



# Canadian Geoscience Council

Published for the Council  
by the Geological Survey of Canada as  
Paper 83-6

## The Geosciences in Canada 1982

### Annual Report

Prepared by  
The Canadian Geoscience Council

Edited by J.P. Greenhouse



Canada

### NOTE / AVIS

The Canadian Geoscience Council regrets an error that occurred in the obituary for Dr. George Mannard which was published in the Council's Annual Report for 1982 (GSC Paper 83-6). Reference to an airplane accident is incorrect and should be deleted.

*Le Conseil géoscientifique canadien regrette une erreur qui s'est glissée dans la notice nécrologique de M. George Mannard parue dans le Rapport annuel de 1982 du Conseil (Étude 83-6 de la Commission géologique du Canada). L'allusion à un accident d'avion est inexacte et devrait être rayée.*





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**GEOLOGICAL SURVEY  
PAPER 83-6**

**THE GEOSCIENCES IN CANADA, 1982  
ANNUAL REPORT**

**Prepared by  
THE CANADIAN GEOSCIENCE COUNCIL**

**Edited by  
J.P. GREENHOUSE**

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Available in Canada through

authorized bookstore agents  
and other bookstores

or by mail from

Canadian Government Publishing Centre  
Supply and Services Canada  
Ottawa, Ontario, Canada K1A 0S9

and from

Geological Survey of Canada  
601 Booth Street  
Ottawa, Ontario, Canada K1A 0E8

A deposit copy of this publication is also available  
for reference in public libraries across Canada

Cat. No. M44-83/6                      Canada: \$4.00  
ISBN 0-660-52339-6      Other countries: \$4.80

Price subject to change without notice

### **Foreword**

The 1982 Annual Meeting, held in Ottawa in December, marked the 45th meeting of the Canadian Geoscience Council and the end of 11 years of operation. This annual report is a testament to the fact that the organization is healthy and carrying out the intentions of its founders, although in areas and in ways which they may not have conceived.

This volume follows the usual format but we have dropped the table on activities and membership of the member societies for this year because the reported changes from 1981 were few. In its place we have added the Canadian Geoscience Calendar. Returning, following a year's absence, is the table prepared by the Council of Chairmen of Canadian Earth Science Departments on enrollment statistics, data with a story to tell.

May I correct an unfortunate error in the 1981 report? A review of the 1979 CGC study "Geology and Geophysics in Canadian Universities", published at the bottom of page 20, was attributed to a journal called "Mineral Deposit Research". There is no such journal; the reference should have been to "Mineralium Deposita". Our apologies go to the editors of that journal and to the reviewer, Dr. E.F. Stumpfl.

*John P. Greenhouse*  
Executive Director



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Dr. George Mannard, President of the Canadian Geoscience Council in 1978, was killed in an airplane accident in 1982. The following is part of the eulogy<sup>1</sup> given at the funeral on August 12th, prepared by George Podolsky.

*"George Mannard's approach to his profession was characterized by his enthusiasm, perseverance and dedication to excellence. Upon graduating from McGill University in 1955 with an Honours degree in Geology, he returned to take a Master of Science degree (in Geology) in 1956. There followed periods of employment with Williamson Diamonds Ltd. in Tanzania and Amax Exploration Company of Vancouver, interspersed with a Ph.D. degree in Geology in 1963, again from McGill. After joining Texasgulf as a Senior geologist late in 1964, George progressed to the position of regional manager of exploration in 1970, vice-president and director of Texasgulf Canada Ltd. in 1977 and vice-president of exploration for Texasgulf in 1979. Under his leadership, Texasgulf carried out successful exploration programs throughout Canada. Most noteworthy of these were the discoveries of several base metal deposits in the North West Territories.*



*In October, 1981, on the formation of Kidd Creek Mines Ltd. out of the Canadian assets of Texasgulf, George was appointed the new company's president and chief operating Officer. In addition to his duties in Texasgulf and Kidd Creek, George gave unstintingly of his time to, and indeed took an active part in, several professional societies including the Geological Association of Canada, the Canadian Institute of Mining and Metallurgy, the Society of Economic Geologists and the Prospectors and Developers Association. He served as a director of the Institute of Natural Resource Studies and was past-president of the Geoscience Council of Canada. An author of numerous scientific and technical papers, he contributed much to his profession and to the mining industry in general.*

*But George will be held in high esteem by his friends and colleagues not only for his achievements as a professional in the mining industry. If possible, these were outshone by his personal qualities of sincerity, warmth, understanding, and total loyalty to his colleagues.*

*Perhaps one's fondest memories of George were when he was among groups of friends and cohorts. His wide variety of interests and his abilities as a witty and engaging raconteur made him equally appreciated in dining rooms and cook tents across the country. There was as much delight for him in a well harmonized Christmas carol as in a totally spontaneous and outrageous pun. In these he was often ably supported and encouraged by his family.*

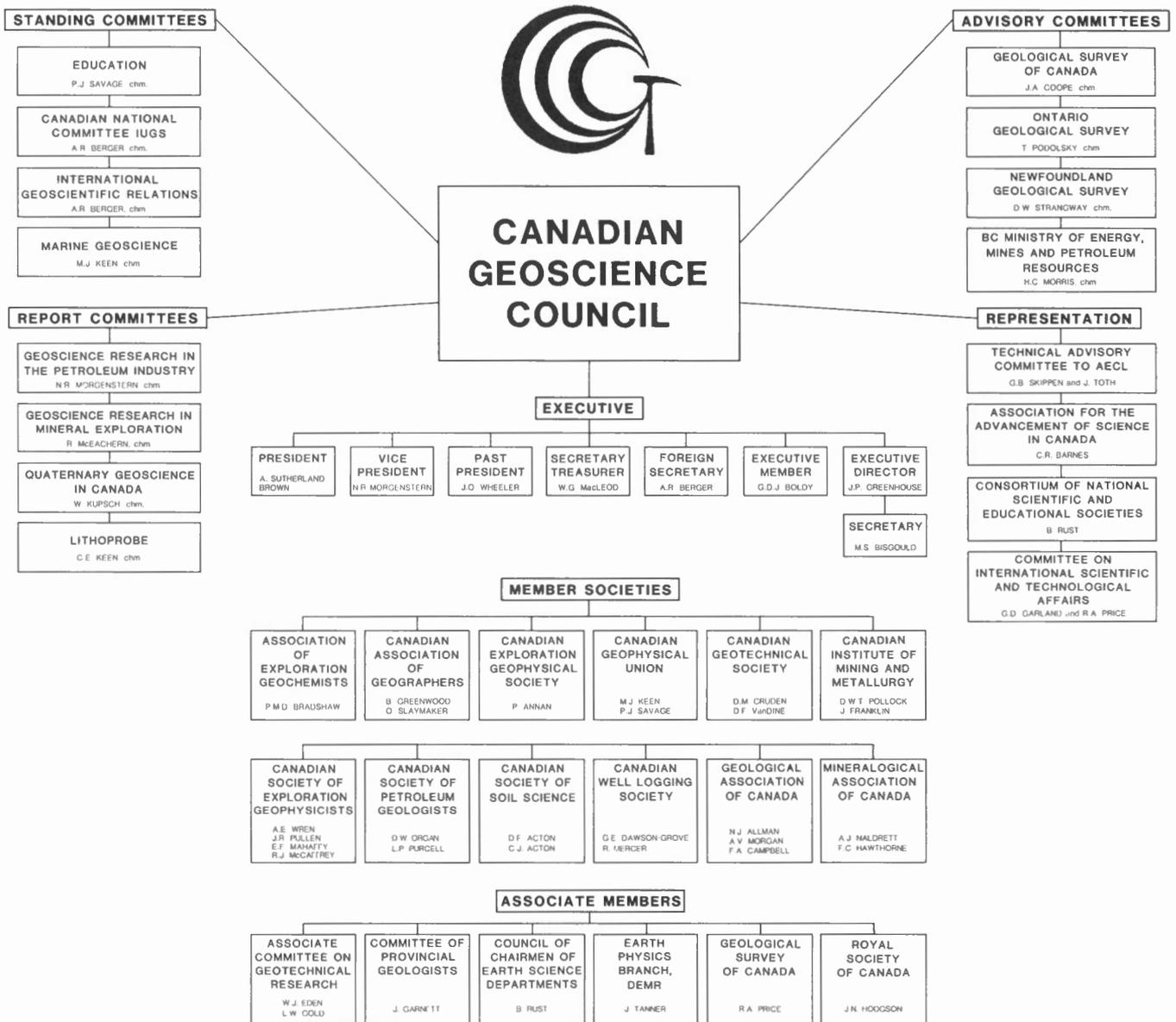
*We all share the burden of grief borne by George's family but if many of us remember seeing him for the last time with a smile on his face, it is entirely fitting. Long after the void in our hearts has healed, the smile will remain."*

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<sup>1</sup> reprinted from the PDA Recorder with permission of Southam Business Publications.  
Photo: Herb Nott and Co. Ltd., Toronto.

Table 1

THE ORGANIZATION OF THE CANADIAN GEOSCIENCE COUNCIL, 1982



## REPORT OF THE PRESIDENT

### ***Evolution of the Council***

In just over a decade the Canadian Geoscience Council has grown from a seed to a complex organism. The Blais report of the Science Council of Canada recommended such a body and creation followed quickly. Growth and evolution have been constant, bringing the Council to a critical point. The CGC has functioned as a group of enthusiastic volunteers, continuously reaching out to involve more geoscientists in aspects of its affairs. It is unlikely that this can go on forever. For example, the time necessary to run any of the major studies now being conducted is beyond what can reasonably be expected of working geoscientists, so that consultants are becoming essential for some studies. This in turn necessitates generating increased funding from a broader base. Also the Council no longer has a single principal focus of study. Currently three major studies are under way as well as our numerous other activities. Furthermore, each completed study seems to generate continuing responsibilities and expense as will be evident from this report. The Council has functioned in a manner that has been admired and imitated in other countries but clearly a debate on its future directions will be needed soon.

### ***The Canadian Geoscience Council in 1982***

The Council met four times in 1982; in Toronto in March during the Prospectors and Developers Conference, in Winnipeg in May during the GAC/MAC Joint Annual Meeting, in Vancouver in September, and in Ottawa in December for the Annual Meeting and the joint meeting with EMR senior officials. In addition to these regular meetings, the work of the Council continued on many fronts, described below.

### **Completed Studies**

1. Marine Geosciences in Canada - 1980, A Status Report is to be published in May 1983. The text was completed under the leadership of R.D. Johnson. The single recommendation of the report was that a standing committee of Council on Marine Geosciences be created, and this has been done. The committee is chaired by M.J. Keen with a broadly based membership; G.R. Campbell, S.E. Calvert, C.P. Lewis, M.A.J. Matich, S.M. Millan, D.I. Ross, P.J.C. Ryall, and C.J. Yorath. It is intended that the committee develop, in conjunction with the CGC, its terms of reference, objectives, plan of operation, method of rotation, criteria of usefulness and a method for dissolution. The committee is expected to tackle problems such as ship time and universities, future ships and their adaption to geoscience studies, major geoscience programs at sea, Canadian contractors for offshore, availability and training of manpower and expertise.

A symposium based on the findings of the report is scheduled for the joint annual meetings of GAC/MAC/CGU at the University of Victoria in May 1983, convened by J.O. Wheeler. This review will draw attention to the report and its implications and will give ample opportunity for discussion by the interested geoscientists.

2. The Advisory Committee to the Geological Survey of Canada completed its Examination of the Output of the GSC which was submitted in final form in mid-year to W.W. Hutchison, Assistant Deputy Minister (Earth Sciences), EMR. The report, and a commentary by the GSC were reviewed by the Executive Committee of Council just prior to the Annual Meeting in December but the complete Council has not yet had the opportunity to review it. This will be done in 1983 and, if endorsed by the Council, will be published during the year.

The committee was chaired by J.A. Coope and included B. D'Anglejan, P.L. Gordy, D.W. Strangway, A. Sutherland Brown, and M.G. Tanguay. It first met in October 1979 and since then it has reviewed the formal and informal output of the survey through observation, interviews and questionnaires followed by an analysis.

### **Studies in Progress**

The Council has three major studies underway all in their early stages due, in part, to the difficulty of finding chairmen for these studies and money to fund them.

1. The study on Geoscience Research and Development in the Petroleum Industry has proceeded from a task force chaired by D.W. Organ to look into the feasibility of conducting the study, to the formation of a steering committee under the incoming President of Council, N.R. Morgenstern with D.W. Organ, Easton Wren, E. Burge, D. Devenny. This committee is intended to give direction to the study, search for a consultant to conduct major parts of it, and to negotiate with petroleum organizations such as the Canadian Petroleum Association for funding and cooperation. Because of the proprietary nature of much of the information, the study will be more concerned with the nature and scale rather than the details of industry research. Council and many in the industry and government think the study to be most useful and timely. It appears to be properly launched but may founder if a suitable consultant cannot be found or if funding and cooperation by industry are inadequate.

2. The study of Geoscience Research in Mineral Exploration has been considered by the Council since 1980. An initial committee dissolved when the chairman had to resign. A new steering committee was formed in the summer of 1982 under the chairmanship of R.G. McEachern consisting of I. Campbell, J.M. Franklin, R. Pemberton, C. Smith, J. Sullivan, and I. Thompson. The study has the advantage of having the report of the workshop chaired by J.M. Franklin that took place in November 1981 at the University of Toronto. This workshop resulted from a request to CGC by the National Geological Surveys Committee. It concerned itself with the environment and facilities for research as well as with areas related to mineral deposits needing research. The CGC study hopes to assess the level of past and present research, examine the impact of research on success in exploration, and consider future directions. Funding will be solicited from a number of sources, including industry, to permit this study to proceed.
3. The study Quaternary Geoscience in Canada was proposed at the Annual Meeting of 1981 by Olaf Slaymaker. Like the other studies it has roots in the Blais report. Moreover the report by E.R.W. Neale and J.E. Armstrong on Geology and Geophysics in Canadian Universities, (GSC Paper 80-6, Part 1) had to be circumscribed from its original mandate with the result that Quaternary studies were not fully canvassed. Olaf Slaymaker was asked to come back to the Toronto meeting in March 1982 with a proposal and names for a steering committee. The report would review the present status, review the educational needs and consider future directions of Quaternary Geoscience in Canada. Council approved the proposal and a committee formed under the chairmanship of W.O. Kupsch, with C. Hilaire-Marcel, A.M. Stalker, D.A. St. Onge, O. Slaymaker, D. Cruden, P. Mudie and J. Locat. The inter-disciplinary nature of the subject will introduce problems similar to those of the marine geoscience study in where to draw bounds to the study. The first meeting of the committee was in December 1982 and a completion is planned in 1985 so that publication will occur well before the INQUA meeting in Canada in 1987.

### **Advisory Committees**

The Council has proposed names for six advisory committees in recent years and has had continuing interest in their progress. Two successive committees have been provided for the GSC with the second just discharging its responsibility. Committees have been provided to the provinces of Ontario, Newfoundland and British Columbia. All these studies have been completed and it is expected that they will be presented to the Council to consider for publication. Each government in turn has expressed great appreciation of the effort and perception of the committees.

The Technical Advisory Committee (TAC) of Atomic Energy of Canada Limited is of a different nature. Council provides AECL the names of two earth scientists for the geoscience component of the committee. The creation of the TAC was partly a fall-out from the symposium conducted in 1978 by the CGC and published as GSC Paper 79-10, edited by C.R. Barnes. Present geoscientists on the TAC are G. Skippen and J. Toth. They review all documents related to radioactive waste disposal and report that the geoscience component of these studies has increased sharply. In view of the Council's former public position of concern about high level radioactive waste disposal expressed in the introduction to Paper 79-10, we have asked the TAC to provide a statement of the current position for the societies to consider in advance of the next Council meeting.

### **Major Project Funding**

Over the last two years the Earth science community in Canada has undertaken an intensive examination of the opportunities and procedure for launching a major, coordinated, multidisciplinary research effort of national scope. This initiative started at a Workshop organized by the Council of Chairman of Earth Science Departments in 1981. Coordination of the effort to solicit and evaluate proposals fell to the CGC which formed a special, broadly based committee to carry this out. Four proposals were reviewed by the committee and their recommendation of LITHOPROBE was accepted by Council at the May 1982 meeting.

