geogram

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DÉCEMBRE

an informal branch newsletter
un bulletin interne d'information

PLAQUE COMMEMORATING ROBERT BELL

A large crowd gathered in front of the Geological Survey Building in Ottawa on the afternoon of 15 September, 1981 to witness the dedication of a plaque erected by the Historic Sites and Monuments Board of Canada commemorating Dr. Robert Bell M.D., F.R.S., who from 1901 to 1906 directed the Geological Survey.

Dr. E.H. Storey, Ontario Member of the Board presided and following his introductory remarks and those of Mr. Rhéal Robert, Deputy Mayor of Ottawa who brought greetings from the city, Dr. J.G. Fyles, Acting Director General outlined Dr. Bell's career and commented on his contribution to Canada. The Honourable Judy Erola, Minister of State for Mines and Mr. John Mackintosh Bell, a grand-nephew of Robert Bell, performed the unveiling of the bronze plaque which rested on a stand at the left of the official party. All present were invited to a reception tendered by the Historic Sites and Monuments Board and arranged by the Geological Wives' Association during which the plaque was affixed to a boulder of Precambrian gneiss to the left of the main flight of steps at 601 Booth Street.

R.G.B.

Judy Erola and John Mackintosh Bell admire the plaque.

PLAQUE COMMEMORATIVE ROBERT BELL

Une foule s'est assemblée en face de l'immeuble de la Commission géologique du Canada, à Ottawa, dans l'après-midi du 15 septembre 1981, afin d'assister à l'inauguration d'une plaque commémorative érigée par la Commission des lieux et monuments historiques du Canada en mémoire du docteur Robert Bell, membre de la Société royale et directeur de la Commission géologique de 1901 à 1906.

M. E.H. Storey, membre ontarien de la Commission des lieux et monuments historiques, a présidé la cérémonie. À la suite de son allocution de présentation et de l'allocation de M. Rhéal Robert, maire suppléant d'Ottawa et représentant des édiles municipaux, M. John G. Fyles, directeur général intérimaire, a donné un bref aperçu de la carrière du docteur Bell et fait valoir sa contribution au Canada. L'honorable Judy Erola, ministre d'Etat aux Mines, et M. John Mackintosh Bell, petit-neveu de Robert Bell, ont dévoilé la plaque, qui avait été installée sur un support placé à la gauche des invités d'honneur. L'assistance a ensuite été invitée à une réception donnée par la Commission des lieux et monuments historiques et organisée par l'Association des épouses des géologues, pendant laquelle la plaque a été fixée à un bloc de gneiss du Précambrien placé à la gauche du grand escalier extérieur du 601, rue Booth.

R.G.B

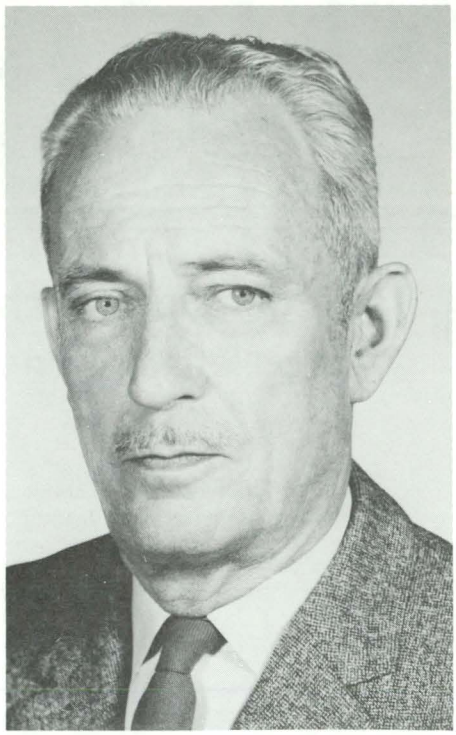
Canada

C.S. LORD
1908-1981

Dr. C.S. Lord, Chief Geologist of the Geological Survey from 1954 to 1973, died in Ottawa on 4 October, 1981. He was a native of British Columbia and a graduate of UBC, MIT and National Defence College. After experience in the private sector including three years in Northern Rhodesia (Zambia) he joined the Geological Survey in 1937. Much of his field work was in the Northwest Territories and for some years, in addition to his scientific reports, he prepared for publication by the Survey a review of the mineral industry of the Northwest Territories. This background and his organizational abilities made him the logical choice to initiate an aggressive mapping program of the North after the war.

In 1952 Cliff Lord pioneered the use of helicopters for geological mapping on Operation Keewatin west of Hudson Bay. Within three years he and his successors had mapped 480 000 km^2. The approach he initiated and subsequently encouraged to the full, resulted in the virtual completion of the reconnaissance of Canada by the early 1970s. Much credit for this accomplishment is due to C.S. Lord.

As Chief Geologist for nearly 20 years he greatly influenced the development of the Survey. He brought to the task a firm belief in the traditional role



of the organization, that of its support to the mineral industry. His tenure covered the period of great expansion in staff and facilities that reflected the increased funding made available for scientific research and he was instrumental in ensuring that the value of the field program was never allowed to be obscured. His methodical approach led him, early in his tenure as Chief Geologist, to develop what to many seemed to be an overly elaborate system for project control but in today's age of accountants his successors have, on innumerable occasions, had reasons to thank him.

Cliff Lord was a hard working and dedicated man to whom the Survey and Department owe much for the smooth operation of the Branch for nearly two decades. He was also a very private person whom few of his professional colleagues knew outside of his official role. Those who did found a person with a dry sense of humour, a provider of sound advice and a raconteur of stories of places and people he had met on his worldwide visits although he remained a man who never seemed able to completely forget his official duties.

Between 1963 and 1971 C.S. Lord carried out many assignments on behalf of Canadian International Development Agency. These took him to Malaysia, Thailand, India, Burma, Kenya, Uganda and Tanzania where he assisted in setting up mineral resource studies. He received many honours but perhaps the most fitting was the naming of the C.S. Lord Core Library in Yellowknife, N.W.T.

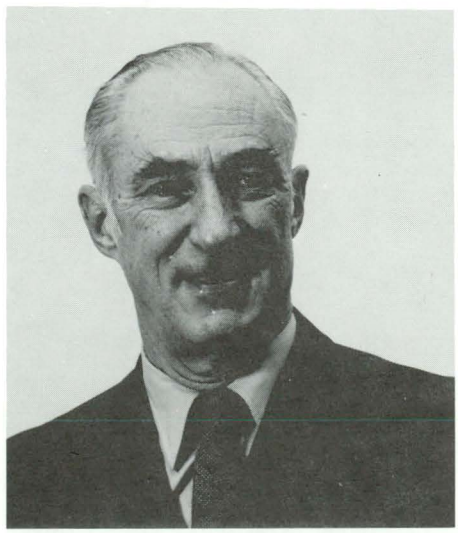
R.G.B.

S.C. ROBINSON
1911-1981

Dr. S.C. (Binks) Robinson, a man who by his scientific leadership and administrative abilities played a major role in the GSC, died on 13 September, 1981. Dr. Robinson had retired in 1973 and had moved to a part of Canada he loved - Vancouver Island. Binks Robinson began his geological career in Africa and was there when war was declared in 1939. He joined the Northern Rhodesia Defense Force but soon tired of that rather quiet setting and joined the Royal Canadian Navy where, during 4 ½ years of service, he had the experience of having his ship torpedoed and blown up and was mentioned in dispatches.

A graduate of UBC (1935) and Queen's (Ph.D. Mineralogy 1947) Binks joined the GSC in 1948. He established the Survey's first X-ray laboratory in a small room in the old Museum building and from these humble beginnings by his own vision and energy laid the foundation for our advances in modern instrumental geoscience.

Dr. Robinson was appointed Chief of the Mineralogy Divison in 1956, Chief of Petrological Sciences in 1960, Chief of



Economic Geology in 1964 (which at that time included Pleistocene Geology and Groundwater), Chief of Geochemistry, Mineralogy and Economic Geology in 1967 and Chief of Economic Geology and Geochemistry in 1969. In 1971 he undertook Survey-wide staff duties and was involved in planning and policy-making on many broad issues, and at the time of his retirement he was in effect Assistant Director in which role he provided necessary executive continuity between the directorships of Yves Fortier and Digby McLaren.

Binks was a man of strongly held opinions who by his tenacity served the Survey well. At the time of his retirement his senior colleagues presented a scroll to Dr. Robinson the words of which form as fitting a tribute today as they did in 1973:

We the undersigned wish to attest to the distinguished services rendered to the Geological Survey and to the people of Canada by STEPHEN CLIVE ROBINSON for a period of twenty-five years.

