



# Canadian Geoscience Council

Published for the Council  
by the Geological Survey of Canada as  
Paper 82-6, Part 2

## The Geosciences in Canada 1981

### Annual Report

Prepared by  
The Canadian Geoscience Council

Edited by J. P. Greenhouse



Canada



**GEOLOGICAL SURVEY  
PAPER 82-6 PART 2**

**THE GEOSCIENCES IN CANADA, 1981  
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  
Hull, Québec, Canada K1A 0S9

and from

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

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

Cat. No. M44-82/6-2                      Canada: \$4.00  
ISBN 0-660-51839-2    Other countries: \$4.80

Price subject to change without notice

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## REPORT OF THE PRESIDENT

The Canadian Geoscience Council performed a variety of activities in 1981 on behalf of the community of geoscientists in Canada. It continued comprehensive studies of sectors of the geosciences in Canada, enlarged its advisory role within the geoscience community, maintained its program aimed at educating high school teachers in earth sciences and providing career advice to aspiring geoscientists, and represented Canadian interests to the International Union of Geological Sciences.

A highlight was the publication in January, 1981 of the report on Geology and Geophysics in Canadian Universities by E.R.W. Neale and J.E. Armstrong. The report and an accompanying letter drawing attention to relevant comments in the report were sent to university presidents, department chairmen, The Minister of Energy, Mines and Resources, The Minister of the Environment, The Minister of State (Mines), and The Minister of State for Science and Technology, related deputy ministers and assistant deputy ministers, the President of the Natural Sciences and Engineering Research Council, Provincial Chief Geologists, Council Members, science editors of major Canadian newspapers, and journal reviewers.

Comments on the report and its recommendations have been invited from the earth science community. The comments are to be sent to the newsletters of the various earth science societies and then they are to be collated in the next annual report of the CGC.

The current study by the CGC – Marine Geosciences in Canada – 1980, a Status Report – under the leadership of R.D. Johnson is nearly complete. It is expected to be submitted to the Geological Survey of Canada in January for publication in 1982. Other members of the committee were: J.I. Clark, L.E. Johnson-Ibach, M.J. Keen, G.E. Reinson and P.J. Savage.

The report reviews the achievements in marine geoscience, mainly over the last 20 years, the kinds of activities undertaken in the various government, university and industry sectors, and the challenges and prospects for the future. Its single recommendation is that a Marine Geosciences Committee be formed, as a standing committee of the Canadian Geoscience Council, that will make specific recommendations to remedy current deficiencies and chart a course for the future.

It is proposed that a half-day session at the GAC Annual Meeting in Victoria in May, 1983 be devoted to the Marine Geosciences in Canada at which time the specific recommendations of the Committee can be presented for debate.

Regarding reviews of other sectors of the geosciences in Canada the study of Geoscience R&D in the Mineral Exploration Industry has been suspended until a suitable leader can be found to replace Roger Barlow, who, unfortunately, had to resign as a result of increased pressure in his job. Difficulty has been encountered in finding a replacement who is suitable yet has sufficient time to devote to the job. For the study of Geoscience R&D in the Petroleum Industry a task force of D.W. Organ (Chairman), Glascott Dawson-Grove, J. MacDonald, N.R. Morgenstern and Easton Wren recommended that it be done by a consultant. The Council recognized the difficulty, similar to that in the Mineral Exploration Industry Study, of finding suitable people of recognized stature who would have the time to devote to the study. Currently two persons have been approached and a steering committee is being established which sets policy and objectives, reviews the conclusions and makes recommendations.

At the December, 1981 meeting Olav Slaymaker, representative of the Canadian Association of Geographers, proposed that a study of the Geosciences in Quaternary Studies should be undertaken by the Council. He pointed out that Canada, with ideal geological and climatic conditions for studying the Quaternary, badly lagged other countries in manpower and facilities for undertaking this. The Council, as well as observers from the Canadian Quaternary Association (CANQUA), endorsed the proposal in principle. Firm proposals on the scope of the study and the means of implementing it will be presented at the next meeting.

A workshop on the next decade of earth science research in Canadian Universities was attended by about 100 representatives of the university community. It was partly sponsored by NSERC and was held in Ottawa January 23-25, 1981 under the leadership of W.S. Fyfe and B.R. Rust. A summary of its conclusions and recommendations was published in Geoscience Canada in September, 1981. One of its principal recommendations was that it was time Canada undertook major new multidisciplinary projects in the earth sciences. As a consequence, one group – The Canadian Committee on the Dynamics and Evolution of the Lithosphere (CANDEL) – under the leadership of Charlotte Keen and with the encouragement of the Canadian Geoscience Council, drew up plans for Project Lithoprobe. A summary of the plans for this project – co-ordinated national geoscience studies in the third dimension beneath Canada and its margins – was published in Geoscience Canada, September, 1981.

A follow-up meeting to the university workshop was held in May, 1981 at the GAC Annual Meeting in Calgary. At that time a motion was passed that the Canadian Geoscience Council should form a committee which would select suitable major earth science projects from project proposals submitted to the Council. Delays caused by the postal strike, the field season, and the times at which Council could meet meant that a roster from which to choose the committee was not established until December, 1981. Projects were solicited in December. Proposals are to be submitted to the Executive Director by April 1, 1982 and are to be reviewed by the committee by mid-May, 1982. Feasibility studies by special subcommittees will be carried out over the summer and submissions made for funding in Autumn, 1982.

Concern has been expressed from several quarters regarding the status of research on mineral deposits in Canada. D.F. Sangster presented a brief to the Council in March, 1981 indicating that, although deposit-oriented documentary studies and commodity inventories and regional metallogenic studies are common, fundamental process-oriented studies are rare. He proposed there should be an increase in fundamental mineral deposit research and that such research could be done best at an autonomous mineral deposit research centre. The National Geological Surveys Committee requested in May, 1981 that the Canadian Geoscience Council organize a workshop to examine the status of mineral deposit research in Canada. Under the able leadership of J.M. Franklin a workshop was held November 27-28, 1981 at the University of Toronto involving over 35 participants from industry, universities and government agencies. A report is to be submitted to the Council at the end of January, 1982.

At the same time that the university community was examining its research priorities and opportunities, a similar review was being undertaken by earth science agencies in the Federal Department of Energy, Mines and Resources (EMR). The Department developed several "thrusts" which were presented to some of the central agencies of the federal government at a conference at St. Jovite in May, 1981. Several members of the Canadian Geoscience Council: J.O. Wheeler, President; W.S. Fyfe, Chairman of the Council of Earth Science Department Heads at Canadian Universities; and Ian Haugh, Chairman, Sub Committee of Provincial Geologists; and two members of the Canadian Lithosphere Committee: D.I. Gough and R.W. Macqueen were asked to attend. It was readily apparent that there was considerable agreement over Canadian earth science priorities between the universities and provincial and federal government agencies, even though they were developed independently. Furthermore, it was recognized that the sophisticated and expensive approaches needed in the future would require the collaboration of all sectors of the earth science community - a point re-emphasized during the Council's discussions with EMR officials in December, 1981. In fact, projects such as the ultrasensitive analytical facility being developed by a consortium at the University of Toronto indicate the process has already begun.

The Canadian Geoscience Council continues to provide a roster of names of experts for a variety of advisory committees. R.N. Farvolden of the University of Waterloo completed his term in May, 1981 representing the field of hydrogeology on the Atomic Energy of Canada Limited (AECL) Nuclear Fuel Waste Management Program Technical Advisory Committee. He was replaced by R.O. Van Everdingen who, unfortunately, a short time later had to resign as he was unable to devote sufficient time to the Committee. He has now been replaced by József Tóth of the University of Alberta. G.B. Skippen of Carleton University continues to represent the fields of geochemistry and petrology on the Committee.

AECL is to be commended on its openness in the way it operates the Nuclear Fuel Waste Disposal Program (NFWDP). Regularly scheduled information meetings are open to any interested and qualified observers. The only restriction on Technical Advisory Committee reports is that they are submitted to AECL prior to public release. Project management concerning geoscience involvement in the NFWDP is now on a sound footing within a revised overall timetable. The "concept assessment" phase of the NFWDP is expected to take until 1993; a demonstration storage vault will then be established and operated until about 2010, at which point a proposal will be made to the Atomic Energy Control Board for design of a commercial vault.

A summary of the second annual report of the NFWDP is included in this report.

The Advisory Committee to the Geological Survey of Canada (J.A. Coope, Chairman, B. D'anglejan, P.L. Gordy, D.W. Strangway, A. Sutherland Brown, and M. Tanguay) has virtually completed its report evaluating the output of the GSC.

The Advisory Committee to The Ontario Geological Survey (P.M. Kavanagh, Chairman, J. Gartner, I. Haugh, G.W. Mannard, D.J. McLaren, T. Podolsky and D.W. Strangway) has submitted its report. The Committee, under the chairmanship of T. Podolsky, will continue to look further into certain aspects of the OGS operations.

The Newfoundland and British Columbia geological surveys have also established Advisory Committees, with the help of the Council, to review their mandates and operations. Those on the Newfoundland Committee are: L.S. Beck, R.M. Buchanan, G.E. Cooper, J.G. Fyles, and D.W. Strangway.

Those chosen on the Committee to the Geological Division of the B.C. Ministry of Energy, Mines and Petroleum Resources are H.C. Morris, Chairman, H.J. Greenwood, G.D. Mossop, E.R.W. Neale, and A.E. Soregaroli.

The Education Committee under the chairmanship of P.J. Savage continued to provide support for earth science workshops for high school teachers. Three workshops, in Winnipeg, Edmonton and Saskatoon, were attended by 25 teachers. Workshops in 1982 are planned for Toronto, Calgary, Winnipeg, Edmonton and Saskatoon.

Another successful enterprise of the Education Committee has been the production of booklets, *Careers in Geoscience*, to help attract students to this field. It is one way in which the Council is helping to ensure adequate expertise and human resources for geoscience in the future. The 1980 edition, which comprised 9000 booklets in English and 3000 in French is completely used up. A slightly revised edition of 8000 English and 3000 French copies was published in late 1981, half of which have been distributed. A similar booklet, *Geological Engineering in Canada*, has been produced in co-operation with The Canadian Geotechnical Society and 10 departments of engineering geology in Canada. Of the 22 500 copies published about 3000 remain with the Council headquarters.

The involvement of the CGC on the international scene is chronicled in The Foreign Secretary's Report. The Council is grateful that the Geological Survey of Canada has undertaken to provide an annual allotment of \$3000 for travel costs of seven delegates to quadrennial meetings of IUGS and IGC., and another \$3000 annually to cover the travel costs for meetings of The Canadian National Committee to IUGS. These grants are in addition to the IUGS affiliation fees of \$12 000 per year underwritten by the GSC.

The Council is pleased to note that Canadian Quaternary researchers have formed the Canadian Quaternary Association (CANQUA) with more than 500 members. Plans are being made by the Canadian National Committee (CNC) to the International Union of Quaternary Research (INQUA) in consultation with CANQUA for a proposal to hold the XII INQUA Congress in 1986 in Canada. We are pleased also that observers from CNC/INQUA and from CANQUA attended the December, 1981 meeting of the CGC.

The Council has endorsed the study on cost effectiveness in earth science journals, exclusive of those supported by the National Research Council, by a task force of the Advisory Board (to NRC) on Scientific Publication (ABOSP). In view of the fact that the earth science journals have been chosen as a pilot group, from which to evaluate scientific publication in other fields in Canada, the Canadian Geoscience Council has encouraged editors and production staff of these journals to co-operate in the NRC study.

The Canadian Geoscience Council has resigned from SCITEC (The Association of the Scientific, Engineering and Technological Community of Canada). CGC membership in SCITEC was debated at some length in 1980 but the decision was taken to remain in SCITEC. Another year has gone by and little benefit, other than the organized access to members of parliament, justified the annual cost of \$1200. The Council still retains ties with the Consortium of National Scientific and Educational Societies based in Ottawa to which Brian Rust of the University of Ottawa is the CGC representative. The Consortium, however, also has periodic formal access to members of parliament. Moreover, in the past the Council has been able to arrange interviews with cabinet ministers in Energy, Mines and Resources, Environment, and the Ministry of State for Science and Technology. Accordingly it was felt that CGC already had several other modes of access to the federal government and hence it was no longer beneficial to belong to SCITEC.

The Council has been concerned with several items of housekeeping. It has reviewed the format of its annual reports and decided to continue in the current mode but in a more timely fashion. The By-Laws were amended so that the Council's fiscal year ends at the close of business September 30. This permits the Secretary Treasurer to table a final financial statement at the annual meeting of the Council in December. It is recognized that the By-Laws badly need revision. This will be undertaken by G.N. Wright and J.O. Wheeler.

As my tenure as President of the Canadian Geoscience Council comes to an end I wish to express my appreciation for the support and advice of the Council and its Executive Committee, especially that of our two efficient and willing workhorses: Secretary Treasurer, Glynn Wright and Executive Director, John Greenhouse. I leave with a feeling that the Council has maintained its credibility and usefulness. It continues to provide a forum for examining the health and effectiveness of the geosciences and to supply valued advice and a balanced point of view eagerly sought by federal and provincial agencies. I am satisfied that the Council under the new President, Atholl Sutherland Brown, and his executive is in good hands. Furthermore, it is a pleasure to record that two geoscientists, each of whom has been active in CGC as Foreign Secretary, are now close "friends in court", having recently won appointments in the Department of Energy, Mines and Resources. W.W. Hutchison is now Assistant Deputy Minister, Earth Sciences, and R.A. Price is Director General of the Geological Survey of Canada. We congratulate them both and wish them well.