LITHOPROBE proposes to examine the third dimension of Canadian geology by seismic reflection – refraction studies across a selection of critical corridors, followed by deep core drilling, logging and multidisciplinary analysis. The LITHOPROBE proposal brought together extensive supporting letters from geoscientists in government and industry as well as academia. A steering committee consisting of J.O. Wheeler, W.S. Fyfe, D.I. Gough, C.E. Keen, R.A. Price, and J.G. Tanner was formed and they produced a preliminary proposal to go to NSERC and EMR. The next stage is the formation of a management committee to prepare a detailed proposal before mid 1983.

### **Earth Sciences and Resource Development Issues: Need for Renewal of Effort**

The Council was asked by W.W. Hutchison, ADM, Earth Sciences of EMR to take part in external consultation on the proposed "thrusts" initiated by EMR. A presentation was made by Dr. Hutchison at the March meeting and the Council elected to poll the member societies to provide a response by the May meeting.

This renewal of effort was proposed in four fields:

1. The structure, composition and development of the continental crust within which and upon which all mineral and energy resource exploration and development takes place;
2. Geological hazards which exert a critical influence on development, particularly in Arctic and offshore areas;
3. The formation of mineral deposits and their detection at depth; and
4. The nature and dynamics of sedimentary basins and the hydrocarbon, mineral, geothermal and water resources they contain.

The coordinated response of CGC welcomed the initiative of EMR and the opportunity to consult on it, noting how it meshed well with the present efforts of Council. All member societies responded in a restricted time interval, with widespread approval. Notwithstanding this, there were several requests for clarification of the objectives and of the sources and application of funding. Some expressed concern that the new thrusts might come at the expense of basic mapping by the GSC, or present funding activities of NSERC. The societies recognized need for and the challenge of coordinated research activities in all the estates of the geoscience community, but wished clarification of how this would take place. Some specific advice was offered.

Following the response to Dr. Hutchison at Winnipeg, N.R. Morgenstern, D.W. Organ and I met with the Honourable Judy Erola, Minister of State (Mines) later in May to reinforce the conclusions of the Council, discuss priorities, and ascertain the future of the initiative, i.e. whether there would be new funds, whether these would be restricted to EMR or also extended to the community. The Minister was enthusiastic about the new thrusts and, though admitting it was not a good time to achieve new funding, was hopeful for the future. She was explicit that it was an initiative for the whole geoscience community.

### **Foreign Affairs**

The foreign secretary, A.R. Berger, has been particularly active during the year as shown in his report. Highlights from the viewpoint of the President include:

1. the formation and first meeting of the Canadian National Committee for IUGS and the signing of an agreement with EMR to fund this activity.
2. the decision by CNC/IUGS, endorsed by Council, to rely on EMR for funding of international activities on behalf of Canada rather than accept an offer from NRC.
3. the endorsement by Council of the nomination of W.W. Hutchison by the Polish National Committee for President of IUGS and the proposal by Council of D.J. McLaren as a member of the Executive.
4. the reception of a proposal for Applied Research on Surficial Material in Developing Countries from the International Development Research Centre – their first venture into geoscience.
5. the agreement to fund a workshop in Thailand on methods of teaching Earth Science in Asian high schools, extending EdGEO internationally.

### **EdGEO**

In 1982 a new high was achieved by EdGEO with six programs held in Calgary, Edmonton, Saskatoon, Winnipeg, Toronto, and Halifax. Two new developments are the requests from Mr. P. Dufour of the Science Council of Canada to discuss their study in school science education with CGC and the previously mentioned workshop in Thailand.

### **Revision of the Constitution and Bylaws**

The evolution of the Council over the past ten years is made evident by comparison of the existing constitution and bylaws with the way the Council currently conducts its affairs. J.O. Wheeler and G. Wright initiated the review which was presented to Council and refined at the Vancouver meeting. A revision in the light of that discussion was presented at the annual meeting. A revised document was presented at the annual meeting. The final revision will be presented to Council for consideration of adoption well in advance of the May 1983 meeting in Victoria.

The intentions of the revisions are mainly four-fold:

1. to democratize the bylaws, principally by a new structure of the nominating committee with stronger society representation.
2. to rationalize the position of the Executive in regard to voting.
3. to define and acknowledge the position of the non-voting and associate members.
4. to better define the current roles of Executive Director, the Secretary-Treasurer and the Foreign Secretary.

### Memorial to George W. Mannard

George Mannard died suddenly in the summer of 1982. He was President of Council in 1978 and, on the creation of Kidd Creek Mines Ltd., he was made President of that company. He will be sorely missed by the geoscience community because of his buoyancy, energy, and tireless advocacy in high places of the role of geoscience.

On the reception of the news of his death, Council decided to initiate some fitting recognition of his life of service to geoscience. As a result I contacted Kidd Creek Mines to find out their intentions. They decided to create a Memorial Fellowship at McGill University in the Mineral Exploration Program. Kidd Creek welcomed the idea of the geoscience community, through the CGC, contributing to a coordinated memorial and will acknowledge the contribution in the McGill Calendar. The CGC will immediately set up a trust fund under the Secretary-Treasurer so that the societies which are being canvassed may contribute. In addition the societies will run notices in their newsletters soliciting funds from individuals for the Fellowship.

A tribute to George Mannard written by George Podolsky is published in this volume.

### Acknowledgments

The Canadian Geoscience Council may seem to function without effort to those who are not close to it but its continuance is dependent on the hard work and good will of a very large number of contributing geoscientists. These consist of society representatives, chairman or members of the studies or of standing committees and the executive. We could not function as we do without this broad base of effort. Also many tend to forget that agencies and institutions who employ the contributing geoscientists tacitly or openly lend great support by allowing the work of Council to go forward.

We owe a considerable debt to those who serve on the executive. Surely the hardest working of these are the Executive Director, John Greenhouse and Secretary Treasurer, Bill MacLeod. I personally owe a great debt to my predecessor John Wheeler, and successor Norbert Morgenstern for their unstinting help and highly valued advice. It is also a pleasure to record the acceptance of an original architect of the CGC, Charles H. Smith, who has accepted the role of Vice President in 1983.

*A. Sutherland Brown*



CGC Executive from left to right:

A.R. Berger, W.G. MacLeod, A. Sutherland Brown, J.P. Greenhouse, N.R. Morgenstern.

## REPORT OF THE FOREIGN SECRETARY

The Foreign Secretary acts as a link between the Canadian Geoscience Council and international, non-governmental organizations with geoscientific activities that involve Canadians. This liaison is achieved through the Standing Committee on International Geoscientific Relations (SCIGR) and the Canadian National Committee for the International Union of Geological Sciences (CNC/IUGS), both chaired by the Foreign Secretary. The SCIGR held its sixth annual meeting at the Geological Survey of Canada, Ottawa, on November 9, 1982, and this was followed on the same day by the first annual meeting of the CNC/IUGS. The full minutes of both meetings are available from the Foreign Secretary and the Executive Director. The reports which follow are based on these minutes and incorporate some subsequent developments.

### *Standing Committee on International Geoscientific Relations*

The Standing Committee is an advisory body on foreign geoscience activities outside those of the IUGS and the International Geological Congress (IGC). SCIGR acts as a clearing house for reports to the CGC from international organizations involving Canada, and proposes to the CGC responses to new international initiatives.

The 1982 meeting was attended by representatives of the Canadian National Committees for the International Union of Geological Sciences, International Geological Correlation Programme, the International Lithosphere Program, and the International Union of Geodesy and Geophysics. Also present were representatives of the International Union of Quaternary Research, the Association of Exploration Geochemists, the Canadian Association of Geographers, the International Mineralogical Association, the Association of Geoscientists for International Development, the Commission for the Geological Map of the World, the Canadian Commission for Unesco and the Geological Survey of Canada. In addition there were observers from the NRC Committee on International Scientific and Technological Affairs, the International Association of Hydrological Sciences, and the International Development Research Centre. Written reports were also received from the Canadian Coordinator for the Decade of North American Geology and the International Association of Engineering Geology. Members of the CNC/IUGS sat in as observers.

### **CC/Unesco**

J.M. Harrison, Vice Chairman of the Canadian Commission for Unesco, reported on the discussions concerning the Mid-Term Plan for 1984-1989 which covers all Unesco activities from human rights to its four major science programs: IGCP, Man and the Biosphere, the International Hydrological Program and the International Oceanographic Commission. Concern was expressed that Unesco would decrease funding for its science program and a motion was adopted "that the SCIGR express its support for maintaining the scientific activities of Unesco at least at their present level in the Mid-Term Plan". The Plan was adopted by Unesco at a special Assembly held in Paris in late November, but indications are that as a result of vigorous protests from a number of national delegations, including Canada, the science program will not be as severely affected as it might otherwise have been.

### **IUGS**

Canada had always taken a leading role in the International Union of Geological Sciences, for example through J.M. Harrison, its first President, and W.W. Hutchison, the past Secretary-General. Canadians are active in many of the IUGS committees, commissions, boards, affiliated organizations and joint programs, and the Union's newsmagazine, EPISODES, continues to be published in Ottawa with support from the GSC. IUGS sponsors many conferences, symposia and seminars including in 1982 the Joint Oceanographic Assembly (Halifax, August), and a Workshop on Petroleum Resource Assessment (Hawaii, August) organized by the IUGS Advisory Board on Research Development (ABRD) through its Chairman, W.W. Hutchison. The workshop was led by personnel from the USGS and the GSC and supported financially by IDRC. A major event in 1982 was the successful holding in Hamilton of the 11th Congress of the International Association of Sedimentologists, an IUGS affiliate. Some 1200 geologists had attended this first IAS Congress to be held in North America, and many excellent field trips were run to many parts of Canada. During 1982, IUGS called for nominations to its Executive Committee for the period 1984-1988. In response the CGC nominated W.W. Hutchison as President and D.J. McLaren as a member of the Executive. J.M. Harrison was also proposed as a member of the ABRD, and R.A. Price for the Board of IGCP.

### **IUGG**

Reporting for the CNC of the International Union of Geodesy and Geophysics, its Chairman, A.E. Beck, recalled the successful 21st General Assembly of the International Association of Seismology and Physics of the Earth's Interior held in London, Ontario, in July 1982. He also pointed to plans for the commemoration of the Centenary for the First International Polar Year (1882/83) and for the establishment of a Canadian Long Base Line Array which should prove useful for accurate measurements of relative crustal movements. An invitation to hold the 1987 General Assembly of IUGG in Vancouver will be presented to the 1983 Assembly in Hamburg.

## **CISTA**

C. Gauvreau, the Secretary of the NRC Committee on International Scientific and Technological Affairs pointed out that IUGS was one of the few members of the family of the International Council of Scientific Unions whose Canadian participation was not handled by CISTA. A formal request was subsequently received by the CGC to discuss the possible transfer of responsibility for Canadian representation in IUGS to the NRC. While appreciating the considerable advantages from geoscience participation in CISTA which provides a link to all non-governmental scientific and engineering organizations in Canada, the CGC decided to maintain its connection with IUGS through CNC/IUGS at least as long as the present arrangements for financial support of the latter by EMR remain in existence.

## **AEG**

E.M. Cameron pointed out that unlike most other members of the CGC, the Association of Exploration Geochemists is international in membership and activities, having developed far beyond its origins in Canada. Direction from this country continues, however, to be essential to AEG. Its bi-monthly Journal of Geochemical Exploration is edited in Canada by E.M. Cameron and J.A. Hansuld, the Secretary of the Association is R.E. Lett (Toronto), and AEG's 9th International Geochemical Exploration Symposium was held in Saskatoon in May 1982. AEG was also accepted as an IUGS Affiliate in 1982.

## **AGID**

The Association of Geosciences for International Development which had its origins in Canada in 1974 at a meeting sponsored by the Canadian Geoscience Council. AGID is now operating from a new headquarters in Bangkok with regional offices in Nigeria and Colombia, and a number of activities in other parts of the Third World. During the past year AGID has sponsored or cosponsored a number of symposia, workshops and training courses in Nigeria, Thailand, Australia, Brazil, Malaysia and Zimbabwe. A network on small mining is being developed in eastern and southern Africa, and an organizational meeting was held in Nairobi in May with financial support from IDRC. Major funding continues to come from CIDA, but contributions from Unesco, Australia and the Netherlands have been increasing.

In 1982 AGID made a formal request to the Canadian Geoscience Council for financial support for the workshop on methods of teaching earth science in Asian high schools. The aim is to review the experience of Canada, U.S. and Australia in bringing earth sciences to the schools. The request was for \$3000 to enable a experienced Canadian high school teacher to participate as an instructor in the workshop. This request was approved by the CGC and the workshop is now scheduled for late 1983.

## **CGMW**

A brief report on the activities of the Commission for the Geological Map of the World was given by R.A. Price, the CGC representative. Begun in the 1880s, CGMW coordinates map activities beyond the national level. Its main efforts have been on global maps in recent years and coverage at 1:10 000 000 is complete. The current emphasis is on mineral resource, geophysical and other special maps.

## **IMA**

A brief report of the recent meeting of the International Mineralogical Association in Varna, Bulgaria, was presented by D.C. Harris. Participants in this meeting paid homage to the late Len Berry, a founding member of the association and its long time Treasurer. D.G. Smith was elected to the new council of the IMA, and J.A. Mandarino was elected as Chairman of the Commission on New Minerals and Mineral Names. There was some criticism of the organizational standard of the Varna meeting, and a decision was taken not to meet with the International Geological Congresses in future.

## **IGCP**

J.M. Harrison reported on the 1982 meeting of the CNC for the International Geological Correlation Programme held in Ottawa in February 1982. The Committee had expressed its disapproval of the high overhead costs of the IGCP Secretariat in Paris, with only one third of the current budget going to scientific projects. Four IGCP projects had met in Canada in 1982, all quite successfully. Number 27 (The Caledonides) held workshops and symposium in Fredericton and field trips to various parts of the Atlantic Province, Quebec and Maine, coordinated by Paul Schenk and supported by NATO. Project 171 (Circum-Pacific Jurassic) held a field trip in western Canada arranged by W. Brown. Project 179 (Proterozoic Correlation) met in a session at White Fish Falls on the north side of Lake Huron and coordinated by Grant Young, and Project 148 (Quantitative Techniques and Stratigraphic Correlation) held a workshop in Ottawa, arranged by F. Agterberg. Newsletter No. 9 of the CNC/IGCP released in January, 1983, reviews Canadian participation in these and other IGCP projects.

## **ILP**

Charlotte Keen, Chairwoman of CNC for the International Lithosphere Program, reviewed the many activities that the Committee had been involved with in 1982. These include Lithoprobe, the Decade of North American Geology, North American Transects, COCRUST, IPOD, and the Canadian Long Baseline Array. The Canadian committee has set up a formal liaison between the COCORP seismic group in U.S. and the COCRUST group in Canada. The Committee had also had substantial contacts with various aspects of the ILP.

R.A. Price, President of the International Commission on the Lithosphere added that most of the ICL working groups and coordinating committees had begun their work and that Canadians were indeed well represented. Recent ICL meetings in Brazil had been very useful and provided an opportunity for Brazilian scientists to discuss their work before an international group.

## **IAEG**

W.J. Eden reported in writing on behalf of the NRC Associate Committee on Geotechnical Research and the Canadian Geotechnical Society. Of particular interest was an initiative taken by the CGS to send a Canadian geotechnical engineer (D.H. Shields, University of Manitoba) to Ghana in 1981 to give a series of lectures at the request of the geotechnical community there so that they could keep in touch with outside developments. The CGS had obtained a grant for this purpose from CIDA and on Shield's return had printed his lectures for distribution in Ghana. The CGS had also arranged free subscriptions to the Canadian Geotechnical Journal for several Ghanaian organizations and, with funds from CIDA, had established an annual fellowship to allow a young Ghanaian engineer to come to Canada for three to four months to work with a Canadian firm or government department who would pay 50 per cent of his salary. The balance plus travel and a living allowance would be paid by CIDA. The CGS had also arranged for F. Matich (Geocon Limited, Toronto) to lecture in Thailand (1981) and A. Lansdown (Civil Engineering, University of Manitoba) and R. Lopez (Golden Associates) to go to Colombia. D.H. Shields is presently co-ordinating this program.

