



**Canadian
Geoscience
Council**

The Geosciences in Canada 1983

Annual Report

**Prepared by
The Canadian Geoscience Council**

Published for the Council
by the Geological Survey of Canada as

Edited by J.P. Greenhouse

Paper 84-6





Energy, Mines and
Resources Canada

Énergie, Mines et
Ressources Canada

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GEOLOGICAL SURVEY OF CANADA
PAPER 84-6

THE GEOSCIENCES IN CANADA, 1983
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. M44-84/6 Canada: \$4.00
ISBN 0-660-53002-3 Other countries: \$4.80

Price subject to change without notice

Preface

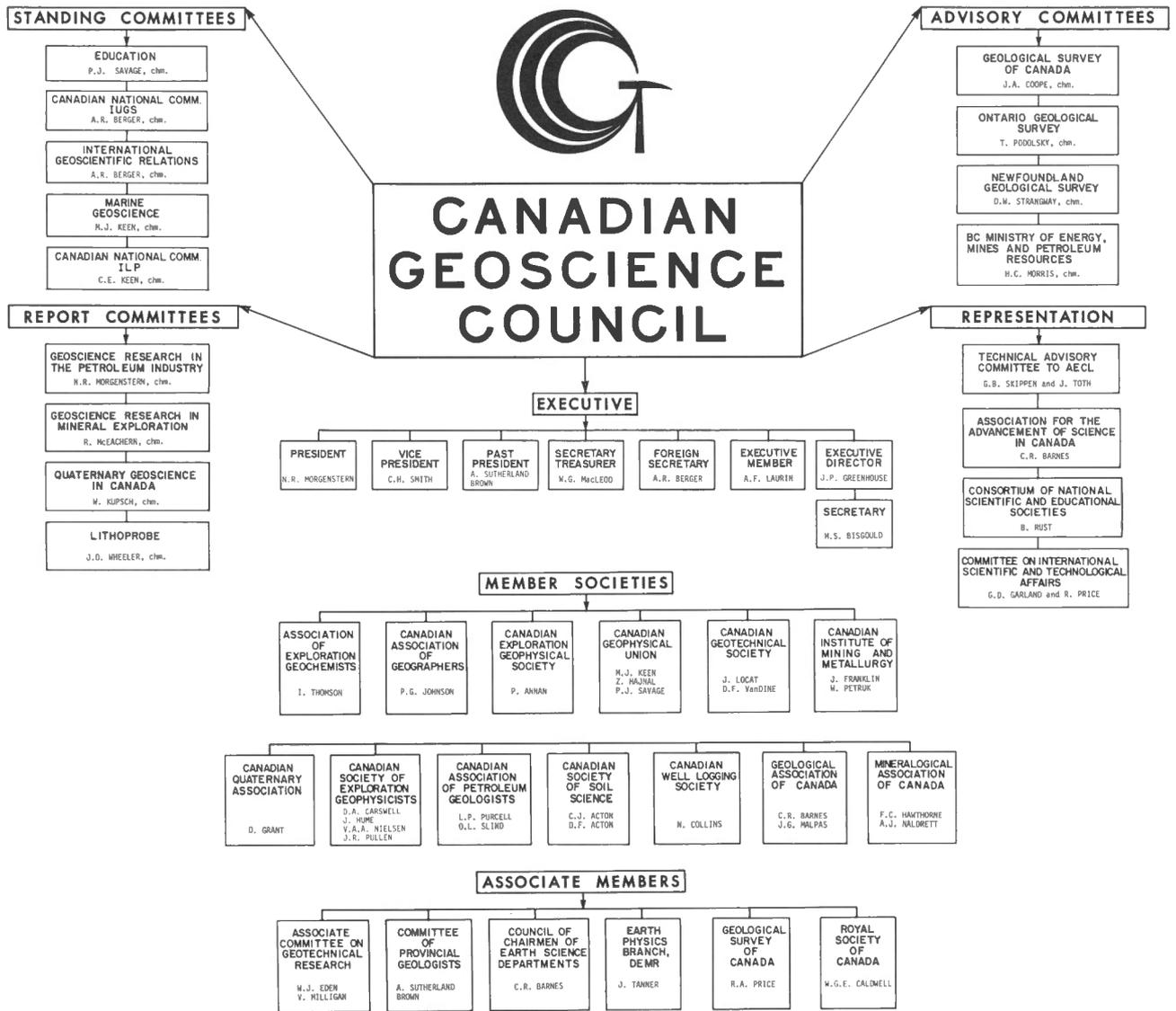
Pleading, coaxing and wheedling members of the executive, committee chairmen and society representatives for these reports and tables is not an easy chore, but it is much easier than having to write the reports themselves. In this my final year as the compiler of this Annual Report I would like simply to thank the contributors, who always respond to my requests gracefully and with all the haste their busy schedules afford.

John P. Greenhouse,
Executive Director
Canadian Geoscience Council

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 THE ORGANIZATION OF THE CANADIAN GEOSCIENCE COUNCIL, 1983



THE GEOSCIENCES IN CANADA, 1983
ANNUAL REPORT OF THE CANADIAN GEOSCIENCE COUNCIL

REPORT OF THE PRESIDENT

Introduction

The Canadian Geoscience Council provides a forum for its members to work co-operatively to encourage the development of the geosciences in the best interests of the nation and of the geoscience professions. It provides advice to governments on science policy and its implementation with respect to the earth sciences, it promotes earth science education, and it publishes periodic reviews and assessments of the health and activity of Canadian geoscience.

In Canada, the year 1983 was noteworthy for an economic recession that was particularly severe in the extractive industries. It was not a year for bold new initiatives on the part of the Council. Nevertheless sustaining the activities initiated in previous years, responding to various new requests for assistance, and exploring the feasibility of new studies constituted a full and vigorous program for the meetings of Council.

Council met three times in 1983; in Victoria in May during the GAC/MAC Joint Annual Meeting, in Saskatoon in September, and in Ottawa in November for the Annual Meeting and the joint meeting with representatives of the Department of Energy, Mines and Resources. Most of the work of Council is undertaken by committees, task forces, and individual members working outside of regular meetings. These activities are described in more detail below.

Publications

Although no major studies were completed for publication during 1983, Council did add three items to its list of publications in addition to its Annual Report.

The publication Future Directions of Mineral Deposits Research in Canada resulted from a workshop convened by Dr. J.M. Franklin. It is concerned with evaluating both the facilities available for research as well as delineating specific subjects related to mineral deposits that merit research.

Council organizes numerous advisory committees to agencies active in the geosciences. It has adopted the practice of publishing the reports of these advisory committees subject to the adoption of the report by Council and the approval of the agency being assisted by the committee. This year the Report of the Advisory Committee to the Ontario Geological Survey and the Report of the Review Committee to the Mineral Development Division, Newfoundland Department of Mines and Energy, have been published.

All three publications are available from Council headquarters.

In addition the report of the Committee chaired by J.A. Coope referred to in last year's Annual Report was published in November 1983. An Examination of the Output of the Geological Survey of Canada was released in English and French editions as GSC Paper 82-6, Pt. 1.

Major studies in progress

Three major studies are underway. Each is co-ordinated by a task force. The studies represent three different aspects of the geosciences and each is progressing in its own manner, as noted below:

1. The study of Geoscience Research in Mineral Exploration is under the direction of a task force chaired by R.G. McEachern. The study is intended to assess the level of past and present research, examine the impact of research on success in exploration, and consider future directions. Questionnaires are being used to elicit information, and will be followed by a series of personal interviews that will be undertaken by task force members. A draft of the final report is intended for the September, 1984 meeting of Council with publication early in 1985. This study is particularly timely since the Geological Survey of Canada has initiated a review of its own activities in the area of mineral research and hopefully the publication of the report will coincide with an upturn in the mining industry. In addition to Council funds, financial support has been obtained from the Canadian Geological Foundation and the Howard Street Robinson Foundation.
2. The study Quaternary Geoscience in Canada is a far-reaching inquiry into this broad interdisciplinary subject. The task force in charge of the study was chaired by W.O. Kupsch until the end of 1983 when Dr. Kupsch resigned from this activity for personal reasons. The new chairman is Dr. Brian Bird. Council appreciates the guidance that this study has received from Dr. Kupsch and also welcomes the future participation of Dr. Bird. The initial phase of this study is also proceeding by means of a questionnaire. This aspect of the survey is intended for completion early in 1984 with a preliminary report to be presented to the May meeting of Council. A second phase of inquiries will then be undertaken. The final report will be written in 1985 and published in 1986 well before the INQUA meeting in Canada in 1987.

3. The third study Geoscience Research and Development in the Petroleum Industry is co-ordinated by a task force chaired by N.R. Morgenstern. This study is less advanced than the other two because it is intended to undertake the study by utilizing the services of a consultant instead of relying totally on volunteer effort as has been the practice of the Council in the past. While the study has been formulated it cannot proceed without substantial funding and the efforts of the task force have been dedicated to procuring funds for the study. Council was of the view that industrial participation in funding this study would be appropriate. Toward the end of 1983 the task force advised Council that the Canadian Petroleum Association had agreed to fund 50 per cent of the study. With the prospect of receiving the remaining 50 per cent from DEMR, it appears that this project is now on a firm financial footing and can be brought to completion early in 1985. It is noteworthy that Council can gain major financial support for some of its activities from industry. The funding of the study marks a new direction in this regard that should be pursued for funding other initiatives taken by Council in the future.

Advisory committees

The Council is increasingly recognized as capable of providing a unique service in the organization of advisory committees to various geoscience agencies. In this way Council acts as broker between the agency and the geoscience community at large. In 1983, Council organized the following advisory committees:

- i) Advisory Committee to the Alberta Geological Survey
Chairman: N. Rutter
- ii) Advisory Committee to the Ontario Geological Survey
Chairman: T. Podolsky
- iii) Advisory Committee to the Earth Physics Branch, DEMR
Chairman: G. Garland
- iv) Advisory Committee to the Geological Survey of Canada on Mineral Research
Chairman: A. Naldrett
- v) Advisory Committee to the Geological Survey of Canada on Engineering Geology and Quaternary Studies
Chairman: M. Church

These committees are all very active and a review of their work will engage Council in 1984.

Council also provides two members to the Technical Advisory Committee of Atomic Energy of Canada Limited. The two members are currently G. Skippen and J. Toth. Council asked its two representatives to prepare a report evaluating the current activities of AECL that bear on the geoscience aspects of their nuclear waste disposal program. This report was distributed to Council and Council supported the publication of the views of its representatives as presented in the report. Council has vigorously expressed its desire to continue to monitor the research developments in this area.

Marine Geoscience Committee

A major study of Council, Marine Geosciences in Canada - 1980, A Status Report, was published in English and French editions in May, 1983 as GSC Paper 80-6, Pt. 1. Descriptions of this study appear in previous annual reports of the Canadian Geoscience Council. The report recommended that a standing committee of Council in Marine Geosciences be formed. This Committee has been formed under the chairmanship of M.J. Keen and it has been charged immediately with several important matters. In particular, Council has asked the Marine Geoscience Committee to participate in the planning of Canadian participation in the Ocean Drilling Program. The Committee is also developing a mandate for guiding the geoscience community on various other issues ranging from availability of ship time to issues related to the Law of the Sea. The initiatives taken by Council, first in the publication of the study on the marine geosciences, and second in establishing a standing committee, have proved timely. We are pleased to see that at least partly as a consequence of the CGC report there now exists a Marine Coordinating Council within EMR and that the federal government has initiated an interdepartmental Committee on Oceans.