By his leadership, scientific ability and integrity as mineralogist and as Division Chief, he brought the Geological Survey to a place of pre-eminence in modern mineralogical research. As its principal scientific adviser and on many occasions acting as its Director, he guided the destinies of the Survey at a time of change and transition and unprecedented expansion.

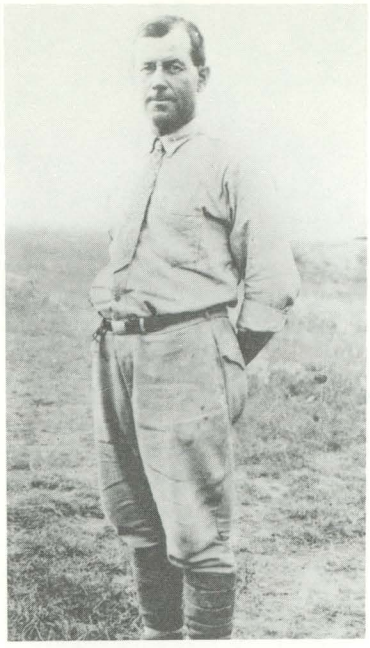
Furthermore, through his own scientific research, by his work in the field of information science and his participation in international councils, he has made a lasting contribution to our science and added lustre to the reputation of the Geological Survey as a leading institution in the world community of earth scientists.

R.G.B.

C.M. STERNBERG
1885-1981

Charles Mortram Sternberg, the famous dinosaur collector, paleontologist and geologist, who worked for the Geological Survey of Canada for about 40 years, died in Ottawa on 8 September, 1981, ten days short of his 96th birthday.

CM was an American by birth, the second son of Charles Hazelius, one of the most renowned and successful vertebrate collectors of all time. The elder Sternberg had three sons - George, CM and Levi. All were trained by their father and there was a time, around 1912-1916, when the whole family - father and the three sons - worked for the GSC. This was because R.W. Brock, GSC Director at the time, decided that the National Museum (then part of the GSC) should have some good dinosaur skeletons from the Upper Cretaceous deposits of the Red Deer Valley in Alberta. Dinosaur bones had been discovered there by GSC scientists in the 19th Century but these workers understandably lacked the time and technique to excavate and collect large specimens. American expeditions, alerted by the early GSC reports, were already making collections. Brock engaged the Sternberg family to ensure that the GSC got its share. After 1916 Sternberg senior, George and Levi went elsewhere but CM stayed on and his full professional career was with the GSC. He



National Museums
Photo J19830

retired in 1950, at about the same time that the National Museum broke the link with its parent - the GSC. He remained active in retirement and would often walk from his home on Holmwood Avenue to the old vertebrate laboratory in the Market area. Because, for the past 30 years, he was associated with the Museum and seldom seen at the GSC, one tended to forget that he was really a GSC person.

As a scientist, both in paleontology and geology, he was evidently self trained but nevertheless very effective. He published extensively on dinosaurs and other vertebrate fossils. He produced a highly informative bulletin entitled Canadian Dinosaurs which went through two editions (1946, 1966). Both regrettably are now out of print, the more the pity as there is no other account of comparable scope. Besides an informative text, the bulletin provides illustrations of skeletons in the outcrop, footprints, skulls and skeletons prepared and mounted together with reconstructions of what the dinosaurs were thought to look like. Sternberg also made important contributions to the geology of Canada. Most notable, perhaps, was his discovery of **Triceratops** - the dinosaur index fossil of the latest Cretaceous - in the Red Deer Valley. This important discovery, which eluded many of his predecessors who had worked in the region, was described in GSC Paper 47-1.

Sternberg's scientific achievements were recognized by his election to fellowship of the Royal Society of Canada (1949), an honorary LL.D. from the University of Alberta (1960), and an honorary D.Sc. from Carleton University (1974).

E.T. Tozer

STAFF NEWS

Director General's Office

Changes at the Top

On 1 August, 1981 the Science and Technology Sector, of which GSC has been a part since the sector was formed, was divided into an Earth Sciences Sector and a Research and Technology Sector. Bill Hutchison, our 15th Director, was appointed ADM, Earth Sciences and John Fyles, in addition to his duties as Chief Geologist, was asked to serve as Acting Director General until the position could be filled.

Digby McLaren who served as ADM, Science and Technology, has accepted a three-year secondment from EMR to serve as Adjunct Professor at the University of Ottawa. He will also continue to serve the department as Senior Science Advisor.

Ray Price, until recently Professor of Geological Sciences at Queen's University, has returned to the Survey after an absence of 13 years.

Malcolm Brown, Director of the Institute of Geological Sciences, U.K. visited GSC in September 1981.

Ed Hall, Scientific Executive Officer to four Directors, officially retired from the GSC on 30 June, 1981. Ed joined the Survey in 1946 and the following year was transferred to British Columbia where for the next ten years he conducted studies connected with the development of the Columbia River. Canal Flats, Revelstoke and Vancouver were home for the Hall's during this period. Ed returned to Ottawa in 1957 and for the next three seasons was involved in ground water studies in Saskatchewan. In the spring of 1960 he assumed responsibility for managing the summer student employment program and following the successful completion of this he was asked by Dr. Harrison, then Director, to join his staff as Assistant to the Director. For some years Ed continued to devote 4 or 5 months to the summer program but gradually the demands from the Director's office grew and with the expansion of the Personnel unit it became possible for him to devote all his time and talents to the Director's office.

Dr. Harrison was in Thailand at the time of the presentation to Ed and Marguerite but the other three directors whom Ed assisted, Y.O.Fortier, D.J. McLaren and W.W. Hutchison were present. Following the formal presentations some 40 of Ed's friends, from within and beyond the GSC gathered for a buffet dinner at the summer house of one of Ed's colleagues on the shore of Lac Deschênes

Hutch, Marguerite, Yves Foriter and Ed.

Administrative Services

We would like to extend our sincere wishes to Dorothy Miller for a long and happy retirement. Dorothy retired in August 1981 after 25 years of service with the Federal Government, 12 years of which were with the GSC. All the best Dorothy. Other departures in the Word Processing Centre include Judy Côte who transferred to the Department of Transport in September and Thérèse Joly who transferred to CANMET in May. Joanne Daniel won a competition with RGG Division in June and Madeleine Marier won a competition with Personnel at Headquarters in August. Congratulations and good luck in your career aspirations.

Louise Thompson is presently on maternity leave. Replacing Louise is Joan Newton who was hired through the Public Service Commission. Rhéal Constantineau and Patrick Kochan are new employees in the Shipping and Receiving Unit. Rhéal comes to us from the Department of Environment and Patrick from the R.C.M.P. Welcome Joan, Rhéal and Patrick.

Randy Robinson is replacing Joan Clark as the Supervisor for the Records Office until Joan returns in the Spring of 1982 from In-House Language Training.

Accounts Office

Cyril Bowstead has been seconded to the Earth Sciences Sector where he is acting Sector Financial Adviser. Jeff Stapledon is acting Branch Financial Comptroller in the interim.

Carol Lawson is replacing André Levesque who is on secondment as the Sector Adviser for the Administrative Program. Carol comes to us from the Mineral Policy Sector. Congratulations to Angela Eastham who recently won a competition as an Audit Clerk in the Accounts Office. Dulcie "Trixie" Toal and Marlene Powers are the new Accounts Payable clerks. Trixie came from Department of Supply and Services and Marlene is from Paul Cardinal Pontiac Buick. Welcome ladies. Departures in the Accounts Office include Becky (Taylor) Dumont transferred to Financial Administration Branch and Betty Manning transferred to Precambrian Geology Division. Margaret McDonald resigned her position in April 1981. Good luck everyone in your new careers.

Cordilleran Geology Division

Vancouver

Another field season has been completed since the last Geogram. This will be the last one for Jan Muller and Stan Leaming who announced they will retire on 24 December, 1981. Stu Blusson left for greener fields in April.

A good deal of re-organization of the physical plant has been going on and is not yet completed at mid-September. Mary Akehurst and Wynne Horwath have the Library in the new location on the fifth floor in great shape after a great deal of work. Olga Langenhaun, Zena Hajek and Elsie Gillis have completed a major re-organization of the Sales Office on the sixth floor. Also on the sixth floor are six new offices; this has allowed a game of musical chairs whereby the administration has acquired more space and Howard Tipper now has room to surround himself with his ammonites.

Geri Eisbacher has returned to the fold after a years research leave in the Alps looking at social and technical aspects of catastrophic debris flows and slope failures. He intends to write up 2000 years of alpine experience with catastrophic mass movements for 1000 years of consumption in Western Canada.