**J.O. Wheeler**

## REPORT OF THE SECRETARY TREASURER

An important feature of the CGC's year has been the publication and distribution of the study Geology and Geophysics in Canadian Universities (GSC Paper 80-6, Part 1), as well as two career brochures which were produced by the Education Committee. The report "Current Research in the Geological Sciences in Canada 1979-80" is available for purchase as of December, 1981.

The total of the Council's twelve societies' memberships is now 14 493. Fees paid to the CGC by the societies vary from \$140 to \$750; the average cost of CGC affiliation to the individual member is about 34 cents.

The financial statement for 1981 follows. The change in fiscal year-end from December 31 to September 30 distorts the report for the current year to some extent, as noted.

December 23, 1981

**G.N. Wright**  
Secretary Treasurer  
Canadian Geoscience Council

Table 1

Consolidated Balance Sheet as of September 30, 1981

<u>Assets</u>		
	<u>1981</u>	<u>1980</u>
Cash	\$ 4 626.28	\$ 8 575.92
Term Deposits	43 591.26	39 497.85
<b>TOTAL ASSETS</b>	<b>\$ 48 217.54</b>	<b>\$ 48 073.77</b>
<u>Liabilities</u>		
Annual Reports, Booklets	\$ -	\$ 13 250.00
Completion of Marine Geosciences Report	1 000.00	-
September Council Meeting	505.00	-
French Text for GSC Paper 80-6, Part 1, typing	2 669.62	-
<b>TOTAL LIABILITIES</b>	<b>\$ 4 174.62</b>	<b>\$ 13 250.00</b>
<b>ASSETS LESS LIABILITIES</b>	<b>\$ 44 042.92</b>	<b>\$ 34 823.77</b>
<u>Consolidated Statement</u>		
Balance at Beginning of Year	\$ 48 073.77	\$ 37 357.81
Net Income	143.77	10 715.96
<b>BALANCE AT END OF YEAR</b>	<b>\$ 48 217.54</b>	<b>\$ 48 073.77</b>
November 28, 1981	G.N. Wright, Secretary Treasurer	

Table 2

Statement of Revenue and Expenses for the year ending September 30, 1981  
For the Canadian Geoscience Council

<u>Revenue</u>	<u>1981</u>	<u>1980</u>
GSC Sustaining Grant	-	\$ 5 000.00
Province of Alberta Sustaining Grant, (for 1980 and 1981)	\$ 4 000.00	-
EMR Service Contract no. 1190650, Final Payment, ("Marine Geosciences...")	1 500.00	7 500.00
Education Program Donations	2 000.00	9 250.00
Membership Fees	825.40	4 489.85
Interest, Term Deposits	4 093.41	4 330.69
Interest, Savings Account	457.39	870.47
Geological Engineering in Canada, booklet; University Contributions	4 748.39	-
Donations	-	61 750.00
Publication Sales	7 384.11	512.00
Travel Fund	-	113.90
Ontario Ministry of Natural Resources, Visiting Committee	5 000.00	-
EMR Contract no. 1451729, Integrated Tectonic Studies Plan	6 000.00	-
Reimbursement: Annual Report Typing ("Geology and Geophysics..."); EMR	1 994.77	-
GSC Questionnaire, Contract no. 2556201	1 933.22	-
	<b>\$39 936.69</b>	<b>\$93 816.91</b>

# NOTES ON THE FINANCIAL STATEMENTS

1. The fiscal year end was changed to September 30: several sources of income are therefore less than those for 1980
2. Cash at Year End Includes:
  1. Savings Account no. 95-09364 \$ 8 499.27
  2. Bank Balance, Chequing Account no. 2300915 (1 102.49)
  3. Four outstanding cheques: \$694.35; \$90.00; \$4 819.50; \$639.00 (6 242.85)
  4. Advances to Waterloo: (\$1 129.22); \$1 976.80;  
\$2 624.77, for accounts no. 901 1188 01, 02 and 03 3 472.35

\$ 4 626.28
3. Anticipated Assets:

Careers in Geoscience Booklets - 8000 @ \$1.00 \$ 8 000.00

Geological Engineering in Canada: booklets, 5000 @0.50 2 500.00

Integrated Tectonic Studies Plan, Contract no. 1451729, final payment 4 000.00

EMR Sustaining Grant for 1981 11 000.00

Remaining 1981 Dues 4 214.00

Reimbursement of typing cost for GSC Paper 80-6, Part 1 2 669.62

\$ 32 383.52
4. Anticipated Liabilities:

Funds set aside for Quadrennial IUGS meeting 3 000.00
5. Chevron Standard again donated \$2 000.00 prior to the end of the fiscal year. Other donations are assured for the fourth quarter in 1981. Education workshops (EdGEO program) were held in Saskatoon, Winnipeg, and Edmonton, (\$500.00; \$1 200.00; \$1 750.00)
6. The descriptions of transactions for 1981 do not apply specifically to the 1980 references
7. The CGC Exploration '77 funds stood last year at \$10 615.32; they are to be held in trust for the next symposium
8. The Savings and Current accounts and Term Deposits are held at: The Canadian Imperial Bank of Commerce, 300 - 5th Avenue S.W., Calgary.

Table 3  
Proposed Budget for 1981 - 1982 Fiscal Year

<u>REVENUE</u>		<u>EXPENSES</u>	
GSC sustaining grants (2 years)	\$ 22 000.00	Typing French text for GSC Paper 80-6	\$ 2 670.00
Provincial sustaining grants	10 000.00	Education program	6 000.00
Integrated Tectonic Studies Plan	4 000.00	IUGS liability	6 000.00
Education program	5 000.00	Physical geographers report	5 000.00
Membership fees	9 000.00	Executive travel	3 000.00
Interest	4 000.00	Annual Report	
		("Marine Geosciences...") Mineral	1 000.00
Sales	1 000.00	Deposit Research Workshop	2 000.00
Reimbursement: typing French text for GSC			
Paper 80-6 ("Geology and Geophysics...")	2 670.00	Secretarial services (Waterloo)	5 500.00
Contract to produce report on			
R&D in petroleum industry	30 000.00	Accounting	1 500.00
		Council Meetings	1 000.00
		Membership	1 500.00
		Bank Charges	100.00
		Expenses involved with report on	
		R&D in petroleum industry	30 000.00
			<u>\$65 270.00</u>
	<u>\$ 87 670.00</u>		
Revenue less expense=	\$ 22 400.00		
(compare with net income of \$143.77 for 1981)			
		G.N. Wright, Secretary Treasurer	
		November 29, 1981	

## **AUDITOR'S REPORT**

We have examined the financial records of the Council, (Secretary Treasurer's ledger, cancelled cheques, bank statements, etc.) for the year ending September 30, 1981. 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 November 28, 1981. This report is not to be considered an audit but rather an examination directed by the Council of its records by the undersigned.

**G.E. Dawson-Grove**  
**L.P. Purcell**

## REPORT OF THE FOREIGN SECRETARY

The position of Foreign Secretary was created in 1976 because of the new role assumed by the Canadian Geoscience Council when the responsibility for the Canadian National Committee for Geology was transferred to the Council from the Geological Survey of Canada, and the Council became the official Canadian adhering body to the International Union of Geological Sciences and the International Geological Congress. The Council established a Standing Committee on International Relations, under the chairmanship of the Foreign Secretary, to provide a forum for discussion of Canadian participation in international geoscience organizations in general, to advise the Canadian Geoscience Council on its relations with international non-governmental geoscience organizations and with Canadian national committees for international geoscience organizations, and to ensure that the Canadian Geoscience Council is adequately represented in the development and implementation of international programs dealing with geoscience for which the Council has a responsibility. The Committee receives, on behalf of the Canadian Geoscience Council, reports from Canadian national committees or representatives of international geoscientific activities, and it makes recommendations to the Canadian Geoscience Council, on new international geoscientific initiatives and on arrangements for Canadian participation in international geoscience activities.

The Committee consists of the chairmen of the Canadian National Committees for: the International Geological Correlation Program (J.M. Harrison), the International Union of Geological Sciences (R.A. Price), International Union of Geodesy and Geophysics (A. Beck), International Lithosphere Program (C.E. Keen), and the International Union of Quaternary Research (D. St-Onge), a representative of the Director General of the Geological Survey of Canada (T.E. Bolton), and representatives of Canadian groups affiliated with other international earth science organizations: W.J. Eden (Associate Committee on Geotechnical Research), for the International Association of Engineering Geologists (IAEG); J.M. Duke (Mineralogical Association of Canada), for the International Mineralogical Association (IMA), and R.A. Blais, a former Vice President of AGID for the Association of Geoscientists for International Development.

### ***Standing Committee on International Geoscientific Relations:***

The fifth annual meeting of the committee was held in the Board Room of the Geological Survey of Canada, in Ottawa, April 6, 1981. The full minutes of the meeting are available from the Foreign Secretary and the Executive Director of the Council. The reports which follow include information taken from the minutes of this meeting and also information on developments which occurred subsequent to the meeting.

**INQUA:** D.R. Grant, Secretary of the Canadian National Committee for the International Union of Quaternary Research (CNC/INQUA), representing D. St-Onge, the President of CNC/INQUA, reported on Canadian activities relating to INQUA. The National Research Council (NRC) confirmed, in April 1980, the arrangement whereby NRC would remain the Canadian adhering member to INQUA, and would be responsible for the annual subscription fee and the operating expenses of the CNC/INQUA, while the CGC, on behalf of NRC, would manage the CNC/INQUA. At the same time NRC endorsed all nominations submitted by the CGC for appointments to the newly formed CNC/INQUA. (These nominations were reported in the 1980 Annual Report of the Canadian Geoscience Council.) The first meeting of the CNC/INQUA was held on September 26, 1980. A draft constitution for the CNC/INQUA was prepared at that meeting, and it was decided that the minutes and other news of the CNC/INQUA would be reported in the Newsletter of the Canadian Quaternary Association (CANQUA).

**CANQUA:** was organized at the same time as the CNC/INQUA, and special efforts were made to establish close communication and co-operation between the two. The first executive committee of CANQUA was elected in February 1981, and a draft constitution was prepared for presentation to a meeting of CANQUA in May 1981. There are more than 500 individual members in CANQUA, and more than 100 Canadian and foreign institutional affiliates. CANQUA is producing a quarterly newsletter, and also organizing field meetings and participating in the sponsorship and organization of symposia at the meetings of the Geological Association of Canada and other scientific organizations. It also seeks to foster co-ordination of activities amongst IGCP projects and INQUA commissions. It plans to prepare index maps showing activities in the field of Quaternary research across Canada and to incorporate an employment service in its Quarterly Newsletter.

The CNC/INQUA, in co-operation with CANQUA, has undertaken to prepare 10 or 12 pictorial presentations for display at the XI INQUA Congress in Moscow in 1982. It also plans to produce a special volume of *Géographie Physique et Quaternaire* containing feature articles on a broad range of current Quaternary research in Canada, for distribution at the XI INQUA Congress.

Also, in consultation with CANQUA, plans are being made for a proposal to NRC that the XII INQUA Congress (1986) be held in Canada and also for a Canadian nominee for the position of Vice President of INQUA.

The CNC/INQUA and the executive of CANQUA have proposed that the level of Canada's membership in INQUA be increased from category 3 to category 4.

The CNC/INQUA has proposed that its membership be increased from 8 to 12 and that ultimately 8 of the 12 members be appointed by CANQUA with the remaining 4 appointed by CGC. (This proposal was endorsed by the Canadian Geoscience Council in September 1981.)

**IGCP:** J.M. Harrison, Chairman of the Canadian National Committee for the International Geological Correlation Program (CNC/IGCP), reported on Canadian participation and international developments in the IGCP. The IGCP is sponsored jointly by the International Union of Geological Sciences (IUGS) and UNESCO. It provides special opportunities for international collaboration in scientific programs that are focussed on mineral and energy resources and the developing countries. The 1981 budget for the CNC/IGCP was approved. It comprises \$15 800 to help pay for the cost of Canadian participation in foreign meetings of IGCP project groups, the costs of conducting IGCP project meetings in Canada, and the clerical and mailing charges for the operation of IGCP projects in Canada, and \$2 100 for the operating of the CNC/IGCP.

The terms of appointment of J.T. Fyles, P. Harker, P. Lesperance and E.T. Tozer end in 1981. The following slate of nominees recommended by the CNC/IGCP was approved by the CGC:

W. MacMillan  
G. Caldwell  
C. Carbonneau  
A. Dreimanis

**ILP:** Charlotte Keen, Chairman of the Canadian National Committee for the Lithosphere Program, reported on the activities of the CNC/ILP. Since its February 1980 meeting the CNC/ILP has established a series of working groups which are responsible for proposing integrated research programs on each of the following general topics

the Precambrian Shield,  
the Western Continental Margin,  
the Eastern Continental Margin,  
the Arctic, and  
Sedimentary Basins.