EdGEO

EdGEO represents Council's standing committee in education in the geosciences. In 1983, it has continued its successful tradition of conducting geoscience educational workshops at various centres in Canada. In addition, through EdGEO, Council provided support for the expenses of a Canadian delegate to a Workshop on Methods of Teaching Earth Sciences in Asian High Schools that was organized by AGID. It is likely that EdGEO can perform additional service in future years by interacting with initiatives taken by education committees of member societies.

International Affairs

The Foreign Secretary, A.R. Berger has had a very active year tending to the responsibilities of the Standing Committee on International Geoscientific Relations and the Canadian National Committee for the International Union of Geological Sciences. The CNC/IUGS was charged with recommending to Council the delegates to the Moscow Congress. Council has also provided advice on geoscience matters to the Canadian Commission/UNESCO. Further details on these and related matters can be found in the report of the Foreign Secretary.

Mannard Memorial

Following the initiative taken in 1982 of establishing a memorial to the late George W. Mannard, a trust fund was created and a solicitation for funds was undertaken by Council. This was successful in raising several thousand dollars which will be turned over to McGill University as a contribution to a Memorial Fellowship in the Mineral Exploration Program established by Kidd Creek Mines.

Administration

As the report of the Secretary-Treasurer shows, Council is in sound financial health although the various studies already commissioned may tax its resources in the future. The revised constitution and by-laws that were discussed extensively in 1982 were approved, and the office of the Executive Director continues to serve the needs of Council in an apparently effortless manner.



Plate 1. The executive of the Canadian Geoscience Council, 1983. From left to right: A. Berger, Foreign Secretary; A. Sutherland Brown, Past President; N. Morgenstern, President; J. Greenhouse, Executive Director; A. Laurin, Executive Member; W. MacLeod, Secretary-Treasurer; C. Smith, Vice President.

Commentary

If, after three years on the executive of the Canadian Geoscience Council, I were asked to summarize briefly what we do, I would say that we conduct studies, give advice, encourage education, and co-ordinate international representation. This in itself is enough of a justification for the existence of CGC, but I sense that more is emerging.

I am pleased with what I perceive to be an increasing confidence on the part of CGC to be a resource for and to seek support from agencies beyond the Department of Energy, Mines and Resources. I do not in any way mean to diminish the value of the support that we enjoy from DEMR and the significance to CGC of acting as a resource group to the Department. However I can see that with increasing maturity of the scientific and technological community in Canada at large, organizations like the CGC can play a pivotal role – not because we are rich and powerful – but because of the many interfaces and connections that we create outside of the formalities of either government, industrial or specialty society settings. We act as honest brokers and can tap the skills of our 15 000 constituent members. This in itself can be a force. I would encourage Council to continue to expand its activities and to serve all sectors as it has before.

With continued success in our traditional role, there is still one other level of activity to pursue. I believe that as the organization of science and technology in Canada develops further, we will find the need to establish a national co-ordinating Council composed of like umbrella Councils and Institutes that will fulfill the active, as opposed to honorific functions, of a national council or academy. This national council would provide the effective voice for science and technology that remains missing from many matters of public policy. I hope that in due course, CGC will find the time and the energy to debate this prospect and develop the proposition further.

Acknowledgments

The Canadian Geoscience Council is a volunteer organization. It succeeds through the dedication and generosity of its members representing the constituent societies and other affiliates. I have enjoyed the participation of an enthusiastic Council during my tenure as President, for which I am grateful. I also appreciate the assistance and wise council always available from the Executive. Both our Secretary-Treasurer, Bill MacLeod, and Executive Director, John Greenhouse, taken on the most onerous tasks willingly and effectively. We owe them both a special vote of thanks.

I wish my successor, Charles Smith, every success during his tenure as President and I am confident that he will enjoy the same level of support from members of Council that I did.

N.R. Morgenstern

REPORT OF 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 seventh annual meeting at the Geological Survey of Canada, Ottawa, on October 19, 1983, and this was followed on the same day by the second annual meeting of the CNC/IUGS. The full minutes of both meetings are available from the Foreign Secretary and the CGC 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 1983 meeting was attended by representatives of most of the international earth science associations and programs with activities in Canada or involving Canadians. A few were reporting to the CGC for the first time. As outlined in the following, some of these organizations have their own Canadian National Committees, some are linked directly to national societies in Canada, and others are represented in Canada by members of their own executive. The inter-relationships between these organizations are complex, as is to be expected where such a wide spectrum of disciplines and activities are represented (see Fig. 1, 2).

In early 1983, CGC member societies were asked whether their international interests were being adequately represented by the CGC and whether the CGC should act as a clearing house for international geoscience assignments. Responses were received from only three societies. One regarded the CGC's international activities as too bureaucratic; the others argued the need for their disciplines to be more fully recognized on the international scene or for their representatives to international meetings to be better funded. On the question of jobs, one society said firmly that they did not need such a service, while the other two seemed to think it could be useful. In view of the lack of enthusiasm and the practical difficulties involved, the CGC proposed no further action on this matter.

Unesco

C.H. Smith, Consultant on Natural Sciences to the Canadian Commission (CC) for Unesco, reported on the lengthy preparations for the Unesco General Conference in late 1983, the main purpose of which was the review and approval of the budget and program plans for 1984 and 1985. Principal attention was given at this conference to the size and growth rate of the Unesco budget, currently at approximately \$360 million. The Canadian delegation included J.M. Harrison, the new President of the CC/Unesco, and C.H. Smith.

Of the 13 major programs of Unesco, No. X (Human Environment and Terrestrial and Marine Resources) is of principle interest to the CGC, and in particular Sub-programs X.1 on the Earth's Crust and its Mineral and Energy Resources, and X.2 on Natural Hazards. Subprogram X.1 with a total budget of \$5.9 million includes X.1.1 on Spatio-temporal Geological Correlation, which provides support to the International Geological Correlation Program (IGCP). Subprogram X.1.2, Geology for Economic Development, is concerned primarily with a major project on the Precambrian of Africa. Sub-program X.1.3, Geology for Land-Use Planning, is a broadly applied program dealing with conservation of mineral resources, impact of mining on the environment, problems of waste, underground storage, and geological, geophysical, geomorphological and geochemical constraints influencing land use planning. This activity is carried out in cooperation with several UN agencies and the International Lithosphere Program (ILP). Sub-program X.1.4 on Interdisciplinary Research of the Earth's Crust includes funding for conferences organized by ILP, the International Association of Geochemistry and Cosmochemistry (IAGC), and the International Association on the Genesis of Ore Deposits (IAGOD), some of which will be held at the forthcoming geological congress in Moscow.

Sub-program X.1.5 Processing and Dissemination of Data Relating to the Earth Sciences includes support for meetings and projects of the IUGS Commission on Geological Data (COGEO DATA) and the ICSU Commission on Data (CODATA) and the publication of thematic maps in cooperation with the IUGS Commission for the Geological Map of the World (CGMW) and the International Union for Quaternary Research (INQUA). The final sub-program X.1.6: Training of Specialized Personnel provides support for post-graduate courses in the earth sciences, particularly for developing country personnel. Sub-program X.2 on Natural Hazards has a budget of \$1.4 million with supplementary funds from UNDP and UNEP. Its purpose is to obtain information on mechanisms underlying natural hazards, and to improve the monitoring and prediction methods and the mitigation of risks.

In mid-1983 the CGC expressed its support, through the Foreign Secretary, for Unesco's earth science activities and for the allocation of a larger portion of its budget (within a framework of zero growth) to Program X. The need for increased funding for the International Lithosphere Program was also emphasized by the CGC. A formal resolution was presented to the Unesco General Conference by the Canadian delegates urging a budget allocation of \$100 000 to assist scientific meetings and symposia of the ILP. This resolution was supported by a number of member countries and led eventually to the allocation of some extra financial resources to the ILP.

Those seeking additional information on the earth science activities of Unesco and the plans and budget arrangements for the future should contact C.H. Smith at the Canadian Commission for Unesco, Box 1047, Ottawa K1P 5V8.

International Union for Geodesy and Geophysics

I. Halliday, Secretary of CNC/IUGG, reported briefly on the 1983 IUGG General Assembly held in Hamburg. A major development was the acceptance of the Canadian invitation to hold the next (19th) General Assembly in Vancouver in August 1987, with R.D. Russell (UBC) as chairman of the Organizing Committee. D.I. Gough (University of Alberta) was elected President of the International Association of Geomagnetism and Aeronomy, and G.D. Garland has become Past-President of IUGG. Halliday also pointed to the usefulness of (and difficulty in producing) the Canadian Geophysical Bulletin, a CNC/IUGG responsibility.

International Geographical Union and Canadian Association of Geographers

P. Johnson (CAG Representative to CGC) reporting on behalf of IGU and CAG pointed to several current or planned joint projects involving CAG members in China, Kenya and Cuba. A delegation of geographers from China toured Canada in late 1983 and addressed a three-day seminar at McMaster University. Canadian hydrologists remain active within the International Association of Hydrological Sciences (IAHS) and the International Glaciological Society. Plans are well advanced for the 1984 IGU Congress in Paris, and L. Kozinsky of the University of Alberta has been nominated as the new IGU Secretary-Treasurer.

International Union of Geological Sciences

A.R. Berger (Editor, EPISODES) recalled that the IUGS Executive Committee had met in Bangkok in early 1983 to review the activities of IUGS constituent bodies and affiliates. A full account of the work of the Commission on Stratigraphy (which involves a number of Canadian geologists) was presented by Anders Martinsson, its Chairman. Many of the Subcommissions and Boundary Working groups will propose formal stratotypes at the Moscow Congress. Berger reported with regret Martinsson's sudden death in July.

In 1983 IUGS established new guidelines for the sponsorship of meetings and for its revitalized publication series. These were published in EPISODES, which itself continues to be produced in Ottawa with support from the GSC. Much effort was being devoted to cooperation with the Russian Organizing Committee for the 1984 International Geological Congress, at which time a new IUGS Executive would be elected. The IUGS Advisory Board on Research Development, chaired by W.W. Hutchison, is actively promoting new research ventures on sedimentary basin analysis and urban geology among others.

Association of Exploration Geochemists

R.G. Garrett (AEG Vice-President) referred to two successful meetings held by AEG in 1983: a regional meeting in Perth on Geochemical Exploration in Arid and Deeply Weathered Environments and the 10th International Geochemical Exploration Symposium held jointly with the 3rd IAGC Symposium on Methods of Geochemical Prospecting in Helsinki. The latter meeting provided the first opportunity for AEG and the IAGC Working Group on Geochemical Prospecting Methods to meet formally. As a result three cooperative programs were adopted: a multilingual lexicon, a notebook of conceptual models and a service to UN and related organizations in the preparation of operational manuals. AEG's head office continues to be located in Toronto, and the Canadian membership is one of the most active in the Association.