Jim Monger attended a seminar on Accretion Tectonics in Hokkaido, Japan September 10-16. This was an international meeting with scientists from U.S.A., Japan, New Zealand, U.K.' U.S.S.R. and Canada. Jim gave a paper on the Canadian segment of the Circum Pacific fold belts.

Some of our crew are addicted to running and do so at noon instead of eating. This paid-off for Bob Thompson in the Annual Dome Race at Dawson, Yukon Territory. Bob came in 5th in a field of 84. Our "detached" colleague Dirk Tempelman-Kluit came in 7th. The run was 5 miles long and 2000 feet up. Jolly good show!!

Peter Dnistransky will retire in November. He will be missed. John Reesor, recently transferred to the Division, is with us in Spirit but his body remains in Ottawa. Bob Anderson has a P.D.F. to study granitic rocks in the Nahanni country. Anne Walton has received an appointment and will be busy liberating bugs from rocks.

Economic Geology Division

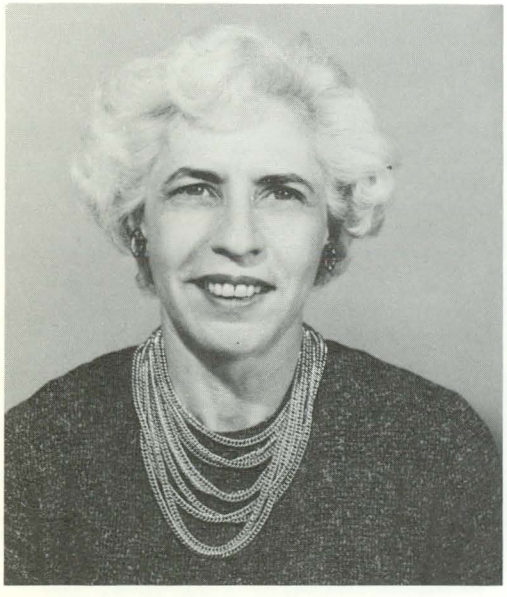
Jennifer Shaw recently won a competition as a Mineral Data Coder in the Mineral Data Bank. Jennifer is an honours geology graduate from Queen's University and is developing a talent in dealing with computers.

Brian Williamson who is an honours geology graduate from Carleton University has joined the Mineral Deposits Geology Section. Among his many talents, is that of being an accomplished piper.

Congratulations to Frits Agterberg on his recent appointment as Corresponding Member of the Royal Dutch Academy of Sciences.

Carolyn Hudson has returned as a Visiting Scientist with the Geomathematics Section until mid-1982. Welcome back Carolyn.

In December 1980, Pauline Moyd left the GSC. This was not reported to Geogram, perhaps because we did not want to accept the fact that she had indeed retired. Pauline joined GSC in 1966 as a staff geologist and assistant to Larry Morley, Chief of the Geophysics Division. Pauline's organizing ability was soon recognized when she was secretary to the organizing committee of the Canadian Centennial Conference on Mining and Groundwater Geophysics in 1967. Her ability for organizing culminated in her being appointed Organizing Secretary for the 24th IGC held in Canada in 1972. Much of the success of that Congress can be attributed to Pauline. She joined Economic Geology in 1973 and thereby returned to her interests in industrial minerals in which she had been a consultant with her husband, Louis, for about 20 years prior to joining the GSC. Pauline was selected Secretary Treasurer of the Industrial Minerals Division of the CIMM for 1975-76 and Chairman for 1977-78. Pauline has retired from the GSC but not from geology. Best wishes Pauline.



Pauline Moyde

Patricia Bay

The staff of the Marine Geology Group at Pacific Geoscience Centre had a most productive field season. Several of them participated in a cruise aboard the CSS HUDSON (which stopped by on its way to the Arctic) in and around Hecate Strait and Queen Charlotte Sound where they attempted to disprove Chris Yorath's rift hypothesis for the area; needless to say they failed. Brian Bornhold in association with scientists from the Coastal Studies Institute at L.S.U. and Texas A and M and using some USGS equipment organized and participated in a highly successful project to study the morphology of submarine slope failures in several B.C. fiords.

Leslie Sarracino has resigned. Dave Seeman has transferred to Earth Physics Branch at P.G.C. Clare Denny has gone to Fisheries and Oceans. R.A. Pickerill from New Zealand joined the group as a P.D.F. in July. He will work with Patrick McLaren on coastal geology.

Geological Information Division

GID Reorganization

The Canada Centre for Geoscience Data was transferred from the Office of the ADM (S&T) to the GSC on April 1, 1981 in order to integrate its activities with those of GID. The Centre, initiated under GSC auspices in 1970 and directed since that time by Dr. C.F. Burk, Jr., has had as its mission the development of a national system for the management of bibliographic data related to the geology of Canada, now given the name GEOSCAN. The database, managed by EMR on behalf of 7 participating provinces and 3 federal agencies, contains more than 60 000 entries. The transfer of this activity to GSC coincides with the end of the developmental phase.

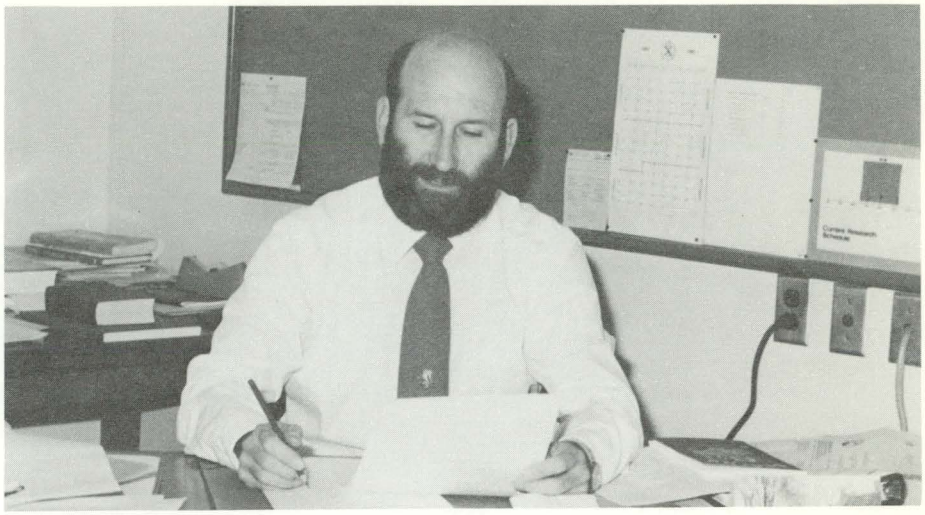
We welcome Neil Burk, Kay Gunn, David Reade, Richard Butterfield and Rita Laprade to GID. On November 1, a new unit, the National GEOSCAN Centre, will be established in the Library managed by David Reade and under the supervision of Annette Bourgeois Kay Gunn will join the Data Systems Group and in this role will for some time continue to assist in the development of GEOSCAN and Neil will become an advisor on information resources, thus making his wide experience in this field available to the Branch, Sector and Department.

Neil Burk, Kay Gunn and David Reade

Editorial

Bill Morgan, who was the successful candidate in a competition held last spring for our Principal Scientific Editor (English), moved into his new office in early August. Bill was born in Inverness, Scotland, in 1939 and took his B.Sc. (1961), M.Sc. (1962) and Ph.D. (1967) at Aberdeen University. He taught at the University of Newcastle Upon Tyne (1964-67) and then at Aberdeen. In 1968 he joined the GSC and mapped in north Labrador and the eastern Arctic for the Precambrian Geology Division.

Diane Tremblay is Bob Blackadar's new secretary. Diane, however, is no stranger to EMR, having worked in the Surveys and Mapping Branch for the last 5 years. Welcome Diane.



Bill Morgan

Library

Samuel O. Alexander joined the GSC Library as the Head of Technical Services in July 1981. Sam, a graduate of School of Library and Information Science, University of Western Ontario, has held professional and teaching positions with SLIS, the University of Waterloo Library, the University of the West Indies, and more recently with Lakehead University Library. As a part of his professional activities, he has served as a member of various committees of the Ontario Library Association and as the president of Ontario College and University Library Association.

Rosemary Swan joined the Library in October as the new Reference and Circulation Librarian. A recent graduate of the University of Western Ontario's Library School, and previously employed by the Transport Canada Library, Rosemary is looking forward to meeting and working with everyone in GSC.