H.M. French reported that the NRC had agreed to provide support for a Canadian based headquarters for an international permafrost association should this be formed in the near future. The proposal to set up this association would be considered at the 1983 International Conference on Permafrost to be held in Fairbanks, Alaska. At this time the official Canadian delegation will formally propose establishment of the International Permafrost Association, and J.R. MacKay had agreed to serve as the Secretary for an initial three year period with headquarters at the University of British Columbia. This is a development with which the Canadian Geoscience Council may wish to be involved.

## **INQUA**

D.R. Grant reported that INQUA, the International Union for Research on the Quaternary had held its Congress last August in Moscow. This had encountered a number of technical and organizational problems which made the Congress rather difficult. N. Rutter had been elected one of the four INQUA Vice Presidents in Moscow, and Canadians were elected to executive positions on most of the active INQUA commissions and subcommissions. Canada's invitation to host the next INQUA Congress in 1987 had been accepted by the Union and will probably be held in August of that year. It was pointed out that liaison should be established between the organizing committee for this INQUA Congress and the organizers of the IUGG General Assembly also scheduled for the same time in Canada.

## **CAG**

H.M. French reported that preparations were now under way for the next Congress of the International Geographical Union to be held in Paris in 1984. Canadians chair two of the 17 IGU commissions most closely related to geoscience: O. Slaymaker (Field Experiments and Geomorphology) and H.M. French (Periglacial Geomorphology). Both of these Commissions are active and have held recent field meetings and/or symposia in South America (Iceland) and Scandinavia. The Periglacial Commission has strong links with the INQUA Commission on Palaeogeographic Mapping and Reconstruction.

## **IDRC**

R. Vicencio, explained briefly the aims and activities of the International Development Research Centre. Through its new Cooperative Programs unit, IDRC has begun to fund joint projects in earth science involving Canadian researchers and their counterparts in developing countries. These include the deep drilling project on the Troodos Ophiolite in Cyprus and a study of aeromagnetic data from Nigeria. A new emphasis on geoscience had recently been approved by IDRC, dealing with surficial materials and processes and a news release describing this program was circulated widely in Canada towards the end of 1982. A directory of Canadian research on surficial geology has been compiled by the IDRC and will soon be available.

## **DNAG**

In a written report submitted by J.O. Wheeler, the Canadian coordinator, the many activities of the Decade of North American geology were reviewed. The purpose of the DNAG project is to focus the efforts of the North American geological community towards major syntheses of various aspects of the geology in North America during the 1980s. The project includes plans for 27 volumes of regional topical geological syntheses, 24 geological and geophysical transects across the margin of the continent, at least 17 major regional tectonostratigraphic correlation charts for the U.S.A. and Canada, new geological tectonic gravity anomaly, magnetic anomaly and linear maps of North America, and field guides documenting the 100 localities that best demonstrate important geological relations and principles in each of the six regional sections of North America. The Geological Survey of Canada will publish nine volumes and new thematic maps of Canada and its experience in regional syntheses continues to be a leading guide in DNAG which is itself a model for international cooperation involving Canada, Mexico and U.S.A.

## **Planning International Congresses for Canada**

The question of scheduling and support for international meetings held in Canada was raised, especially in terms of the proposed 1987 Congresses of INQUA, IUGG and the International Society for Rock Mechanics. NRC had established a fund under CISTA which could be used as a seed for future meetings managed by NRC or contracted out to Canadian organizations. A possible conflict might arise between the IUGG and INQUA meetings, both scheduled for August 1987, and the Canadian National Committees for these organizations were asked to coordinate their plans.

## ***Canadian National Committee for the International Union of Geological Sciences***

The first meeting of the CNC/IUGS was held immediately following the SCIGR meeting in Ottawa on November 9, 1982. It was attended by the Foreign Secretary and F. Frey (representing structural geology and tectonics), R. Greggs (sedimentology and petroleum geology), P.J. L esperance (palaeontology and stratigraphy), D.G.W. Smith (petrology, mineralogy and geochemistry) and M. Vall e (economic geology) who had been nominated by CGC member groups for various disciplines. Also in attendance were J.M. Harrison (Chairman, CNC/IGCP), C.E. Keen (Chairman, CNC/ILP), D.R. Grant (CANQUA), D.J. McLaren (Head of Canadian delegation to the 1980 Paris Congress and the IUGS Council) and R.A. Price (DG/GSC and past Foreign Secretary).

In reviewing the steps that led to the formation of this new committee R.A. Price stated the GSC which had formerly acted as national adhering body to IUGS had passed this responsibility to the Canadian Geoscience Council in 1976. The Council had charged its Standing Committee on International Geoscientific Relationships with this duty. However, it had been difficult for the SCIGR to carry out this responsibility because its membership includes individuals representing geophysics, soil science, and geography which have their own international unions and their own arrangements for Canadian participation in these unions. A new CNC/IUGS had therefore been set up by the Canadian Geoscience Council under the terms of an agreement with EMR which would provide funds to the CGC for the new committee (\$3000 per year for its annual meeting and \$3000 per year as a contribution toward the participation of the Canadian delegates to the IGC and IUGS Council meetings). It was also agreed that the GSC would continue to pay the annual subscription fee for Canada to the IUGS.

The Foreign Secretary reminded members that the CNC/IUGS had been established in order to retain formal liaison and to ensure effective communication between the Canadian Geoscience Council and IUGS and IGC. The committee was also responsible for evaluating the place of Canada in the Union and the Congress, advising the CGC on Canadian participation in the affairs and the activities of IUGS and IGC, appointing delegates and alternates to represent Canada at the IUGS Council meetings and the IGC, and receiving reports from Canadian delegates to these meetings. The committee also facilitates cooperation between IUGS, IGC and Canadian scientific societies and scientists interested in the activities of the Union and the Congress.

D.J. McLaren reviewed the report published earlier in the 1980 CGC Annual Report (GSC Paper 81-6, Part 2) on the Canadian delegation which attended the 1980 Congress in Paris and the IUGS Council meeting held at that time. At the request of the Chairman, D.R. Grant discussed some of the details of the 11th INQUA Congress which had been held last August in Moscow and which had run into certain logistic and organizational problems. The lessons learned at the INQUA Congress might prove useful to the organizing committee of the 1984 International Geological Congress in Moscow and the CNC/IUGS recommended that these comments be relayed by the CNC/INQUA to the IUGS Secretary General.

The committee then discussed at length the criteria that might be used to select Canadian representatives to the Moscow Congress. These included disciplinary balance, affiliation of delegates (university, government and private industry), Canadians attending Moscow on other sources of funds, and Canadians chairing symposia, giving papers or officially involved in the Congress sessions. D.J. McLaren pointed out that in 1980 a number of the Canadian delegation had had their expenses covered by their employers. It was generally agreed that a list of those planning to go to the Congress, in any case, should be obtained, and the Chairman asked the committee members to attempt to identify such people before the next meeting of this committee. The Foreign Secretary circulated a letter in December 1982 to various CGC members requesting further information on those Canadians planning to attend the Moscow Congress.

## REPORT OF THE SECRETARY-TREASURER

The Consolidated Balance Sheet and Statement of Income and Expenses for fiscal 1982 are given in Tables 3 and 4 respectively. The change in fiscal year-end from December 31 to September 30 in 1981 distorts the report for the current year to some extent because of duplication of sustaining grants and membership dues.

The approved budget for 1983 is listed in Table 2.

The total of Council's twelve societies' membership is now 14 742. Fees paid to the Canadian Geoscience Council by the societies vary from \$140.00 to \$750.00. The average cost of CGC affiliation to the individual member is about 34 cents.

December 6, 1982

*W.G. MacLeod*  
Secretary-Treasurer  
Canadian Geoscience Council

Table 2

### CANADIAN GEOSCIENCE COUNCIL APPROVED BUDGET - 1982/83

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#### EXPENSES

|                               |              |
|-------------------------------|--------------|
| Mineral Research Committee    | \$ 5,000.00  |
| Quaternary Studies Committee  | 5,000.00     |
| Marine Geoscience Committee   | 4,700.00     |
| CNC/IUGS                      | 3,000.00     |
| EdGEO Workshops               | 5,000.00     |
| EdGEO Workshop (Thailand)     | 3,000.00     |
| Secretarial Services, Postage | 5,500.00     |
| Printing: Brochures, Booklets | 6,800.00     |
| Mineral Research Report       | 1,575.00     |
| Executive Travel              | 1,300.00     |
| Council Meetings              | 2,300.00     |
| Youth Science Foundation      | 150.00       |
| Miscellaneous                 | 100.00       |
|                               | \$ 43,425.00 |

#### INCOME

|                                       |              |
|---------------------------------------|--------------|
| G.S.C. Sustaining Grant               | \$ 11,000.00 |
| Alberta Sustaining Grant (1982, 1983) | 4,000.00     |
| Ontario Sustaining Grant              | 2,000.00     |
| B.C. Sustaining Grant                 | 1,000.00     |
| Membership Fees                       | 5,000.00     |
| Interest: Term Deposits               | 5,500.00     |
| Savings Account                       | 1,500.00     |
| Publication Sales                     | 8,000.00     |
| Reimbursement: G.S.C. Paper 80-6      | 2,670.00     |
|                                       | \$ 40,670.00 |

PROFIT (Loss) \$ 2,755.00)

Future Major Liabilities

1) Delegates to 1984 IGC \$12,000.00

*W.G. MacLeod*, Secretary Treasurer  
December 6, 1982

Table 3

CANADIAN GEOSCIENCE COUNCIL  
CONSOLIDATED BALANCE SHEET  
as of September 30, 1982

| <u>ASSETS</u>                          | <u>1982</u>  | <u>1981</u>   |
|--|--------------|---------------|
| Chequing Account 230095                | \$ 603.95    | \$ (7,345.34) |
| Chequing Account 901-118801            | 478.99       | (1,129.22)    |
| Chequing Account 901-118802            | 4,008.11     | 1,976.80      |
| Chequing Account 901-118803            | -            | 2,624.77      |
| Saving Account 95-09364                | 22,182.46    | 8,499.27      |
| Term Deposits                          | 51,918.50    | 43,591.26     |
|  | <hr/>        | <hr/>         |
| TOTAL ASSETS                           | \$ 79,192.01 | \$ 48,217.54  |
| <br><u>LIABILITIES</u>                 |              |               |
| Completion of Marine Geoscience Report | -            | \$ 1,000.00   |
| September Council Meeting              | -            | 505.00        |
| French Text, G.S.C. Paper 80-6, Part 1 | -            | 2,669.62      |
|  | <hr/>        | <hr/>         |
| TOTAL LIABILITIES                      | -            | \$ 4,174.62   |
| ASSETS LESS LIABILITIES                | \$ 79,192.01 | \$ 44,042.92  |
| <br><u>CONSOLIDATED STATEMENT</u>      |              |               |
| Balance at Beginning of Year           | \$ 48,217.54 | \$ 48,073.77  |
| Income less Expenses                   | 30,974.47    | 143.77        |
|  | <hr/>        | <hr/>         |
| BALANCE AT END OF YEAR                 | \$ 79,192.01 | \$ 48,217.54  |

W.G. MacLeod, Secretary Treasurer  
November 16, 1982

Statement of the Auditors

We have examined the financial records of the Council, Secretary Treasurer's ledger, cancelled cheques, bank statements, etc., for the year ending September 30, 1982.

All records are in order and we believe the consolidated financial standing of the Canadian Geoscience Council to be fairly represented in the Consolidated Financial Statement of 1982-11-16.

This report is not to be considered an audit but rather an examination directed by the Council of its records by the undersigned.

  
D.W. Organ

  
L.P. Purcell

Table 4

CANADIAN GEOSCIENCE COUNCIL  
STATEMENT OF INCOME AND EXPENSES  
FOR THE YEAR ENDING 82-09-30

| <u>INCOME</u>  | <u>1982</u>         | <u>1981</u>         |
|--|---------------------|---------------------|
| G.S.C. Sustaining Grant (for 1982, 1981)                               | \$ 22,000.00        | -                   |
| EMR Service Contract No. 1190650                                       | -                   | \$ 1,500.00         |
| Province of Alberta Sustaining Grant (for 1980, 1981)                  | -                   | 4,000.00            |
| Education Program Donations  | 6,000.00            | 2,000.00            |
| Membership Fees (1981, 1982)   | 7,706.00            | 825.40              |
| Interest, Term Deposits  | 8,327.24            | 4,093.41            |
| Interest, Saving Account   | 1,993.97            | 457.39              |
| Geological Engineering in Canada; booklet,<br>University Contributions | -                   | 4,748.39            |
| Publication Sales  | 8,191.46            | 7,384.11            |
| Ontario Ministry of Natural Resources;<br>Visiting Committee           | -                   | 5,000.00            |
| Province of Ontario Grant (1982)                                       | 2,000.00            | -                   |
| Province of British Columbia Grant (1981, 1982)                        | 2,000.00            | -                   |
| Reimbursement: Annual Report Typing<br>(Geology and Geophysics)        | -                   | 1,994.77            |
| G.S.C. Questionnaire, Contract No. 2556201                             | -                   | 1,933.22            |
| EMR Contract No. 1451729, Integrated Tectonic<br>Studies Plan          | 4,000.00            | 6,000.00            |
| <b>TOTAL INCOME</b>  | <u>\$ 62,218.67</u> | <u>\$ 39,936.69</u> |
| <br><u>EXPENSES</u>  |                     |                     |
| Education Program  | \$ 2,800.00         | \$ 3,450.00         |
| Executive Travel   | 1,192.50            | 1,232.61            |
| Secretarial, postage   | 5,748.52            | 4,014.38            |
| Council Meetings   | 2,123.63            | 285.00              |
| Bank Charges   | 75.33               | 51.21               |
| G.S.C. Paper 80-6, Part I, typing                                      | 2,669.62            | -                   |
| Youth Science Foundation   | 150.00              | -                   |
| C.G.C. Annual Report, French Translation                               | 2,300.00            | -                   |
| Mineral Research, Workshop, Committee                                  | 4,655.94            | -                   |
| Major Project Selection Committee                                      | 1,482.46            | -                   |
| Quaternary Studies Committee   | 389.00              | -                   |
| C.N.C./I.U.G.S.  | 3,000.00            | -                   |
| Lithoprobe   | 627.00              | -                   |
| Miscellaneous  | 30.00               | -                   |
| Printing: Careers in Geoscience, and others                            | 4,000.20            | 10,402.22           |
| Geological Engineering in Canada                                       | -                   | 10,801.61           |
| English text for Annual Report<br>("Geology and Geophysics...")        | -                   | -                   |
| GSC Paper 80-6, Part I   | -                   | 1,994.77            |
| Annual Report, 1979 ("Geology and Geophysics")<br>Committee            | -                   | 29.50               |
| Annual Report, 1980 ("Marine Geosciences...")<br>Committee             | -                   | 5,620.62            |
| Memberships (AGID)   | -                   | 90.00               |
| Integrated Tectonic Studies Plan Committee                             | -                   | 1,821.00            |
| <b>TOTAL EXPENSES</b>  | <u>\$ 31,244.20</u> | <u>\$ 39,792.92</u> |
| <b>TOTAL INCOME</b>  | <u>\$ 62,218.67</u> | <u>\$ 39,936.69</u> |
| <u>INCOME LESS EXPENSES</u>  | <u>\$ 30,974.47</u> | <u>\$ 143.77</u>    |

**REPORT OF THE EDUCATION COMMITTEE  
EdGEO, 1975-1983**

The prime function of the Geoscience Council's Education Committee is the encouragement, support and sponsoring (financial and otherwise) of EdGEO workshops.

These workshops run from one day to a full week. The common format consists of meeting Friday evening and all day Saturday and Sunday. The attendees are junior and high school teachers. The workshops are designed to present basic concepts in the Earth Sciences, particularly as they apply to the local geology, and to provide hands-on experience in developing teaching aids and projects related to the local environment.

While the Council provides the seed money (up to \$2000 for each workshop) and will, occasionally, create the initial interest, we are entirely dependent on enthusiastic local participation by Earth Science professionals and teachers. The organization and presentation of these programs is completely in the hands of these local groups. They will be assisted by such organizations as the Atlantic Geoscience Society (affiliate of the G.A.C.) in Halifax, the C.S.P.G. in Calgary, and by Provincial Museums and Departments of Education.