Association of Geoscientists for International Development

A.R. Berger (AGID Vice-President) pointed to several new publications and regional newsletters issued in 1983 by the AGID headquarters in Bangkok. The AGID Small Mining Network was becoming active in eastern and southern Africa, and there had been a major meeting on phosphorites in Bolivia. A highlight of interest to Canada was the successful Workshop on Earth Science Curriculum for High Schools held at the University of Chiang Mai in Thailand. Through its EdGeo Committee the CGC had contributed \$3000 to facilitate a Canadian input to the Workshop.

International Association for the Study of Clays (AIPEA)

H. Kodama (Treasurer AIPEA) gave the first report received by SCIGR on this IUGS affiliate, founded in 1966 with antecedents going back to 1948. AIPEA, with 812 individual and organizational members in 44 countries, organizes the International Clay Conferences (next in Denver in 1985), publishes an annual newsletter and coordinates the activities of several committees dealing, for example, with nomenclature, and standardization of preparation methods. No Canadian national group exists, but there are some 25 individual AIPEA members in this country.

Commission for the Geological Map of the World

R.A. Price, the Canadian representative to CGMW, noted that CGMW was collaborating actively with the Circum-Pacific Map Project. Geological Society of America would be contributing to CGMW through its own map compilations as would the GSC with its National Geological Atlas (1:1 million).

IUGS Commission on Tectonics

A.J. Baer, a member of COMTEC, reviewed recent activities of the Commission, especially its 1983 meeting in China on Precambrian Crustal Evolution. A book, Precambrian Tectonics Illustrated, prepared by COMTEC will be published in 1984, and another on Comparative Tectonics of Phanerozoic Belts (modeled after Tectonics Styles in Canada) is now in the planning stages.

International Association of Engineering Geology

W.J. Eden presented a brief report on IAEG, together with four other international geotechnical organizations of interest to the CGC: the International Society for Soil Mechanics and Foundation Engineering (ISSMFE), the International Tunnelling Association (ITA), the International Society for Rock Mechanics (ISRM), and the new International Permafrost Association (IPA).

IAEG held an international symposium on underground construction in Lisbon, in September 1983; O. White was the Canadian delegate. IAEG will be co-sponsoring with ISSMFE the 4th International Symposium on Landslides now being organized by Canadian Geotechnical Society (CGS) for Toronto, September 1984. Eden reiterated that financial support for Canadian participation in IAEG international activities remains a problem.

The CGS, which forms the Canadian Section of ISSMFE, sponsored in 1983 the first Ghanaian Fellow to train on-the-job in Canada. With the aid of funds from CIDA, he spent four months with the Ontario Ministry of Transportation and Communications, before returning home.

The CGS has now formed a Rock Mechanics Division which is part of the Canadian Rock Mechanics Group, the Canadian affiliate to ISRM. The Group is now planning for the 1987 International Rock Mechanics Congress in Montreal.

At the 4th International Permafrost Conference in Fairbanks, in 1983 the IPA was formed to disseminate information on permafrost and to promote cooperation among permafrost workers. Canada had taken a leading role in setting up this new organization, and NRC is supporting its secretariat at UBC under the Secretary-General, J.R. MacKay. A Canadian National Committee is now being established for the IPA in consultation with the CGC.

International Association on the Genesis of Ore Deposits

The first report on IAGOD to SCIGR was presented by G.B. Leech, its Associate Secretary General. He explained the general structure, and activities of IAGOD, an informal and low budget organization (member fees -\$5). IAGOD promotes international cooperation in the study of ore genesis, and has a number of commissions and working groups devoted, for example, to manganese and to ore-forming fluids in inclusions. R.W. Boyle is an IAGOD Vice-President. A dual secretariat had been established in 1978 to facilitate the payment of fees and communications with the membership. The Prague secretariat deals with Eastern Europe and the U.S.S.R., and the Ottawa office with the rest of the world. Long-range planning is now underway for the 8th IAGOD Symposium, scheduled for 1990 tentatively in Canada.

International Association of Sedimentologists

The aims, structure and activities of the IAS were summarized by B.D. Bornhold, IAS National Correspondent for Canada. Of the Association's more than 2000 members, some 75 live in Canada. The proceedings of the 1982 IAS Congress in Hamilton are now being prepared for publication. Plans were being made for the next IAS Regional Meeting in 1984 in Marseilles and the next Congress in Australia, 1986. Following discussions on the feasibility of establishing a new Commission on Sedimentology under IUGS, it was decided that this was premature but that IAS should continue to support the work of the IUGS Ad Hoc Committee on Sedimentology. Efforts are also underway to involve in IAS more sedimentologists from the socialist and developing countries.

International Geological Correlation Programme

A.J. Naldrett, Chairman CNC/IGCP summarized new developments of interest to Canada. During the past year four members and the past chairman had retired and had been replaced by Naldrett and R. Wardle so as to reduce the size of the Committee and hence its running costs.

Among projects with active Canadian input, Project 24 on Quaternary Glaciation in the Northern Hemisphere is nearing completion (A. Dreimanis – Canadian contact, Cc), and Project 27 on the Caledonide Orogen (P.E. Schenk, Cc) concludes in 1984 with a final meeting in Glasgow. Project 29 on the Precambrian-Cambrian Boundary (W.H. Fritz, Cc) was in the process of voting on possible reference sections in Siberia, China and Newfoundland. Project 60 on Correlation of Stratabound Sulphides (D.F. Sangster, Cc) concluded in September with a final symposium in Ottawa, the papers from which will be published in 1984 by Economic Geology. Project 92 on Archaean Geochemistry (A.M. Goodwin – Project Leader, PL) held a field trip in August across the Kapuskasing gneiss belt in conjunction with NASA, and 148 on Quantitative Stratigraphic Correlation (F.P. Agterberg – PL) organized a short course in Dartmouth, N.S. on biochronology and stratigraphic correlation. Project 161 on Sulphide Deposits in Mafic and Ultramafics continued with its compilation of data on Canadian nickel sulphides (A.J. Naldrett – PL), and Project 171 on Circum-Pacific Jurassic (G.E.G. Westermann – PL) held a field meeting in Argentina attended by three Canadians, and was involved in the publication of GAC Special Paper, Jurassic-Cretaceous Biochronology and Palaeogeography of North America. Project 179 on Stratigraphic Methods as Applied to the Proterozoic Record (G.M. Young – PL) had organized a field trip to China.

Canadians were also active in 1983 in Projects 53 (Ecostratigraphy: A.C. Lenz – Cc), 61 (Sea-level Movements: C. Hillaire-Marcel – Cc), 91 (Metallogeny of the Precambrian: G.A. Gross – Cc), 115 (Siliceous Deposits of the Pacific: W.R. Danner – Cc), 156 (Phosphorites: R.L. Christie – Cc), 158 (Paleohydrology of the Temperate Zone: M. Church – Cc), 160 (Precambrian Exogenic Processes: J.A. Donaldson – Cc), 166 (Correlation of Coal-bearing Formations: D.W. Gibson – Cc), 187 (Siliceous Deposits: T.J. Barrett – Cc), 195 (Ophiolites and Lithosphere of Marginal Seas: J. Malpas – Cc), and 197 (Metallogeny of Ophiolites: J. Malpas – Cc).

International Lithosphere Program

C.E. Keen, Chairman CNC/ILP, reported that her committee was active in planning (1) the Lithoprobe seismic profiles to begin in 1984, (2) Project CESAR on the Alpha Ridge, (3) transects now being prepared extending from cratonic North America to the oceanic basins, (4) Decade of North American Geology, and (5) a proposed symposium on mafic dyke swarms.

R.A. Price, President of the International Lithosphere Commission which runs the ILP, referred to ILP symposia held during the recent IUGG Assembly and to others now being organized for Moscow. Publication of their proceedings and of other ILP work is now being arranged, possibly in cooperation with AGU. Because of the low level of funding available, ILC was now arguing the case, with support from IUGS, for a substantial financial allocation from Unesco, a number of whose programs fit within the ILP framework.

International Mineralogical Association

D.G.W. Smith, a member of the IMA Council, reported on the follow-up to the 1982 Varna meeting (publications in preparation), and the plans for the next General Meeting to be held in 1986 in the U.S.A. IMA is organizing several technical sessions for the Moscow Congress, and an attempt is being made to open a number of mineral collections and museums in the U.S.S.R. to participants. Smith also referred to the forthcoming World Directory of Mineralogists, and the possible formation of an International Association for Applied Mineralogy.

International Commission on the History of Geology

W.O. Kupsch, INHIGEO member, described the structure and activities of this IUGS Commission. He explained that Canadian input to INHIGEO had been minimal because CANHIGEO, "supposedly the representative constituent organization" for Canada was only loosely organized. Anyone can join, there are no dues, and the current mailing list includes some 100 names, not all resident in Canada. Kupsch proposes that CANHIGEO be transformed into a structured organization funded securely to cover its costs.

International Union for Quaternary Research

The President of CNC/INQUA, D.A. St-Onge reported that plans for the 1987 INQUA Congress to be held in Ottawa were now well underway, and that an Organizing Committee had been selected under the Chairmanship of N.W. Rutter, who is also a Vice-President of INQUA. A. Dreimanis had been selected as Honorary President of the Congress and J.E. Armstrong, B. Cooke, L. Hamelin, F. Hare, R. Mackay, V. Prest and A. Stalker as Honorary Vice-Presidents, all in recognition of their outstanding contributions to Quaternary Science, A.V. Morgan is the Secretary General.

Ocean Drilling Project

Although as an intergovernmental program ODP did not normally come under the SCIGR purview, a verbal report by M. Keen (Chairman of CGC Marine Geoscience Committee) was presented because a formal agreement linking Canada to the planning stages of ODP was being signed in Ottawa on the day of the SCIGR Meeting. According to this Memorandum of Understanding, Canada will contribute \$250 000 in 1984 to the planning phase. It was anticipated that drilling would begin in late 1984 and that the new drillship would be working in the Labrador Sea in 1985. Keen suggested that additional funds might be obtained if Canada linked with a number of interested developing countries in a Canadian-led consortium, which might be eligible for IDRC/CIDA support for "technology transfer" under the framework of the Law of the Sea.

NRC Committee on International Scientific and Technological Affiliations

R.A. Price (CGC Representative to CISTA) pointed out that IUGS was now the only international scientific union for which NRC was not the Canadian adhering body. He raised the question as to whether the CNC/IUGS should be transferred from the CGC to the NRC so as to preserve uniformity, formalize links to other scientific NGOs, and ensure that CNC/IUGS is treated in the same way as CNCs for other unions. Disadvantages would be the loss of control by CGC and funding by EMR which might be replaced by less favourable levels of support by NRC. The Chairman noted that this issue had also been raised at the 1982 SCIGR meeting when the decision had been taken to remain with the CGC, and this decision was confirmed by the CNC/IUGS in 1983.

Price also referred to the ICSU General Assembly to be held in Ottawa in September 1984, during which there would be a symposium on Global Change, a new interdisciplinary program on the biosphere and geosphere being developed by ICSU for the 1990s.

Decade of North American Geology

J.O. Wheeler, the Canadian Coordinator reviewed plans for the Canadian contribution, which would be the 6th edition of the Geology and Economic Minerals of Canada. A standard geological time-scale was published in *Geology*, September, 1983, and the nomenclature for standard sections on correlation charts was now agreed.