Earl Maahs, Jacques Yelle and Vern Foster

Cartography

Jacques Yelle, Vern Foster and Earl Maahs were declared the successful candidates in a competition last spring to fill vacant supervisory positions in Cartography. Jacques took over subunit A2 on the 4th floor and brings to his new job 19 years experience in the production of geological maps, charts and illustrations. Vern became supervisor in subunit B1 on the 3rd floor and Earl fills the void left by retired Herbie Finn in subunit C1 on the 2nd floor. Vern and Earl have been in GSC Cartography 4 and 5 years respectively and had prior experience at Surveys and Mapping working on the National Atlas of Canada. They also worked for 10 years at the Department of Agriculture producing thematic maps for that department and the Department of the Environment.

We Welcome 3 New Employees in Cartography

Ed Belec transferred from Terrain Science to the section in September. Ed spent 2 years with his former division as their resident graphics specialist. He is a graduate of Algonquin College and he brings to us a broad knowledge of cartography and the allied fields of graphic reproduction.

Phil O'Regan and Michel Sigouin joined the section in September. They are graduates in Cartography of Algonquin College and worked for the same commercial firm prior to accepting employment in GSC. Both are experienced cartographers with specialized skills in large scale topographic map production.

Institute of Sedimentary and Petroleum Geology

Calgary

In July, Ken Nairn left his position as Head of Computer Services to join the staff of Esso Resources in a similar capacity. He had been computer answer man at ISPG for four years. About the same time, Wahnita Penley left her CR4 position in Central Registry to work as an education co-ordinator in a social program for senior citizens organized by Mount Royal College. Nita was one of the original staff members of the Institute when it was first set up in Calgary at the old Customs Building, some 18 years ago. She held various clerical positions over the years. Aline Hennessey was promoted to Nita's former position as supervisor of Central Registry.

Brenda Baker began working as secretary to the Petroleum Geology Subdivision in September; Joni Merrills occupied that position before leaving ISPG in August.

Kurt Ozadetz is the petroleum geologist who replaced Jim Krocko in the Petroleum Resources Subdivision.

Denis Braman was hired in July as a subsurface geologist to the Regional Geology Subdivision.

Chris Niewert has been replaced in the accounts office by Shelly Wilson. Shelley was recently promoted to the CR3 level. Word processor Earlena Ijeh was hired recently.

Congratulations go to Wolfgang Kalkreuth and Alex Cameron who were recently promoted to senior PC positions in the Coal Technology Section.

Ottawa

In May Alberto Riccardi resigned his position with the section after a year on GSC staff. He returned to his studies in Argentina. Lorraine Lee joined the staff in May, and replaces Robby Lennox as secretary.

Precambrian Geology Division

A number of staff changes have occurred within the Division in recent months.

Bill Morgan, a regional geologist in the Churchill Section famed for his taste in food, scotch and fast cars, has traded his hammer for a green pencil and transferred to the position of Principal Scientific Editor in the Geological Information Division.

Ingo Ermanovics, a regional geologist in the Superior-Churchill Section, famed for his musical talent, savoir faire, and navigational ability, remains in the Division but has taken on the position of Branch Project Manager of the Geological Activity phase of the Radioactive Waste Disposal program.

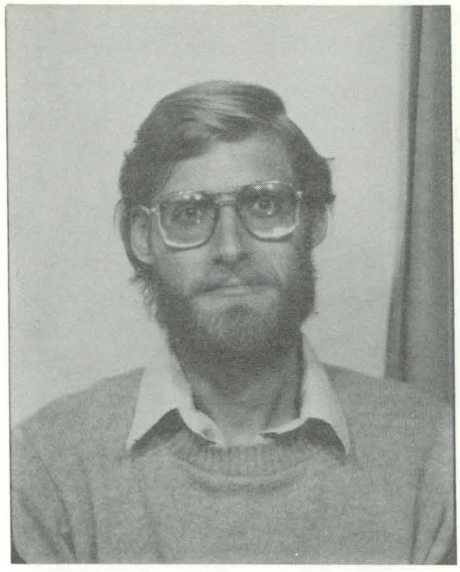
Freed from the responsibility shouldered by Ingo, Bruce Sanford will concentrate on the completion of numerous other projects he is involved with, in particular, those concerning sedimentary rocks.

After working for the Geological Survey of Canada for more than thirty years, Lloyd Davison and Ralph Skinner recently retired from the Survey, although not from geology.

While Lloyd completed his B.Sc. (Geology-Physics, 1948) at Dalhousie University, he worked as a geologist in the summer for the Newfoundland Government, Shaw Steamship Company and GSC. As traverse officer and party chief during the Survey's geological reconnaissance of southern Baffin Island, he managed to do the field work for his M.Sc., Geology of Upper Frobisher Bay. Lloyd was one of the pioneers of Baffin Island geology, doing most of his work on foot and with pack dogs. He studied for two years at the University of Edinburgh, with the aid of an Overseas Research Scholarship, before returning to a continuing position with GSC in 1952. His first responsibility included an inventory of uranium deposits, but, subsequently, Lloyd divided his time between mapping in Manitoba and the Northwest Territories. In addition to his own projects, he participated in four of the major helicopter operations that mapped, for the first time, huge areas of the Northwest Territories. Most recently he has been involved with detailed work in Manitoba and Saskatchewan.

Ralph began his geological career underground with Brittania Mines after receiving a B.A.Sc. in mining engineering from the University of British Columbia in 1939. Following four years of service overseas with the Royal Canadian Engineers (1942-46), Lieutenant Skinner returned to Canada and graduate studies at McGill University. While working with the GSC on the Vernon map area in B.C. as a senior assistant, he collected material for M.Sc. thesis (1949) on intrusive rocks and replacement phenomena. As a party chief in 1949 he began regional mapping in the Bathurst Mining District of New Brunswick. The next year Ralph joined the Geological Survey on a full-time basis and, while mapping Nepisiquit Falls, Bathurst, and Tetagouche Lakes map areas, he completed a Ph.D. (1956) on the stratigraphy, structure, and origin of the economically important Tetagouche Group. For the next six years Ralph was Resident Geologist in Whitehorse, where he was the first to publish annual reports on the exploration and development carried out by the mineral industry in the Yukon. In 1967 he transferred to the Precambrian Section in Ottawa and began regional mapping in the Sioux Lookout area, Ontario, and participated in Operations Leaf River and Torngat in Quebec and Labrador. In 1968 Ralph turned his attention again to mapping in central New Brunswick. In 1973, he took on the position of Staff Geologist for the Precambrian Subdivision.

Lloyd and Ralph, by mapping thousands of square kilometres spread across two provinces and all three districts of the Northwest Territories in one case, and across six provinces in the other, and by publishing numerous maps and reports, have made an important contribution to knowledge of the geological framework of Canada and its economic potential.

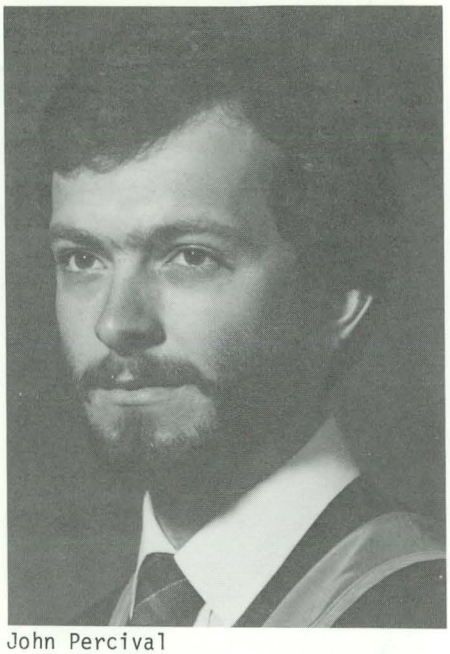


Ken Buchan

Kenneth Buchan (Paleomagnetic Section), John Allan Percival (Superior-Grenville Section) and Marc St-Onge (Bear-Slave Section) are new members of staff.

Ken was born in Fort William, Ontario, on 23 June, 1948. He remained in Fort William for several years before moving to Belleville and, later, to Toronto, where he received a B.Sc. in Physics from the University of Toronto in 1972. Graduate studies in paleomagnetism and rock magnetism under David Dunlop were the basis for M.Sc. and Ph.D. (1977) degrees in Geophysics. His Ph.D. thesis, "Rock magnetic and paleomagnetic studies of multicomponent remanences in metamorphosed rocks of the Grenville Province of the Canadian Shield", led to a Postdoctoral Fellowship with the Paleomagnetic Section of the Geological Survey (1977-79). Ken then spent two years as Assistant Professor in the Department of Physics at Memorial University of Newfoundland (1979-81). He has numerous published papers to his credit. Current research projects such as paleomagnetic studies of the Lac St. Jean anorthosite and Nipissing Diabase and the use of remanent magnetization in dyke contact zones to determine depth of burial, demonstrate Ken's interest in uravelling the complex paleomagnetic study of the Canadian Shield.