Planning documents presented and reviewed at the February 1981 meeting of the CNC/ILP, provided the basis for further discussion at a workshop on Canadian participation in the International Lithosphere Program, held in Calgary in May 1981, in conjunction with the annual meeting of the Geological Association of Canada, the Mineralogical Association of Canada and the Canadian Geophysical Union. At this latter meeting the committee developed a formal proposal for Lithoprobe studies (involving the use of combined geological and geophysical techniques to determine the third dimension of crustal geology) to be carried out in specific corridors that are located in several parts of Canada and are selected to solve key geological problems. This proposal, which incorporates ideas that were developed independently by university and federal government groups, is described in detail in the September 1981 issue of Geoscience Canada (V. 8, No. 3).

**IAEG:** W. Eden reported on the international scientific affiliations of the engineering geology community in Canada. In addition to the International Association of Engineering Geology (IAEG), Canadian engineering geologists and geological engineers are active in the work of International Society of Rock Mechanics (ISRM), the International Society of Soil Mechanics and Foundation Engineering (ISSMFE), the International Tunnelling Association, and the newly formed International Permafrost Society. The 10th International Conference of ISSMFE will be held in 1981. The Fourth International Congress of the ISRM will be held in 1982 in India. The National Research Council as "the adhering body" has assumed responsibility for the membership fees from the Canadian members in ISSMFE, and therefore, the Engineering Geology Division of the Canadian Geotechnical Society has requested that the Canadian Geoscience Council, as the "adhering body" to the IUGS, to which the IAEG belongs, consider assuming responsibility for the membership fees which Canadians pay to the IAEG. There are about 1000 members of the Geotechnical Society who are members of IAEG. The Canadian Geoscience Council has recently completed arrangements with the Department of Energy, Mines and Resources for financial support for the Canadian National Committee for the International Union of Geological Sciences (see below). These arrangements provide for the annual Canadian subscription fee to IUGS, the cost of operating the CNC/IUGS, and partial support for the travel expenses of the Canadian delegation to the meetings of the Council of the IUGS, which are held every four years with the International Geological Congress. There is no financial provision in these arrangements for payment of membership fees for Canadian members in the IAEG or any of the other constituent associations of IAEG; and the Canadian Geoscience Council does not have other sources of revenue which could be used for this purpose.

**IMA:** L. Cabri, representing M. Duke, the Secretary of the Mineralogical Association of Canada, reported on Canadian participation in the activities of the International Mineralogical Association. The 12th General Meeting of the IMA was held in Orleans, France, July 4th-7th, 1980. D.G.W. Smith, L.J. Cabri, and M.E. Fleet were appointed by the MAC as Canadian delegates to the IMA. L.G. Berry continues as Treasurer of IMA. The reports of the National Representatives to the IMA commissions were published in the IMA Newsletter number 27 in December 1980. The next IMA meeting will be held in Bulgaria in 1982.

**AGID:** R. Blais, past Vice President, and one of the founding executive members of the Association of Geoscience for International Development, reported on the origins and achievements of AGID. The membership is now above 1500, represents 105 countries, and is approximately equally divided between developing and developed countries. In addition to its official newsletter, AGID has produced a number of useful publications concerning its workshops and technical courses, these cover the whole spectrum from hydrogeology and mineral exploration to geoscience data management. Planning is underway for the establishment of an International Geoscience Research Institute concerned with mineral exploration technology in rain forest areas. AGID headquarters have now moved to Bangkok. Financial support for AGID continues to present a major challenge; Canada has made substantial contributions to the operating expenses of AGID through CIDA. The AGID cash flow in 1980 was about \$800 000; present planning calls for expenditures of about \$5 000 000 in 1984.

**Canadian Commission for UNESCO:** J. Harrison, Vice Chairman of the Canadian Commission for UNESCO, reported on the role of Canadian geoscience in the activities of UNESCO. Three of UNESCO's international scientific programs rely heavily on Canadian participation. D.J. McLaren has been President of the Board of the International Geological Correlation Program. The Canadian Government, through the Canada Council is providing accommodation and support services for the Man and the Biosphere Program; and the Canadian Department of the Environment provides the secretariat for the International Hydrologic Program.

**DNAG:** R.A. Price, who is a member of the Geological Society of America Council and Centennial Program Steering Committee, reported on Canadian participation in the Geological Society of America's Centennial program: "The Decade of North American Geology". (DNAG).

In 1978 the CGC and the GSC made a commitment to participate in this project which will involve the preparation of a series of memoirs and thematic maps outlining the geological evolution of the North American continent and adjacent parts of the ocean basins. Canadian participation co-ordinated through the Geological Survey of Canada by John Wheeler will include a broad spectrum of Canadian earth scientists from the federal and provincial governments, industry and academia, and will lead to the production of a series of books and thematic maps dealing with the Canadian part of North America. These will form part of the GSA series; but they will also comprise the updated sixth edition of "Geology and Economic Minerals of Canada", previous editions of which were published as a single volume prepared by officers of the Geological Survey of Canada.

***Canadian National Committee for the International Union of Geological Sciences (CNC/IUGS):***

A proposal from the Canadian Geoscience Council (CGC) to the Department of Energy, Mines and Resources for the sharing of responsibility of Canadian adherence to the International Union of Geological Sciences (IUGS) and the International Geological Congress (IGC), described in the 1980 Annual Report of the CGC (published as Geological Survey of Canada Paper 81-6, Part 2), has been adopted. The CGC is the Canadian adhering member to IUGS. The Geological Survey of Canada will award an annual grant to the CGC to cover the annual IUGS affiliation fees (\$12 000), the annual allotment for travel costs of seven delegates to quadrennial meetings of IUGS and IGC (\$3 000), and the travel costs for meetings of the CNC/IUGS (\$3 000). The CGC will establish and operate the CNC/IUGS. As of December 1981 nominations to the CNC/IUGS are incomplete and the membership has not been completely established.

***Canadian National Committee for the International Council of Scientific Unions Scientific Committee on Problems of the Environment:***

In response to a request from the CGC the CNC/SCOPE has agreed to add a representative of the Canadian geoscience community to its membership. Brian Greenwood, of the Canadian Association of Geographers, the CGC nominee, has been appointed to the CNC/SCOPE.

***National Research Council (NRC) Committee on International Scientific and Technological Affiliations (CISTA):***

Arrangements within the International Relations Secretariat of the National Research Council for reviewing Canadian participation in international scientific and engineering activities have recently been revised. The NRC Committee on International Scientific and Technological Affiliations (CISTA) has been enlarged and has incorporated the responsibilities of the former Canadian National Committee for the International Council of Scientific Unions (CNC/ICSU). George Garland of the Department of Physics of the University of Toronto and Ray Price of the Department of Geological Sciences, Queen's University, represent the Canadian Earth Science community on this committee.

**Raymond A. Price**

## REPORT OF THE EDUCATION COMMITTEE - 1981

### Career Booklets

Working from an address list provided by the CIM one copy of the booklet "Careers in Geoscience" was sent to every high school in Canada. Envelopes, postage and labour were supplied by Pan Canadian Petroleum. Copies of the booklet were also provided to each teacher participating in Edgeo workshops.

### Edgeo Workshops

Funding for these workshops in 1981 was provided by Mobil (\$6 000.00) and Chevron (\$2 000.00) Oil Companies. Workshops were held in Winnipeg, Saskatoon, and Edmonton. In 1982 we expect workshops to be repeated at these three locations, and also held in Calgary and Toronto.

P.J. Savage



*The Executive of the Canadian Geoscience Council, 1981.*

From left to right: *Glynn Wright*, Secretary Treasurer; *Norbert Morgenstern*, Executive Member; *Dave Strangway*, Past President; *John Wheeler*, President; *Ray Price*, Foreign Secretary; *Jean Lajoie*, Vice President.

Missing: Executive Director, *John Greenhouse*.

## REPORTS OF THE SOCIETIES

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

The Canadian Exploration Geophysical Society (KEGS), founded in 1953, is an informal association of Canadian geophysicists working primarily in the mineral exploration industry.

Meetings are held the second Tuesday of every month from October to May at the Engineers' Club in Toronto. Each meeting features a speaker on a technical topic which is current, or on a relevant case history. KEGS is thus a forum for the exchange of ideas and the exposition of new developments in geophysics. The March meeting, held in conjunction with the Prospectors and Developers Convention in Toronto, is usually oriented towards other aspects such as education, economic issues, or the social impact of mining.

KEGS is a Section of the Society of Exploration Geophysicists with a representative on its Council and forms the largest single group of mining geophysicists in North America.

A short bulletin is issued to the membership prior to each meeting, and includes announcements and information for the members in addition to an abstract of the forthcoming talk and a summary of the previous presentation. The 1981-82 executive is:

President: Roger J. Cavén

Vice President: Zbynek Dvorak, Dighem Ltd.

Secretary Treasurer: Nigel Edwards, Dept. of Physics, University of Toronto

**R.J. Cavén**

### **2. The Canadian Geotechnical Society Report to the Canadian Geoscience Council, 1981**

In 1981, the Canadian Geotechnical Society grew in membership to 1060, an increase of 30 members from the previous year. At the present time there is one technical division, the Engineering Geology Division, within the Society. It has a membership of 240. A second division, associated with Rock Mechanics, will be formed, in conjunction with the Canadian Institute of Mining and Metallurgy, during 1982. In addition there are ten regional sections established in the major centres across Canada, and four technical committees concerned with Foundation Engineering, Slope Stability, Earth Structures and Tunnelling. The Tunnelling Committee assisted in the formation of the Tunnelling Association of Canada early in 1981.

The 34th Annual Canadian Geotechnical Conference was held in Fredericton from September 29 to October 2, 1981. The theme of the conference was "Non-textbook Soils". In addition to many excellent papers presented on this theme, two symposia were held: the 2nd Geotextile Symposium; and a Symposium related to the Geotechnical Aspects of High Level Radioactive Waste Disposal, which was sponsored by the Engineering Geology Division. The keynote address of the conference was presented by J.I. Clark, Past President, and entitled, "Geotechnical Research and Development in Canada - The Next Two Decades". The 5th Canadian Geotechnical Colloquium was given by D. Folkes. His topic was "Control of Contaminant Migration by the Use of Liners". Approximately 300 Society members attended this conference.

The Society also co-sponsored a Research Seminar on "In situ Measurements in Geotechnique" held at University of British Columbia in May.

Traditionally, the two major Society awards are presented at the annual meeting. The 1981 recipient of the R.F. Legget Award for outstanding contributions to the field of geotechnique in Canada is Branko Ladanyi from Ecolé Polytechnique. His contributions have been extensive, and include research in Soil Mechanics, Rock Mechanics, Engineering Geology and Permafrost. In addition Dr. Ladanyi has served, and is serving, on numerous technical and review committees. The Canadian Geotechnical Prize for the best paper published in the Canadian Geotechnical Journal was awarded to R.J. Quigley, University of Western Ontario, for his paper entitled "Geology, mineralogy and geochemistry of Canadian soft soils: a geotechnique perspective."

R.J. Quigley, who ironically also took over the editorship of the Canadian Geotechnical Journal, has continued to make that journal one of international standing. The CGS News, the Society's newsletter, has continued to develop with the help of W.J. Eden, the editor and J.W. Gadsby, the publisher.

This year the Society sponsored three Cross-Canada Lecture Tours. In the spring Milton Hare talked on Probability in Geotechnical Engineering. During the fall Branko Ladanyi visited Western Canada and Louis Jasper toured Eastern Canada. In recognition of the Society's responsibilities in the world community of geotechnique, the Society, with financial aid from CIDA, sponsored its first lecture tour to Third World developing nations. Don Shields was the first lecturer and visited Ghana for a two week period.

J.I. Adams, President and J.I. Clark, Past President, represented the Society at the executive meeting of the International Society of Soil Mechanics and Foundation Engineering in Stockholm, Sweden in June. P. Larochelle has been named chairman of the Landslide Sub-Committee of that international body. Continuing on the international scene, a six man Canadian delegation, under the leadership of Owen White, visited mainland China for three weeks during the fall.

During 1981, and on into 1982, the Society is assisting the Division of Building Research of the National Research Council of Canada in its study of R&D requirements in geotechnique in Canada. Internationally, the Society completed and published the Lexicon of geotechnical terms, symbols and units, in eight languages.

The Engineering Geology Division of the Society is also the National Group of the International Association of Engineering Geology, and represents the Canadian Geotechnical Society on the Canadian Geoscience Council. During 1981 it produced a draft of a report "Information for Site Investigation", which is planned to be an appendix to the Canadian Foundation Engineering Manual. The Division is planning to contribute to the 1982 joint conference of the Canadian Geotechnical Conference and the Association of Engineering Geologists to be held in Montreal, in September.

**D.F. VanDine**

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

Membership in the Geology Division of CIM reached 2717 members in 1981, constitutes approximately 25% of the total membership of the Institute, and is its second largest division. Geology division activities include publication of technical papers in the CIM Bulletin, preparation of special volumes on specific areas or geological subjects, supporting a visiting lecturer program to Canadian universities, collation of Abstracts of theses on subjects related to mineral deposits geology, and organization of field trips and field conferences. In 1981, approximately 40 technical papers on geological subjects were published in the Bulletin. These papers all received scientific review from two critical readers, and were subjected to careful technical editing. Special Volume 23, "Platinum-Group Elements: mineralogy, geochemistry, recovery", edited by L.J. Cabri, was published; this volume contains 11 chapters (267 pages) discussing geochemical, mineralogical and metallurgical aspects of these metals. The Gold Symposium volume, which resulted from a field symposium held in 1980, is complete and will be published early in 1982.