Canadian National Committee for the International Union of Geological Sciences

The main task of the CNC/IUGS during 1983 was the selection on behalf of the CGC of seven delegates and alternates to represent Canada at the quadrennial meetings of the Councils of IUGS and IGC to be held during the 1984 Moscow Congress. The delegation was selected from lists of Canadians planning to attend the IGC submitted by CGC member societies. The main criteria used were: balance in the range of disciplines, knowledge of IUGS and familiarity with Canadian geoscience affairs. The following were selected and agreed to serve. As Chief Delegate and representing Structural Geology and Tectonics – R.A. Price (Alternate – A.R. Berger); for Mineralogy, Petrology and Geochemistry – D.G.W. Smith (J. Malpas); Economic Geology – A.J. Naldrett (A. Laurin); Stratigraphy and Palaeontology – P.J. Lespérance (F. Gradstein); Engineering Geology and Hydrology – J. Locat (B. Hitchon); Petroleum Geology and Sedimentology – M.E. Hriskevich (B. Norford); Quaternary and Geomorphology – A.V. Morgan (I. Smalley).

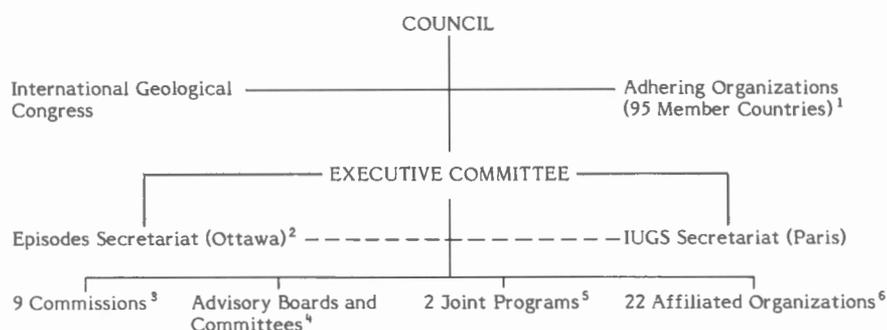
The second meeting of the CNC/IUGS took place in Ottawa on October 19, 1983, immediately following the SCIGR meeting. It was attended by A.R. Berger, F.R. Frey, P.J. Lespérance, J. Locat, A.J. Naldrett, R.A. Price, D.G.W. Smith, A.M. Stalker and M. Vallée. The selection of the Canadian delegation to Moscow was reviewed as were the organization of the Congress and procedures for the delegation. The possibility of affiliation of IUGS to the NRC/CISTA instead of the CGC was discussed and, as in 1982, rejected (see above). A lengthy discussion of the terms of reference for the CNC/IUGS led to the recognition of the necessity of modifying those set out originally by the CGC, but the detailed changes proposed required further thought and the matter was postponed for the 1984 meeting of the CNC/IUGS.

At the annual meeting of the CGC on November 28, 1983, the CNC/IUGS was directed to identify in 1984 sources of funds and to develop guidelines for their allocation for the purpose of supporting the activities of Canadian officers of IUGS bodies and affiliates.

A.R. Berger

INTERNATIONAL UNION OF GEOLOGICAL SCIENCES (IUGS)

Organization Chart



¹ In Canada the adherent is the Canadian Geoscience Council which delegates responsibility to its Canadian National Committee for IUGS. The CGC appoints Canadian national delegates to the Councils of IUGS and IGC which meet during the International Geological Congresses.

² Based at the Geological Survey of Canada.

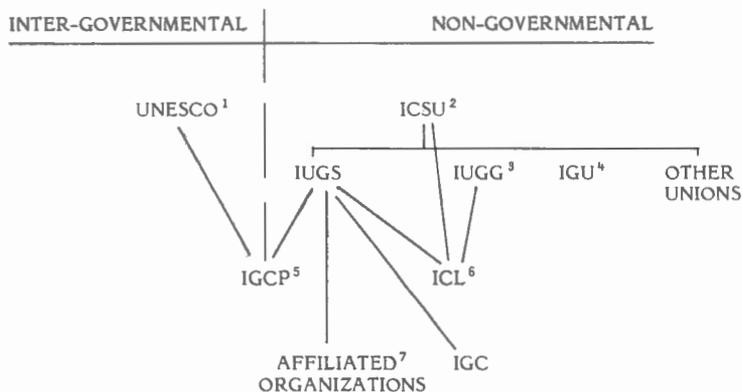
³ Including the International Commission on Stratigraphy and the Commission on Tectonics with active Canadian membership.

⁴ Includes the Advisory Board for Research Development chaired by W.W. Hutchison.

⁵ The International Geological Correlation Programme (IGCP), and the International Lithosphere Program coordinated by the Inter-Union (IUGS, IUGG and ICSU) Commission on the Lithosphere, whose President is R.A. Price.

⁶ Includes many with active Canadian officers and members.

Linkages Between IUGS and Other International Organizations



ICL Inter-Union Commission on the Lithosphere
 ICSU International Council of Scientific Unions
 IGC International Geological Congress
 IGCP International Geological Correlation Programme
 IGU International Geographical Union
 IUGG International Union of Geodesy and Geophysics
 Unesco United Nations Educational, Scientific and Cultural Organization

¹ Represented in Canada by the Canadian Commission for Unesco.

² Represented in Canada by the Canadian National Committee for ICSU, convened by NRC.

³ Represented in Canada by the Canadian National Committee for IUGG, convened by NRC.

⁴ Represented in Canada by the Canadian National Committee of Geographers, convened by NRC.

⁵ Represented in Canada by the Canadian National Committee for IGCP, convened by the Canadian Geoscience Council.

⁶ Represented in Canada by the Canadian National Committee for ILP, convened by CGC and CNC/IUGG.

⁷ Includes INQUA, which also has a direct link with ICSU as a Scientific Associate.

REPORT OF THE SECRETARY-TREASURER

The income for 1983 is down slightly from 1982. This is a result of the distortion which occurred in 1982 due to duplication of payments and dues with the change of the fiscal year, and the decrease in the term deposit interest rate. The expenses for 1983 are up from 1982. This is largely a result of increased payment to the Report Committees and to EdGeo workshops. The total membership of Council's thirteen societies is now nearly 15 000. Fees paid to the Canadian Geoscience Council by the member societies vary from \$140.00 to \$750.00. The average cost of CGC affiliation to the individual member is about 35 cents.

W.G. MacLeod
Secretary-Treasurer

Table 2

CANADIAN GEOSCIENCE COUNCIL BUDGET - 1984

<u>EXPENSES</u>	<u>PROPOSED</u>	<u>APPROVED</u>
Mineral Research Committee	\$	\$16,000.00
Petroleum Research Committee		22,500.00
Quaternary Studies Committee		6,000.00
Marine Geoscience Committee		1,200.00
CNC/IUGS	3,000.00	3,000.00
EdGEO Workshops	13,250.00	13,250.00
International Geological Congress	12,000.00	12,000.00
Secretarial Services, Postage	5,750.00	5,750.00
Printing: Brochures, Booklets	8,000.00	8,000.00
Executive Travel	1,300.00	2,300.00
Council Meetings	1,800.00	1,800.00
Youth Science Foundation	150.00	150.00
AGID and AASC Memberships	200.00	200.00
Miscellaneous	300.00	300.00
Youth Science Fair		<u>500.00</u>
TOTAL		92,950.00
 <u>INCOME</u>		
SIGC Grant		3,000.00
CNC/IUGS Grant		3,000.00
G.S.C. Operating Grant	11,000.00	5,000.00
Provincial Grants	4,000.00	4,000.00
Membership Fees	5,200.00	5,200.00
Interest: Term Deposits	4,000.00	4,000.00
: Savings Account	1,200.00	1,200.00
Publication Sales	9,000.00	9,000.00
CPA Petroleum Research Grant		22,500.00
Mineral Research Grants		16,000.00
EdGEO Donations		<u>5,000.00</u>
TOTAL		77,900.00
 PROFIT (Loss)		 (15,050.00)

W.G. MacLeod
Secretary Treasurer
November 28, 1983

Table 3

CANADIAN GEOSCIENCE COUNCIL
 CONSOLIDATED BALANCE SHEET
 as of September 30, 1983

<u>ASSETS</u>	<u>1983</u>	<u>1982</u>
Chequing Account 230095	\$ 979.22	\$ 603.95
Chequing Account 901-118801	(1,048.88)	478.99
Chequing Account 901-118802	4,237.97	4,008.11
Saving Account 95-09364	19,742.34	22,182.46
Term Deposits	56,486.48	51,918.50
Accounts Receivable	<u>1,253.00</u>	<u>-</u>
TOTAL ASSETS	\$ 81,650.13	\$ 79,192.01
<u>LIABILITIES</u>		
TOTAL LIABILITIES	-	-
ASSETS LESS LIABILITIES	\$ 81,650.13	\$ 79,192.01
<u>CONSOLIDATED STATEMENT</u>		
Balance at Beginning of Year	\$ 79,192.01	\$ 48,217.54
Income less Expenses	<u>2,458.12</u>	<u>30,974.47</u>
BALANCE AT END OF YEAR	\$ 81,650.13	\$ 79,192.01

W.G. MacLeod, Secretary-Treasurer
 November 1, 1983

We have examined the financial records of the Council, Secretary-Treasurer's ledger, cancelled cheques, bank statements, etc., for the year ending September 30, 1983.

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 1983-11-01.

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

N. Collins

L. Slind

Table 4

CANADIAN GEOSCIENCE COUNCIL
STATEMENT OF INCOME AND EXPENSES
FOR THE YEAR ENDING 83-09-30

<u>INCOME</u>	<u>1983</u>	<u>1982</u>
G.S.C. Sustaining Grants	\$11,000.00	\$22,000.00
Provincial Grants	7,000.00	4,000.00
Education Program Donations	3,000.00	6,000.00
Membership Fees	5,543.25	7,706.00
Interest, Term Deposits	4,567.98	8,327.24
Interest, Savings Account	2,185.01	1,993.97
Publication Sales	10,266.00	8,191.46
Reimbursement Paper 80-6	2,669.62	-
EMR Contract No. 1451729	-	4,000.00
TOTAL INCOME	\$46,231.86	\$62,218.67
<u>EXPENSES</u>	<u>1983</u>	<u>1982</u>
Mineral Research Committee	\$ 4,040.12	\$ 4,655.94
Quaternary Studies Committee	5,861.69	389.00
Marine Geoscience Committee	1,144.30	-
CNC/IUGS	3,000.00	3,000.00
EdGEO Workshops	7,500.00	2,800.00
EdGEO Workshop (Thailand)	3,000.00	-
Secretarial Services, Postage	5,405.98	5,748.52
Printing: Brochures, Booklets	9,479.00	4,000.20
: Mineral Research Report	1,426.03	-
Executive Travel	1,092.57	1,192.50
Council Meetings	1,056.64	2,123.63
Youth Science Foundation	150.00	150.00
Miscellaneous	617.41	105.33
G.S.C. Paper 80-6, Part I, typing	-	2,669.62
C.G.C. Annual Report, French Translation	-	2,300.00
Major Project Selection Committee	-	1,482.46
Lithoprobe	-	627.00
TOTAL EXPENSES	\$43,773.74	\$31,244.20
TOTAL INCOME	\$46,231.86	\$62,218.67
<u>INCOME LESS EXPENSES</u>	<u>\$ 2,458.12</u>	<u>\$30,974.47</u>

REPORT ON THE EdGEO PROGRAM, 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 have run from one day to – this year for the first time – 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, or the C.S.P.G. in Calgary, and, in many cases, by Provincial Museums and Departments of Education.