In one sense at least he is well prepared for work in the Precambrian of the Northwest Territories. In line with his enjoyment of outdoor activities such as skiing and canoeing, Ken has made several major canoe expeditions along the routes followed by the early explorers of the Territories.

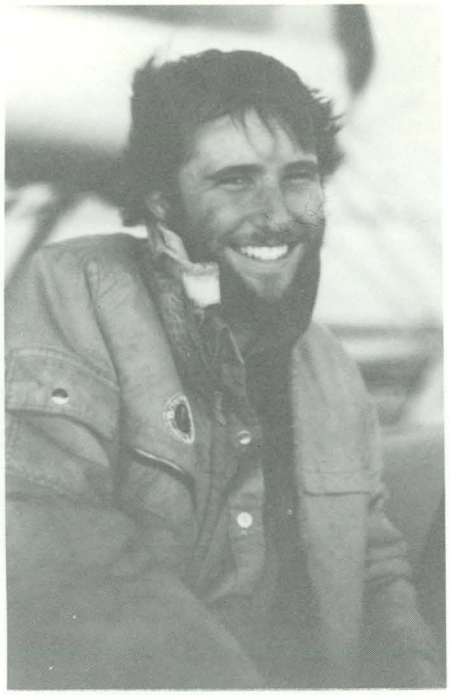


John Percival

John was born on 16 July, 1952 in North Bay, Ontario, and spent his youth in North Bay and Kirkland Lake. He attended high school in Toronto and Concordia University in Montreal, where he obtained his B.Sc. in geology in 1976. Thereafter, he attended Queen's University, Kingston, obtaining his master's in 1978 and Ph.D. in 1981.

During the summers, John was employed by Québec Ministère des Richesses Naturelles, Noranda, and for six summers, by the GSC in the Northwest Territories and northeastern Ontario. He studied the structure and petrology of high grade metamorphic rocks of the Kapuskasing Structural Zone in Ontario for his Ph.D. thesis. John is the author or coauthor of several scientific papers on aspects of Territories and Ontario geology. His work with the Survey will deal with the geology of the Precambrian Shield of northwestern Ontario and Manitoba. He maintains his interest in the Kapuskasing rocks and is currently investigating their U-Pb zircon geochronology in association with T.E. Krogh of the Royal Ontario Museum, Toronto.

John is a musician and played guitar with a rock band while at university. His hobbies include cross-country skiing, white-water rafting, and furniture making. He retreats periodically to his small farm in Quebec's Eastern Township on the Canada-U.S. border. He informs us that smuggling is not one of his hobbies.



Marc St-Onge

Marc's Manitoban father and Flemish mother met in Ethiopia and produced Marc in Brussels on 4 September, 1955. Having enjoyed a year he spent in Montreal (1958-59) he decided to return from Belgium to Canada with his family in 1962. Fluently bilingual at an early age, his academic education in Ottawa culminated with a B.Sc. in geology from the University of Ottawa in 1977. Although well grounded in the less-consolidated aspects of geology by his father Denis, and a summer on Banks Island with Jean Serge Vincent, he saw the light under the expert tutelage of Ken Eade and decided his future was in hard rocks. Paul "Wopmay Orogen" Hoffman, impressed by Marc's enthusiasm and competence, entrusted him with the fascinating metamorphic chapter of the Wopmay story. This turned out to be rather more than a Master's thesis. After a year at Queen's, Marc transferred to a Ph.D. program, which he completed with the help of NSERC scholarships in the spring of 1981. A few weeks later he was setting up a base camp in the Redrock Lake map area north of Yellowknife and beginning the field component of his own GSC regional project (note accompanying photo of Marc in his field mode). The map area provides excellent opportunity to study the internal portion of an orogen with a fold and thrust zone, metamorphic-plutonic complex and nappe structures at very high metamorphic grade well exposed across 100 km.

While completing his Ph.D., Marc found time to publish papers on various aspects of Wopmay Orogen, be a lab instructor, act as editor of the Geology Department newsletter, and organize the Geocolloque lecture series. When he is not meditating on or actively pursuing the solutions to geologic mysteries, he is dancing, skiing or sailing.

Resource Geophysics and Geochemistry

Jack Janveau moved over to the Geological Data Processing Section from the Geochemistry subdivision in April 1981.

The three members of the Contract Surveys Section - Ed Ready, Wim Knappers, and Dwight Reveler- have moved back to City Centre from 580 Booth Street.

Terrain Sciences Division

Roger McNeely joined the Division in November to take over operation of the Radiocarbon Dating Laboratory. With a B.Sc. in geology and a Ph.D. in limnology, plus a strong emphasis on chemistry throughout his studies, he has an exceptionally broad scientific background. Roger did postdoctoral work in Sweden, and since 1974 he has worked for the Water Quality Branch of DOE.

Paul St-Amour joined the Division in September as our new Draftsman. He has a wide range of drafting experience after working for a few years with a consulting firm. Welcome to the Division. Paul is replacing Ed Bélec who has moved on to Geological Information Division after 2½ years with us. Al the best, Ed.

Bob Hélie joined Regional Projects section as a term physical scientist this June after working for the Division for several field seasons as a student assistant. He recently received his M.Sc. in geology from McGill University. Bob has been mapping in the Yukon this past summer and next year will be mapping in the Arctic.

Lorrie Farrell joined the staff or Sedimentology and Mineral Tracing Section in October as a term physical scientist. She is a graduate of the University of Waterloo and worked for one year for Ontario Geological Survey in both Quaternary and Precambrian geology. Her primary responsibilities will include conducting subbottom profile surveys of Canadian Shield lakes and compiling the data on maps and cross-sections.

Phil Wyatt also joined the staff of Sedimentology and Mineral Tracing section in October as a term physical scientist. Phil is recent graduate of Carleton University with a major in chemistry and geology. He spent the summer as a chemist for the Water Quality Branch of Inland Waters Directorate. Phil will serve as an analytical geochemist with an immediate responsibility for developing laboratory techniques appropriate for estimating the sensitivity of glacial and related sediments to acid rain.

Linda Barton joined the Paleoecology and Geochronology Section as a term scientist in September. She is a biology graduate from Carleton University. Linda was a summer assistant during the field season and continues to assist in paleoecological studies.

John England, on sabbatical leave from the University of Alberta, will be with the Division until May 1982. During this period, John will familiarize himself with divisional mapping techniques and procedures used in the North. We hope you have many fruitful discussions with our Arctic researchers.

Of General Interest

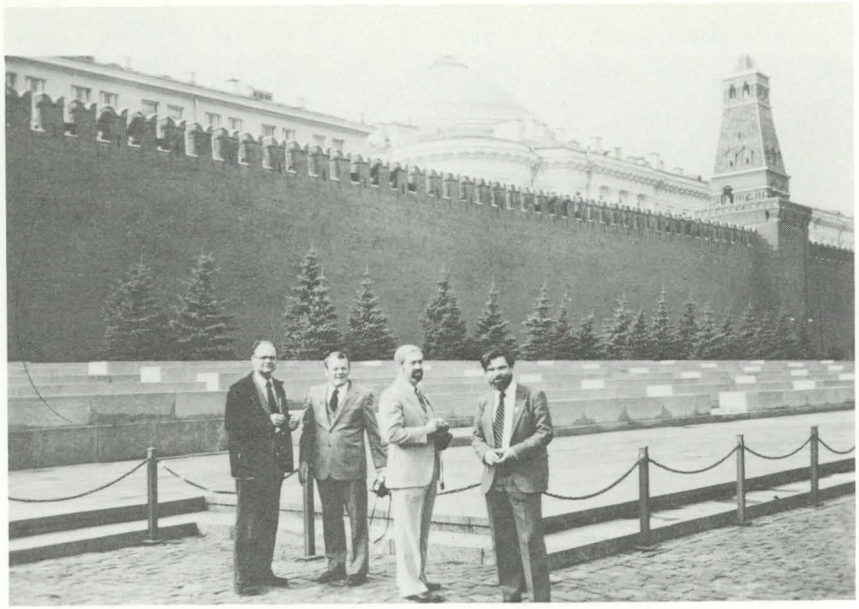
GSC visits USSR

Four members of Economic Geology Division visited USSR September 14-30 as the first Canadian delegation under the Canada/USSR Memorandum of Agreement on Industrial Applications in Geology. Chris Findlay, Bill Poole, Don Sangster and Rod Kirkham visited Moscow (Ministry of Geology, USSR; Ministry of Non-Ferrous Metallurgy, USSR) and VSEGEI (All Union Geological Research Institute), at Leningrad, for "institute" discussions and negotiations regarding the agreement. They then spent 2-3 days each in three separate field operation areas: North Caucasus Geological Management, Ordzhonikidze, Osetia (5 000 people with responsibility for mineral exploration in the Main Caucasus Mountain region); Bashkirgeologiya Management, Ufa (3 000 people with responsibility for mineral exploration in the Republic of Bashkir and Southern Ural Mountains region); Altai Geological Exploration Expedition (West Siberian Geological Management) responsible for exploration in the Rudny Altai district, West Siberia.