For the first few years the financial support came through grants from the Canadian Geological Foundation. Since 1979, the Council has provided these funds from donations solicited from the oil industry. In several locations the organizers have been successful in obtaining grants of money or supplies from local industry and Departments of Education. It has been a general practice to recognize the support of the Geoscience Council and other contributors in the workshop programs. The local chairman submits a complete report, including a breakdown of expenditures, to the C.G.C. Education Committee Chairman.

Attendance at the EdGEO workshops has ranged from 16 to 50. It is customary to ask the "pupils" to fill out an evaluation form and these, with letters of comment, are forwarded to the Education Committee chairman. A review of the evaluations of past EdGEO workshops reveals an enthusiastic response on the part of the teachers.

There is, in the Canadian school systems, a small but growing recognition of the importance of the Earth Sciences. This is frustrated to a considerable extent by a lack of training and support from within those systems. In most cases this lack is recognized and the help of Earth Science professionals from Industry, Government and Universities is gratefully received. This help, however, can not be imposed from the outside. It is absolutely essential that when organizing one of these workshops the local teachers be involved from the beginning, and that the School authorities be aware of the program.

Since 1975 the Geoscience Council has sponsored some 25 EdGEO workshops. Outside of our general guidelines there has been no specific linking mechanism or collective sharing of experience. Several of our organizers have expressed the desire to meet with their counterparts elsewhere to share ideas, materials and programs. The Council should consider organizing and financially supporting such a meeting.

The EdGEO workshops held from 1975 to 1982 are as follows:

1975 – Wolfville, N.S.; Calgary, Alberta  
1976 – Winnipeg (30)\*  
1977 – Winnipeg, Saskatoon (26), Toronto (16)  
1978 – Winnipeg (25), Saskatoon, Halifax (22)  
1979 – Winnipeg (21), Saskatoon, Edmonton (29)  
1980 – Winnipeg (20), Saskatoon, Edmonton (34), Vancouver  
1981 – Winnipeg (31), Saskatoon, Edmonton  
1982 – Winnipeg (24), Saskatoon, Edmonton (50), Halifax, Calgary, Toronto

\*(30) attendance, when recorded.

*P.J. Savage*  
Chairman, Education Committee  
Canadian Geoscience Council

## REPORTS OF THE MEMBER SOCIETIES

### **1. The Association of Exploration Geochemists**

The Association of Exploration Geochemists (AEG) was founded in 1970. It is an international organization with about 800 members in 60 countries, most of whom reside in North America. The official journal of the AEG, "Journal of Geochemical Exploration", is published bimonthly. Worldwide subscriptions to the Journal including members is approximately 1500. A newsletter is mailed out quarterly to the members. In addition to regular publications, the AEG publishes special volumes from time to time.

The AEG sponsors an International Geochemical Exploration Symposium every two years; the next one is to be held in August, 1983 in Helsinki, Finland. In the intervening years, regional meetings are held on topics of local or specialized interest. Field trips are conducted both before and after Symposia and meetings. The AEG was affiliated with the International Union of Geological Sciences in 1982.

Activities during 1982 included the 9th International Geochemical Exploration Symposium held in Saskatoon in May. Approximately 430 delegates representing 29 countries attended technical sessions and field trips.

Publications in 1982 include:

Special Volume No. 10 "Precious Metals in the Northern Cordillera" edited by A.A. Levinson. This volume contains papers from a meeting held in Vancouver in April, 1981. The meeting was jointly sponsored by the AEG and the Cordilleran Section of the GSC.

Special Volume No. 11 "Exploration Geochemistry Bibliography" compiled by H.E. Hawkes. This book contains a comprehensive compilation of geochemical exploration literature from before 1940 to January 1981.

The AEG reprinted "Applications of Probability Graphs in Mineral Exploration" by A.J. Sinclair.

Information about AEG activities or publications can be obtained from the Association of Exploration Geochemists, P.O. Box 523, Rexdale, Ontario, M9W 5L4, Canada.

*J. Howard McCarthy, Jr.*

### **2. The Canadian Association of Geographers**

The Association's annual meetings were held in June at the University of Ottawa. D.C. Ford of McMaster University became President. Forty-seven physical geology papers were presented in eight sessions with emphases on climatology and climatic change, Quaternary geology, mountain geomorphology, hydrology and ecology.

The International Geographical Union (IGU) Commission on Field Experiments in Geomorphology is chaired by O. Slaymaker (University of British Columbia). Its fifth meeting took place in Rio de Janeiro, Brazil, on August 30, attended by delegates from eight nations. The themes were technology and environmental analysis, critical climatic events and their consequences, tropical soils and agricultural potential, degradation of nature by human action, ecodevelopment, and environmental analysis in physical geography. The Commission is currently producing a text, "Geomorphic Experiments in Instrumented River Basins", edited by Walling and Burt and published by the University of East Anglia, Norwich, 1983.

The IGU Commission on the Significance of Periglacial Phenomena is chaired by H.M. French of the University of Ottawa. A business meeting, and liaison with the INQUA Commission of Paleogeographic Mapping was held at the INQUA Congress in Moscow in July 1982. A field symposium was held in Iceland in August and September.

*D.C. Ford*

### **3. The Canadian Exploration Geophysical Society**

The Canadian Exploration Geophysical Society (KEGS), which was founded in 1953, is an informal association of Canadian geophysicists who work or have an interest in the mining exploration industry. KEGS is a Section of the Society of Exploration Geophysicists with a representative on its Council and forms the largest group of mining geophysicists in North America.

Meetings are held the second Tuesday of every month from October to May at the Engineer's Club in Toronto. A technical paper is presented at each meeting featuring a topic of current interest to the Society membership. A short bulletin is issued to the membership prior to each meeting which includes an abstract of the forthcoming talk and a summary of the previous presentation, announcements and general Society business information. The March meeting, held in conjunction with the Prospectors and Developers Convention in Toronto, is usually oriented towards a nontechnical topic, such as economic issues, education, or the social aspects of mining.

In 1981 and 1982 KEGS co-sponsored a mining day during the annual meeting of The Canadian Geophysical Union. Also, preparation began for a one day workshop on "Exploration Applications of Micro-Computer Technology" to be held in December, 1982 in Toronto, and for a three day "International Symposium and Workshop on Borehole Geophysics, Mining and Geotechnical Applications" to be held in late August, 1983 in Toronto. This last event is co-sponsored by Geological Survey of Canada.

The 1982-1983 Executive, elected in May, 1982 is:

|                     |  |
|---------------------|--|
| President           | Zbynek Dvorak                                |
| Vice-President      | Nigel Edwards                                |
| Secretary/Treasurer | Alex Herz, 197 Fenn Avenue, Willowdale, Ont. |

*Z. Dvorak*

#### **4. The Canadian Geophysical Union**

The Canadian Geophysical Union was founded in 1973 to provide a forum for Canadian geophysicists which had been provided before by the Associate Committee of Geodesy and Geophysics of the National Research Council and its numerous subcommittees. The Union was formed as a joint Division of the Geological Association of Canada and the Canadian Association of Physicists.

The Union nominates a substantial number of members to the Canadian National Committee for the International Union of Geodesy and Geophysics, and the Canadian National Committee for the Lithosphere. The Union publishes a newsletter three times a year. It meets annually, sometimes alone, sometimes with another related society such as the Canadian Exploration Geophysical Society (KEGS) and sometimes with one of its parent societies GAC and CAP.

Each year CGU awards the J. Tuzo Wilson medal for outstanding contributions to Canadian geophysics. The award was given to Dr. J. Jacobs in 1982. The Medal Committee in 1982 is Mr. M.R. Dence, Dr. D. Oldenburg, Dr. A. Mair and Mr. R.W. Hutchins. The Union meets in 1983 with GAC and MAC in Victoria, and plans to meet with the Canadian Meteorological and Oceanographic Society in Halifax in 1984. The Editors of the Newsletter are R. Farquhar, H. Halls and P. Vanicek. The Executive in 1983 is: M.J. Keen, President; Z. Hajnal, Vice-President; A. Camfield, Secretary-Treasurer; D. Russell, Past-President; R. Bailey, P. Savage and P. Vanicek, Members at Large.

*M.J. Keen*

#### **5. The Canadian Geotechnical Society**

In 1982 the membership of the Canadian Geotechnical Society stands at about 1100 while for the Engineering Geology Division it grew from 318 to 397, an increase of 25 per cent. The Society now includes two technical divisions: Engineering Geology and Rock Mechanics. The Rock Mechanics Division and the Tunneling Society were both formed in 1982.

The Society held its 35th annual meeting at Montreal in September, jointly with the Association of Engineering Geologists. The theme of the conference was "Water Retaining Structures". The Society has also co-sponsored the 2nd Conference on Marine Geotechnical Engineering which was held at Dartmouth, Nova Scotia in June, 1982. This special meeting was attended by more than 150 specialists from Canada and abroad.

At its annual meeting, the Society named D. Bazett the recipient of the Legget Award for outstanding contribution to the Society, especially his remarkable work as editor for many years of the Canadian Geotechnical Journal.

During 1982, the Society sponsored three lecturers for a cross-Canada tour: D. Campanella, B. Ladany and E. Jasper. Campanella lectured on the use of the piezo-cone; Ladany on some aspects of stresses and deformations around underground excavations, and Jasper presented a review of studies and actual behaviour of the Gardiner Dam.

The next annual meeting of the Society will be held in Vancouver in June 1983, jointly with the PAN-AM Conference on Soil Mechanics and Foundation Engineering.

*Jacques Locat*

#### **6. The Canadian Institute of Mining and Metallurgy**

The Geology Division of CIM in 1982 had 2618 members, about 21 per cent of the total CIM membership. Geology Division activities include publication of technical papers in the CIM Bulletin, preparation of special volumes on specific areas or geological topics, holding of symposia and workshops, sponsorship of a visiting lecturer program at Canadian universities, sponsorship of a distinguished lecturer program at local CIM branches, biennial publication in the CIM Bulletin of abstracts of Canadian theses on topics related to mineral deposits geology, organization of field trips and field conferences, and sponsorship of a student essay competition.

Geology Division editor R. Hodder supervised the review and editing of 21 technical papers published in the CIM Bulletin during 1982. Another 33 papers were presented in five technical sessions organized by the division for the annual general meeting of CIM in Quebec City. CIM Special volume 24 "Geology of Canadian Gold Deposits", edited by R.W. Hodder and W. Petruk was published in 1982. During the same year the three Geology Division distinguished lecturers J. Boldy, G. Perrault and H. Seigel spoke to a total of 25 CIM branches, while 12 visiting lecturers presented talks on geological topics at 30 Canadian universities. Geology Division also co-hosted the Fifth Symposium on Prospecting in Areas of Glaciated Terrain, held at St. John's Newfoundland. The papers presented at this meeting were published in a symposium volume edited by P.H. Davenport and prepared in time for distribution at the symposium.

The Barlow Memorial Medal, for the best geological paper published during 1981 in the CIM Bulletin, was awarded by CIM to P.J. MacGeehan, W.H. Maclean and André Bonenfant of McGill University for their paper "Exploration Significance of the Emplacement and Genesis of Massive Sulphides in the Main Zone at the Norita Mine, Matagami, Quebec". On the recommendation of Geology Division, CIM selected Julian Boldy of Placer Development Ltd. Toronto to receive a Distinguished Lecturer Award. M.J. Crawford, University of Western Ontario, won the President's Gold Medal for his entry in the CIM Graduate Essay Competition, while in the Undergraduate Essay Competition the first and second prizes for Geology Division entries were taken by C.N. Orsich and D.A. Brown, respectively, both of Carleton University.

*Richard Darling*  
Chairman  
CIM Geology Division

### **7. The Canadian Society of Exploration Geophysicists**

The CSEG has about 1900 members, involved in petroleum and minerals exploration in industry, and academic and governmental environments. The CSEG conducts monthly technical programs at lunch in the Westin Hotel. The Annual Convention usually attracts about 1500 delegates and the exhibit space of about 100 booths is filled with companies presenting a wide assortment of equipment and services. The 1983 Convention will be held in the Calgary Convention Centre from April 26 to 28. A Joint CSEG-CSPG Convention is planned for 1984.

*Duncan A. Carswell*

### **8. Canadian Society of Petroleum Geologists**

The Society operated this year with approximately 70 standing committees. In addition several "ad-hoc" committees have completed their projects during the year. The key achievements of these committees are summarized below.

In March the Sedimentology group organized a very successful conference on "Major controls on Devonian stratigraphy and sedimentation" in honour of Dr. Helen Belyea's great contribution to the contribution of the Devonian system.

The AAPG/SEPM Annual Meeting attracted 8000 delegates to a very successful conference with 209 delegates from 40 countries outside of North America providing an international flavour to this outstanding occasion.

In August the Congress of the International Association of Sedimentologists met in Hamilton, Ontario. The conference sponsored by CSPG and GAC attracted 1200 delegates. Authors from about 50 countries presented papers in 13 general theme sessions and over 40 symposia on more specialized sedimentological topics. The papers were of high caliber and the conference was a great success. That this major international conference was so successful is a great tribute to General Chairman Gerard V. Middleton and his organizing committee.

Future Conferences are being planned as follows:

- 1983 CSPG Conference, Mesozoic of Middle North America (May 8-11 Calgary, Alberta), General Chairman, Don Stott; Technical Program Chairman, Ian McIlreath.
- 1984 CSPG/CSEG Conference (June 18-20 Calgary, Alberta), General Chairmen Tim Hawkings CSPG, Michael Doyle CSEG, Technical Program John Hutton CSPG, Pat Kieran CSEG.
- 1984 The 6th International Palynological Conference (August 24-30 Calgary) jointly sponsored by CSPG, University of Calgary, Canadian Association of Palynologists and Arctic Institute of North America.
- 1985-6 Discussions are under way with Petroleum Society of CIM with respect to a joint Convention.

Jim Dixon completed his first year as editor and assumed "ex-officio" status on the executive. During 1982, The Bulletin of Canadian Petroleum Geology was issued four times, part 4 of volume 29 and parts 1-3 of volume 30. "The Reservoir", edited by Fred de Wiel, appeared 11 times during the year with its usual vital information on Society activities. Fred de Wiel completes his term as "Reservoir" editor this year and his position will be taken over by Rory Hankel. Special Reprint No. 3

was issued containing three significant out-of-print papers on the structural geology of the southern Canadian Rockies. A Pre-publication sale was arranged for Memoir 8, "Arctic Geology and Geophysics" with delivery anticipated early in 1983.

Two volumes of the Lexicon were published in 1981 and are selling successfully, five additional volumes are underway as well as the "Lexicon of Tectonic Terms". It is probable that Volumes 3 and 4 will be completed and published in 1983. The Geological Calendar for 1983 has again been well received. A new membership directory was published in the fall and represented a major undertaking since members submitted address changes at the rate of almost two hundred per month during the year.

Work is continuing on several publications. These include new cross section series of the Western Canada Sedimentary Basin, an addition to the reprint series on Saskatchewan, the first binder of "Oil and Gas Pools of Canada", and a special publication entitled "The Calgary Geological Setting". The first monograph in the Palaeontographica Canadiana series has been presented for review and should appear in 1983.

The lunchtime technical program continues to be the core of our activity and attendance has remained high despite the recession and company cutbacks. The committee chaired by Grant Bartlett presented 21 luncheon talks during the year to an average attendance of 850 people at each luncheon. Approximately 17 000 tickets were sold for the luncheons with 83 per cent of sales being to Society members.

The Continuing Education Committee under the chairmanship of Ted Bogle presented a short course, "The Terrigenous Depositional Systems" taught by Dr. W.L. Fisher, with an attendance of 103. The Committee was also involved in sponsorship of two additional courses during the year. The future thrust of the committee is to present courses, and seminars on topics pertaining to and using examples from the Canadian sedimentary basins.

The Honorary Address "Early Man in Africa" was presented by Dr. Phillip Tobias, University of Witwatersrand, to an enthralled audience of 700.

The Speakers Bureau under the chairmanship of Ernie Greenwood is responsible for the organization of the Link Award and Distinguished Lecture Tours. This year only the Link Award Tour took place with the two speakers, Dr. Derald Smith and Dr. Peter Putnam, presenting the Link Award winning paper to fourteen universities across Canada.