For the first few years the financial support was made possible by grants from the Canadian Geological Foundation. From 1979 on the Council provided the funds from donations solicited from the oil industry. Some 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 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 when organizing one of these workshops that local teachers be involved from the beginning, and the school authorities be aware of the program.

Since 1975 the Geoscience Council has sponsored some 25 EdGEO workshops with attendance 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

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.

P.J. Savage

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 including members is approximately 1500. A newsletter is mailed out quarterly to the members. In addition to regular publications, special volumes are published from time to time.

The AEG sponsors an International Geochemical Exploration Symposium every two years; the next one is to be held April 28 to May 1, 1985 in Toronto, Canada. In the intervening years, regional meetings are held on topics of local or specialized interest. Field trips may be conducted both before and after symposia meetings.

Activities during 1983 included the 10th International Geochemical Exploration Symposium held in Helsinki, Finland in August and a regional symposium addressing problems of geochemical exploration in deeply weathered terrain held in Perth, Australia in May. The Helsinki meeting was jointly sponsored by AEG and the Geochemical Prospecting group of the IUGS. Proceedings of these meetings are typically published in the Journal of Geochemical Exploration. The proceedings of the 9th International Geochemical Exploration Symposium held in Saskatoon, Canada in May 1982 has been published as volume 20. Proceedings of the Perth and Helsinki meetings are scheduled for publication in 1984.

Future region meetings are scheduled for (1) Reno, Nevada in March 1984, (2) Vancouver, Canada in May 1986 and (3) Johannesburg, South Africa in 1986.

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

L. Graham Closs

2. The Canadian Association of Geographers

The most noteworthy item of 1983 was the launching of a new journal. The Operational Geographer, under the editorship of Brenton Barr of the University of Calgary, is intended as a publication aimed specifically at practicing geographers in government, industry and elsewhere. It will be a quarterly journal, wideranging in terms of its content matter and designed to complement the Association's existing journal The Canadian Geographer.

J. Derek Booth

3. The Canadian Geophysical Union

The Canadian Geophysical Union is a joint Division of the Geological Association of Canada and the Canadian Association of Physicists. The objective of the Union is to promote the better understanding of the science of geophysics throughout Canada.

The Union's annual meeting was held jointly with GAG and MAC at the University of Victoria in May, 1983. Papers on the results of the COCRUST 1977-1982 crustal seismic experiments and several electromagnetic, earthquake and rheological studies comprise the main topics of the geophysical sessions.

A major immediate aim of the Union is to develop closer ties with other geophysical or related scientific organizations both nationally and internationally. A formal information exchange program was developed with the American Geophysical Union and the European Geophysical Society. The Union meets in 1984 with the Canadian Meteorological and Oceanographic Society in Halifax and in 1985 with Canadian Society of Exploration Geophysicists in Calgary.

In 1983, CGU awarded the J. Tuzo Wilson medal for outstanding contribution to Canadian geophysics to Dr. J.D. Gough.

Z. Hajnal

4. The Canadian Geotechnical Society

In 1983, the Canadian Geotechnical Society had about 1200 members while the Engineering Geologist Division's membership counted only 312 members compared to the 318 registered the previous year.

In June 1983, the Society held its 36th Annual Congress in Vancouver in conjunction with the Pan-American Conference on Soil Mechanics and Foundations where one day was set aside for the Society's annual meeting. Many local chapters organized seminars on various aspects of the geotechnical field. Among the most noteworthy were those organized by the Edmonton chapter and dealing with compaction and "geotextiles" which respectively drew audiences of 250 and 150 spectators.

As usual, the Society took this opportunity to name the recipient of the Legget prize which this year went to Jack Clark. This prize was awarded in recognition of Mr. Clark's work in and contribution to the Canadian geotechnical field. As for the Engineering Geology Division, it awarded the Thomas Roy prize to this year's first prize winners, Dennis Moore and Alan Imrie for their excellent publication entitled "Rock Slope Stabilization at the Revelstoke Dam site".

During 1983, the Canadian Geotechnical Society sponsored two speakers on what is generally referred to as the Canadian circuit. K.Y. Lo travelled to Western Canada last spring to discuss problems related to rock mechanics; G.G. Meyerhof, on the other hand, travelled across Canada to introduce ideas dealing with design, using the limit state in the field of geotechnical engineering.

In 1983, the Canadian Geotechnical Society and the U.S. National Society of the International Society of Soil Mechanics and Foundation Engineering jointly prepared an information circular entitled "Geotechnical News". The upcoming reunion will therefore confer a North-American dimension to this publication. Still in 1983, the Canadian Institute of Engineers, within which the Canadian Geotechnical Society plays an important role, introduced significant organizational changes. Recently, the Canadian Institute of Engineers was transformed into a federation regrouping different societies, one of which is the Canadian Geotechnical Society. These changes should lead to sounder management of all societies, some of which now face serious financial difficulties.

The 37th annual meeting of the Canadian Geotechnical Society will be held from September 17 to 21, 1984, in Toronto, as part of the International Landslide Symposium.

Jacques Locat

5. Canadian Quaternary Association

The Canadian Quaternary Association was founded in 1980 to bring together members of the various disciplines working in the Quaternary, and to serve their interests. At present, it represents more than twenty disciplines, as diverse as geology, paleontology, biology, geography, engineering, climatology, and pedology. The first few years were a period of recruitment of members, planning, finding out the wishes of the members, and determining our relations with other groups and associations. That period has now largely ended, membership stands at about 500, and during the summer of 1983 the proposed Constitution of the Association was approved overwhelmingly by the members.

Elections for the first Council of the Association were also held during the summer of 1983, and subsequently the Council installed an Executive to replace the interim one emplaced at the founding of the Association. One of the first tasks of the Council undoubtedly will be to put the Association on a more solid financial basis. Under the new Constitution, councillors are elected regionally, with the country divided into five regions to ensure representation from all parts; all five regions are represented on the Executive.

A biennial meeting was held in conjunction with the "York Symposium" in Toronto in May, 1983. The next one is planned for Lethbridge in late summer of 1985; field trips will be held in conjunction with it. Newsletters have been published intermittently, as finances permitted, and it is expected they will soon be issued on a more regular basis. The new secretary-treasurer, Jacques Thibeault of the Department of Natural Resources, Province of New Brunswick, Fredericton, N.B. is now handling the newsletter, and contributions for it can be sent to him.

The Association is looking forward to the next congress of the International Association for the Quaternary, which will be hosted by Canada, in Ottawa, in 1987.

Archie Stalker

6. CSEG Report for Canadian Geoscience Council 1983 Annual Report

The Canadian Society of Exploration Geophysicists is a very active society with approximately 2000 members, the greatest percentage of which reside in Calgary, Alberta.

In addition to regular noon luncheon meetings, at which the attendance is generally 800-900, an annual journal documenting current geophysical processing, interpretation and data acquisition techniques, is published.

Our relationship with the CGC has been restructured in the past year in order to ensure continuity and allow the CSEG to participate to the greatest extent. A CSEG Committee has been established under a Chairman whose term will extend for a two-year period. A Vice-Chairman and the current President of the CSEG will be the other two members of the Committee. If neither of these can attend the Geoscience Council meetings, the Past President will be designated as an alternate.

The Chairman of this committee also chairs an ad hoc committee, which was established in the past year to provide industry input into the Lithoprobe project. This will be an ongoing, long-term commitment for the CSEG.

This has been another difficult year for the petroleum and geophysical industries. The decrease in industry cash flow, precipitated initially by the introduction of the National Energy Program in October of 1980, was accelerated as a result of the world economic recession, which was reflected in high interest rates and reduced demand for both oil and gas. Shut-in Canadian crude production consequently further aggravated the situation.

Certain positive initiatives, however, have been taken by both levels of government over the past few years. Activity levels will increase. The boom days of 1980 will probably not materialize again but the industry will recover.

Because the livelihood of our industry is affected in such a major way by government policy and legislation, this Society has placed more emphasis this year on geophysical/government relations. Numerous meetings and continuing dialogue with both levels of government have been initiated and are ongoing. Government involvement with the oil and gas industry is a reality of doing business in Canada today. It therefore behooves us to take the initiative and present our point of view.

The Society has been active not only politically and technically but also socially; it has, in summary, been a very successful year.

V.A. Nielsen

7. Canadian Society of Petroleum Geologists

This past year marked the tenth anniversary of the Society as the Canadian Society of Petroleum Geologists and as such it seemed quite appropriate for the Executive to approach matters from an introspective point of view. More precisely, we chose to critically examine our progress in achieving our national goals as related to our stated objectives as a society and, coincidentally, to improve our methods of conducting our affairs. The process of self-examination of our recent past and present activities and commitments had actually been initiated earlier, as part of a Special Committee's three-year review to update our Manual of Operations. As a result of this process, many specific recommendations to streamline our operations have been proposed, not the least of which has been the retiring of a significant number of defunct committees and furthering the implementation of modern business practices.

Present activities were again scrutinized when future commitments were reviewed during an exercise whereby most committees, divisions, and liaisons were challenged to expand our national character and purpose by finding ways of increasing national participation and influence through innovative projects, and explore ways to participate on an international basis. It may be several years before the results of these particular efforts materialize; however, from the response, it is readily apparent that there has been a shift in interest (for many reasons) from the mammoth, multi-year type of project to the short term ventures which have relatively smaller manpower requirements but a resulting high profile. Examples of the latter include posters illustrating various stratigraphic, structural or sedimentologic themes, and cross-sections of various Canadian sedimentary basins.

The review process led to a number of significant developments and changes including the realization that not only is more long term planning for conventions required but that it would be highly desirable, as a national entity, to sometimes have our main convention outside of Calgary, and in co-operation with other societies. Therefore, the proposal to have the CSPG's National Convention in 1985 in Edmonton with the Petroleum Section of the Canadian Institute of Mining and Metallurgy has been ratified. In addition, dialogue has been initiated with other societies to sponsor a similar joint convention somewhere in eastern Canada later in this decade. Although the 1986 convention theme and location has not been decided, the Executive approved staging the Second International Symposium on the Devonian System in 1987, thereby coinciding with the twentieth anniversary of the first Devonian Symposium.

On the national scene, the Atlantic Geoscience Society became an affiliated society and we have pledged ourselves to discussing possible mutual programs. The importance of the National Liaison Committee grew and for the first time it met twice, in Toronto with the President and in Calgary with both the President and Vice-President. The amount of discussion and the number of national issues has grown to the point that future Calgary meetings will be extended over two days to ensure that the Committee has a proper amount of direct interaction with the Executive. Steps were taken to make the Bulletin bilingual (English-French), in that abstracts are now bilingual and it is now possible to publish papers entirely in French.