Three field excursions and one field conference examined the niobium-tantalum deposits of the Chicoutimi district, Quebec, massive sulphide deposits on Vancouver Island, a variety of deposits in the Yukon and western N.W.T., and the uranium deposits of the Athabasca district, Saskatchewan. The latter field conference, co-sponsored with the Society of Economic Geologists, was attended by 450 people. Jet aircraft were used to visit the Uranium City, Cluff Lake, Key Lake and Rabbit Lake areas. In addition, geological aspects of many uranium districts in North America were described in the two-day symposium held in Saskatoon.

Approximately 12 lecturers visited 30 Canadian universities, presenting talks on a variety of geologically oriented subjects. The Geology Division thus continues to provide a valuable educational service, in addition to fulfilling its role of service to its professional membership.

**J.M. Franklin**

### **4. The Canadian Society of Petroleum Geologists**

During 1981, the membership of the society grew to nearly 3400 members with activities conducted by 70 committees. One of the most active committees has been the group working toward the 1982 AAPG Convention to be held in Calgary June 27-30, 1982 which is expected to attract 10 000 delegates.

The society has held 21 noon hour technical meetings throughout 1981 with average attendance of 900 members. Effort also continued to maintain the society as a national entity, particularly through co-operation with other societies, through CSPG area representatives and through contact with the universities. The CSPG student-industry field trip, sponsoring student attendance from universities across Canada, has been useful in this regard.

The third International Symposium on Arctic geology was held by the society in 1981. The proceedings will be published in 1982. The society also sponsored a two-day conference on the Canadian Pacific Continental margin at the Pacific Geoscience Centre in Sidney, British Columbia.

In 1982, the society looks forward to the joint CSPG-AAPG Conference in Calgary, the jointly CSPG-GAC sponsored XI Congress of the International Association of Sedimentologists in Hamilton, Ontario and the 1982 CSPG Sedimentology Conference, Calgary, in March. The society is also sponsoring a half-day session at the GAC Cordilleran meeting in Vancouver.

The first two volumes of the Lexicon of Canadian Stratigraphy, covering The Arctic Islands and the districts of Mackenzie and Yukon, appeared in 1981. Work on the remaining four volumes is under way. Memoir 7, The Geology of the North Atlantic Borderlands, was completed. Four volumes of the Bulletin of Canadian Petroleum Geology and 11 issues of the Reservoir were published. A geological calendar for 1982 was prepared and the geology highway map of Alberta reprinted.

Three programs of Continuing Education in Remote Sensing, Geophysics for Geologists and Cordilleran Geology attracted about 400 attendees. A Core Conference sponsored by the society was attended by 800 geologists.

The society's honorary address featured a NASA scientist, Bradford Smith, who spoke on NASA investigations of Saturn. The society's distinguished lecture tour visited 10 universities. The topic was the Hibernia Structure and the lecturer Ron McKenzie.

In 1981 Honourary Membership was awarded to Rein de Wit. The CSPG Medal of Merit for 1981 was awarded to Frank Stoakes for his paper on the Upper Devonian of Alberta. The R.J.W. Douglas Memorial Medal for outstanding scientific contribution in Canadian sedimentary geology was awarded to Ray Thorsteinsson for his work in Arctic Canada. The Link Award for best oral presentation was given to Donald G. Smith and Peter E. Putnam. Eleven CSPG Tracks Awards were made and special presentations were made to E.E. Pelzer, Peter Sherrington and Robert D. Orr. The CSPG award for best M.Sc. thesis was made to Bret Mattes, McGill University, and the award for best Ph.D. thesis to Margaret E. McMechan, Queen's University. Undergraduate awards were made to students in 22 universities. The John B. Webb Memorial Trophy for best paper at the Western Interuniversity Conference was won by Scott Carmichael of the University of British Columbia. The CSPG trophy for the Atlantic Interuniversity Conference was won by Karen Pelletier of Memorial University of Newfoundland.

The six divisions of the CSPG on Structure, Sedimentology, Coal, Geochemistry, Paleontology and Geomathematics continued to hold meetings relating to their specialities throughout the year.

The Society continues to support the Gallagher Library at the University of Calgary and 31 students from 28 different universities attended the student industry field trip. The education committee held two field trips and a workshop for high school teachers.

The CSPG has also maintained representation on the Canadian Geoscience Council, at the AAPG House of Delegates, on several APEGGA Committees, on the Canadian Committee for the World Petroleum Congress, and on the Petroleum Resources Communication Foundation.

**A.E. Calverley**

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

The Annual Meeting of the Canadian Society of Soil Science was held at Brock University, St. Catharines, Ontario from August 10-14th in association with the Agriculture Institute of Canada annual meeting. The program consisted of four technical sessions with 37 papers submitted by members. Two symposia entitled "Limits to Crop Productivity" and "Sustaining Agriculture in an Urbanizing Region" were also held in co-operation with the Canadian Societies of Agronomy and Agricultural Economists, respectively. The latter society also was involved with the Canadian Society of Soil Science in a tour/workshop to examine land resources and land use conflicts in the Niagara fruitbelt.

The society honoured two members at the awards banquet, Roger Baril, and Bob Soper, with recognition as Fellows of the Canadian Society of Soil Science.

Some of the activities of the Canadian Society of Soil Science during the past year are summarized as follows:

"A Manual on Soil Sampling and Methods of Analysis" has been reprinted and is again offered for sale at a cost of \$10 to members and \$13 to non-members.

A brief on "Soil Erosion on Agricultural Land in Canada" also has been prepared.

Both publications are available through the office of the Agricultural Institute of Canada, 151 Slater St., Ottawa K1P 5H4.

**C.J. Acton**

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

The Canadian Well Logging Society has enjoyed a busy and fruitful year. Active membership has increased by some 20% to over 600 members in 1981 while corporate membership has risen rather dramatically from 34 in 1980 to 72 in 1981. Attendance at the monthly technical luncheons has increased substantially from average gatherings of 100 to 150 in previous years to 250 to 350 this year.

John Lishman, a petrophysicist with Chevron Standard in Canada, was elected an Honourary Member of the CWLS. Since 1954 Mr. Lishman has contributed substantially to the Society and to the science of formation evaluation. His publications relate to the use of resistivity and sidewall neutron logs, hydrodynamics and pore fluid pressure data and core permeability and anisotropy. His election brings the total honorary membership to 6.

The practice of holding joint meetings with other technical societies was continued with June and September meetings being held jointly with the Petroleum Society of CIM and the CSEG respectively. The biannual symposium was held during the last three days in September. This year's theme was "Energy self-sufficiency: Target for the Eighties". Some 27 technical papers were included in the program. A wide variety of topics were covered, ranging from pure log analysis through drillability tests and heavy oil occurrence. Many of the papers presented will be republished over the next year in the Petroleum Society of the CIM's "Journal of Canadian Petroleum Technology" (JCPT). Under an agreement between CIM and CWLS, concluded last year, CWLS members received the JCPT at no charge and CWLS news and technical papers are being published in this journal. A special edition of JCPT devoted to the history of Log Analysis in Canada will be published in early 1982.

As an ancilliary event, a short course entitled "Automated Lithofacies mapping from Well Logs" was given by J.H. Doveton, Kansas State Geological Survey. The text of this course has become a special publication of the society. Bound copies of the complete symposium transactions are also available.

The CWLS is embarking on an ambitious project to provide a manual of log interpretation and formation evaluation of most major oil and gas pools in Canada. This report will be published as a companion volume to a CSPG publication dealing with the geology of these pools. Completion is expected in 1983.

*Hugh W. Reid.*

## **7. The Geological Association of Canada**

Year end of 1981 culminated in a record high membership, just 101 short of the elusive 3000. As in previous years the bulk of members continue to be concentrated in Ontario and British Columbia, but increasing percentages are reported from Alberta and Quebec. The 1981 Annual Meeting was held at Calgary in conjunction with MAC and CGU. Attendance at this meeting provided a high for recent years and was approximately 46 per cent above the numbers attending the 1980 joint GAC/MAC meeting.

The Editorial Committee and the editors acting for the Association succeeded in producing three Special Papers in 1981. Special Paper 21 – Cretaceous Rocks and Their Foraminifera in the Manitoba Escarpment, edited by D.H. McNeil and W.G.E. Caldwell, appeared early in the year and Special Paper 22 – The Buchans Orebodies: Fifty Years of Geology and Mining, edited by E.A. Swanson, D.F. Strong and J.G. Thurlow was completed in time for the May Annual Meeting. Special Paper 23 – Sedimentation and Tectonics in Alluvial Basins, edited by A.D. Miall went for final printing at the year end. One further Special Paper – Major Structural Zones and Faults of the Northern Appalachians, edited by P. St. Julien and J. Béland is in the final stages of preparation.

The highest award of the Association, the Logan Medal, was presented in 1981 to W.S. Fyfe, Chairman of the Department of Geology at the University of Western Ontario, for his many and varied multi-disciplinary researches in geology as well as pure and applied geochemistry. The 1981 Past President's Medal was awarded to D.J. Templeman-Kluit, of the Geological Survey of Canada, for his outstanding contributions to Cordilleran geology. D.F. Strong, the 1981 recipient of the Past President's Medal gave a lecture entitled 'Granitoid rocks and associated mineral deposits of North Atlantic Paleozoic orogens', to groups of Association members across Canada, a tour route repeated by Dirk Templeman-Kluit in the Fall of 1981. Dr. Templeman-Kluit's lecture was entitled 'Yukon tectonic elements and a collision model for the evolution of the Canadian Cordillera'.

The Duncan R. Derry Medal was awarded by the Mineral Deposits Division of the Association to D.F. Sangster of the Geological Survey of Canada for his many achievements in economic geology in Canada.

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

The Mineralogical Association of Canada held its 1980 annual meeting in Calgary, in conjunction with the GAC and the CGU. Prior to the meeting, a short course entitled "Fluid Inclusions: Petrologic Applications" took place at the University of Calgary. The course was organized by E.D. Ghent, L.S. Hollister and M.L. Crawford, and stressed the applied aspects of fluid inclusion work in the geosciences. Subsequent to the annual meeting, a short course entitled "Clays and the Resource Geologist" took place at the University of Calgary. The course was organized by F.J. Langstaffe, and as is the custom with MAC short courses, addressed the applied and industrial aspects of this topic. Both short courses were extremely successful and the organizers are to be congratulated on their work. MAC sponsored several technical sessions at the meeting. G. Donnay organized a symposium entitled "Crystallographic Advances of Geologic Import", setting up a program of extremely eminent speakers from around the world. E.D. Ghent convened a symposium dealing with "Advances in the Study of High Grade Metamorphic Rocks". I. Hutcheon organized a special session entitled "Modern Approaches to the Diagenesis and Geochemistry of Clastic and Carbonate Rocks".

D.G.W. Smith gave the MAC Presidential Address "Microbeam Analysis in the Earth Sciences: Into the 1980s" prior to the Annual Luncheon. At the luncheon, the Hawley Award for 1981 was presented to R.B. Ferguson in recognition of his paper "From Unit-Cell Parameters to Si/Al Distribution in K-Feldspars", published in Vol. 18 of the Canadian Mineralogist.

## REPORTS OF THE ASSOCIATE MEMBER SOCIETIES

### 1. *Associate Committee on Geotechnical Research*

The Associate Committee on Geotechnical Research is one of about 25 technical committees which assist the National Research Council in the co-ordination of scientific and industrial research in Canada. Members of the Committee are appointed by Council. The Associate Committee on Geotechnical Research was established in 1945 to co-ordinate and stimulate research on the engineering and physical aspects of the terrain of Canada. The original six-member Committee was concerned with the operation of tracked military vehicles over terrain. With the end of hostilities, the Committee turned its attention to civilian needs. Subcommittees were established to deal with specific problems under the following general terms of reference:

"To define problem areas in their assigned field, advise the Associate Committee on research needs, follow through actively in promoting research and assisting in the publication and application of results."

There are presently six Subcommittees that are concerned with Peatlands, Permafrost, Snow and Ice, Soil and Rock Engineering, Urban Engineering Terrain Problems and Marine Geotechnical Engineering. There is also a task group to study problems of toxic waste disposal.

The Subcommittees are active in the organization of research conferences, seminars and workshops on specific topics. For example, there have been a series of Muskeg Research Conferences and Permafrost Conferences (the most recent held in Calgary, March 1981), and also special conferences such as the First Canadian Conference on Marine Geotechnical Engineering in Calgary, April 1979. Whenever possible, such activities are carried out in conjunction with professional activities, in particular the Canadian Geotechnical Society. At present, the Committee is organizing the 2nd Canadian Conference on Marine Geotechnical Engineering which will be held in Halifax, June 7-10, 1982.

The Associate Committee is the Canadian adhering organization with the International Society for Soil Mechanics and Foundation Engineering and the International Tunnelling Association. In collaboration with the Canadian Geotechnical Society and the Tunnelling Association of Canada, it forms the Canadian Section of the two International Societies.

The Committee publishes its work in a series of Technical Memoranda, which are distributed by the Publications Office of the National Research Council. Enquiries about the Committee and its publications may be directed to:

The Secretary,  
Associate Committee on Geotechnical Research,  
c/o Division of Building Research,  
National Research Council of Canada,  
Ottawa, Ontario. K1A 0R6

The present officers of the Committee are:

Dr. L.W. Gold, Chairman  
Mrs. W.J. Eden, Technical Advisor  
Mrs. J. Curran, Secretary

Recent publications include:

Technical Memorandum No. 126 – Results of a Survey of Research in Geotechnics at Canadian Universities. November 1979.