The one day field trip program was one area of activity which was significantly affected by the industry slowdown. Two trips had to be cancelled and registration was down 50 per cent from the previous year. Successful trips were run to Lake Minnewanka, Moose Mountain, and Burnt Timber.

The National Conference of Earth Sciences was not held in 1982. After nineteen successful conferences in a row Gordon Williams relinquished the chairmanship to Peter Gretener. A Conference is now planned for September 13-14 1983 on "Petroleum Source Rocks: Maturation and Migration".

The Society honours outstanding contributions to the geological community and to its affairs through a series of awards. Honorary Membership has been awarded to George Grant for his continuing contributions over many years. The Medal of Merit distinguishing the most significant paper dealing with Petroleum Geology of Canada's sedimentary basins has been awarded to the Sedimentology Research Group, 1981 for the paper, "The effects of in situ Steam Injection on Cold Lake Oil Sands". The R.J.W. Douglas Memorial Medal this year has been awarded to an outstanding earth scientist Dr. James T. Fyles who has made outstanding contributions to the geology of the Canadian Cordillera.

The Link Award for the best oral technical paper at a meeting of the Society was won by Dr. Peter Gretener for his presentation, "Bulk Reservoir Surveying, A Necessary Step Between Successful Exploration and Optimal Exploitation". Thirteen Tracks Awards were given during 1982 in recognition of outstanding committee work for the Society. Special Awards for outstanding contributions to the Society were given to Jim McDonald, General Chairman of the 67th AAPG Annual Meeting, Gordon Williams for his great contribution to the Society and particularly the National Conference on the Earth Sciences and A.E. Calverley for his many contributions to the Society including the past three years on the Executive.

The Society continued its efforts to encourage students in geology with the following awards. Undergraduate Student Awards were presented to some 25 students across Canada. The Best M.Sc. Thesis Award was won by William B. Styan, University of British Columbia for his thesis entitled "The Sedimentology, Petrography, and Geochemistry of Some Fraser Delta Peat Deposits". Due to the low number of entries the Ph.D. Award was suspended for this year. The John B. Webb Memorial Trophy for the best paper at the Western Inter-University Conference was presented to J.K. Russell, University of Calgary while the CSPG trophy was presented at the Atlantic Universities Geological Conference to Ricky Secco, St. Francis Xavier University.

The Special Interest Divisions of the CSPG were augmented by a new group increasing the number to seven - Structure, Sedimentology, Coal, Geochemistry, Paleontology, Geomathematics and Petrology. The Divisions actively promote scientific programs through lectures and discussions and of course benefit from the informal participation possible in small group meetings. As in the past the Divisions have also been actively involved in the organization of Field Trips and technical symposia.

In the area of Public Service, the Student Industry Field Trip is our major commitment. The 1982 trip, ably organized by Roy Smith, marked the first occasion on which all 33 University Geological Departments have been represented. The trip affords the opportunity for an impressive field program as well as a general review of the role of the petroleum geologist. The Education Committee under the direction of Chris Hurrell provided a workshop for Calgary High School teachers. This was funded through the EdGEO program of the Canadian Geoscience Council.

The Society again has provided liaison representatives to a number of groups and committees. We have been ably represented at Canadian Geoscience Council by Dave Organ and Pat Purcell. This organization continues to address the broad issues of the Earth Sciences in Canada. The Society by virtue of its affiliation with the AAPG is entitled to twelve representatives in the AAPG House of Delegates. We have obtained significant new representation on the APEGGA Council and are represented also on The Canadian Committee for the World Petroleum Congress, and on the Petroleum Resources Communication Foundation.

*A.N. Hutton*

### **9. The Canadian Society of Soil Science**

The Canadian Society of Soil Science held its annual meeting at the University of British Columbia, Vancouver, B.C. from July 11-15, 1982 in association with the Agriculture Institute of Canada annual meeting. The program consisted of 10 technical sessions with 77 papers submitted by members. Included was a joint symposium in cooperation with the Canadian Society of Agricultural Engineering entitled "Urban and Agricultural Water Management". Theme sessions also were held on the topics "Forest Soils" and "Soil Variability". Poster sessions enabled research to be presented on an additional 27 topics. The meeting concluded with a field trip to the Lower Fraser Valley highlighted by some problems associated with the use of a variety of organic soils.

The Society honoured three members at the awards banquet, Jim Beaton, Dave Elrick and Murray Miller with recognition as Fellows of the Canadian Society of Soil Science.

During the past year, the Society sponsored a lecture tour at eight locations across Canada by President G.J. Wall, speaking on the topic soil and water conservation and promoting the Canadian Society of Soil Science.

Working towards a more diversified membership continues to be a concern and activity of the Society. As Soil Science is being practised in a wide spectrum of agencies, it is the aim of its members to develop a stronger, broader-based society to promote the development of the science, and to represent the interests of agricultural and non-agricultural soil scientists alike.

*C.J. Acton*

### **10. The Canadian Well Logging Society**

The Canadian Well Logging Society has enjoyed a successful year in 1982. The number of active members now stands at 600, while Corporate members number approximately 70. Monthly technical luncheon meetings were held all year, except during the summer months, with excellent attendance by both members and non-members.

Mr. Ross Crain, the Publications Chairman, organized a committee to develop a manual of log analysis examples from various oil and gas pools of Canada. The first volume will be published in the Spring of 1983, and work will continue throughout the year on successive volumes. A second editorial committee has been organized to re-vitalize the CWLS Journal, which was last published in 1978. The new Journal will contain an Author/Subject bibliography of the CWLS publications, a membership directory and technical papers, and it will be available for distribution in the Spring of 1983.

The Society continued to publish technical information and news of members in the Journal of Canadian Petroleum Technology. In early 1982, a special edition, devoted to the history of log analysis in Western Canada, was published.

In June 1982, the CWLS had a booth at the American Association of Petroleum Geologists Convention, which was held in Calgary. This proved to be a success in selling publications and in soliciting new members. In July 1982, several members of the Society attended the Society of Professional Well Log Analysts Formation Evaluation Symposium in Corpus Christi, Texas. In January 1983, the CWLS held a joint technical luncheon meeting with the Canadian Society of Petroleum Geologists, a practice which is very beneficial to both societies.

In the fall of 1982, President Valerie Stallard was transferred to London, England, for five months, and Vice-President Lorne Slusarchuk took charge of the Executive for the remainder of the 1982-1983 term.

The London chapter of the SPWLA has agreed to distribute CWLS membership application and publication order forms to its members. It is hoped that this will give our society a broader exposure in Europe.

In June 1983, the CWLS will co-sponsor a joint technical symposium with the Society of Professional Well Log Analysts from the USA. The conference will be held in Calgary, and thanks to the hard work of the Symposium committee, we anticipate a very successful meeting.

*Valerie Stallard*  
President

### **11. Geological Association of Canada**

Membership of the Geological Association of Canada as of December 31st, 1982 was 2950. The 1982 joint GAC/MAC Annual Meeting was held in Winnipeg and those attending agreed that it was a very successful meeting. Attendance was down considerably, however, from the 1981 Annual Meeting.

Three Special Papers were produced in 1982. Special Paper 23 entitled "Sedimentation and Tectonics in Alluvial Basins", edited by A.D. Miall, was published in February. Special Paper 24, "Major Structural Zone and Faults of the Northern Appalachians", edited by P. St. Julien and J. Béland, was published in June. The most recent volume was Special Paper 25, "Precambrian Sulphide Deposits" (The Howard Street Robinson Memorial Volume) edited by R.W. Hutchinson, C.D. Spence, J.M. Franklin and published in December 1982.

The Association's Logan Medal was presented in Winnipeg to Dr. C.R. Stelck of the Department of Geological Sciences at the University of Alberta, Edmonton for his outstanding contribution to the development of earth sciences in Canada. The 1982 recipient of the Past President's Medal was Dr. Noel P. James of the Department of Earth Sciences, Memorial University, St. John's, Newfoundland. Dr. James received the medal for his many and varied contributions to sedimentology and paleontology in Canada and in other parts of the world.

The Mineral Deposits Division of the Geological Association of Canada awarded the Duncan R. Derry Medal to Julien Boldy of Placer Development, Toronto for his prominent contribution to the understanding and the discovery of mineral deposits in Canada.

*Alan V. Morgan,*  
Secretary Treasurer

### **12. The Mineralogical Association of Canada**

The Mineralogical Association of Canada experienced another successful year in 1982. The Association's quarterly journal, "The Canadian Mineralogist" comprised 626 pages and included 49 technical papers as well as assorted book reviews, proceedings, etc. A highlight was the special issue on High-Grade Metamorphism which was compiled under the Guest Editorship of E.D. Ghent. L.J. Cabri stepped down after 7 years as Scientific Editor of the journal and he was succeeded by R.F. Martin.

Total membership in late 1982 stood at 2294 of which 1533 are individuals. The Association continues to maintain a sound financial position which has meant that membership fees have been maintained at their 1978 level despite the rapid inflation in publication and other costs.

The Association's 27th annual meeting was held in conjunction with the annual meeting of the Geological Association of Canada on May 17-19, 1982 at the University of Manitoba in Winnipeg. The Association sponsored or co-sponsored four special technical sessions during the meeting on the topics "Mineralogical and Geochemical Aspects of Nuclear Waste Disposal", "Ore Deposits in Mafic-Ultramafic Suites", "Metamorphism of Sulfide Deposits and Alteration Zones", and "Meteorites and Terrestrial Impact Structures". The technical program was also noteworthy for the large number of mineralogical papers presented in the general sessions.

The eighth in the Association's continuing series of short courses was held prior to the annual meeting. The course was organized by P. Cerny and dealt with the topic "Granitic Pegmatites in Science and Industry". The course attracted 80 registrants and also produced a very successful handbook.

A number of the Association's members were honoured for their contributions to the science or to the Association. L.G. Berry was the first recipient of the Past Presidents' Medal which is to be awarded annually to individuals having a record of distinguished scientific contributions to mineralogy in Canada. A.R. Philpotts received the Hawley Award in recognition of his paper entitled "A model for the generation of massif-type anorthosites" published in Volume 19 of "The Canadian Mineralogist". Honorary Life Memberships in the Association were awarded to L.J. Cabri and J.L. Jambor in recognition of their many years of exemplary service as editors of the journal.

*J.M. Duke*  
Secretary

## REPORTS OF THE ASSOCIATE MEMBER SOCIETIES

### 1. *Committee of Provincial Geologists*

#### History and Organization

The Committee of Provincial Geologists had its inaugural meeting in St. John's at the Mines Ministers' Conference in 1976, although it is the successor to a series of task forces convened to tackle specific problems. The Committee consists of the Chief Geologists or their equivalents from each Provincial Survey and, because of association with the Mines Ministries, has a mineral resource bias. Representatives of the Yukon and the Northwest Territories are participating observers. The Committee meets regularly twice a year with special meetings as needed. The work of the committees is spread out to the staffs, for the Committee has no permanent secretariat. The chairmanship and secretary are rotated yearly in a manner related to the annual Mines Ministers' Conference. The secretary is the Chief Geologist or equivalent of the province that is host to the Mines Ministers' but takes office after that Conference. The following year he becomes Chairman.

Canadian Geoscience Council urged the Committee to join the Council as an associate member, and this it did after some soul searching as to the appropriateness of its participation. Within the Council its main role probably has been initiating and supporting the study or research in economic geology and exploration.

#### Objectives

The objectives of the Committee are as follows:

1. Encourage disclosure of mineral exploration data through appropriate legislation.
2. Promote standardization and simplification of provincial mining lands legislation and regulations.
3. Promote improvement in provincial storage and retrieval capability of exploration and mineral deposit data.
4. Ensure optimum availability of mineral resource lands with high potential for exploration and development.
5. Monitor trends in exploration, identify the appropriate levels of exploration, and recommend measures to foster this adequate level of activity to maintain and enhance the relative contribution of the minerals industry to the economy.
6. Foster research leading to improved efficiency and effectiveness of exploration and geoscience surveys.
7. Identify measures to improve the government geoscience data base in support of mineral exploration.
8. Provide information on provincial survey organization and activities as a basis for program planning.
9. Provide a forum for discussion with GSC, University and Industry to resolve problems in respect of geoscience surveys and initiate cooperative programs.
10. Provide liaison with and/or representation to other geoscience groups in Canada on behalf of the Mines Ministers.

#### Activities

In its relatively short history, the Committee has established itself as an element in the Canadian Geoscience fraternity. The Committee has had a role in the creation of a related group, the National Geological Surveys Committee which has become the interface between the provincial surveys and the Geological Survey of Canada, coordinating broad activities, establishing the division of labour and initiating and supervising cooperative ventures.

The activities of the Committee continue to grow. Each year the Committee produces a series of brief reports, such as organization charts of provincial surveys with senior personnel, phone numbers, etc. to facilitate liaison and summaries of expenditures of provincial surveys for program planning. It also has a series of special studies such as the status of Mineral Land Use in the Provinces and Territories, the status and development of drill core storage, etc. In preparation for the latter, the Committee had two formal meetings with provincial and national mining or exploration associations.

Most Committee reports have been published with the Proceedings of the Mines Ministers' Conference but there is concern that they are not receiving wide enough circulation. For this reason, some consideration is being given to a separate publication, the Provincial Geologists Journal, that would be cheaply produced but available on demand from the index of each province's publications.

Table 5

## STUDENT AND STAFF NUMBERS IN CANADIAN EARTH SCIENCE DEPARTMENTS, 1980-1983

|  | Year  | Atl. <sup>1</sup> | Que. <sup>2</sup> | Ont.  | West <sup>3</sup> | Total <sup>1,2,3</sup> |
|--|-------|-------------------|-------------------|-------|-------------------|------------------------|
| All students taken   | 80-81 | 1048              | 102               | 3992  | 4058              | 9200                   |
| 1st year course  | 81-82 | 1142              | 116               | 4661  | 3770              | 9689                   |
|  | 82-83 | 1402              | 142               | 4595  | 4067              | 10206                  |
| 2nd year majors:   | 80-81 | 150               | 150               | 490   | 386               | 1176                   |
| Arts & Sciences  | 81-82 | 192               | 132               | 593   | 447               | 1364                   |
| & Engineers  | 82-83 | 208               | 169               | 721   | 469               | 1567                   |
| 3rd year majors:   | 80-81 | 82                | 145               | 379   | 305               | 911                    |
| Arts & Science   | 81-82 | 121               | 157               | 421   | 378               | 1077                   |
| & Engineers  | 82-83 | 174               | 147               | 544   | 439               | 1304                   |
| 4th year majors:   | 80-81 | 94                | 96                | 269   | 267               | 726                    |
| Arts & Science   | 81-82 | 92                | 125               | 307   | 345               | 869                    |
| & Engineers  | 82-83 | 125               | 134               | 387   | 389               | 1035                   |
| M.Sc. (full-time<br>& part-time)   | 80-81 | 46                | 137               | 282   | 158               | 623                    |
|  | 81-82 | 51                | 158               | 299   | 157               | 665                    |
|  | 82-83 | 55                | 180               | 320   | 199               | 754                    |
| Ph.D. (full-time<br>& part-time)   | 80-81 | 26                | 35                | 157   | 92                | 310                    |
|  | 81-82 | 29                | 41                | 165   | 95                | 330                    |
|  | 82-83 | 33                | 43                | 178   | 90                | 344                    |
| PDF & Research<br>Fellows  | 80-81 | 7                 | 8                 | 31.5  | 36                | 82.5                   |
|  | 81-82 | 8                 | 6                 | 44    | 41                | 99                     |
|  | 82-83 | 9                 | 8                 | 51.5  | 53                | 121.5                  |
| Faculty, full-time   | 80-81 | 52                | 75                | 175.5 | 135               | 437.5                  |
|  | 81-82 | 65                | 79                | 177   | 136               | 457                    |
|  | 82-83 | 69                | 80                | 188.5 | 138               | 475.5                  |
| Faculty, part-time   | 80-81 | 6                 | 6                 | 19    | 14                | 45                     |
|  | 81-82 | 6                 | 6                 | 13    | 16                | 41                     |
|  | 82-83 | 7                 | 2                 | 10    | 22                | 41                     |
| Secretaries &<br>Admin. Assts.   | 80-81 | 15                | 17                | 38    | 34.5              | 104.5                  |
|  | 81-82 | 16                | 15                | 39.5  | 34                | 104.5                  |
|  | 82-83 | 16                | 16                | 46    | 35.5              | 113.5                  |
| Technicians  | 80-81 | 30.5              | 38                | 101.5 | 100.5             | 270.5                  |
|  | 81-82 | 33.5              | 37                | 107.5 | 99.5              | 277.5                  |
|  | 82-83 | 38.5              | 37                | 96    | 96.5              | 268                    |
| <sup>1</sup> No report from St. Marys<br><sup>2</sup> No report from Concordia. UQUAM reported years 2, 3 and 4 enrollments combined.<br>These are: 80-81 - 140<br>81-82 - 155<br>82-83 - 149<br>These numbers are not included in this table, but are included on the accompanying graph<br><sup>3</sup> No report from Brandon, Victoria |       |                   |                   |       |                   |                        |

The Committee initiated, raised funds and co-sponsored with the Mineral Deposit Division of G.A.C., a panel discussion on Method of Predictive Metallogeny at the Joint Annual Meetings of GAC/MAC at Winnipeg in May 1982. The papers from this meeting, including Russian and American contributions, will be published in "Geoscience Canada".