Of all the national issues, perhaps the easiest to deal with has been the re-assessment of our professional support for geology students. In the past, it has been generous when compared to other societies, but unfortunately it has been primarily directed to undergraduates. Our goal in 1983 has been to further promote the science of geology in Canada primarily through increasing financial support in awards to graduate students. These efforts were accomplished by: (1) 3-year sponsorship of the intermediate gold medal for physical sciences at the National Youth Science Fair; (2) increasing the monetary value of present undergraduate and graduate student awards; (3) creating three \$1000 yearly graduate scholarships in geology, one each for Eastern, Central and Western Canada; (4) initiating \$1000 graduate scholarship in marine geology, in response to the need identified by the Canadian Geoscience Council's report on the status of Marine Research in Canada; and (5) further strengthening of the Student Industry Field Trip Trust Fund with a \$10 000 donation from general revenues. This support is a professional responsibility but surely the level of our participation relative to the size of the society is extraordinary and should be a source of pride to our membership.

Membership totalled 3813 in 1983, and although this is almost double our membership level of 10 years ago, it is not a significant increase over 1982 and is below the rate of growth experienced in previous years. Obviously, the current economic situation had a bearing on this and a number of people chose not to renew their membership. Even though those who left were essentially replaced by incoming applicants, present trends in hiring very few new graduates, coupled with erosion of our manpower base through various types of retirements, means our anticipated membership growth rates will not materialize. Such a scenario would seriously affect the capability of our volunteer membership to maintain even our present activities. To help reverse this possible trend, a concerted effort will be made in 1984 to increase membership outside of Alberta and especially in foreign countries.

In 1983, the Society acquired additional adjacent office space to store the volume of books currently being sold over the counter. The office, which is well staffed and equipped, has been functioning well for the past year. For the first time, the Executive Committee held its regular meetings and conducted the affairs of the Society from the boardroom in the office.

The issue of professionalism and the concept of professional registration and certification especially with the Association of Professional Engineers, Geologists and Geophysicists of Alberta has always been a major issue. This year we chose to air specific issues through the CSEG/CSPG/APEGGA Committee. However, it would appear that, at least for geologists, the major problem now is registration portability and we feel that it is necessary to address these concerns before restrictive legislation within various provinces can be passed. Therefore, we will be investigating with our societies the concept of national registration in the coming year.

Undoubtedly the most successful event of 1983 was the staging, solely by the Society, of the Conference on the Mesozoic of Middle North America. This conference, with its technical program, field trips, poster sessions, core conference, short courses and social programs, offered a great deal for the 1207 registrants interested in the exploration of hydrocarbons and coal in Mesozoic rocks. Originally budgeted to break even the conference was also a great financial success.

In summary, over the past ten years the Society has collectively made enormous strides in meeting the responsibilities of being a national society and has conducted itself in a most professional manner. However, there still remains the continual challenge of finding new ways of providing services to our membership outside of Alberta and involving these members in the activities of the Society. The CSPG has established a tradition of technical excellence in petroleum and related aspects of geology and can only further this reputation through its international efforts. Quite frankly, if this momentum should cease we will no longer be a national entity.

I.A. McIlreath

8. The Canadian Society of Soil Science

The Canadian Society of Soil Science held its annual meeting at Nova Scotia Agricultural College, Truro, N.S. from July 10-14, 1983, in association with the Agricultural Institute of Canada annual meeting. The program consisted of six technical sessions with 51 papers submitted by members. Topics included contributions reflecting many aspects of soil science. Of particular interest were presentations by local members on physical and economic aspects of agriculture in Nova Scotia.

The Society honoured one member with recognition as a Fellow of The Canadian Society of Soil Science. A very enlightening joint field trip for agricultural engineers and soil scientists was held in the Truro area. As soils and agriculture of significant areas of this province are affected by the strong tidal bore of the Bay of Fundy, historic and present attempts to ameliorate this were observed. The old French dyke and "Aboiteau" system of drainage and land protection evoked great interest. As soil may be considered the planet's environmental filter as well as the source of much of its food supplies, the society encourages membership by agricultural and non-agricultural interests alike.

9. The Canadian Well Logging Society

The Canadian Well Logging Society enjoyed another fruitful year during 1983. Membership continued relatively constant with 700 individual members and 60 corporate members. Technical Luncheon meetings were held monthly at the Westin in Calgary, with speakers on a wide variety of formation evaluation topics.

Highlight of the year was the Society of Professional Well Log Analysts 24th Annual Logging Symposium held in Calgary June 27-30. This symposium was hosted by the C.W.L.S. in conjunction with the 9th C.W.L.S. Formation Evaluation Symposium. General Chairman was E.T. Connolly. A total of 960 delegates attended with 54 excellent papers being presented during the four-day joint symposium.

A committee has been formed under the chairmanship of John Ellis to update the C.W.L.S. Water Resistivity Catalogue. Special emphasis will be placed on incorporating the latest water resistivity values from frontier areas. Publication is expected during spring of 1984.

Objective of the society continues to be the furthering of the formation evaluation skills of its members through regular technical meetings and bi-annual symposium.

10. The Geological Association of Canada

This proved to be an eventful year in the history of the Geological Association of Canada with the move of headquarters to Memorial University of Newfoundland in St. John's. Alan Morgan thereby ended his tenure of the Secretary-Treasurer's position in May 1983 after eight years of service, at which time total membership stood at 2797. Membership rose to 3001 by the end of December 1983. On behalf of all members of the Association, President Hugh Morris presented Alan with a wood carving during the 1983 Annual Meeting held in Victoria B.C. At this same meeting, which was extremely successful and well attended by some 1200 registrants, the Association also expressed its gratitude to headquarters staff, Heather Sokoloskie and Nancy Riley, for their long service while headquarters resided at Waterloo.

The Logan Medal for 1983 was presented to Dr. John (J.O.) Wheeler of the Geological Survey of Canada for his outstanding services to Canadian earth sciences, especially in regional geological studies of the Rocky Mountains and western Canada. The Past President's Medal was presented to Dr. Andrew Miall of the University of Toronto in recognition of his research into sedimentary basin analysis. The Mineral Deposits Division of the Geological Association of Canada awarded the Duncan R. Derry Medal to Dr. R.W. Hutchinson of the University of Western Ontario for his considerable contributions to the study of metal sulphide deposits and their origins.

There was one Special Paper produced in 1983. Special Paper 26 Glacial Lake Agassiz, edited by J.T. Teller and L. Clayton, was published in July.

Perhaps the highlight of 1983 was the filing of documents of Incorporation in November, whereupon the Geological Association of Canada became a fully incorporated organization. Under this new guise, the Association hopes to operate in a more effective way both administratively and financially and, together with its sections and divisions, plans to increase the status of membership services and publications it offers.

J. Malpas

11. The Mineralogical Association of Canada

The Mineralogical Association of Canada experienced another successful year in 1983. The Association's quarterly journal, The Canadian Mineralogist, consisted of 728 pages and included 46 technical papers as well as assorted book reviews, proceedings, etc. Highlights were Part 2 devoted to The Crystal Chemistry of the Amphiboles by F.C. Hawthorne and Part 4, containing a group of five papers on Mineralogical and Geochemical Aspects of the Disposal of Nuclear-Fuel Waste which had been presented at a symposium sponsored by the Mineralogical Association of Canada and held in conjunction with the annual GAC/MAC conference in Winnipeg in May, 1982. An improvement in print quality in the journal was introduced by a change to computer-generated type setting.

Total membership in late 1983 stood at 2073 of which 1380 were individuals. The Association continues to maintain a sound financial position which has meant that membership fees have been maintained at their 1978 level despite rapid inflation in publication and other costs.

The Association's 28th annual meeting was held in conjunction with the Geological Association of Canada and the Canadian Geophysical Union on May 11-13, 1983, at the University of Victoria, Victoria, British Columbia. The Association sponsored four special technical sessions during the

meeting on the topics Modern Advances in Geochemical Thermodynamics, Deep Ocean Mineral Deposits and the Cyprus Project, Applications of Lead Isotopes in Petrogenesis and Ore Genesis, and Their Implications for Exploration, and Stable Isotopes in the Study of Sediment-Hosted Mineralization. Of particular interest to MAC members in the general programme were two sessions in crystallography/mineralogy, two sessions in geochemistry, and four in economic geology.

The ninth in the Association's continuing series of short courses was held prior to the annual meeting. The course was organized and coordinated by D.F. Sangster and D. MacIntyre and dealt with the topic Sediment-hosted Stratiform Lead-Zinc Deposits. The course attracted 130 registrants, an encouraging number in these economically restrained times, and produced a very excellent handbook.

Two of the Association's members were honoured for their contributions to science. Gabrielle Donnay was the second recipient of the Past President's Medal which is awarded annually to individuals having a record of distinguished scientific contributions to mineralogy and the allied sciences in Canada. J.R. Weidner received the Hawley Award in recognition of his paper entitled Iron oxide magmas in the system Fe-C-O published in Volume 20 of The Canadian Mineralogist.

S.M. Barr, F. Hawthorne

REPORTS OF THE ASSOCIATED MEMBER SOCIETIES AND REPORT COMMITTEES

1. *The Geological Survey of Canada*

The Geological Survey's work can be described in terms 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.

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, extraction and use of these resources.

Organization

The Geological Survey of Canada in 1983-84 was organized into nine divisions, three of which are located in regional centres and a headquarters office in Ottawa.

During the 1983-84 fiscal year, the Geological Survey of Canada had a full-time equivalent staff of 762 and a budget of 53.8 million dollars; but significant progress was made in achieving additional breadth and depth in Geological Survey of Canada programs by establishing mutually beneficial cooperative projects with the universities, industry, and other government agencies at the federal, provincial, and international levels.

Cordilleran Geology Division

This division with offices in Vancouver and at the Pacific Geoscience Centre, Sidney, B.C. is responsible for studying the composition, age, distribution and origin of the rocks of most parts of British Columbia and Yukon. Studies are carried out to assist in assessing mineral and hydrocarbon potential, to guide mineral exploration and to aid in land-use development. The unit in Sidney is concerned with studies of the Pacific Continental Shelf and adjacent areas. The Division's resources in 1983-84 were 46 person years and \$3.2 million.

Institute of Sedimentary and Petroleum Geology (ISPG)

The ISPG, Calgary Alberta, is responsible for collecting information on the sedimentary basins of western and Arctic Canada which occupy one third of the area of the country and contain most of Canada's oil, natural gas and coal resources. The area of interest includes most of Alberta, southern Saskatchewan, southwestern Manitoba, the Arctic Islands and the western mainland of the Northwest Territories. The Institute staff are also responsible for preparing estimates of Canada's oil and natural gas resources, for developing methods for making such estimates and for maintaining a repository of samples, cores and other data derived from industry's work in Canada Lands. In 1983-84 the ISPG budget was \$11.7 million with an establishment of 147 person years.

Precambrian Geology Division

Located in Ottawa the staff of this division study the bedrock geology of the mineral-rich Canadian Shield and carry out geochronological, petrological and paleomagnetic studies, studies that are used by industry in the search for mineral resources, and by government in evaluating resource potential. Volcanology and radioactive waste disposal are also studied. Last year the division operated with \$5.0 million and 74 person years.