Technical Memorandum No. 127 – Proceedings of the Eighteenth Muskeg Research Conference, 15 August 1979. June 1980.

Technical Memorandum No. 128 – Proceedings of Symposium on Permafrost Geophysics (No. 5) 13-14 November 1978. July 1980.

Technical Memorandum No. 129 – Workshop on Winter Roads, 18-19 October 1979. September 1980.

Technical Memorandum No. 130 – Proceedings of Workshop on Permafrost Engineering, 27-28 September 1979. December 1980.

Technical Memorandum No. 131 – Mineral Terrain Terminology. January 1982.

Technical Memorandum No. 132 – Guidelines for Weather, Snowpack and Avalanche Observations. October 1981.

Technical Memorandum No. 133 – Proceedings of Avalanche Workshop, 3-5 November 1980. October 1981.

## **2. Geological Survey of Canada**

The overall objective of the Geological Survey of Canada is to ensure the availability of comprehensive knowledge, technology, and expertise concerning the onshore and offshore geology of Canada including geological aspects of mineral resources and non-renewable energy resources and geological conditions affecting land and seabed use. In working towards the attainment of this objective the Survey determines the resource base of Canada, facilitates formulation of mineral and energy policy, assists in resource exploration and exploitation and promotes effective management of land and resources.

The 1981-82 budget of the Survey was about \$39.7 million and the authorized strength was 757 person years. The Survey is divided into 9 divisions, 6 in Ottawa (Precambrian Geology, Terrain Sciences, Economic Geology, Resource Geophysics and Geochemistry, Central Laboratories, and Geological Information) and 3 outside of Ottawa (Atlantic Geoscience Centre-Dartmouth, N.S., Institute of Sedimentary and Petroleum Geology - Calgary, and Cordilleran Geology - Vancouver and Patricia Bay, B.C.).

In August 1981 W.W. Hutchison 15th Director General, was appointed Assistant Deputy Minister, Earth Sciences in the Department of Energy, Mines and Resources and was succeeded as Director General on January 1, 1982 by R.A. Price who had rejoined the GSC in September 1981 as co-ordinator of the 1:1 million atlas. Prior to that appointment Dr. Price had been associated with the Department of Geology at Queen's University since 1968.

During the year planning continued for the Canadian contribution to the Geological Society of America's "Decade of North American Geology". Workshops were held and J.O. Wheeler, co-ordinator, attended many of these. R.G. Blackadar and R.A. Price as well as J.O. Wheeler are Canadian representatives on the overall Steering Committee, Price and Wheeler representing the CGC and Blackadar representing the GSC. This committee meets twice during the year.

The GSC program in the sedimentary basins of Western Canada and the Arctic continued to suffer the now familiar turnover of staff although by the end of 1981 the downturn in the economy was reflected in the greater availability of support staff. There were 10 resignations but 25 appointments were made.

During the period 1981-82 the GSC, one of Canada's major publishers of earth science information published 5 memoirs, 19 bulletins, 1 miscellaneous report, 31 multicoloured maps, 45 two-colour maps, 39 papers and released 85 Open File items. The number of printed pages published exceeded 3500. Included in this output were the proceedings of a symposium on the Proterozoic Basins of Canada sponsored by the GAC in May 1980 and a collection of historic photographs from the GSC's own collection.

During the year oil and gas resource estimates of the East Newfoundland Shelf (including the Hibernia field) were updated and for the first time included cost, discovery and supply projections. In addition the first evaluation of the oil and gas resource potential of the West Coast Offshore was made public and in co-operation with the government of British Columbia estimates of the natural gas resources of the northeastern part of the province were updated.

The demand for regional mineral appraisals of northern Canada continued in 1981 and reports on areas in northern Yukon and Ellesmere Island were prepared. Such appraisals are used in connection with native people's landclaims and the evaluation of areas proposed for new national parks.

The aeromagnetic survey of Canada was continued and about 40 000 line kilometres were flown in Labrador. Since 1947 more than 8 million line kilometres have been flown. In 1981 the last maps required to give complete aeromagnetic coverage of Quebec were printed. The first four 1:1 million coloured compilation maps based on the existing database were released in 1981.

Acid precipitation has become a topic of considerable national concern and in June 1981 the GSC published, in both French and English editions, a report and three maps covering an area extending from the East Coast to west of the Great Lakes in which the sensitivity of bedrock and derived soils to this process is described.

More than 300 people from industry, provincial government agencies and the universities attended a 2-day "Current Activities Forum" held in Ottawa just after the end of the period covered by this report. The results of on-going studies were presented by means of 19 talks and 35 poster sessions. Another facet of the GSC's program to communicate with the public is reflected by the distribution statistics for the Vancouver, Calgary and Ottawa publication outlets: 105 552 maps and 39 073 reports were distributed in 1981-82.

**A SUMMARY OF THE SECOND ANNUAL REPORT  
OF THE TECHNICAL ADVISORY COMMITTEE ON THE  
NUCLEAR FUEL WASTE MANAGEMENT PROGRAM; MAY 1981**

The Technical Advisory Committee of distinguished scientists and engineers was established by Atomic Energy of Canada Limited (AECL) in June, 1979. Its members are selected entirely from nominees submitted by the major scientific and engineering societies of Canada: the Biological Council of Canada, the Canadian Association of Physicists, the Canadian Federation of Biological Societies, the Canadian Geoscience Council, the Canadian Institute of Mining and Metallurgy, the Chemical Institute of Canada, the Engineering Institute of Canada and the Information Processing Society of Canada.

The role of the Technical Advisory Committee is to advise AECL on the extent and quality of the technical program on nuclear fuel waste management, acting as an independent peer review committee. The Committee also accepts a role in interpreting and evaluating the program for the scientific and technical community, and the general public. This second annual report of the Committee describes its continuing review and assessment of the program.

In reviewing the basis for assessment of the overall concept of deep geological disposal, the Committee notes that developments in other countries, as well as international studies, lend credence to the validity of the general concepts adopted in the Canadian program. The Committee strongly supports the systems approach being used in the analysis to evaluate the total consequence of the disposal system. While such an approach must involve criteria for acceptance and some possible criteria are being usefully applied in a preliminary fashion, caution is advocated against any hurried development of specific final criteria.

All major areas in the research program were evaluated over the past year. The Committee considers that the overall program is well conceived and notes, with approval, the effort now being placed on the preparation of detailed program documents, as requested in the Committee's previous report. Significant progress was achieved in many areas of the program. The Committee remains concerned, however, that lack of access to additional field research limits the scope of the program and urges that such impediments be resolved as soon as possible. Recognizing the degree of international co-operation and the resources available in Canada, the Committee supports the concentration of research on disposal in hard rock plutons of the Canadian Shield.

The Technical Advisory Committee considers the application of Systems Variability Analysis to environmental and safety assessment appropriate. The assessment objectives are both logical and comprehensive, correct methods are being followed and progress, to date, is satisfactory. A stage has now been reached where the assessment can give definition and guidance to the program and its usefulness in determining research priorities is noteworthy. Recognizing that the application of Systems Variability Analysis is in the early stages of development, the Committee supports the continuing caution with which it is currently used. Nevertheless, the Committee strongly urges the inclusion of means to identify and take into account interaction between the component models and nonlinear and transient effects. Efforts should also be made to ensure the reliability of the models used in the assessment studies.

In the area of environmental research, the Committee feels strongly that the disposal site at the Chalk River Nuclear Laboratories constitutes a unique resource which should be more fully utilized for radio-ecological studies. It also suggests that serious consideration be given to concentrating all bioscience work there and strengthening the team by appointing a plant physiologist.

Technically, the Committee believes that the individual elements of the geoscience research program are of high value; however, they lack overall co-ordination without which a timely evaluation of the composite rock mass response may not be achieved. The Committee is entirely satisfied with the regional geology studies in northern Ontario and the detailed surface studies of granitic plutons done at CRNL, at Atikokan and at WNRE. There is a need to expand this work to include research work on other rock types such as gabbroic plutons. The Committee commends the intention to test the premise that the geological characteristics of a relatively small area of a pluton can be representative of the whole rock body.

The Technical Advisory Committee is pleased that the establishment of a Hydrogeology Review Panel, combined with wide ranging discussions, has helped elucidate detailed hydrogeology research objectives. The very limited field data collected so far in the hydrogeology program indicate that more resources and effort will be required than originally allocated. A need is seen for expanded studies of groundwater flow systems, chemistry and age along with the hydrogeological characteristics of Precambrian terrain in Canada. Continued and extended work on hydrogeological modelling is also required.

The Committee agrees with the decision in the vault sealing program to concentrate, at this time, on buffer material development. However, when increased funding becomes available, prompt attention should be given to vault and shaft sealing aspects.

The Committee commends the program of studies to determine the effects of temperature and water composition on waste-water-rock reactions. However, the Committee suggests that consideration should be given to interactions with buffer and back-fill materials. The sorption process is an important area for the environmental and safety assessment and it is important to

determine if the approach being taken leads to conservative assumptions. Additional workshops to discuss new developments in this field are recommended. Much of the work on waste-water-rock interactions is suited to existing research facilities in Canadian universities and this is an area where increased contributions could be made to the waste management program by the academic community.

In general terms, the Technical Advisory Committee deems a ten-year generic research program and increased funding levels are both realistic and crucial to the fulfillment of the research objectives and would give the necessary emphasis to the high priority geotechnical work required. The Committee is pleased to note the continuing and expanding participation from universities, industry and consulting groups.

The Committee once again expresses its full support for the development of the Underground Research Laboratory with its significant potential for providing relevant information for the whole disposal program. To maximize the benefits from this facility, it is important to determine, as fully as possible, the geophysical, surface geological and regional hydrogeological characteristics of the undisturbed rock body. Co-ordination of the multidisciplinary program envisaged for the Laboratory requires a clear statement of detailed program objectives. Such a document is now under study by an Underground Research Laboratory Review Panel in which Technical Advisory Committee members participate.

Research objectives for both fuel and waste immobilization are well defined and comprehensive. The Technical Advisory Committee urges that increased efforts should be given to studies of packed-particulate containment systems for fuel immobilization. Efforts directed towards predicting the corrosion performance of container materials in a vault environment are commendable. However, the Committee urges greater participation of the scientific community in assessing and developing the best research strategies to achieve the necessary performance assessment. Continued work is recommended on assessing the consequences of colloid formation in uranium solutions in a vault environment.

In the waste immobilization area, the explicit recognition of the relationships between product development and process development is commended; this work is well integrated into the international scene. The Committee agrees with the high priority given to leaching rate studies and the attempts to relate them more adequately to eventual disposal conditions.

Although the Committee feels that more results of the research program should be published in the scientific literature, it commends, in the highest possible terms, AECL and other program participants for the degree of openness in making available information and results from the program. The availability of information pertains not only to the Technical Advisory Committee, but to the scientific community at large and to the general public.

The full report is available, on request, from the Chairman of the Technical Advisory Committee:

Dr. L.W. Shemilt,  
c/o Room 136, Engineering Building,  
McMaster University,  
Hamilton, Ontario,  
L8S 4L7.

**COMING FULL CIRCLE: RESPONSE TO THE 1979 CGC REPORT –  
GEOLOGY AND GEOPHYSICS IN CANADIAN UNIVERSITIES  
(GSC Paper 80-6, Part 1, 1981)**

This study, probably the most ambitious yet undertaken by Council, has also proved in many ways to be the most successful. It has built upon and updated some of the statistics and data published in the 1971 Science Council report "Earth Sciences Serving the Nation" which is widely recognized as a significant point of departure from which our science grew and flourished over the past decade in Canada. Our recent Council report also attempted to interpret the new data, to offer commentary and opinion, and to provide guidelines for future development. A requirement of NSERC, one of the funding agencies, was to provide criteria for recognition of excellence. The report has attempted to do this and, also, by soliciting opinions from a wide variety of sources at home and abroad, to identify excellence and the manner in which it is attained in many aspects of teaching, research, technology transfer and public communication.

The report was written chiefly for the benefit of Canadian universities and for the government agencies and resource industries that support and use their research and hire their graduates. Initially, the study was regarded with suspicion and resentment by some elements of the university community and this feeling has obviously persisted in a few quarters as indicated by the published letter reproduced, in part, below. On the whole, however, it has been warmly received by academics. At least one university president has cited it in a convocation address and deans and department heads have used it to identify their weaknesses and strengths and to become aware of new approaches underway in other schools. Government agencies have also found the report useful and, although they question certain recommendations, they have invited our Council to pursue some of the suggestions made in regard to university support – as exemplified below by parts of letters from a Cabinet minister and a senior civil servant. Several petroleum and mineral exploration companies, despite curtailment of activities during the current recession, admit to being induced to re-examine their research support programs and their relationships with universities. At least one of our Council's member societies (CSPG) has also taken the report's advice to heart and endeavoured to broaden its horizons in co-operation with sister societies.

The university report has also attracted attention abroad. One of the authors was asked to prepare a summary for the U.S. magazine *Geotimes* (May 1981, p. 21-24); the Association of Geoscientists for International Development acquired some hundreds of copies for distribution at a major meeting; and several newsletters and journals have reviewed it favourably and called for similar studies in other countries. Some excerpts from reviews are reproduced below.