The Committee is starting to coordinate the various Open Houses or program reviews of the Provincial Surveys. In addition, it has embarked on a program of presenting a single session at the Prospectors and Developers Conference, series of topical geoscientific papers and a poster session.

13 January 1983

A. Sutherland Brown

## **2. Committee of Chairmen of Canadian Earth Science Departments: Report on statistical data, 1973-1983**

The previous report to the Geoscience Council (GSC Paper 81-6, Pt. 2, p. 17-19) included data up to 1979-80. This report adds information for the period 1982-83 (Table 5). As in the previous report, the data are incomplete, but they nevertheless show significant trends (Fig. 1), which may be summarized as follows:

1. The number of students taking a first year course in Earth Science continues to increase slowly, exceeding 10 000 for the first time in 1982-83.
2. Earth Science majors (2nd, 3rd and 4th year B.Sc.) increased slowly from 1973-74 to 1980-81 and then dramatically jumped through 1981-82 and 1982-83.
3. M.Sc. enrolment increased steadily from 1973-74 to a peak in 1976-77. The peak was followed by a shallow trough, but 1982-83 enrolment has again reached the 1976-77 level. Ph.D. enrolment patterns have followed similar, but more subdued trends.
4. Trends in faculty and support staff number cannot be judged adequately, because of incomplete data.
5. The data on placement of graduating students are too incomplete to be tabulated usefully.

Brian R. Rust  
Chairman

## **3. Earth Sciences Section, The Royal Society of Canada**

The Royal Society has not held scientific sessions in its various member disciplines for several years. Instead it arranged interdisciplinary symposia on topics of national or international importance. Papers presented in these symposia are normally published in the Society Transactions, copies of which may be obtained from:

The Secretary  
Royal Society of Canada  
344 Wellington Street  
Ottawa, Ontario, K1A 0N4

The year 1982 marked the centenary of the Society. As part of the celebration of this event a symposia was held with the general title "1982: Retrospect and Prospect". Speakers included Sir Andrew Huxley, President of the Royal Society of London, Dr. Frank Press, President of the National Academy of Science, U.S.A., economists Sylvia Ostry and J. Kenneth Galbraith, Nobel prize-winning physicist Gerhard Herzberg. The proceedings are now being prepared for publication.

1982 also marks the 100th anniversary of the first Polar Year. A symposium to mark this event was arranged by Michael Dence. Speakers on earth science topics included E.F. Roots, Paul Serson and E. Irving. This symposium is also in press.

The Society awards a number of medals. Two of them, the Willet G. Miller Medal and the Bancroft Award, are in the earth sciences. Recent winners of the Miller Medal, given for excellence of research in any branch of the earth sciences are:

1979 E.T. Tozer  
1981 Denis M. Shaw

Recent Winners of the Bancroft Award, given for excellence in instruction and research in geology, have been:

1979 F.K. North  
1980 W.W. Hutchison

J.N. Hodgson

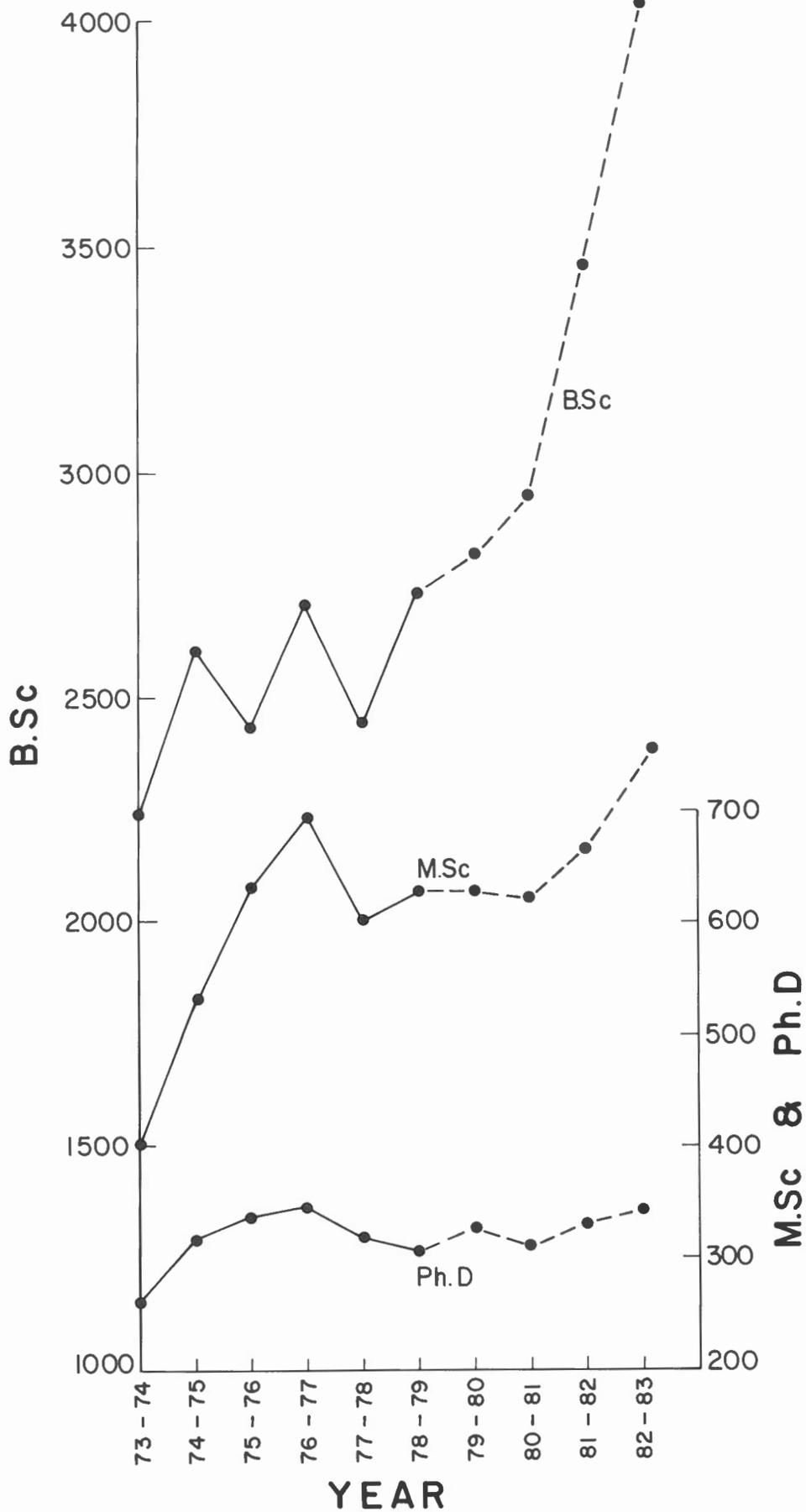


Figure 1. Student numbers in Canadian Earth Sciences Department, 1975-1983.

#### 4. The Geological Survey

The Geological Survey's work can be described in term of three main activities:

- ensuring the availability of basic geoscience knowledge concerning the landmass and offshore areas needed to meet Canada's needs.
- acquiring information on the nature, distribution, and magnitude of our energy and mineral resources and related exploration technology needed to develop effective resource policies and to foster exploration and development of new resources.
- identifying and assessing natural geological hazards, features, and processes that affect the environmental and ecological balance and that may constrain our use of the landmass.

Without a comprehensive geoscience data base neither resource assessment nor land-use evaluations can be made; therefore these activities are interdependant and interlocking. Commonly the results of a study in one field contribute substantially to the others and indeed results that were not even anticipated may contribute significantly to other studies.

The Geological Survey since its foundation in 1842 has emphasized the need to develop the broad knowledge base while responding as far as possible to immediate needs. Thus, during the past year the core program continued to the degree possible given the national needs for current information concerning resources and possible hazards and constraints connected with the exploration for and extraction, exploration and use of these resources.

To carry out these interrelated activities, the branch is organized into nine divisions plus a headquarters and has offices from coast-to-coast. Some divisions deal with particular subjects on a Canada-wide basis whereas others reflect a regional aspect.

The Cordilleran Geology Division has offices in Vancouver and at the Pacific Geoscience Centre at Sidney on Vancouver Island. It is responsible for the study of all aspects of the geological framework of the Canadian Cordillera and for studies in marine geology on the Pacific Continental Margin. The divisional budget in 1981-82 was 2.6 million and 46 person years.

The Institute of Sedimentary and Petroleum Geology, in Calgary, provides the geological knowledge base for Canada western and Arctic sedimentary basins. Its 1981-82 budget was 7.7 million and 147 person years.

Responsibility for geological information concerning the large, mineral rich areas of the Canadian Shield rests with the Precambrian Geology Division, which had a budget of 4.6 million and 75 person years last year.

The Atlantic Geoscience Centre, housed at the Bedford Institute of Oceanography, in Dartmouth, N.S. is responsible for geological and geophysical studies of the Atlantic and Arctic offshore regions and the sedimentary basins of the Atlantic region. The budget was 6.6 million and 102 person years in 1981-82.

Terrain Sciences Division used its budget of 2.7 million and 65 person years to provide comprehensive geological information on the surficial materials, landscape processes and natural terrain hazards of the Canadian landmass.

The Economic Geology Division elucidates of the processes, materials and structures which lead to the formation of mineral deposits. It also integrates regional geology, mineral deposit data and metallogenic concepts to determine the probable distribution and potential abundance of Canada's non-hydrocarbon mineral resources. Its budget in 1981-82 was 2.4 million and 51 person years.

The Resource Geophysics and Geochemistry Division develops and tests technologies for the acquisition and interpretation of geophysical and geochemical data, and demonstrates the application of the technologies to mineral exploration and to national and regional surveys of the Canadian landmass. The Division also conducts aeromagnetic, radiometric and geochemical surveys, and produces maps, based on those surveys, which contribute to national map series. This year the Divisional budget was 6.9 million and 97 person years.

Public communication of the results of GSC's scientific program for the use of other government agencies, industry, and the general public, through reports and maps, open file reports and other publications media is the responsibility of Geological Information Division, which also operates Canada's largest earth science library. This division had a budget of 3.6 million and 96 person years in 1981-82.

The Central Laboratories and Technical Services Division provides analytical services and mineralogical expertise needed by other divisions of the survey, and conducts related research. In 1981-82, 1.8 million and 46 person years were allocated for this work.

The total resources available to the Branch for the year were \$41.5 million and 766 person years.

## Some Highlights

- Aeromagnetic survey flying in northern Labrador completed the survey of Newfoundland-Labrador thus fulfilling one of the terms of Newfoundland's entry into Confederation in 1949.
- Aeromagnetic gradiometer surveys were carried out in the Lynn Lake and McLarty Lake areas of Manitoba to assist mineral exploration; the Lynn Lake mine was closed a few years ago because the known ore body was exhausted.
- COSMOS 1402. In January 1983 GSC was assigned the responsibility for airborne search operations in the event that debris from the Soviet Union's disintegrating satellite landed anywhere in Canada. The GSC Skyvan aircraft, a 16-person Radioactive Alert Team and four airborne geophysical contractors were on standby on January 20 and February 6 but fortunately the satellite broke-up over the ocean.
- The major discoveries at the Venture and Hibernia fields have led to renewed interest in Scotian and East Newfoundland basins. Seismic data made available to the GSC by industry combined with micropaleontology, micropalynology and lithostratigraphy are facilitating the interpretation of geological structure in these areas.
- The foraminiferal zonation established in the Dome Gulf et al. Kopanoar M-13 well, has been extended to several other Beaufort Sea wells thus establishing the biostratigraphic framework essential for a comprehensive analysis of the Beaufort-Mackenzie sedimentary basin.
- Co-operative mineral programs between EMR and equivalent departments in Nova Scotia and Newfoundland resulted in studies by the GSC on gold deposits, geochemical and geophysical surveys and surficial and bedrock geological mapping projects in Nova Scotia and geological and geochemical surveys in Newfoundland and Labrador. Geological and geophysical work was done at the Buchans Mine in Newfoundland as part of a program designed to enhance the efforts to extend the life of this important property.
- Studies of mineral deposits were made in many parts of the country including detailed studies of gold in the Geraldton-Beardmore area of Ontario, Contwoyto Lake, N.W.T., the tungsten-molybdenum-tin deposit at Mt. Pleasant, N.B., and uranium deposits at Shultz Lake, N.W.T., Athabasca Basin, Saskatchewan, Wernecke Mountains, Yukon and East Arm, Great Slave Lake.
- Various studies directed to evaluating the geological constraints to offshore hydrocarbon development were carried out. Iceberg scouring on the Grand Banks appears to be at about the same order of magnitude as it has been for the past 10 000 years. Similar studies were made on Saglek Bank in northern Labrador and in Beaufort Sea.
- The continental slopes have also been identified by industry as having potential for long-term resource development. In such areas sediment stability would be important if hydrocarbon extraction took place and studies are underway to assess this problem on the Scotian Slope. These show that the upper slope is gullied and that the mid-slope has been affected by debris flows.
- Victoria Island in the Arctic may well become the site of a hydrocarbon transportation corridor. To facilitate planning for this an integrated terrain mapping study was carried out to gather information on the nature, properties and stratigraphy of the surficial deposits and on the distribution ground ice and vegetation.
- New X-ray diffraction laboratory and new facilities for electron microprobes and scanning electron microscopes opened.
- Two new minerals, kiddcreekite ( $\text{Cu}_6 \text{Sn Ws}_8$ ) and lapieite ( $\text{Cu Ni Sb Sz}$ ) identified and recognized by International Mineralogical Association.
- An assessment of the petroleum resources of Georges Bank was made to assist the Canadian position in establishing the Canada-USA boundary in this important offshore area.
- Each year a major display is developed for use at scientific meetings and for subsequent circulation to Branch offices, universities and similar locations. The 1982 display featured many of the activities carried out at ISPG.
- 49 scientific reports were published by the Branch and 4 out-of-print reports for which there was a significant demand were reprinted. Included in the new publications were three volumes of "Current Research", a collection of historical photographs "On the Frontier/Frontières" and a symposium volume "Uranium in Granites". In all about 3500 pages were published. A total of 52 geological maps and geophysical maps were published.
- Maps, report and indexes, brochures, posters and other miscellaneous items were distributed through the Vancouver, Calgary and Ottawa sales offices. The libraries at these centres added books, scientific journals and maps to their collections.

**A SUMMARY OF THE THIRD ANNUAL REPORT OF THE  
TECHNICAL ADVISORY COMMITTEE ON THE  
NUCLEAR FUEL WASTE MANAGEMENT PROGRAM, JUNE 1982**

The Technical Advisory Committee (TAC) to Atomic Energy of Canada Limited (AECL) on the Nuclear Fuel Waste Management Program was established in mid-1979 following recommendations in earlier government reports and suggestions from parts of the scientific community. The role of the Technical Advisory Committee is to advise AECL on the extent and quality of the technical program on nuclear fuel waste management, acting as an independent peer review committee. To ensure its independent status, the membership was selected entirely from a list of nominees submitted by major scientific and engineering societies in Canada. The Committee also accepts a role in interpreting and evaluating the program for the scientific and technical community, and the general public. This third annual report of the Committee describes its continuing review and assessment of the program during the period May, 1981 to May, 1982.