The Canadian group visited Ministry of Geology field operations, examined drill core and geological and geochemical data from several recently discovered deep (100-900m) polymetallic volcanic-associated massive sulphide (Cu, Zn ± Pb) deposits (Zmeinogorsk, Rubtsovsk, Zakharov; all in Devonian sections in Rudny Altai), saw a Sadonsky-type Pb-Zn vein under exploration/development amidst spectacular scenery in the Caucasus Mountains and visited an operating medium-tonnage open pit polymetallic massive sulphide (Cu-Zn) mine at Sibai, Bashkir. We were told that we were the first western geologists to see the Sibai deposit and that it had taken our hosts five months to arrange the visit, through the labyrinthine Russian bureaucracy.

The Canadian group was treated with at times overwhelming hospitality, except by Aeroflot which apparently treats everyone with indiscriminate contempt. The group travelled over 11 000 km inside USSR, by jet (9 750 km), by a bush A/C that resembled a biplane version of a pregnant Single Otter and appears to be constructed of cast iron (700 km) and jeep and car (900 km), the latter

Rod Kirkham (left), Bill Poole (with hammer) and Chris Findlay (right) pose with Russian hosts.



Bill, Rod and Don sightseeing.

BELOW
The cast iron plane

always driven by what we came to recognize as graduates of the North Caucasus Guided Missile Driving School and prohibited by law from decelerating below 130 km/h. The group proposed 427 toasts, received 632 toasts, consumed 152 gallons of vodka and rejected 241 gallons as superfluous. Except locally the conduct of the Canadian group was exemplary.

Canadians will have an opportunity to reciprocate when three Soviet Geologists from the USSR Ministry of Geology pay a visit to points in Canada, including GSC Ottawa and Vancouver in the last two weeks of November 1981.

What is happening in RGG?

Wim Knappers is monitoring a contract that was granted to Kenting Earth Sciences for an aerial survey of 82 800 km^2 in northern Labrador as part of the Federal-Provincial aeromagnetic program. Peter Hood attended the IUGG meeting in Edinburgh in July and delivered a paper on interpretation techniques for aeromagnetic data, before proceeding on to Pakistan in support of the aeromagnetic interpretation program that was carried out for that country under the sponsorship of CIDA as a followup to the earlier aeromagnetic survey flown there. Dennis Teskey attended the CGU meeting in Calgary in May and presented a paper on interpretation techniques applied to the Wollaston basin. Peter McGrath attended the Third International Arctic Symposium in Calgary in June and reported on the progress of the 1:3.5 M Magnetic Anomaly Map of the Arctic. Les Kornik attended the CIM Uranium Symposium meeting in Saskatoon in September.

ISPG - Ottawa Paleontology

In July Bill Fritz attended the field trip of the Precambrian-Cambrian Working Group of IUGS and IGCP to the Oldan River, Siberia. The trip, sponsored by the USSR Academy of Science, was attended by 4 scientists from outside the Soviet Union; Bill was the only Canadian in attendance.

Also in July, Murray Copeland, Godfrey Nowlan and Tom Bolton attended the field trip of the Ordovician-Silurian and Early Silurian Working Groups of IUGS and IGCP to Anticosti Island and Gaspé, Québec. The trip, lead by C.R. Barnes (Memorial University) and P.J. Lespérance (Université de Montréal) with assistance from several others working in the area, was attended by more than 20 scientists from Europe, North America and Australia. According to those who attended, the trip was an unqualified success. Anticosti Island may be selected as the stratotype for the Ordovician-Silurian boundary and also for the Early Silurian Anticostian Stage, the latter would replace the Llandovery Stage.

In October Tim Tozer attended meetings of the IGCP Projects and Triassic Subcommissions in Sarajevo, Yugoslavia where he stood in the footprints of Archduke Franz Ferdinand's assassin. Luckily Tim did not start World War III.

The second edition of "Rock and Mineral Analysis" by CLTS Division Director John Maxwell, has just been published by John Wiley and Sons, New York, but this time with Dr. W.M. Johnson, B.C. Ministry of Energy, Mines and Petroleum Resources as coauthor. The first edition appeared in 1968 and emphasized the "classical" gravimeter/titrimetric methods of rock analysis, with only a rudimentary treatment of instrumental methods such as X-ray fluorescence spectroscopy and atomic absorption spectroscopy. By contrast, the revised edition devotes 132 of its 489 pages to detailed descriptions of these methods with brief treatments of optical emission spectroscopy, neutron activation analysis, fire assaying and electron microprobe analysis, the later written by A.G. Plant, Head of the Mineralogy Section of CLTS. Appendix I is a reproduction of GSC Paper 80-14 On standard samples (1979 edition of "usable values") by Sydney Abbey, the Analytical Chemistry Section Head.)

New Director for USGS

Dr. Dallas Peck was appointed the new Director of the U.S. Geological Survey on 30 September, 1981. He is the 11th Director of the 102-year-old USGS and succeeds Dr. H. William Menard who resigned in January 1981

With more than 9700 fulltime employees and nearly 400 field offices across the country, the USGS is one of the largest bureaux of the Department of the Interior. From headquarters in Reston, Va., the USGS conducts the nation's basic civilian mapping program and largest water resources data program, supervises energy and mineral development on federal lands, and conducts basic and applied research into a wide range of earth science and earth hazard programs.

Dr. Peck, 52, received formal training in geology at California Institute of Technology (B.Sc. 1951; M.Sc.,1953) and Harvard (Ph.D., 1960). He joined the USGS in 1951. In 1977, he was named Chief Geologist and head of the USGS Geologic Division. During his career Dallas Peck has received the Department of Interior's Meritorious Service Award (1970), the Distinguished Service Award (1979), and the Presidential Meritorious Executive Award (1980).

He is a Fellow of the Geological Society of America and the American Association for the Advancement of Science, and served as president of the American Geophysical Union's Section on Volcanology, Geochemistry and Petrology, and the Geological Society of Washington.

Precambrian Field Activities

Once again members of Precambrian Geology Division braved the usual hardships, close calls, heat, cold and bugs to further our understanding of the Precambrian basis of Canada. Bob Baragar continued his work on the Ottawa Islands in Hudson Bay in spite of a polar bear invasion. In District of Keewatin, Al Fraser completed the Woodburn Lake area with an assist by Fred Taylor. Mikkel Schau, while finishing the Baker Lake map area, found that some thrusts do reach a satisfactory conclusion. Several hairy (as in dangerous) helicopter incidents did not stop Hewitt Bostock from filling in the last blank spots in the Fort Smith map area. North of 55° in Quebec, André Ciesielski kept mapping to the bitter end, only retreating southward in the first week of October. Fred Chandler spent 6 weeks with André working on the Richmond Gulf rocks and then moved over to Newfoundland and found some arid lake deposits with interesting implications. This year Paul Hoffman used the "flying circus" approach to begin mapping the fold and thrust belt of Wopmay Orogen. Marc St-Onge started the Redrock Lake map area and discovered kyanite-bearing rocks that suggest the Wopmay Orogen is more profound than previously realized. Major tectonite zones revealed by continuing field work in the Grenville Province have led Tony Davidson to propose a Himalayan-type tectonic model for the region. Ken Currie divided his summer between assisting Joe Whalen to map two 1:50 000 sheets in Newfoundland and field work in the U.S.S.R. and Scandinavia. Janet MacManus was another of the Newfoundland "mapfia" this year. On the mainland in Labrador Ron Emslie mapped the Mistastin Batholith. Farther north, Jack R. Henderson spent two weeks checking critical areas in the Piling Basin on Baffin Island. Having completed an odyssey by camper truck through Ontario and Quebec and searching vast areas of moose pasture by helicopter for outcrop, Ken Card is ready to begin the geological compilation of NTS sheets 41 and 42, a mere 140 000 km^2. Our man in Manitoba (1981), Terry Gordon, finished the field work part of a metamorphic study of the Crowduck Bay area. Not only did his camp feature a handmade basketball court and a part-time resident veterinarian, but Terry claims to have had the best cook of all the Survey crews this summer. Farther north and west, Maurice Lambert put the finishing touches (1:10 000) on his Back River Volcanic Complex in the Slave Province. With the help of half a helicopter contract John B. Henderson and Peter Thompson filled in the white areas of the Healey Lake map and returned to Ottawa in late July with enough rocks to reconstruct the Thelon Front at Tunney's Pasture, if necessary. Otto van Breemen joined the party on July 4 and sampled extensively for geochronology. Following 6 weeks of fly-camping, Tony Frith used the other half of the helicopter contract to complete the Beechey Lake E($\frac{1}{2}$)-Duggan Lake (W$\frac{1}{2}$) map areas and Walter Fahrig sampled basic dykes for a paleomagnetic study. Meanwhile, Ingo Ermanovics was so busy completing his mapping project in Labrador that he did not notice visitor David Bridgwater removing approximately 6000 pounds (2727 kg) of samples from the portion of the world's oldest rocks that Ingo has mapped up there.