Our Council is grateful to NSERC and to GSC who together provided the modest sums required to fund the study. The major input came from volunteer committee members and authors and from the company managers, federal and provincial geoscientists and university people who took time and trouble to answer several questionnaires and queries and to participate in discussions and interview sessions. Most of the following brief abstracts from typical letters and reviews suggest that the report will eventually benefit all of those who contributed to it.

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The preface of *The Geosciences in Canada, 1979. Part 1: Geology and Geophysics in Canadian Universities* (E.R.W. Neale and J.E. Armstrong. Published for the Canadian Geoscience Council by the Geological Survey of Canada as Paper 80-6, Part 1; pp. 154; 1981) neatly summarises what the publication is all about. It does not, however, reveal it as one of the most entertaining "State of the Art" reviews one could possibly come across, nor that it is written with style, understanding and some delightful flashes of humour – and packed with factual information.

The point is that much of what is happening in Canada is probably true of here (certainly like many a sociological study it confirms a lot of one's prejudices!), only we live in a University system where no such serious effort has ever been made to assess the quality of either the work we do or the graduates we produce (hence the commonly held feeling that the current UGC "plans" for the Universities reflect the nescience and prejudices of an old-boy network determined to preserve its privileges. We do, I gather, have a body known as the British National Committee for Geology, but have you ever read a report on its activities? Should it not be thinking of an in-depth study of what is going on in Geology in this country? We might even get some informed decisions from the UGC that way!)

I was particularly impressed with the attempt in the body of the report to define what research is all about, how it is seen to have developed and how it is funded. (The problems NSERC has in deciding who gets grants rouse the same passions in Canada as NERC does here!). The observations of industry compared with those of academics outside Canada are revealing. The "pecking order" of

Universities as seen from industry's point of view, from the NSERC point of view and from outside Canada invites speculation and has no doubt caused acrimonious discussions in certain places. The "reputation" of a Department is of course something that is difficult to define, and furthermore the situation is never a static one. I often think that one of our problems is that a Department's reputation outside the immediate world of academic specialists is almost always at least a decade out of date. School teachers and industry-employed scientists still look back at things as they appeared to them when students – and even then one only has to talk to any group of undergraduate students to realise how little they know of what is going on outside their own universities and how such views as they have are based mainly on the views (and prejudices) of their teachers.

The main message of this study to me therefore comes back to problems of communication. We as a geological community are not getting across to our University colleagues, to industry, to politicians, to school-leavers or to the public at large that Planet Earth needs looking after and that geologists are an important group of scientists who should be listened to with attention. But we also need periodic reviews of ourselves, by ourselves, to keep our house in order.

The Canadian Geoscience Council is to be congratulated for initiating this study – the baby that is Canadian academic geology is healthy and looks as if it will continue to develop in a most satisfactory way, given the sustenance it deserves!

*From "Open Earth", No. 13, 1981.*

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The views of both the Petroleum Industry and the Minerals Industry were sought on current undergraduate programmes. From their replies there is clearly a strong feeling that instruction in report writing and oral presentation should become an integral part of all geology and geophysics curricula.

The appendix to this section which sets out in some detail the views of Mining and Mineral Exploration companies makes fascinating reading. One wonders how well the curricula of U.K. universities would survive a similar exercise. In fact is it not time for the employers of U.K. graduates to be identified and their ideas sought on the training of their future employees?

Interestingly, however, the authors of the report recommended that there should be a decrease in the current over-emphasis on frontier research by encouraging those who are ill suited to it to concentrate on reflective enquiry and to address their talents to teaching and other legitimate scholarly activities. I would like to direct this opinion at British universities and polytechnics and suggest that the pages of the *British Geologist* would be an appropriate place to focus the debate.

This report presents a valuable analysis of geology and geophysics departments in Canadian universities and provides both the statistical evidence and the intelligent commentary which can form the basis for future policy changes. It is a matter of great regret that at a time when the Government are precipitating rapid changes in the University sector in this country we do not possess a similar document so that rational policy decisions can be made.

*From a review in British Geologist,  
Vol. 7, November, 1981*

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University departments were visited by members of the review committee who met individuals and groups of faculty members, to ask questions, obtain data etc. We were also asked to submit numerous data on all manner of things. Since this department publishes a detailed report every year containing not only the information requested but a lot of other information as well, we submitted copies of our annual reports covering several years. In March 1979 we were asked to fill out questionnaires which requested information already in the annual reports. Since we considered that we had already fulfilled our promise of cooperation, we simply sent the latest report and assigned a low priority to the questionnaires – something to be done if we had time; we did not refuse to fill it out. In fact, I still have the letter of request and questionnaire forms sitting on my desk in the pending pile, where they have been since the time of their arrival waiting for attention; unfortunately although they obviously started at the top they are now approximately 0.00006 km from the top (what is a typical figure for annual sedimentation rate?). I assure you that we had good intentions it was

simply a matter of ordering our priorities. Had the committee recommended one of the most cost effective ways of improving efficiency by suggesting that provincial governments supply sufficient funds to universities to hire an adequate number of support staff, and in the unlikely event that some action had been taken on such a recommendation, I am quite certain that we would have got around to answering the CGC questionnaires within the next decade or two; hell, we might even hire a couple of people just to fill out questionnaires.

However, there is a much more disturbing aspect of the whole operation of the CGC review process from conception to completion, although since we come out reasonably well, it may be churlish of me to raise the matter. In a letter to Department Chairman in March 1979, the following sentence appeared at the end of the first complete paragraph on page 2. i.e. "In particular, it is not our intention that the report should rate the University departments one against another for any purpose".

This leads me to compose a one question questionnaire. In the light of such an explicit statement, how could the committee proceed to spend, and the CGC to endorse the spending of, so much time, effort and good cash doing precisely what they said they wouldn't do?

*From a letter by A.E. Beck appearing in Geoscience Canada, Vol. 8, no. 3, September 1981*

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I find the humane treatment of those ill-suited to frontier research refreshing. It is very apparent that in some segments of the community the tendency to discard undeveloped or burned-out researchers is paramount. The encouragement and support of reflective enquiry is very attractive.

The discussion on the measurement of excellence is very interesting. Some of the indicators used could certainly be applied to the age old problem of comparing leading individuals in different disciplines and thus of comparing the discipline funding levels.

I note that the report recommends accelerating the rate of support increases to geosciences by NSERC. I think that Council might have some difficulty with that degree of selectivity, but I can see the possibility that the acceleration may take place anyway based on the recent consolidation of interests that is taking place under the chairmanship of Dr. Fyfe. The spirit that was generated at the recent Ottawa University meeting may be the required spark for a new round of activity.

*From a letter to Dr. J. Wheeler from Dr. G.M. MacNabb, President of the Natural Sciences and Engineering Research Council of Canada, April 13, 1981*

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The authors have succeeded in producing an excellent, well organized and penetrating survey which leaves little doubt that Canadian geoscience, particularly if viewed in relation to the country's population, is truly a world leader. Not less impressive is the willingness to openly discuss shortcomings and suggest modifications to existing structures, projects or attitudes. The section on "recommendations" thus assumes a significance far beyond the Canadian context.

The reader familiar with the European universities scene, dominated as it is by centralist ministerial bureaucracies and rigid structures, will find he now better understands the structural reasons for the superiority of Canadian geoscience: tenure and salary increments are related to merit, not to age, research funding is competitive with an elitist element, curricula are elastic and not a matter for parliamentary commissions, direct government interference in university matters is minimal, and an expanding resource industry provides stimuli and opportunities.

The report is much more than a survey of Canadian curricula and research projects – it is probably the best anatomy of our profession published anywhere and it is a "must" for every geoscientist who wonders if and how we can meet the challenge of the future.

*From a review in Mineral Deposit Research*

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May I take the opportunity to congratulate the Council for producing such a comprehensive yet concise report with pertinent reference data. It is a pleasure to learn of the high regard for geoscience study and research in Canadian universities, and to read your recommendations on how these might be further strengthened.

Two of the comments in the report refer specifically to my Department. In one you urge the Geological Survey of Canada to fulfill its mandate for the well-being of national geology by increasing its support of university research by contracts and research agreements. In response, may I acknowledge the valuable contributions of the research for my Department that has been conducted under contract by universities. I understand that the Geological Survey has a number of contracts each year with universities or with professors and graduate students. The Geological Survey values this input to its program and will continue at a level permitted by its budget.

In another recommendation relating to the Geological Survey, the report proposes that EMR appoint external reviewers to aid in evaluation of research agreement applications. This proposal slightly puzzles some of my advisers because representatives of your Council monitored the review of the submissions for the 1976-77 awards and concluded that decisions were fair and equitable and that considerable internal knowledge of the Department's program would be required to evaluate the potential contribution of each proposal. Nevertheless, the Geological Survey of Canada would welcome additional advice and is therefore willing to discuss the possible role of external reviewers to assist in selecting research agreement projects. I suggest that you explore this matter directly with W.W. Hutchison, Director General of the Geological Survey of Canada.

*From a letter to Dr. J.O. Wheeler, CGC President,  
from the Honourable Marc Lalonde,  
Minister of Energy, Mines and Resources, May 15, 1981.*

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Table 4  
Confirmed Significant Hydrocarbon Discoveries 1979-81\*

Region/Area	Well Name	Discovery Year	Formation/Type	Operator/Participants
Scotian Shelf	Venture D-23 44-02-14N 59-34-21W	1979	Cret./Gas	Mobil/PEX
Grand Banks	Hibernia P-15 46-44-58N 48-46-52W	1979	Cret./Jur./Oil	Chevron et al.
Beaufort Sea	Ukalerk 2C-50 70-09-05.3N 132-43-48.9W	1979	Tertiary/Gas	Dome/Gulf
Beaufort Sea	Kopanoar M-13 70-22-55N 135-05-34W	1979	Tertiary/Gas/Oil	Dome/Gulf
Beaufort Sea	Nerlerk M-98 70-27-47.62N 133-29-43.37W	1979	Tertiary/Oil	Dome
Beaufort Sea	Tarsuit A-25 69-54-9.25N 136-20-20.27W	1979	Tertiary/Gas/Oil	Dome/Gulf
Arctic Islands	Whitefish H-63 77-12-18N 106-52-53W	1979	Jurassic/Oil	Panarctic AIEG
Alberta	Blood 10-30-8-23W4	1979	Wabamun/Oil	Kaiser/Gulf
Alberta	Blackstone 11-33-42-16W5	1979	Miss./Gas	Shell/Siebens
Alberta	Brown Creek 11-22-44-16W5	1979	Dev./Gas	Amoco et al.
Alberta	Wembley 7-15-71-7W5	1979	Tri. Halfway/Oil	GAO et al.
N.E. Br. Col.	Sukunka c-45-J-93-P-4	1979	Tri. Halfway/Gas	B.P./AEG
N.E. Br. Col.	Monias 7-30-82-20W6	1979	Perm./Gas	Wainoco
N.E. Br. Col.	July b-27-J-94-P-10	1979	Dev./Gas	Fina et al.
Grand Banks	Ben Nevis I-45 46-34-40N 48-21-10W	1980	Cret./Oil	Mobil et al.
Cumberland	Hekja O-71 62-10-15N 62-58-46W	1980	Cret./Gas/Oil	Aquitaine et al.
Mackenzie Delta	Issungnak O-61 70.01-0.45N 134-18-47.93W	1980	Tertiary/Oil	Esso
Arctic	Char G-07 77-36-30N 99-31-08.W	1980	Jur./Tri./Gas	Panarctic Dome
Alberta	Eaglesham 9-9-77-25W5	1980	Wabamun/Oil	Cdn. Occidental
Alberta	Del Bonita 16-35-1-22W4	1980	Miss./Dev./Oil	Amoco et al.
Alberta	Golden 12-2-87-13W5	1980	Dev./Oil	Norcen et al.
N.E. Br. Col.	Steep Rock c-12-L-93-P-1	1980	Cret./Gas	Cdn. Hunter/Esso
Arctic Island	Cisco B-66 77°25'01.3N 106°23'35.06"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.
N.E. Br. Col.	Gaylor c-14-D-94-B-1	1981	Tri./Gas	Quazar et al.
Alberta	EZ-1 5-36-86-13 West 5	1981	Dev./Oil	Texas Pacific et al.
Alberta	SYN-PEM 6-29-59-10 West 5	1981	Cret./Oil	Texaco
Alberta	Shekilie 16-6-118-8 West 6	1981	Dev./Oil	Canadian Development Corporation
* The information in this table was collected by D.W. Organ of Chevron Standard Ltd., Calgary. It is understood that "significant" is a subjective judgement.				

Table 5

## Significant metallic and precious metal, and uranium discoveries, 1979-81

Among its accomplishments in the 1979-81 period, Canada's mining exploration community lists the following significant mineral discoveries.