The Committee reaffirms its endorsement of the concept of nuclear waste disposal deep in geological formations, and the Canadian program places emphasis on such formations (plutons) in the Canadian Shield. The assessment of the concept is planned to proceed through a ten-year generic research and development program. Government actions in the past year have supported this plan through increased financial support and by approving access to new Research Areas for the necessary geoscientific field work. The Committee considers it important that the public in general, and those resident in or near research sites, in particular, should have sufficient free and easy access to information on such research plans and activities.

TAC supports the systems approach and, in particular, the application of systems variability analysis in assessing the environmental, health and safety aspects of the concept. The distribution of the first and interim Concept Assessment Document by AECL, which outlines this approach, and the Consultative Document C-71 by the Atomic Energy Control Board (AECB) which suggests the framework for the regulatory review and approvals process, initiates a careful and consultative approach to the parallel development of the concept and regulatory approvals procedure. These documents deserve careful study and response by interested government bodies, the scientific community and the public at large. TAC still considers that formulation of final regulatory criteria should not be unduly hurried, but agrees that the adoption of interim performance criteria by AECL and the issuance of document C-71 by AECB, are appropriate steps. Serious consideration should be given to relating radiation exposure standards to the variation in natural-background levels.

In its continuing examination of progress in the various components of its program, TAC considers that the biosphere model developed is reasonably comprehensive and provides a useful first approximation. The importance of using material and methods specifically relevant to the Canadian Shield is emphasized.

In the geoscience program, the Program Documents, which are newly available, provide a clear and logical overview of research objectives and coordinated research plans. In the geology area the Committee feels that the premise that information obtained by the study of a relatively small area could be taken as representative of the plutonic unit needs to be tested. Likewise, reservation is expressed on the desirability of attempting to establish threshold values for rock mass characterization at this stage. The application of advanced scientific instrumental techniques including scanning electron microscopy and electron microprobe analysis is commended.

Although there have been substantial increases in funding, the activities of the hydrogeology program may be spread somewhat too thinly over the designated field Research Areas and over too many ancillary or minor topics. It is thus recommended that specific priorities be carefully established. The Flow System Study appears to be well conceived and is a very important component of the program. The Special Study of Shield saline groundwater and its distribution is endorsed.

The application of the range of geophysical techniques has reached a point where TAC feels that a degree of selectivity would be appropriate. TAC considers that all the long-term tests are the most important on the laboratory scale. The rock mass behavioural modelling is sound in general terms and seems to be a promising approach. The Underground Research Laboratory (URL) continues to be recognized and fully supported by TAC as a very valuable, comprehensive, multidisciplinary, research activity related to the safe disposal of nuclear wastes in a crystalline rock environment.

In the area of methods for immobilizing used fuel, TAC continues to support concentration of effort on Supported Shell systems, the construction of the hydrostatic test facility, fuel characterization and fuel dissolution and leaching behaviour. For high-level, processed wastes, the overall research objectives for product and process development are well defined, carefully interrelated and sufficiently comprehensive. Likewise, the vault sealing program appears to TAC to be suitably detailed and based on a good research plan. The importance of the integrity of shafts and boreholes being made equivalent to that of bulk rock is emphasized.

The issuance of a series of valuable and well prepared Program Documents now provides full and detailed research plans for all components in the program. This important step also provides a clear picture of the interrelationships amongst the program components, and supports the coordination of the multidisciplinary research work. TAC commends again the general high quality of the technical program, the full cognizance taken of work in other countries, the participation in international activities of direct relevance, and the full availability of information and technical results.

## CANADIAN GEOSCIENCE CALENDAR

Regular

### BRITISH COLUMBIA GEOPHYSICAL SOCIETY

Meetings are held on the second Wednesday of the winter months (September to May) at the Engineers Club, 640 West Pender Street, Vancouver, B.C. at 7:30 p.m. Inf.: J.M. Thornton, Secretary-Treasurer, B.C. Geophysical Society, Placer Development Limited, Bentall 4, P.O. Box 49330, Bentall Postal Station, Vancouver, B.C. V7X 1P1.

Regular

### CANADIAN EXPLORATION GEOPHYSICAL SOCIETY – KEGS

Regular meetings are usually held the 2nd Tuesday of each month from September to May at the Engineers Club of Toronto, 105 Victoria St. at 4:30 p.m. Technical papers on exploration and mining geophysics are received. KEGS is a section of the Society of Exploration Geophysicists. Inf: Nigel Edwards, Secretary-Treasurer, Department of Physics, Geophysics Laboratory, University of Toronto, Toronto, Ontario M5S 1A7.

Regular

### CANADIAN SOCIETY OF EXPLORATION GEOPHYSICISTS

The Society meets once a month from September through June. These luncheon meetings are held at the Westin Hotel, 4th Avenue and 3rd Streets S.W. starting at 12:00 noon. Technical papers and papers of academic interest are presented. Inf: Second Vice-President, Canadian Society of Exploration Geophysicists, 229-640-5th Ave. S.W., Calgary, Alberta, T2P 3G4.

Regular

### CANADIAN WELL LOGGING SOCIETY

The Society meets once a month from September through June, usually on the third Wednesday of the month. These are luncheon meetings convening at 11:30 a.m. at the Westin Hotel to hear a technical paper related specifically to petrophysical well log interpretation or formation evaluation in general. Details of speakers are published in the Daily Oil Bulletin and the CSPG Reservoir prior to the meeting. For information contact the Secretary, CWLS, P.O. Box 6962, Postal Stn. D, Calgary, Alberta, T2P 2G2.

### CANADIAN SOCIETY OF PETROLEUM GEOLOGISTS

Regular technical meetings of the Society are held twice monthly from September through June. These luncheon meetings are generally held at the Westin Hotel, 4th Ave. and 3rd St. S.W., Calgary, starting at 11:30 a.m. Technical papers are presented and announcements of interest to the Society membership are presented. Inf: President, Canadian Society of Petroleum Geologists, No. 505, 206 7th Ave. S.W., Calgary, Alberta, T2P 0W7.

#### **May 8-13, 1983**

The Mesozoic of Middle North America, Calgary, Alberta. Field trips and Coal Conference.

Inf: D.F. Stott, Institute of Sedimentary & Petroleum Geology, 3303-33rd St. N.W., Calgary, Alberta, T2L 2A7. Program Chairman: Ian McIlreath, Petro Canada, P.O. Box 2844, Calgary, Alberta, T2P 3C8.

#### **May 10-13, 1983**

The Petroleum society of CIM will hold its 34th Annual Technical Meeting in Banff, Alberta.

Inf: Denyse B. Crawford, CIM Information Officer (514) 842-3461.

#### **May 11-13, 1983**

Geological Association of Canada – Mineralogical Association of Canada, Annual Meeting. Victoria, British Columbia.

Inf: Dr. A. Sutherland-Brown, Chief Geologist, Min. of Mines & Petroleum Resources, Victoria, B.C., V8V 1X4.

**May 11-14, 1983**

Canadian Geophysical Union, Annual Meeting with the Joint Annual Meeting of the Geological Association of Canada, Victoria, British Columbia.

Inf: R.D. Hyndman, Pacific Geoscience Centre, P.O. Box 6000, Sidney, B.C., V8L 4B2.

**May 12, 1983**

Canadian Coastal Conference '83, Vancouver. The NRC Associate Committee on Research on Shoreline Erosion and Sedimentation, in conjunction with Simon Fraser University, The University of British Columbia, and the Canadian Society of Civil Engineering, will hold their Canadian Coastal Conference 83 in the Four Seasons Hotel, Vancouver, B.C.

Inf: D.H. Willis, Secretary, Associate Committee for Research on Shoreline Erosion and Sedimentation, Building M-32, National Research Council of Canada, Ottawa, Ontario, K1A 0R6.

**May 29 – June 2, 1983**

The Canadian Association of Geographers Annual Meeting to be held at the University of Winnipeg, Winnipeg, Manitoba, R3B 2E9.

Inf: Dr. T.J. Kuz, Department of Geography, University of Winnipeg, 515 Portage Avenue, Winnipeg, Manitoba, R3B 2E9.

**May 30 – June 3, 1983**

American Geophysical Union (Spring Meeting), Baltimore, Maryland, U.S.A.

Inf: Meetings, AGU, 2000 Florida Avenue, N.W. Washington, D.C. 20009.

**June 2-3, 1983**

6th Canadian Hydro-technical Conference, Ottawa, Ontario.

Inf: Chairman, Technical Program Committee, 6th Canadian Hydrothermal Conference, Department of Civil Engineering, University of Ottawa, 770 King Edward Avenue, Ottawa, Ontario, K1N 9B4.

**June 19-25, 1983**

36th Annual Canadian Geotechnical Conference to be held in conjunction with VII Pan American Conference on Soil Mechanics and Foundation Engineering, Vancouver, British Columbia.

Inf: Dr. R. Benson, Organizing Chairman, c/o Klohn Leonoff Ltd., 10180 Shellbridge Way, Richmond, B.C. V6X 2W7.

**June 22-25, 1983**

The 96th Annual Meeting of the Mining Society of Nova Scotia will be held at Keltic Lodge, Antigonish, Nova Scotia.

Inf: Denyse B. Crawford, CIM Information Officer (514) 842-3461.

**June 27-30, 1983**

Canadian Well Logging Society and Society of Professional Well Log Analysts, Joint Formation Evaluation Symposium, Calgary, Alberta.

Inf: Secretary, CWLS, P.O. Box 6962, Postal Stn. D, Calgary, Alberta, T2P 2G2. Executive Secretary, SPWLA, 806 Main Street – Suite 1017, Houston, Texas, 77002.

**July 18-22, 1983**

International Conference on Permafrost, Fairbanks, Alaska.

Inf: L. DeGoes, Polar Research Board, National Academy of Sciences, 2101 Constitution Ave. NW, Washington, D.C., 20418, U.S.A. Tel: (202) 389-6071.

**August 1983**

Melanges of the Appalachian Orogen (Penrose Conference), tentatively in Newfoundland.

Inf: Harold Williams, Department of Earth Sciences, Memorial University, St. Johns, Newfoundland, A1B 3X5.

**August 15-26, 1983**

XVIII General Assembly of the International Union of Geodesy and Geophysics. Hamburg, Federal Republic of Germany.

Sponsored by International Union of Geodesy and Geophysics.

Inf: P. Melchior, Observatoire Royal de Belgique, Avenue Circulaire 3, B-1180, Bruxelles, Belgium.

**August 21-24, 1983**

The 22nd Annual Conference of the Metallurgical Society of CIM and the 13th Annual Hydrometallurgical Meeting will be held jointly in Edmonton, Alberta.

Inf: Denyse B. Crawford, CIM Information Officer (514) 842-3461.

**August 28 – September 2, 1983**

Eleventh World Petroleum Congress, London, England.

Inf: W.B. Waugh, Secretary-Treasurer, Canadian National Committee, World Petroleum Congress, c/o Shell Canada Limited, P.O. Box 400, Terminal A, Toronto, Ontario, M5W 1E1.

**August 28 – September 2, 1983**

10th International Geochemical Exploration Symposium, Helsinki.

The Symposium organization will involve members of all the Scandinavian Geological Surveys with the first circular being mailed by April 15, 1982, and the meeting announced in international journals this autumn.

Inf: Dr. A. Bjorklund, 10th IGES – 3rd SMGP, Geological Survey of Finland, SF-02150 Espoo, Finland.

**September 11-15, 1983**

Society of Exploration Geophysicists Annual Meeting, Las Vegas, Nevada.

Inf: SEG, P.O. Box 3098, Tulsa, Oklahoma, 74101.

**September 12-16, 1983**

Petroleum Source Rocks: Maturation and Migration (Conference), Banff, Alberta.

Mrs. Pat Larham, Faculty Extension, The University of Alberta, Edmonton, Alberta, T6G 2G4.

**September 16-17, 1983**

Correlation of Caledonian Stratabound Sulfides (Symposium), Ottawa, Ontario, Canada. Organized in collaboration with IGCP Project 60. Pre- and post-symposium field trips.

Inf: D.F. Sangster, Geological Survey of Canada, Room 699, 601 Booth Street, Ottawa, Ontario, Canada K1A 0E8.

**September 21-23, 1983**

CIM Field Trip covering nickel/uranium deposits, Sudbury-Elliot Lake Areas.

Inf: Mr. R.H. McMillan, Exploration Manager, Eastern Canada, Westmin Resources Limited, Suite 1414, 390 Bay Street, Toronto, Ontario, M5H 2Y2. Tel: (416) 364-8116.

**October 17-19, 1983**

Biochronology and Stratigraphic Correlation (IGCP Project 148 International Meeting), Dartmouth, N.S., Canada.

Inf: Dr. F.M. Gradstein, Atlantic Geoscience Centre, Bedford Institute of Oceanography, P.O. Box 1006, Dartmouth, N.S., Canada, B2Y 4A2.

**October 30 – November 3, 1983**

Society of Exploration Geophysicists, Annual Meeting, Washington, D.C., U.S.A.

Inf: John Hyden, Society of Exploration Geophysicists, Box 3098, Tulsa, Oklahoma 74101, U.S.A.

**October 31 – November 3, 1983**

Geological Society of America and Associated Societies, Annual Meeting, Indianapolis, Indiana.

Inf: Arthur Mirsky, Dept. of Geology, Indiana University/Purdue University, 925 W. Michigan St., Indianapolis, Indiana 46202. Tel: (317) 264-7484.

**December 5-7, 1983**

Symposium entitled "Economic Deposits of Northern Cordillera" at Whitehorse, Yukon Terr. Sponsored by Department of Indian and Northern Development. Co-sponsors: CIM Geology Division and Mineral Deposits Division – Geological Association of Canada.

Inf: Mr. J.A. Morin, D.I.A.N.D., 200 Range Road, Whitehorse, Yukon Terr., Y1A 3V1.

**December 5-9, 1983**

AGU Fall Meeting, San Francisco, California.

Inf: Meetings, AGU, 2000 Florida Ave., N.W., Washington, D.C. 20009.

**April 15-19, 1984**

CIM Annual General Meeting at Ottawa. Technical Papers presented by Geology Division to emphasize geochemistry.

Inf: Mr. R. Darling, Chairman, CIM Geology Division, Ecole Polytechnique, P.O. Box 6079, Station "A", Montreal, Quebec, H3C 3A7. Tel: (514) 344-4743.

**April 19-22, 1984**

CIM Symposium and Field Workshop "Till Tomorrow" (Methods of deep till sampling).

Inf: Dr. C. Gleeson, C.F. Gleeson & Associates Ltd., Lakeshore Drive, R.R. No. 1, Iroquois, Ontario, K0E 1K0.

(N.B. The one-day symposium in Ottawa immediately follows the Annual General Meeting. The symposium is followed in turn by 3 days in the field at Kirkland Lake).

**May 13-16, 1984**

Geological Association of Canada – Mineralogical Association of Canada, Annual Meeting, London, Ontario.

Inf: Dr. W.S. Fyfe, Chairman, Dept. of Geology, University of Western Ontario, London, Ontario, N6A 5B7.

**May 14-18, 1984**

AGU Spring Meeting, Cincinnati, Ohio, U.S.A.

Inf: Meetings, AGU, 2000 Florida Avenue NW, Washington, D.C. 20009, U.S.A.

**May 14-19, 1984**

Canada's Second International Energy Exposition and Conference, First Call for Papers. Regina, Saskatchewan. A Forum on Energy Self-Reliance: New, Renewable and Energy Conservation.

**May 15-18, 1984**

Canada Society of Exploration Geophysicists National Convention held at the Calgary Convention Center, Calgary, Alberta.

**May 28 – June 1, 1984**

C.G.U. and C.M.O.S. Joint Annual Meeting, Halifax, N.S.

Inf: Mr. Rod Shaw, Environment Canada, Queen Square, 45 Alderney Drive, Dartmouth, N.S. (902) 426-6132.

**May – June (date undecided), 1984**

The Canadian Association of Geographers Annual Meeting to be held at Malaspina College, Nanaimo, B.C., V9R 5S5.

Inf: Professor Elizabeth Forrester, Malaspina College, Nanaimo, B.C., V9R 5S5.

**June 15-17, 1984**

Research Symposium on Nearshore and Shelf Sedimentology, special symposium sponsored by the Canadian Society of Petroleum Geologists, at the University of Calgary, Calgary, Alberta.