Economic Geology Division

Processes leading to the formation of mineral deposits are studied by the staff of this division who also interpret the relationships of mineral deposits to the geological characteristics of Canada's principal geographic and geological regions. Such work is used to integrate regional geology, mineral deposit data and concepts concerning the formation of mineral deposit data and concepts concerning the formation of mineral deposits to determine the probable distribution and potential abundance of Canada's non-hydrocarbon mineral resources. The division operated in 1983-84 with \$2.9 million and 50 person years.

Resource Geophysics and Geochemistry Division

This division serves as a national centre for research and development into geophysical and geochemical methods relating to metallic mineral exploration and economic, regional, engineering and environmental geology. Technologies developed are tested and applications demonstrated with the aim of making the procedures available to the public as well as for governmental use. In 1983-84 the division had 96 person years and a budget of \$8.0 million.

Terrain Sciences Division

This division studies the geology of the unconsolidated materials of the Canadian landmass, the processes that modify the landscape, and natural terrain hazards that may seriously affect our use of the land. In addition studies concerned with Nuclear Fuel Waste Management are centred in the division. In 1983-84 the division comprised 65 person years and a budget of \$3.6 million.

Geological Information Division

Public communication of the results of the Survey's scientific programs 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 this Division, which also operates Canada's largest earth science library. The Division had a budget of \$4.5 million and 96 person years in 1983-84.

Central Laboratories and Technical Services Division

The Division provides analytical services and mineralogical expertise needed by other divisions of the Survey, and conducts related research. In 1983-84, it operated with a budget of \$2.5 million and 45 person years.

Atlantic Geoscience Centre (AGC)

AGC, housed at the Bedford Institute of Oceanography, Dartmouth N.S., carries out geological and geophysical studies in the east coast offshore and arctic and geological mapping of Canada's coasts with the exception of the Pacific coast. Work in the Beaufort Sea, Arctic Islands channels and Arctic Ocean are shared with scientists at the Pacific Geoscience Centre, Sidney B.C. AGC's 1983-84 budget was \$8.1 million and it had 102 person years.

Headquarters

The Headquarters in Ottawa provides management direction, program administration, financial and personnel services to the Survey, coordinates certain branchwide projects such as compilation of the 1:1 000 000 scale "Geological Atlas of Canada" and the International Relations Office and administers the Survey's input to the research agreements program. In 1983-84 Headquarters operated on a budget of \$4.2 million and had 41 person years.

Some Achievements in 1983

The Geological Survey of Canada and the Earth Physics Branch have collaborated with the United States Geological Survey and scientists from Canadian and U.S. universities in extending a deep seismic reflection profile from Maine into Quebec, to probe successfully the deep structure beneath the Appalachian Mountains. They have also collaborated with several Canadian university groups in launching the first phase of Lithoprobe, a national multidisciplinary earth science research program aimed at extending knowledge of the geology of Canada into the third dimension – depth.

Systematic field investigations in the northwestern Canadian Shield and the Canadian Cordillera, during the past decade that involved participation by several university groups, and collaboration with specialists in the fields of geochronology, crustal geophysics and stratigraphy, have resulted in fundamental new insights on the application of plate tectonic theory to the elucidation of the origin and evolution of the continental crust, which provides virtually all of our mineral and mineral fuels resources, as well as the space in which we live.

Fundamental research on the origin and evolution of sedimentary basins and the fossil fuel resources that they contain is being organized as a multidisciplinary team effort, involving stratigraphers, sedimentologists, geophysicists, paleontologists and organic geochemists. The resulting basin analyses have been used as a basis for appraising undiscovered petroleum and natural gas resources, some of which have been incorporated in "Oil and Natural Gas Resources of Canada, 1983", an updated summary of Canada's hydrocarbon resources that was published early in 1984 as GSC Paper 83-31.

Basic research on mineral deposits and regional metallogeny involves collaboration with the mineral exploration industry, provincial geoscience agencies and universities, and has provided the basis for mineral resource appraisals of proposed northern national parks. Cooperative studies of west coast hydrothermal sulphide deposits were initiated in 1983.

Geophysical and geochemical technology developed by the Resource Geophysics and Geochemistry Division and drift prospecting technology developed by the Terrain Sciences Division have been used in special geoscience programs aimed at stimulating mineral exploration and development in several regions of Canada. Several major advances were made in transferring GSC technology to the private sector for commercial use.

The Geological Information Division, which is responsible for maintaining the national geoscience library, as well as the publication of the Survey's reports and maps has completed arrangements with the Geological Society of America for publication of the next edition of the "Geology of Canada" and the accompanying geological and related thematic maps as part of a set of 27 volumes synthesizing the geology of North America and adjacent ocean basins.

2. Quaternary Geoscience in Canada

Three meetings of the C.G.C.'s Committee on Quaternary Geoscience have been held: December 8, 1982, in Ottawa; May 9, 1983 in Victoria and November 25/26, 1983 in Ottawa. The membership of the committee is now: J. Brian Bird (Chairman), E. Christiansen, C. Hillaire-Marcel, J. Locat, A. Morgan, P. Mudie, A. Stalker and D. St-Onge. A 17-page questionnaire has been approved and a French translation is in progress. It is anticipated that this will be mailed to over 800 Quaternary geoscientists in January. The next meeting of the Committee in London in May, 1984 will be the first occasion to evaluate responses. Time frame for the whole study has now been identified more closely. By November, 1984 all survey data will be available. Committee members will then interview a sample of Quaternary geoscientists on a regional basis to check survey data and preliminary conclusions of the committee. During 1985 the report will be compiled and written by Brian Bird and first complete draft is to be presented to C.G.C. at end of 1985. All Quaternary geoscientists are urged to participate as fully as possible in filling in the questionnaire and in sending suggestions to the new Chairman, Brian Bird. There will be interaction and exchange of information between this Committee, the C.G.C. Advisory Committee on G.S.C. Output in Quaternary and Engineering Geology and the Canadian Geotechnical Society's Committee on Geotechnical R. & D. Needs in Canada.

Olav Slaymaker

3. Geoscience R&D in the Petroleum Industry

The major objective of the study is to identify the nature and scale of geoscience R&D activity in the petroleum industry in Canada and the organizational structures under which it is conducted. The effort in 1982 was devoted to finding funds for the study and obtaining industrial involvement. The Canadian Petroleum Association has agreed to support the study and fund part of it. Matching funds are expected from Department of Energy, Mines and Resources. With funding secure, it is anticipated that the study will be conducted in 1984 with a report ready in early 1985.

N.R. Morgenstern

CANADIAN GEOSCIENCE CALENDAR

(Geoscience Meetings to be held in Canada, and International Meetings of broad interest)

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.

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 Street 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.: Mr. Heikki Liminion, Newmont Exploration, 33 Yonge Street, Toronto, Ontario, M5E 1T2.

CANADIAN SOCIETY OF EXPLORATION GEOPHYSICISTS

The Society meets once a month from September through June. These luncheon meetings are held at the Westin Hotel Calgary, 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.

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 Calgary 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 Station 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.

January 20-21, 1984

The Atlantic Geoscience Society's Biennial Colloquium on Current Research in the Atlantic Region; Amherst Wandylyn Motor Inn, Sackville, New Brunswick. Inf.: Laing Ferguson, Mount Allison University, Sackville, N.B., E0A 3C0.

March 4-7, 1984

Prospectors and Developers Association 52nd Annual Convention, Royal York Hotel, 100 Front Street West, Toronto, Ontario.

Inf.: Ms. Greta Frith, Prospectors and Developers Association, Suite 219, 159 Bay Street, Toronto, Ontario, M5J 1J7.

April 15-19, 1984

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

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

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 6-8, 1984

Recent advances in the geochemistry of ore deposits, sponsored by the Mineral Exploration Research Institute of Montreal.

Inf.: Dr. R.P. Taylor, Dept. of Geology, University of Montreal, C.P., 6128, succ. A, Montreal, Canada, H3C 3J7.

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 13-20, 1984

23rd Annual Canada Wide-Science Fair, Saint Mary's University, Halifax, Nova Scotia.

Inf.: Alexander Flack, General Chairman, 948 Greenwood Avenue, Halifax, Nova Scotia, B3H 3K9.
Tel: (902) 421-2456.

May 14-18, 1984

American Geophysical Union Spring Meeting, Cincinnati, Ohio, U.S.A.

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

May 14-19, 1984

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

May 15-18, 1984

Canadian Society of Exploration Geophysicists National Convention; Calgary Convention Center, Calgary, Alberta.

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

May 20-23, 1984

1984 A.A.P.G. Annual Meeting, San Antonio, Texas.

Inf.: Convention Department at A.A.P.G., P.O. Box 979, Tulsa, Oklahoma 74101, (918) 584-2555.

May 28-June 1, 1984

Canadian Geophysical Union 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; 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; University of Calgary, Calgary, Alberta.

Inf.: Dr. John Knight, PetroCanada, Box 2844, Calgary, Alberta, T2P 3E3.

June 17-20, 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; Calgary, Alberta.

Inf.: Mr. T. Hawkings (CPSG 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.

Inf.: EERI - 8 WCEE, 2620 Telegraph Avenue, Berkely, CA, 94704, U.S.A.

August 4-14, 1984

27th International Geological Congress, Moscow, U.S.S.R.

Inf.: N.A. Bogdanov, Committee of the 27th IGC, Staromonetny per. 22, Moscow 109180, U.S.S.R.

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.

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 5-8, 1984

Geological Society of America, Annual Meeting, Reno, Nevada.

Inf.: S.S. Beggs, GSA, P.O. Box 9140, 2200 Penrose Place, Boulder, CO 80301, U.S.A.

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.

March 10-14, 1985

Prospectors and Developers Association 53rd Annual Convention; Royal York Hotel, 100 Front Street West, Toronto, Ontario.

Inf.: Ms. Greta Frith, Prospectors and Developers Association, Suite 219, 159 Bay Street, Toronto, Ontario, M5J 1J7.

April 21-24, 1985

CIM Annual General Meeting; 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 and Resources, Victoria, B.C., V8N 2N5.

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

April 28-May 1, 1985

11th International Geochemical Exploration Symposium (IGES); Toronto, Ontario.

Inf.: Bill Coker, Kidd Creek Mines Ltd., 357 Bay Street, Suite 300, Toronto, Ontario, M5H 2T7.
(416) 869-1200.

May 7-10, 1985

Canadian Society of Exploration Geophysicists; National Convention Calgary Convention Center, Calgary, Alberta.

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

May 15-17, 1985

Geological Association of Canada - Mineralogical Association of Canada, Annual Meeting, Fredericton, New Brunswick.

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

May 24-26, 1985

National Association of Geology Teachers meeting; Erindale College, Toronto.

Inf.: Dr. Ed Freeman, Royal Ontario Museum, Avenue Road and Bloor Streets, 100 Queen's Park, Toronto, Ontario.

May 27-31, 1985

American Geophysical Union; Spring Meeting; Baltimore, Maryland.

Inf.: Meeting AGU, 2000 Florida Ave., NW, Washington, D.C. 20009, U.S.A.

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.

October 28-31, 1985

Geological Society of America Annual Meeting, Orlando, Florida.

Inf.: S.S. Beggs, Geological Society of America, P.O. Box 9140, 330 Penrose Place, Boulder, Colorado, 80301, U.S.A.