Geological Wives' Association Scholarship

The award for 1981 has gone to Joan Currie, a daughter of Ken Currie. Miss Currie has enrolled at University of Western Ontario and hopes to complete an honours degree in the Physical Sciences. The scholarship is offered each year to a son or daughter of an employee of the GSC, who is preparing to enter university or college for the first year.

Australian Mineral Foundation

By invitation of the Australian Mineral Foundation, Neil Burk contributed to a seminar entitled 'Geoscience Numeric and Bibliographic Data' in Adelaide, Australia 30 March - 1 April 1981. An extensive list of publicly available geoscience databases was compiled.

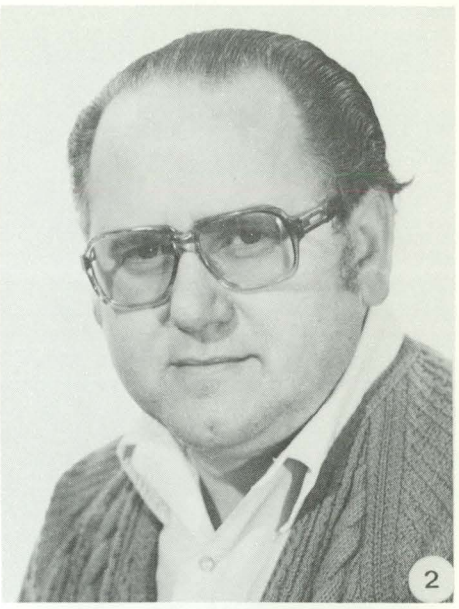
Association of Canadian Universities for Northern Studies (ACUNS)

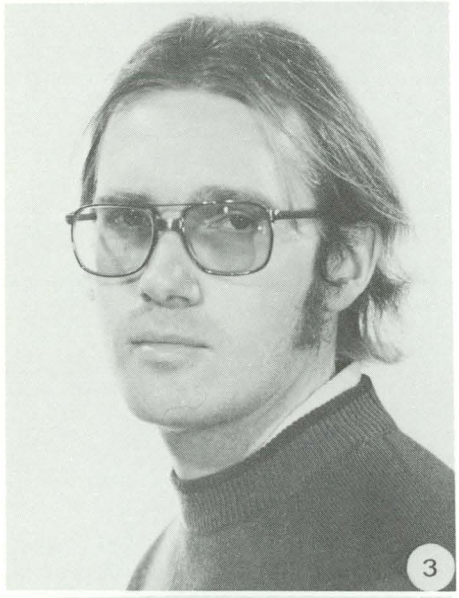
ACUNS recently released a consultant's report titled 'Development of a Bibliographic Database on Northern Canada: Summary Report'. With her extensive experience in the development of the GEOSCAN bibliographic database, Kay Gunn has been serving on the Management Committee, directing the study for development of a Northern Canada database.

The Time People

Do you ever wonder who the familiar face that you keep seeing in the corridor, laboratory or adjacent office belongs to, and what that person actually does? With this question in mind, Dale Loveridge suggested a pictorial cross-section of the Geochronology Section of the Precambrian Geology Division. The number following the name of each person is the year they joined the GSC.

This feature is a chance to quietly get to know your colleagues. Pick up extra copies of Geogram, you may want to trade favourites with friends. Keep the complete collection pinned to the wall over your desk or cut out the pictures and carry then in your wallet for quick reference. Sounds interesting, doesn't it?





1. Dianne Bellerive (1974)

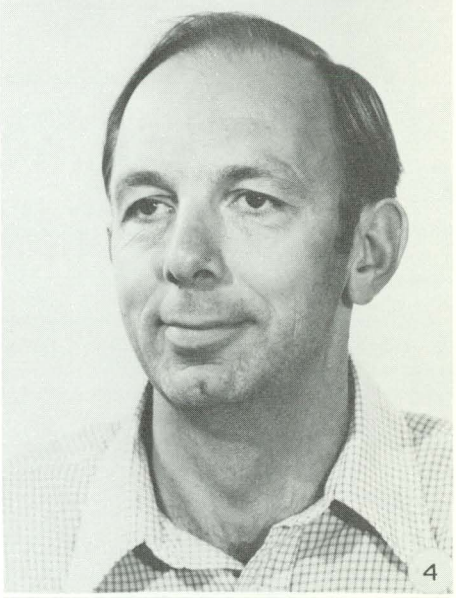
Dianne performs the Rb, Sr and K extraction chemistry and maintains a supply of pre-baked mass spectrometer filaments ready for use.

2. Jean-Claude Bisson (1967)

Jean-Claude performs the intricate U-Pb extraction chemistry for zircon samples in a clean lab in the northwest wing of the seventh floor, well removed from the main Geochronology Laboratories.

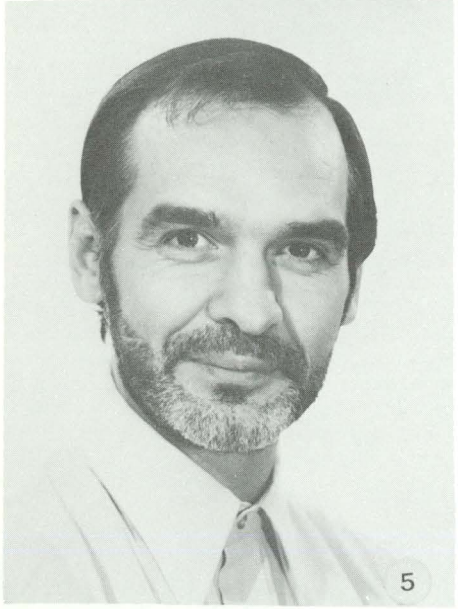
3. David Lapierre (1979)

David operates the U-Pb mass spectrometer and calculates the isotopic results from the output data.



4. Dale Loveridge (1959)

Dale oversees the mass spectrometry and production of results of the Rb-Sr and U-Pb (zircon) age determination projects, compiles and contributes to the geochronology publications in Current Research, Part C, and designs, builds, and modifies mass spectrometers.

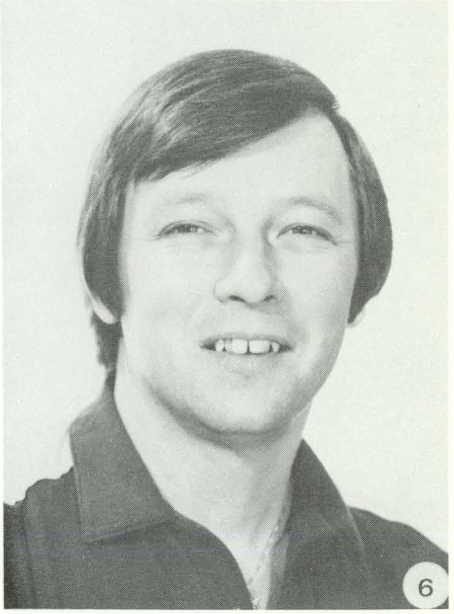


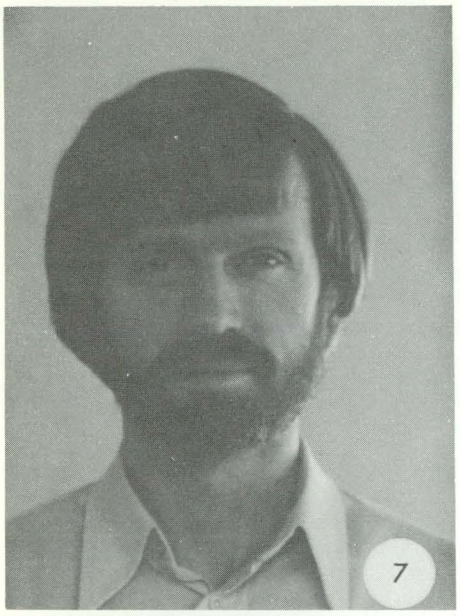
5. Jack MacRae (1966)

Jack operates the Rb-Sr mass spectrometer and calculates the Rb-Sr age results.