Inf: Dr. John Knight, Petro-Canada, Box 2844, Calgary, Alberta, T2P 3E3.

**June 18-20, 1984**

"CONCEPTS" (Concepts of Geology and Geophysics to aid Oil and Gas Exploration in Canada). Joint Annual Convention of the Canadian Society of Petroleum Geologists and the Canadian Society of Exploration Geophysicists; in Calgary, Alberta.

Inf: Mr. T. Hawkings (CSPG Co-chairman); c/o Esso Resources Canada Ltd., 237-4 Ave. S.W., Calgary, Alberta, T2P 0H6 or Mr. M. Dole (CSEG Co-chairman); c/o Dome Petroleum Ltd., 333-7th Ave. S.W., Calgary, Alberta, T2P 2H8.

**July 21-28, 1984**

8th World Conference on Earthquake Engineering – San Francisco – Call for Abstracts.

Inf: EERI – 8 WCEE, 2620 Telegraph Avenue, Berkeley, CA, 94704, U.S.A.

**August, 1984**

International Geological Congress, Moscow, 1984. The Canadian National Committee for the International Union of Geological Sciences (CNC/IUGS) has as one of its many functions the appointment of several Canadian delegates to represent Canada at the Council meetings of the International Geological Congress and IUGS to be held in Moscow in August, 1984.

Interested persons may obtain more information, and submit their names to the CNC by contacting Dr. A.R. Berger, Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario, K1A 0E8. Tel.: (613) 995-4927.

**August 18-24, 1984**

International Paleobotanical Conference, Edmonton, Alberta. Sponsored by the International Organization of Paleobotany, to take place before the 6th International Palynological Conference. Field excursions.

Inf: Dr. Ruth A. Stockey, Dept. of Botany, The University of Alberta, Edmonton, Alberta, T6G 2E9.

**August 28-30, 1984**

International Symposium and Workshop on Borehole Geophysics: Mining and Geotechnical Applications, Toronto, Ontario. Sponsored by KEGS and the Geological Survey of Canada.

Inf: Dr. Pat Killeen, GSC, (613) 996-2312.

**September 2-6, 1984**

CIM Symposium "Ore Deposits of the Chibougamau, Quebec".

Inf: Dr. J. Guha, Sciences de la Terre, Universite du Quebec a Chicoutimi, Chicoutimi, Quebec, G7H 2B1.

**September 16-21, 1984**

IVth International Symposium on Landslides, and 37th Canadian Geotechnical Conference, Sheraton Centre Hotel, Toronto, Ontario.

Inf: Conference Secretary, IVth International Symposium on Landslides, P.O. Box 370, Postal Station A, Rexdale, Ontario, M9W 5L3. Tel: (416) 675-7341. Telex: 06-98982.

**November 12-13, 1984**

CIM Symposium "Geophysical Exploration for Gold Deposits".

Inf: Dr. E. Gaucher, President, Edwin Gaucher & Associates Inc., 2406 Quatre-Bourgeois, Sainte-Foy, Quebec, G1V 1W5.

**1985**

38th Canadian Geotechnical Conference, Edmonton, Alberta.

Inf: Mr. L.A. Balanko, Secretary, Canadian Geotechnical Society, EBA Engineering Consultants Ltd., 14535 - 118th Avenue, Edmonton, Alberta, T5L 2M7.

**April 21-24, 1985**

CIM Annual General Meeting at Vancouver. Technical papers presented by Geological Division to emphasize geophysics.

Inf: Dr. W. Petruk, Chairman, Canadian Institute of Mining and Metallurgy, Canmet, 555 Booth Street, Ottawa, Ontario, K1A 0G1.

**April 25-26, 1985**

CIM Symposium "Cordilleran Porphyry Deposits".

Inf: Dr. A. Pantaleyev, Senior Project Geologist, Mineral Resources Division, Department of Energy, Mines & Resources, Victoria, B.C. V8N 2N5.

(N.B.) This symposium is to be held immediately after the Vancouver Annual General Meeting.

**May, 1985**

Geological Association of Canada - Mineralogical Association of Canada, Annual Meeting, Fredericton, N.B., E3B 5A3.

Inf: Dr. W. van de Poll, Department of Geology, University of New Brunswick, Box 4400, Fredericton, N.B., E3B 5A3.

**May 7-10, 1985**

Canadian Society of Exploration Geophysicists National Convention held at the Calgary Convention Center, Calgary, Alberta.

Inf: Headquarters, Room 229, 640 – 5 Ave. S.W., Calgary, Alberta, T2P 3G4.

**September 22-28, 1985**

CIM Field Conference "Granite-Related Mineral Deposits". Fredericton, N.B.

Inf: Dr. R. Taylor, Dept. de Geologie, Universite de Montreal, P.O. Box 6128, Station "A", Montreal, Quebec, H3C 3J7.

**April 20-23, 1986**

CIM Annual General Meeting at Montreal, Quebec. Technical papers presented by Geological Division to emphasize geochemistry.

Inf: Dr. W. Petruk, Chairman, Canadian Institute of Mining and Metallurgy, Canmet, 555 Booth Street, Ottawa, Ontario, K1A 0G1.

**April 24-25, 1986**

CIM Symposium "Ore Reserve Estimation and Grade Control: Models Prediction & Reality".

Inf: Dr. M. David, Dept. de Genie mineral, Ecole Polytechnique, Box 6079, Station "A", Montreal, Quebec, H3C 3A7.

(N.B.) This symposium is to be held immediately after the Montreal Annual General Meeting).

**May 1986**

Canadian Geophysical Union Annual Meeting.

Inf: Dr. P.A. Camfield, Secretary, Canadian Geophysical Union, c/o Earth Physics Branch, Dept. of Energy, Mines and Resources, 1 Observatory Crescent, Ottawa, Ontario, K1A 0Y3.  
Tel: (613) 995-5576.

**1986**

39th Canadian Geotechnical Conference, Ottawa, Ontario.

Inf: Mr. L.A. Balanko, Secretary, Canadian Geotechnical Society, c/o EBA Engineering Consultants Ltd., 14535 – 118th Avenue, Edmonton, Alberta, T5L 2M7.

**May, 1986**

Geological Association of Canada – Mineralogical Association of Canada, Annual Meeting, Ottawa, Ontario.

Inf: Dr. J.A. Donaldson, Department of Geology, Carleton University, Ottawa, Ontario, K1S 5B6.

**May 13-16, 1986**

Canadian Society of Exploration Geophysicists National Convention held at the Calgary Convention Center, Calgary, Alberta.

Inf: Canadian Society of Exploration Geophysicists, Room 229, 640 – 5 Ave. S.W., Calgary, Alberta, T2P 3G4.

**May, 1987**

Geological Association of Canada – Mineralogical Association of Canada, Annual Meeting, Saskatoon, Saskatchewan.

Inf: Geological Association of Canada, Department of Earth Sciences, Memorial University of Newfoundland, St. John's, Newfoundland, A1B 3X5. Tel. (709) 737-8143.

**August, 1987**

International Union of Geodesy and Geophysics may be held in Vancouver.

Inf: Dr. R.D. Russell, Department of Geophysics and Astronomy, The University of B.C., Vancouver, B.C., V6T 2B4.

**May, 1988**

Geological Association of Canada – Mineralogical Association of Canada, Annual Meeting, St. John's, Newfoundland.

Inf: Geological Association of Canada, Department of Earth Sciences, Memorial University of Newfoundland, St. John's, Newfoundland, A1B 3X5. Tel. (709) 737-8143.

Table 6

SIGNIFICANT METALLIC AND PRECIOUS METAL, AND URANIUM DISCOVERIES, 1980-82.  
INFORMATION SUPPLIED BY W.S. LAUGHLIN AND COMPILED BY STEPHEN B. GREEN.

| Name and Year of Discovery   | Responsible Companies                   | Location  | Type of Deposits   | Grade and Reserves  |
|------------------------------|---|---|--|---|
| Opapimiskan L. (1980)        | Dome Expl., Ezzo Minerals, Lacana Mng.  | Pickle Lake area, NW Ontario                                      | Au in Archean banded iron formation enclosed in volcanic rocks   | 1 000 000 tons of 0.20 oz/ton Au  |
| Mattabi Deep Ore Zone (1980) | Mattabi Mines                           | Sturgeon Lake, Ontario  | Massive sulphide deposit, volcanogenic associated  | not available   |
| Ansil (1980)                 | Falconbridge Copper                     | Noranda area, Quebec  | Volcanogenic massive sulphide underlain by magnetite at contact between andesite and quartz feldspar porphyry              | Drill hole intersections only 129.5 ft. of 12.42% Cu, 0.10% Zn, 0.61 oz Ag, 0.117 oz/ton Au |
| Kiena (1980)                 | Kiena Gold Mines Ltd.                   | Under islands and waters of Lac de Montigny near Malartic, Quebec | Au-bearing quartz in sheared and brecciated basic volcanic rocks of the Abitibi belt                                       | 2 500 000 tons of 0.23 oz/ton Au  |
| Norbeau (1980)               | Consolidated Copper-Lode Dev. Inc.      | McKenzie Twp., Chibougamau, Quebec                                | Gold-bearing quartz veins in a gabbro sill   | 111 000 tons of 0.20 oz/ton Au  |
| Gaspe Copper (1980)          | Gaspe Copper                            | Murdochville, Quebec  | Skarn copper   | Major extension   |
| Lake George (1980)           | Cons. Durham Mines & Res. Ltd.          | Lake George, N.B. 25 mi. SW of Fredericton                        | Disseminated stibnite in quartz veins in Silurian slates and quartzites  | 150 000 tons of 7% Sb   |
| Gondor Lake (1981)           | Kidd Creek, Noranda                     | 30 miles east of Izok Lake  | Volcanogenic massive sulphide deposit located in the hinge zone of a fold  | Drill hole intersections as high as 8.05 oz/ton Ag, 18.8% Zn, 1.2% Pb and 1.6% Cu           |
| Winston Lake (Zenmac) (1981) | Falconbridge Copper                     | 25 km NW of Schreiber, Ontario                                    | Massive sulphide lens below gabbroic intrusion at rhyolite contact   | Drill hole intersections as high as 38% zinc  |
| Hemlo (1981)                 | Corona Resources/Teck Lac Minerals Ltd. | 3 miles east of Hemlo, Ontario                                    | Multiple mineralized zones containing Au, Au-tellurides and Mo in metasedimentary rocks                                    | 10 million tons of 0.25 oz/ton Au (Golden Giant deposit)                                    |
| Broulan Reef (1981)          | AMAX/Dupont of Canada                   | Hoyle Twp., Timmins area  | Gold in veins  | 422,000 tons of 0.22 oz Au/ton to a depth of 725 ft.  |
| Wabassi Falls (1981)         | Wasabi Res./Kerr Addison                | Norton Lake, Ontario  |  | 1,400,000 tons of .72% Ni or 0.56% Cu   |
| Corner Bay (1981)            | Riocanex/Muscocho                       | Southeast of Chibougamau Lake                                     | Volcanic associated massive sulphide deposit   | Approx. 2,000,000 tons of 4% Cu   |
| Midway (1981)                | Regional Resources/AMAX                 | N. British Columbia near Yukon Border 23 km from Alaska Highway   | Volc. associated-Pb-Zn-Ag in 3 siliceous, baritic zones with mineralization occurring at contact between sedimentary units | Drill hole 8.2 feet of 10.1% Pb+Zn and 5.0 oz/ton Ag  |
| Johnny Mtn. (1982)           | Skyline Expl./Placer Dev.               | 75 miles NW of Stewart, British Columbia                          | Gold in silicified volcanic tuff and breccia zones   | Drill hole intersections of 40 ft. of 0.303 oz/ton Au and 17 ft. of 0.71 oz/ton Au          |
| Bigstone Lake (1982)         | SMDC/Granges                            | 88 km west of Flin Flon   | Volcanogenic massive sulphide (Cu-Zn)  |   |
| New Pascalis (1982)          | Soquem                                  | Val d'Or area, Quebec   | Gold and tourmaline-bearing veins in a north-trending diorite dyke   | Drill hole intersections of 268 ft. of 0.2 oz Au/ton  |
| Silver Butte (1982)          | Cons. Silver Butte/Esso Min. Canada     | Stewart, British Columbia area                                    | Cu-Pb-Zn-Ag mineralized conformable zone in andesite volcanic sequence   | N.A.  |
| Windy Craggy (1982)          | Falconbridge                            | N.W. British Columbia 40 miles east of Haines-Alaska Highway      | Volcanogenic massive sulphide deposit  | Est. 90 million tons of 3.04% Cu and 0.09% Co   |

Table 7

## CONFIRMED SIGNIFICANT HYDROCARBON DISCOVERIES 1980-82\*

| Region/Area     | Well Name                                      | Discovery Year | Formation/Type    | Operator/Participants            |
|-----------------|--|----------------|-------------------|----------------------------------|
| Grand Banks     | Ben Nevis I-45<br>46-34-40N<br>48-21-10W       | 1980           | Cret./Oil         | Mobil et al.                     |
| Cumberland      | Hekja 0-71<br>62-10-15N<br>62-58-46W           | 1980           | Cret./Gas/Oil     | Aquitaine et al.                 |
| Mackenzie Delta | Issungnak 0-61<br>70.01-0.45N<br>134-18-47.93W | 1980           | Tertiary/Oil      | Esso                             |
| Arctic          | Char G-07<br>77-36-30N<br>99-31-08.W           | 1980           | Jur./Tri./Gas     | Panarctic Dome                   |
| Alberta         | Eaglesham<br>9-9-77-25W5                       | 1980           | Wabamun/Oil       | Cdn. Occidental                  |
| Alberta         | Del Bonita<br>16-35-1-22W4                     | 1980           | Miss./Dev./Oil    | Amoco et al.                     |
| Alberta         | Golden<br>12-2-87-13W5                         | 1980           | Dev./Oil          | Norcen et al.                    |
| N.E. Br. Col.   | Steep Rock<br>c-12-L-93-P-1                    | 1980           | Cret./Gas         | Cdn. Hunter/Esso                 |
| Arctic Island   | Cisco B-66<br>77°25'01.3"N<br>106°56'22.5"W    | 1981           | Jur./Oil/Gas      | Panarctic et al.                 |
| Arctic Island   | McLean I-72<br>77°31'39.56"N<br>103°56'22.5"W  | 1981           | Tri./Gas          | Panarctic et al.                 |
| Arctic Island   | Skate B-80<br>77°49'13.44"N<br>104°57'19.75"W  | 1981           | Jur./Tri./Gas/Oil | Panarctic et al.                 |
| N.E. Br. Col.   | Gaylor<br>c-14-D-84-B-1                        | 1981           | Tri./Gas          | Quazar et al.                    |
| Alberta         | Evi<br>5-36-86-13W5                            | 1981           | Dev./Oil          | Texas Pacific et al.             |
| Alberta         | CYN PEM<br>6-29-51-10W5                        | 1981           | Cret./Oil         | Texaco                           |
| Alberta         | Shekilie<br>16-6-118-8W6                       | 1981           | Dev./Oil          | Canadian Development Corporation |
| Manitoba        | Waskada<br>1-25-1-26W1                         | 1981           | Miss./Oil         | Omega Hydrocarbons               |
| Alberta         | Rumsey<br>9-36-34-21W4                         | 1982           | Dev./Oil          | Gulf                             |
| Alberta         | Fenn West<br>6-12-36-21W4                      | 1982           | Dev./Oil          | Tripet et al.                    |
| Alberta         | Crystal<br>6-6-43-3W5                          | 1982           | Cret./Oil         | Westcoast et al.                 |
| Alberta         | Crimson<br>7-5-38-8W5                          | 1982           | Cret./Gas         | Gulf et al.                      |
| Alberta         | Amber<br>4-8-115-7W6                           | 1982           | Dev./Oil          | Chevron-Irving                   |
| Beaufort Sea    | Kenaloak J-94<br>70-43-44N<br>133-58-28W       | 1982           | /Gas              | Dome et al.                      |
| Scotian Shelf   | Banquereau C-21<br>44-10-18N<br>58-33-59W      | 1982           | Cret./Gas         | PetroCan et al.                  |

\*The information in this table was collected by L.P. Purcell of Husky Oil Operations Ltd., Calgary. It is understood that "significant" is a subjective judgment.