This list is an update of a similar list published in 1979 covering the 1976-1978 period

Name and year of Discovery	Responsible Companies	Location	Type of Deposit	*Grade and reserves
H.W. Mine (1979)	Westmin Resources	Buttle Lake area, Vancouver Island, B.C.	Volcanogenic massive sulphide deposit	Geological inventory indicates 18 773 800 tons of 0.066 oz/ton Au, 0.77 oz/ton Ag, 1.81% Cu, 0.21% Pb, 3.45% Zn.
Cirque (1979)	Cyprus Anvil & H.B.O.G.	N. of Williston Lake, B.C.	Shale-hosted Pb-Zn-Ag-Lower Carboniferous	33 000 000 tons at 2.2% Pb, 7.8% Zn and 1.5 oz/ton Ag.
Black Dome Mtn. (1979)	Black Dome Expl.	Dog Creek area, B.C.	Au-bearing quartz veins in Eocene to Pliocene volcanic rocks	313 000 tons at 0.35 oz/ton Au, 3.21 oz/ton Ag.
Tulsequah (1979)	Cominco Ltd.	N. British Columbia along B.C.-Alaska border	Massive to disseminated sulphides in altered, folded Mesozoic volcanic rocks.	788 000 tons at 0.09 oz/ton Au, 2.90 oz/ton Ag, 1.3% Cu, 1.6% Pb, 8% Zn.
Elf (1979)	Cyprus Anvil	Akie River, N.E. British Columbia	Ba-Pb-Zn shale-hosted showing 4-5 metres thick.	
Clear Lake (1979)	Conwest Grp. Essex Minerals	Yukon Territory along Tintina fault 60 mi. N.W. of Anvil Mine	Shale-hosted massive pyritic sulphide body in Proterozoic-Paleozoic rocks.	25 000 000 tons at 80% pyrite low values of Zn, Pb, Ag.
Dublin Gulch (1979)	Canada Tungsten Mng. Corp. Ltd.	30 mi. N. of Mayo	Tungsten-bearing garnet skarn in Yellowknife metasedimentary rocks and tuffs.	7 272 500 tons at 0.51% WO <sub>3</sub> .
Kathleen Lakes (1979)	Prism Res. Ltd. Chieftan Mrls. Ltd. Dome Pete. Ltd. Asamara Inc.	Kathleen Lakes area, 65 km NE of Keno Hill	Vein structures in Hadrynian-Helikian dolomite	864 000 tonnes at 9.0 oz/tonne Ag, (Vera deposit) 3.0% Pb + Zn.
Pine Point (1980)	Pine Point Mines Ltd.	S. Shore Great Slave Lake	Mississippi Valley Type in dolomite of Presqu'ile Formation	38 000 000 tons of 1.4% Pb, 5.0% Zn + (1980) 6 000 000 tons of 2.4% Pb, 5.0% Zn.
Dawn Lake (1979)	Asamera Oil Corp Sask. Mng. Dev. Corp.	12 mi. NW of Rabbit Lake	Uranium mineralization above and below contact of Athabasca sandstone and Wollaston Gp. metasedimentary rocks.	20 000 000 + lb. of contained U <sub>3</sub> O <sub>8</sub>
McLean Lake (1979)	Can. Occidental Petroleum + Inco Metals	N. Sask., 7 mi. NW of Rabbit Lake Mine	Uranium at contact between Athabasca sandstone and underlying gneisses.	390 000 tons of 1.8% U <sub>3</sub> O <sub>8</sub> .
Opapimiskan L. (1980)	Dome Expl., Esso Minerals. Lacana Mng.	Pickle Lake area, NW Ontario	Au in Archean banded iron formation enclosed in volcanic rocks.	1 000 000 tons of 0.20 oz/ton Au.
Mattabi Deep Ore Zone (1980)	Mattabi Mines	Sturgeon Lake, Ontario	Massive sulphide deposit, volcanogenic associated	not available
Hoyle Pond (1979)	Kidd Creek Mines Ltd.	Timmins-Porcupine area, Ontario near Kidd Creek's concentrator	Three vertical, NE-trending zones with visible gold in volcanic and metasedimentary rocks.	500 000 tons at unstated grade.
Ansil (1980)	Falconbridge Copper	Noranda area, Quebec	Volcanogenic massive sulphide underlain by magnetite at contact between andesite and quartz feldspar porphyry.	Drill hole intersections only 129.5 ft. of 12.42% Cu, 0.10% Zn, 0.61 oz. Ag, 0.117 oz/ton Au.
Kiena (1980)	Kiena Gold Mines Ltd.	Under islands and waters of Lac de Montigny near Malartic, Quebec	Au-bearing quartz in sheared and brecciated basic volcanic rocks of the Abitibi belt.	2 500 000 tons of 0.23 oz/ton Au.
Norbeau (1980)	Consolidated Copper-Lode Dev. Inc.	McKenzie Twp., Chibougamau, Quebec	Gold-bearing quartz veins in a gabbro sill	111 000 tons of 0.20 oz/ton Au.
Gaspé Copper (1980)	Gaspé Copper	Murdochville, Quebec	Skarn copper.	Major extension.
Lake George (1980)	Cons. Durham Mines & Res. Ltd.	Lake George, N.B. 25 mi. SW of Fredericton.	Disseminated stibnite in quartz veins in Silurian slates and quartzites.	150 000 tons of 7% Sb.
East Kemptville (1979)	Shell Canada Res.	S. central N.S.	Cassiterite in quartz vein stockwork in gneiss zones	38 000 000 tonnes at 0.2% Sn to 100 m.

Table 6: Data on member societies of the Canadian Geoscience Council.

SOCIETY AND MEMBERSHIP	OBJECTIVES	MEETINGS, ACTIVITIES COMMITTEES	PUBLICATIONS
ASSOCIATION OF EXPLORATION GEOCHEMISTS P.O. Box 523 Rexdale, Ontario. M9W 5L4  Membership, 1980 Voting 125 Affiliate 17 Honorary 1 Student 8 Corporate 10 Total (Canada) 161 Worldwide 628	To present the professional interests of persons specializing in exploration geochemistry; to advance mineral exploration applications of geochemistry; to disseminate geochemical information and ideas among professional geochemists.	- 1980 Annual General Meeting, Hannover, F.R.G. - 1981 Annual General Meeting, Vancouver, B.C. - 1980 8th International Geochemical Exploration Symposium, Hannover, F.R.G. - 1981 Precious metals in the Northern Cordillera, Joint symposium with the Cordilleran Section of the GAC, Vancouver, B.C. - Regular council meetings. COMMITTEES: Admissions, Bibliography, Case Histories, Geochemical Analysis, Membership, Research and Education	<u>Journal of Geochemical Exploration</u> Elsevier (6 issues/year) - Quarterly Newsletter (to members only). <u>Bibliography of Exploration Geochemistry</u> AEG, 4 vols. 1965-1978 <u>Geochemical Exploration 1976</u> , Elsevier, 494p. <u>Geochemical Exploration 1978</u> , AEG, 504p.
CANADIAN ASSOCIATION OF GEOGRAPHERS c/o Burnside Hall McGill University 805 Sherbrook St. W. Montreal, Quebec H3A 2K6  Life Members 7 Family Members 23 Student Members 380 Full Members 965 Total 1375	To encourage geographical study and research, particularly in relation to the Canadian environment.	- Annual Meeting - Two executive meetings per year COMMITTEES: Careers, Education GROUP STUDIES: Industrial Geography, Medical Geography, Historical Geography, Coastal Management, Recreation and Tourism, Geography of the Urban Fringe.	<u>Canadian Geographer</u> ; published quarterly. Directory: Published annually. Newsletter: Published semi-annually. Publications of the Education Committee, Teaching aids, etc.,
CANADIAN EXPLORATION GEOPHYSICAL SOCIETY (KEGS) c/o Dr. Z. Dvorak, Dighem Ltd. 32010 1 First Canadian Place Toronto, Ontario M5X 1C7 Active members in Canada 149 Members outside Canada 8 Student members 4	To promote mining geophysics, to encourage the flow of information between mining geophysicists, to represent mining geophysicists, when possible, in representations to governments on matters directly involved in the performance of mining geophysics, and to promote high professional standing and fellowship among its members.	- Eight meetings (60), all business/technical meetings are held on the second Tuesday of each month from October to May. - "Eye Opener" Breakfast (85) featuring a guest speaker in conjunction with the Prospector's and Developer's Annual Meeting in Toronto, March.	No formal journal, Abstracts, summaries, and complete papers of talks given to KEGS are appended on the monthly notice of meetings and announcements mailed to all members.
CANADIAN GEOPHYSICAL UNION c/o Dr. P.A. Camfield Secretary-Treasurer Earth Physics Branch 1 Observatory Crescent Ottawa, Ontario K1A 0Y3 Active membership in Canada approximately 278	To advance the science of geophysics and to promote a better understanding thereof throughout Canada.	SUBDIVISIONS: Gravity, Seismology and Physics of the Earth's Interior, Exploration Geophysics, Geomagnetism, Geochronology and Stable Isotope Studies, Geodesy, Mathematical Geophysics. - Appoints 5 members to the Canadian National Committee for the International Union of Geodesy and Geophysics - International Union of Geodesy and Geophysics - Appoint 5 members to the Canadian National Committee.	<u>Canadian Geophysical Bulletin</u>
CANADIAN GEOTECHNICAL SOCIETY (a constituent society of the Engineering Institute of Canada) Secretary: Mr. L.A. Balanko 14915 87th Street Edmonton, Alberta T5E 5T4  Paid Members 1060	To stimulate activities and co-operation among engineers and other professionals for the advance of knowledge in the geotechnical field in Canada. This includes the study of the properties of soil, rock, muskeg, snow and ice, the influence of environmental factors on such properties and the application of this knowledge in practice.	- Canadian Geotechnical Conference, held annually in the fall, in a different Canadian city each year - sponsors or cosponsors national or regional technical seminars, workshops and symposia - sponsors two Cross-Canada lecture tours - sponsors, with CIDA, a foreign lecture tour to Third World countries - Board of Directors meet twice; spring and fall - Engineering Geology Division, annual meeting held in conjunction with Canadian Geotechnical Conference - Technical Committees: Foundation Engineering; Slope Stability; Tunnels; Earth Structures - Regional Sections: Atlantic, Eastern Quebec, Western Quebec, Eastern and Northern Ontario, Southern Ontario, Manitoba, Saskatchewan, Northern Alberta, Southern Alberta, British Columbia; meet approximately 9 times in the year for technical sections.	<u>Canadian Geotechnical Journal</u> (4 issues/year published by the NRC) CCS News, the Society newsletter. <u>Canadian Foundation Engineering Manual</u>
CANADIAN INSTITUTE OF MINING AND METALLURGY c/o Gordon F. Skillings Executive Director Suite 400, 1130 Sherbrooke St. W. Montreal, Quebec, H3A 2M8 Total CIMM membership: 11860 In Geology Division 2595	To stimulate and advance the application of geology, geophysics, and geochemistry in the exploration for, and development and exploitation of, mineral resources by arranging technical discourses, lectures, and discussions; by publication of technical papers; by sponsoring field excursions; and by the promotion and encouragement of research and education in the earth sciences.	- Numerous Branch Meetings COMMITTEES (Geology Division): Publications; University Visiting Lecturers Technical Program; Barlow Memorial Medal; Mineral Deposits Research; Student Essays; Geophysics; Geochemist Distinguished Lecturers; Program Policy GAC-SEG liaison; Nominating.	<u>The Canadian Mining and Metallurgical Bulletin (CIM Bulletin)</u> -monthly <u>The Journal of Canadian Petroleum Technology</u> - quarterly <u>The Canadian Metallurgical Quarterly</u> - quarterly <u>The CIM Directory</u> - yearly <u>Special Volumes</u> - 23 to date

AWARDS	BRIEFS AND POSITION PAPERS	ASSOCIATION WITH OTHER ORGANIZATIONS	OTHER INFORMATION
The By-Laws provide for Honorary members	The case history committee has co-ordinated special volumes on geochemical exploration in Canada, Fennoscandia, the Basin and Range province U.S.A., and Australia.	Canadian Geoscience Council, Australian Geoscience Council, United States National Committee for Geochemistry	The Association of Exploration Geochemists (AEG) was founded in 1970 in Toronto as an international organization. Approximately 27% of the membership are Canadian, with the balance spread across 50 other nations. The Geochemical Analysis Committee has assembled analytical data for 44 elements on a series of six geochemical standard reference samples.
Award for Service to the Profession Award for Scholarly Distinction Annual -prizes to the top honours undergraduate in each Geography Department in Canada.		Canadian Geoscience Council, National Committee on Cartography, Canadian Committee for Geography, Social Science Federation of Canada	Founded in 1951. There are Western, Prairie and Ontario Divisions.
- Don Salt Memorial Scholarship is awarded to the most promising third and fourth year students enrolled in geology or geophysics at the University of Toronto who have an interest in the exploration for mineral deposits.	Contributed to preparation of the brochure "Careers in Geophysics in Petroleum and Mining Exploration", published by the CSEG.		KEGS was formed June 8, 1953 by a small group of mining exploration geophysicists in Toronto. Members probably represent, by their employment, 90% of the mining exploration in Canada. Approximately one quarter of the members reside outside the Toronto area with members living in most provinces of Canada and as far abroad as South Africa and the Philippines.
- J. Tuzo Wilson medal for Outstanding Contribution to Canadian Geophysics. 1981 Recipient: G.D. Garland		Canadian Geoscience Council, Division of GAC, Division of CAP	Annual meeting for 1981 was held in Calgary on May 11-13 with the Geological Association of Canada and the Mineralogical Association of Canada. The 1982 annual meeting will be a "stand-alone" meeting at York University, Downsview, Ontario, May 10-12.
- R.F. Legget Award to an individual for significant achievements to Canada in the field of geotechnical engineering; not given every year. - Society Prize awarded annually for the best paper published in the Canadian Geotechnical Journal.	From time to time, the Society prepares briefs, position papers and reports. In the past these have been prepared for the NRC/DBR, ISSMFE, and the Federal Government.	- Member Society of the Canadian Geoscience Council - Constituent Society of the Engineering Institute of Canada - Associated with the NRC Associate Committee on Geotechnical Research - National Society of the International Society of Soil Mechanics and Foundation Engineering - Engineering Geology Division of the Society is the National Group of the International Association of Engineering Geology.	- Society formed 1972 - Engineering Geology Division formed 1974 - Technical Committees formed 1977 - regional sections of Society are partially supported by a rebate from CGS Headquarters.
CIM awards pertaining to Geology Division: Distinguished Lecturer Award, Barlow Memorial Medal Prize, Student Essay Awards and the President's Gold Medal.		Canadian Geoscience Council, Canadian Standards Association (World Mining Congress) (Council of Commonwealth Mining and Metallurgical Institutions) (A.I.M.E. Council of Economics) Mining Society of Nova Scotia	The Geology Division is an integral part of CIM which is a technical society covering the entire range of mining and mineral processing technology. In addition to those in Geology Division many geoscientists belong to other CIM Divisions and Societies, notably the Coal Division, the Industrial Minerals Division and the Petroleum Society. Large numbers of others participate in the activities of the 62 branches.