March 9-12, 1986

Prospectors and Developers Association 54th Annual Convention; Royal York Hotel, 100 Front Street West, toronto, Ontario.

Inf.: Ms. Greta Frith, Prospectors and Developers Association, Suite 219, 159 Bay Street, Toronto, Ontario, M5J 1J7.

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.

In.: 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 19-21, 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.

March 8-11, 1987

Prospectors and Developers Association 55th Annual Convention Royal York Hotel, 100 Front Street West, Toronto, Ontario.

Inf.: Ms. Greta Frith, Prospectors and Developers Association, Suite 219, 159 Bay Street, Toronto, Ontario, M5J 1J7.

May 25-27, 1987

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

Inf.: Dr. W.O. Kupsch, Department of Geological Sciences, University of Saskatchewan, Saskatoon, Saskatchewan, S7N 0W0. Tel: (306) 343-3175.

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.

August 1987

International Quaternary Association (INQUA) Meeting, tentatively scheduled for the first week of August in Ottawa.

Inf.: Dr. Alan Morgan, Department of Earth Sciences, University of Waterloo, Waterloo, Ontario, N2L 3G1. Tel: (519) 885-1211.

September 1987

Sixth International Congress on Rock Mechanics, sponsored by the International Society for Rock Mechanics, tentatively scheduled for the 1st week of September, 1987.

Inf.: Dr. Branko Lavanyi, Dept. of Civil Engineering, Ecole Polytechnique, P.O. Box 6079, Station A, Montreal, Quebec, H3C 3A7. Tel: (514) 344-4804.

March 6-9, 1988

Prospectors and Developers Association 56th Annual Convention held at the Royal York Hotel, 100 Front Street West, Toronto, Ontario.

Inf.: Ms. Greta Frith, Prospectors and Developers Association, Suite 219, 159 Bay Street, Toronto, Ontario, M5J 1J7.

1988

GAC/MAC Joint Annual Meeting, Montreal, Quebec.

May 1989

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 5

CONFIRMED SIGNIFICANT HYDROCARBON DISCOVERIES 1981-83

Region/Area	Well Name	Discovery Year	Formation/Type	Operator/Participants
Arctic Island	Cisco B-66 77°25'01.3"N 106°56'22.5"W	1981	Jur./Oil/Gas	Panarctic et al.
Arctic Island	McLean I-72 77°31'39.56"N 103°56'22.5"W	1981	Tri./Gas	Panarctic et al.
Arctic Island	Skate B-80 77°49'13.44"N 104°57'19.75"W	1981	Jur./Tri/Gas/Oil	Panarctic et al.
Beaufort Sea	KoaKoak O-22 70°21'54.50"N 134°06'48"W	1981	Oil	Dome
Grand Banks	South Tempest G-88 47°07'18"N 47°57'32"W	1981	Oil	Mobil et al.
Grand Banks	Hebron I-13 46°32'34.50"N 48°31'46.70"W	1981	Oil	Mobil et al.
N.E. British Columbia	Gaylor C-14-D-94-B-1	1981	Tri./Gas	Quasar et al.
Alberta	Evi 5-36-86-13W5	1981	Dev./Oil	Texas Pacific et al.
Alberta	CYN PEM 6-29-51-10W5	1981	Cret./Oil	Texaco
Alberta	Shekilie 16-6-118-8W6	1981	Dev./Oil	Cdn. Development Corporation
Manitoba	Waskada 1-25-1-26W1	1981	Miss./Oil	Omega Hydrocarbons
Alberta	Rumsey 9-36-34-21W4	1982	Dev./Oil	Gulf
Alberta	Fenn West 6-12-36-21W4	1982	Dev./Oil	Tripet et al.
Alberta	Crystal 6-6-432-3W5	1982	Cret./Oil	Westocast et al.
Alberta	Crimson 7-5-38-8W5	1982	Cret./Gas	Gulf et al.
Alberta	Amber 4-8-115-7W6	1982	Dev./Oil	Chevron-Irving
Beaufort Sea	Kenalooak J-94 70-43-44N 133-58-28W	1982	/Gas	Dome et al.

Table 5 (con't)

Region/Area	Well Name	Discovery Year	Formation/Type	Operator/ Participants
Beaufort Sea	Kiggarik A-43 69°52'10.31"N 135°55'17.08"W	1982	Gas	Gulf et al.
Beaufort Sea	West Atkinson L-17 69°46'33.86"N 132°04'32.40"W	1982	Oil	Esso et al.
Grand Banks	Nautilus 46°51'2.9"N 48°44'20.4"W	1982	Oil	Mobil et al.
Scotian Shelf	Banquereau C-21 44-10-18N 58-33-59W	1982	Cret./Gas	PetroCan et al.
Alberta	Homrim 6-22-42-2W5	1983	Dev./Oil	Chiefco
Alberta	Sturgeon Lake S. 1-9-69-21W5	1983	Dev./Oil	Shell
Alberta	Sawn Lake 8-32-91-12W5	1983	Dev./Oil	Roxy et al.
Alberta	Millarville 6-32-22-4W5	1983	Miss./Gas	Gulf et al.
British Columbia	Sikanni A-32-I-094-G-03	1983	Miss./Gas (Debolt)	Remington
Scotian Shelf	Glenelg J-48 43-37-37.5N 60-06-26W	1983	Gas	Shell/ PetroCan et al.
Scotian Shelf	S. Venture 0-59 43-58-53N 59-38-09W	1983	/Gas	Mobil et al.
Scotian Shelf	Arcadia j-16 44-05-43.6N 59-31-59W	1983	/Gas	Mobil et al.
Scotian Shelf	Bluenose G-47A 44°06'22.6"N 59°21'22.6"W	1983	/Gas	Mobil et al.
Scotian Shelf	Olympia A-12 44-01-03N 59-46-44W	1983	/Gas	Mobil Texaco PEX
Arctic Islands	Cape MacMillan 2K-15 77°44'38.1"N 99°06'58.7"W	1983	/Oil & Gas	Panarctic et al.
Beaufort	Itiyok I-27 69-56-40N 134-5-19W	1983	/Gas & Oil	Esso/PEX, Home et al.
Information tabulated by O.L. Slind, Shell Canada Resources Ltd. It is understood that "significant" is a subjective judgment.				

Table 6

SIGNIFICANT METALLIC AND PRECIOUS METAL, AND URANIUM DISCOVERIES REPORTED DURING 1983. COMPILED BY S.B. GREEN

Name	Responsible Companies	Location	Type of Deposit	Grade and Reserves
Strange Lake	Iron Ore Company	Near Lac Brisson approximately on Quebec/Labrador border. 90 miles SW of Nain.	Zirconium, yttrium, beryllium, niobium and other rare earths occur within pegmatite zones in an alkaline granite intrusion.	Not available however the granitic stock is some six to eight km in diameter.
Cape Spencer	Gordex Minerals	St. John County N.B.	Gold occurs in hydrothermally altered rocks and in quartz veins at the contact zone between lower and upper Cambrian sedimentary rocks and a fine grained siliceous granite.	Best intersection to date indicates 1180 tons per vertical foot of 0.10 oz/ton Au.
Beech Hill	Riocanex Inc.	West of Mt. Pleasant, N.B.	Tin and tungsten occur in an altered zone within a small, high level Mississippian granitic intrusion.	0.13% Sn and 0.77% W. No tonnage available.
Mount Costigan	Lac Minerals	35 miles east of Grand Falls N.B.	Low grade lead-zinc deposit. Disseminated to massive sulphide in submarine volcanic rocks.	N/A
Sheephouse Brook	Noranda Exploration	Approximately 20 miles west of Newcastle N.B.	Sulphides in veinlets and disseminated in silicified volcanic rocks.	N/A
Casa Berardi	Inco/Golden Knight Res.	35 miles south of Detour Lake	Four stratabound mineralized zones detected to date. Gold appears to be concentrated in iron formation.	Best intersection to date is 81 feet of 0.23 oz/ton Au.
Eastmain River	Placer/Eldor Res. Ltd.	300 km Northeast of Chibougamau	Volcanogenic massive sulphide deposit with gold associated with pyrite, chalcopyrite and pyrrhotite.	1982 reserve figure of 700,000 tons grading 0.4 oz. Au, 0.46 oz. Ag, 0.26% Cu.
Cameron Lake	Nuinsco Res./ Lockwood Pet.	Nr. Cameron Lake, Ontario	Gold occurs in a quartz-sericite-carbonate altered shear zone in mafic meta-volcanic rocks.	Best intersection reported to date is 30 feet of 0.16 oz/ton Au.
Cobalt Ontario	Silverside Res.	Lorraine Twp., Ontario	Three parallel vein sets in sedimentary host rocks. Silver-bearing veins are up to two inches wide.	Drill hole with a weighted average of 29 oz Ag over an eight foot intersection.
Marker Twp.	Camflo Mines	40 miles east of Kirkland Lake	Gold occurs in an exhalative stratiform zone of felsic tuffs and cherty sediments. Mineralized zone is also stratabound.	Best intersection pulled to date is 0.1 oz/ton Au over 50 feet.
Waterbury Lake	Sask. Min. Dev. Corp/ SERU Nucleaire	Approx. 20 miles west of Rabbit Lake	Athabasca unconformity related uranium deposit with nickel and cobalt occurring as arsenides.	Reserves to date quoted at 125 million pounds of U ₃ O ₈ over a 100 metre zone.
Star Lake	Sask. Min. Dev. Corp/ Starrex Mining	70 miles north of La Ronge Sask.	Gold mineralization is associated with quartz and syenite dykes occupying shear zones within a felsic intrusion. High grade is from pyritic-quartz zone.	Best intersection reported is 2.87 oz/ton Au over 13 feet.
Harrison Lake	Rhyolite Resources	90 miles east of Vancouver, B.C.	Gold in quartz veins cutting greenstones and sedimentary breccias of the Fire Lake Gp.	500,000 tons grading 0.1 oz/ton Au, 0.5 oz/ton Ag.
Kamloops	Falconbridge/Rea Gold	90 miles northeast of Kamloops, B.C.	Gold, silver and base metals in a heavy sulphide zone within metasedimentary rocks.	A shallow drill hole in a 1500 foot zone yielded 0.038 oz/ton Au and 0.8 oz/ton Ag. Surface chip samples yielded 2.6% Cu, 3.2% Zr and 7.8% Pb over 17 feet.
Tillicum Mntn.	Esperanz/La Teko	6 miles east of Burton, B.C.	Several mineralized horizons occurring near the contact between granites of the Nelson batholith and Triassic-Jurassic sedimentary rocks of the Slocan Group.	40,000 tons of 0.6 oz/ton Au.
Windy Craggy	Falconbridge/Geddes	N.W. British Columbia, 40 miles east of the Haines-Alaska Highway.	Gold in a volcanogenic associated massive sulphide deposit.	0.29 oz/ton Au over a 201 foot intersection.
Midway	Butler Mountain	Southern Yukon Territory west of Watson Lake and 5 miles south of the Alaska highway.	Gold and silver associated with arsenopyrite in a volcanogenic massive sulphide deposit.	Best gold intersection is 0.168 oz/ton over 25 feet. Another drill hole yielded 1.09 oz/ton Ag and 6.2% Zn over 12 feet.