Table 6: (continued)

SOCIETY AND MEMBERSHIP	OBJECTIVES	MEETINGS, ACTIVITIES COMMITTEES	PUBLICATIONS
<b>CANADIAN SOCIETY OF EXPLORATION GEOPHYSICISTS</b> 229, 640-5th Avenue S.W. Calgary, Alberta. T2P 3G4 Active membership 1800 Honorary members 6 Corporate members 25	To promote the science of geophysics especially as it applies to exploration in the fields of petroleum, mining, and groundwater, and to promote fellowship and co-operation among those persons and organizations.	<ul style="list-style-type: none"> <li>- One General Meeting per year (500)</li> <li>- One Executive (10), and one or more Technical Meetings per month (500)</li> <li>- One National Convention per year (1200)</li> <li>- Committees. Approximately 25 committees administer the professional technical and social affairs of the Society. -Registered Scholarship Fund to administer scholarships to deserving students. -Sponsoring Continuing Education Program including one or two courses per year.</li> </ul>	<u>Journal of the Canadian Society of Exploration Geophysicists</u> published annually on a regular basis to be changed to two issues per year. Monthly newsletter, "CSEG Recorder".
<b>CANADIAN SOCIETY OF PETROLEUM GEOLOGISTS</b> 612 Lougheed Building 229, 640-5th Ave. S.W. Calgary, Alberta. T2P 3G4 Active members 2389 Student 169 Associate 83 Honorary 18 Corporate 80 Emeritus 10 Total Membership: 3115	To advance the science of geology, especially as it relates to fossil fuels; To promote the technology of exploration for these resources; To foster scientific research; To inspire and maintain a high standard of professional conduct.	<ul style="list-style-type: none"> <li>- Annual Meeting</li> <li>- Technical Meeting, Luncheon meetings with guest speakers addressing current topics related to petroleum geology. Average attendance was approximately 860 people. COMMITTEES: Membership Technical Programme, Medal of Merit, Link Award, Geological Research, Stratigraphic Nomenclature, Discipline, Printing, CSPG/CIM Convention, International Convention. Division: Paleontology, Structural, Geochemistry, Geomathematics, Coal. Administrative Committee: 50 special committees administer business, social and technical functions.</li> </ul>	<u>Bulletin of Canadian Petroleum Geology</u> -quarterly <u>Reservoir</u> - (Monthly)
<b>CANADIAN SOCIETY OF SOIL SCIENCE</b> c/o Dr. R.B. McKercher Dept. of Soil Science University of Saskatchewan Saskatoon, Saskatchewan, S7N 0W0 Total membership 340 Active in Canada 300 Honorary 25 Active Fellows 15	To foster all branches of soil science by: - providing forums for communications among soil scientists -assisting in communication among users of soil science information -co-ordination of soil research, teaching and extension.	<ul style="list-style-type: none"> <li>- Annual Convention, University of British Columbia, Vancouver, B.C. July 11-15, 1982</li> </ul> COMMITTEES: Journal, Awards, Organization, Rules, International Exchange	<u>Canadian Journal of Soil Science</u> (4 issues/year) <u>Newsletter</u> - (3 issues/year)
<b>CANADIAN WELL LOGGING SOCIETY</b> c/o President P.O. Box 6962, Postal Station "D" Calgary, Alberta T2P 2G2 Active members 602 Honorary members 6 Corporate members 72	To further the science of Formation Evaluation by providing regular meetings with discussion of related subjects and encouraging research and study.	<ul style="list-style-type: none"> <li>- Ten Luncheon Technical Meetings (avg. 200 attendees)</li> <li>- Annual General Meeting in February (100 attendees)</li> <li>- Nine Executive Meetings</li> </ul> COMMITTEES: Membership; Nominating Award 1981; Formation Evaluation Symposium Organizing; Water Resistivity Catalogue; Well Log Standards; Seminars and Research; Manual of Log Interpretation of Oil and Gas Pools - Organizing Committee.	The CWLS Journal - annually 1968-77 Since 1980, CWLS includes Society news and technical articles in J.C.P.T., Journal of Canadian Petroleum Technology, published quarterly by Petroleum Society of CIM. <u>CWLS Symposium transactions</u> published biannually next 1983 <u>Formation Water Resistivity Catalogue</u> -published occasionally, last revision in 1978 <u>Course Manual</u> - 1981 "Automated Lithofacies mapping from Well Logs" - J.H. Doveton, Kansas Geological Survey.
<b>GEOLOGICAL ASSOCIATION OF CANADA</b> c/o Dr. A.V. Morgan Department of Earth Sciences University of Waterloo Waterloo, Ontario N2L 3G1 Fellows 1807 Associates 936 Retired 68 Honorary members 5 Life members 2822 Corporate 77 2899	To advance the science of geology and closely related fields of study and to promote a better understanding thereof throughout Canada	<ul style="list-style-type: none"> <li>- Annual Meeting, May 1981, Calgary (With MAC and CGU) 1346</li> <li>- Annual Meeting, May 1982, Winnipeg (with MAC)</li> <li>- Annual Meeting, May 1983, Victoria (with MAC, CGU)</li> </ul> Council and Executive and Committee meetings. Sections and Divisions meet independently. COMMITTEES: Editorial, Education, Finance, Logan Medal, Membership, Past President's Medal, Program, Projects, Robinson	<u>Geolog</u> - Newsletter published quarterly <u>Geoscience Canada</u> - published quarterly <u>Special Papers</u> - Twenty so far in series <u>Canadian Journal of Earth Sciences</u> -published by National Research Council and included in GAC membership fees.
<b>MINERALOGICAL ASSOCIATION OF CANADA</b> c/o Dept. of Mineralogy & Geology Royal Ontario Museum Toronto, Ontario. M5S 2C6 Life members 34 Sustaining members 50 Corporate members 636 Ordinary members 994 Student members 482 Total 2196	To advance the knowledge of crystallography, mineralogy, geochemistry and economic geology and its applications in the earth sciences.	Annual Meeting, May 1982, Winnipeg (with GAC) Short Courses: Granitic Pegmatites-Geology, Geochemical Exploration & Ore Processing, May 1982, Winnipeg Executive Committee Meetings COMMITTEES Finance, Membership, nominating Hawley Award	<u>Canadian Mineralogist</u> - quarterly <u>Short Course Notes</u> - annually <u>Newsletter</u> - semi-annually

AWARDS	BRIEFS AND POSITION PAPERS	ASSOCIATION WITH OTHER ORGANIZATIONS	OTHER INFORMATION
<ul style="list-style-type: none"> <li>- <u>Best Paper Award, Honorary Membership, Meritorious Service Awards</u></li> <li>- <u>Student Scholarships</u></li> </ul>	<p>As required, according to the executives discretion. A government relations committee is in charge of routine letters or briefs.</p>	<p>Canadian Geoscience Council, Association of Professional Engineers, Geologists and Geophysicists of Alberta Canadian Exploration Geophysical Society (As to statistics) Other Geological, mathematical and physics Societies as to joint meetings (Society of Exploration Geophysicists) (World Petroleum Congress)</p>	<p>The 1982 annual meeting was held February 24 in Calgary. The 1983 annual meeting will be held at the Calgary Convention Centre, Calgary, Alberta, on April 26-29, 1983.</p>
<ul style="list-style-type: none"> <li>- <u>Medal of Merit</u>: Exploration Staff, Chevron Standard Ltd.</li> <li>- <u>Link Award</u>: Best oral presentation of a paper to the society by a member, John C. Hopkins</li> <li>- <u>Research and Graduate Student Award</u>: For post graduate thesis of merit, Brian R. Pratt, Memorial; Brian D. Ricketts, Carleton.</li> <li>- <u>Western Inter-University Award</u>: For best oral presentation by a student at the Western University Geological Conference, J.D. Dudley, University of Calgary.</li> <li>- <u>R.J.W. Douglas Memorial Medal</u>: Dr. Harold Williams, Memorial.</li> </ul>		<p>Canadian Geoscience Council</p>	
<ul style="list-style-type: none"> <li>- <u>Fellowship award</u> - Fellow of the Canadian Society of Soil Science.</li> <li>- Honorary Member.</li> </ul>	<p>All these are through the central office of the Agricultural Institute of Canada, Ottawa.</p>	<p>Affiliation with Agricultural Institute of Canada Member - Canadian Geoscience Council. Affiliation with International Soil Science Society</p>	
<ul style="list-style-type: none"> <li>- <u>President's Award</u> (\$500) for best paper in formation evaluation. First presentation in 1976.</li> </ul>		<ul style="list-style-type: none"> <li>- Canadian Geoscience Council</li> <li>- Annually a joint luncheon meeting is held with the Petroleum Society of CIMM</li> <li>- (Working Agreement with Society of Professional Well Log Analysts (U.S.A.) to encourage interchange of technical material between the two societies.</li> </ul>	<ul style="list-style-type: none"> <li>- Working Agreement with Society of Professional Well Log Analysts (U.S.A.) to encourage interchange of technical material between the two societies.</li> <li>- Member Alberta Joint Technical Societies Liaison Committee of APEGGA. (Association of Professional Engineers, Geologists &amp; Geophysicists of Alberta)</li> <li>- Representative of Calgary Joint Geologist/Geophysicist Student Affairs Committee.</li> <li>- Joint project with CSPG, Canadian Society of Petroleum Geologists, to produce a CWLS "Manual of Log Interpretation" in conjunction with the CSPG's proposed revision of "Oil and Gas Fields of Canada" Publication</li> <li>- Joint symposium with SPWLA, Society of Professional Log Analysts (U.S.A.) to be held in Calgary, June 1983.</li> </ul>
<ul style="list-style-type: none"> <li>- <u>Logan Medal</u> - annual for outstanding contributions to Earth Sciences</li> <li>- <u>Past President's Medal</u> - annual for outstanding achievements in the Earth Sciences. (Awarded to a younger scientist).</li> <li>- <u>Billings Medal</u> - awarded every two years for excellence in paleontology.</li> <li>- <u>Duncan Derry Medal</u> - awarded annually to an economic geologist.</li> <li>- <u>Youth Science Foundation</u> - annual award for the best Earth Science exhibit at National Science Fair.</li> </ul>	<ul style="list-style-type: none"> <li>- Information Circular No. 3 - Sources of Free Materials for Canadian Science Teachers and Students.</li> <li>- Field Guide for London, Ontario, currently in preparation</li> </ul>	<p>Canadian Geoscience Council SCITEC Joint Annual Meetings with Mineralogical Association of Canada and bi-annually with the Canadian Geophysical Union. Annual Meetings are frequently organized with other associations: 1978 the Parent Body of the Geological Society of America; 1979 Canadian Geophysical Union (American Commission on Stratigraphic Nomenclature) (World Petroleum Congress)</p>	<p><u>Divisions of GAC</u>: Environmental Earth Sciences, Geophysics (Canadian Geophysical Union), Paleontology, Precambrian, Structural Geology, Volcanology, Mineral Deposits. Regional Sections of GAC exist in Edmonton, Newfoundland Winnipeg and Vancouver (Cordilleran), with a branch of the Cordilleran Section in Victoria. Atlantic Geoscience Society (Halifax) and Toronto Geological Discussion Group are an affiliated society.</p>
<ul style="list-style-type: none"> <li>- <u>Hawley Award</u> - presented to the author(s) of the best paper printed in the Canadian Mineralogist during the preceeding year. Awarded in 1981 to R.B. Ferguson for his paper "From Unit-Cell Parameters to Si/Al Distribution in K-Feldspars".</li> </ul>		<p>Canadian Geoscience Council Joint Annual meetings with the Geological Association of Canada (International Mineralogical Association) (Joint Committee on Powder Diffraction Standards)</p>	<p>The Mineralogical Association of Canada runs short courses either preceeding and/or subsequent to the GAC/MAC annual meeting. These courses generally address aspects of mineralogy that are of interest to the industrial sector.</p>