6. Fred Quigg (1966)

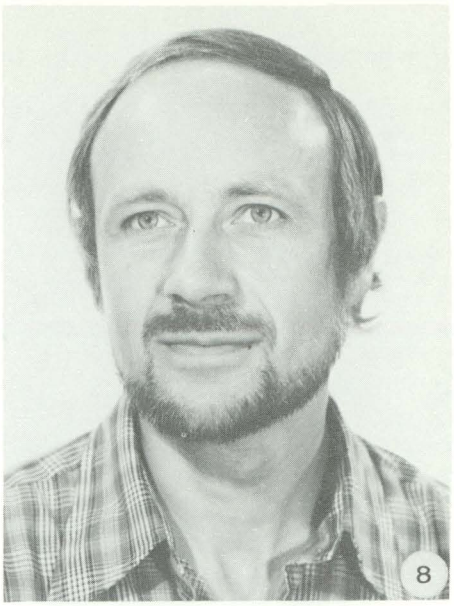
Fred is our electronics wizard and includes in his function the design, construction and repair of electronic equipment. He is also the section's computer hardware expert.





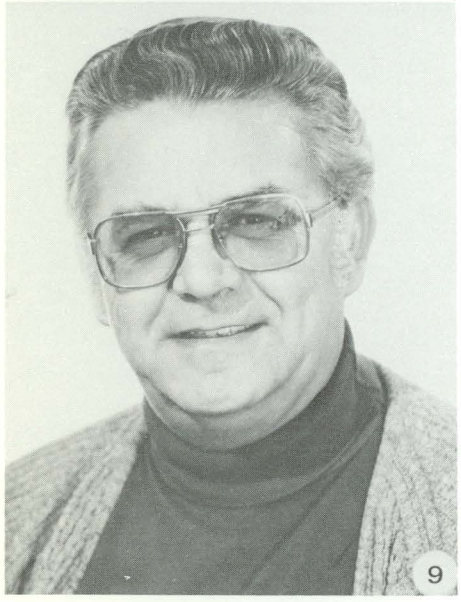
7. Chris Roddick (1981)

Chris will be joining the Section as a research scientist in November, from Leeds University in England. He currently has a strong interest in the $^{40}Ar/^{39}$ Ar age determination method, but has experience in all the solid source mass spectrometry techniques and in computing.



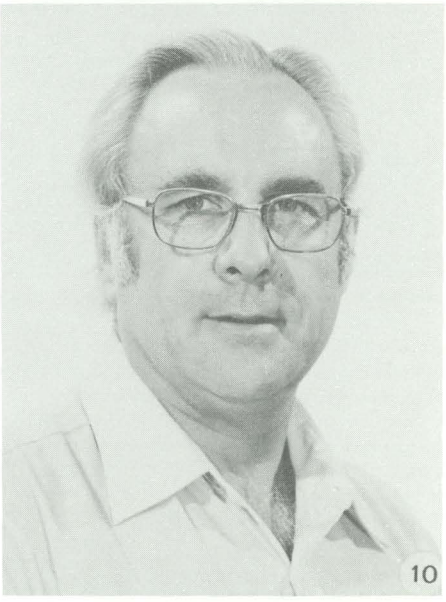
8. Klaus Santowski (1968)

Klaus operates the K-Ar mass spectrometers and is responsible for results obtained. He also checks samples for the presence or absence of zircon crystals and is often found with his head in a fume hood.



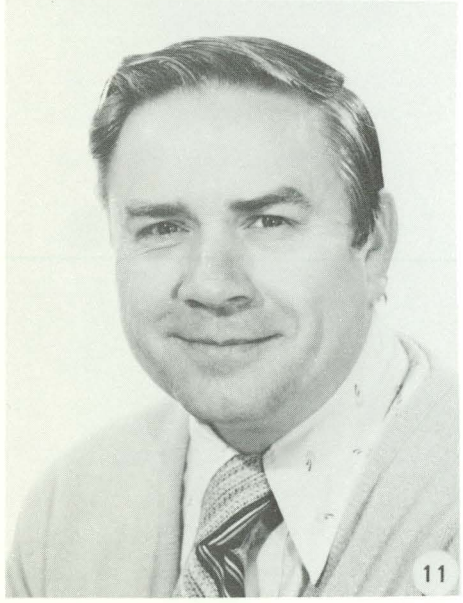
9. Reg Seguin (1957)

Reg runs the argon extraction system, a high vacuum system which melts rock and mineral samples and collects and purifies the argon gas released.



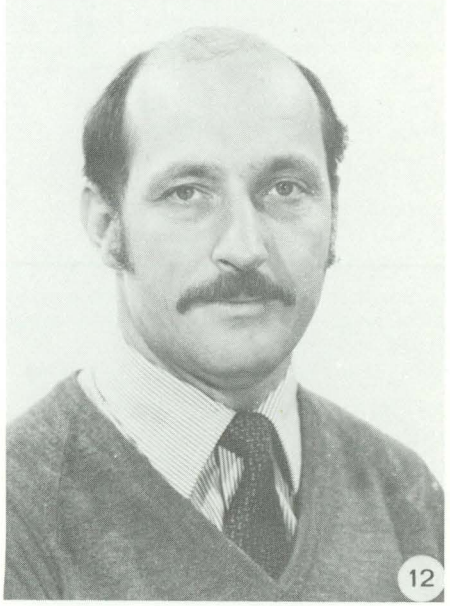
10. Bob Stevens (1958)

Bob Stevens' main responsibility is for the K-Ar age determination program, but he also spends a lot of time doing administration work and was acting Section Head before Otto joind the Section. He has the happy job of compiling the GSC, K-Ar age publication which appears at one to two-year intervals.



11. Bob Sullivan (1963)

Bob Sullivan is kept very busy overseeing the chemical extraction procedures for K, Rb, Sr, U and Pb, is the Section's resident computer expert, taking care of the software side of the laboratory computer chores, and he is also very involved in preparing zircon sample-fractions for U-Pb analyses.



12. Otto van Breemen (1981)

Otto is the new Section Head of the Geochronology Section. He was appointed to that position in April, 1981 and has been working hard since that time to upgrade the laboratory capabilities in all fields.

A Fennoscandian Field Trip

This summer, I visited Fennoscandia to pick the brains of geochemists and glacial geologists on problems of prospecting in glaciated terrain. I arrived in Helsinki on 6 August, was guided along a 6500 km route (Fig.1) by a succession of most hospitable geologists, and returned to Canada on 9 September.

The first leg of my tour started at the head office of the Geological Survey of Finland in Helsinki, and then went northwards to regional offices in Kuopio and Rovaniemi. It followed a complicated route on which the Finnish geologists showed me: interglacial sediments in southwestern Finland, till sampling with a backhoe and percussion drill, stream sediment sampling, weathered bedrock and old tills in Lappland, several mineral prospects, the Pyhäsalmi copper-zinc mine, the Otanmäki vanadium-iron mine, the Finnish National Museum, folk parks at Helsinki and Oulu containing pioneer-style houses and antiques, and churches ranging in age from the 16th century to a modern one built entirely within a granite knob in downtown Helsinki. A fascinating day was spent visiting grizzled gold miners in Lappland, where placer methods include Klondike-style sluicing and panning as well as heavy equipment methods. Valuable scientific discussions were held all along the route, the most memorable of which took place in the ritual of the sauna, where the combined effects of vodka, the heat, and a long day's travel promoted a free (but at times somewhat slurred) exchange of idea.

The second leg of the trip began in Rovaniemi, where I joined a field trip of glacial geologists from Finland, Sweden, and Norway who are working on a co-operative mapping and geochemical project to assess 250 000 km^2 of their northern lands. Dodging reindeer all the way, our bus took us to the spectacular fiord coast of northern Norway near Hammerfest (the world's most northerly city), where we saw late glacial moraines and deltas; then we turned into Sweden to see classic morainic landforms and returned to Rovaniemi. I then went back to northern Norway to observe and participate in geochemical sampling on the tundra-like plateau overlooking the coast. At many places in these northern travels, reindeer and salmon were on the menu; they were served in a variety of ways - all delicious. The next leg of the trip took me to the Swedish Survey's offices at Luleå, where I was shown some of the results and problems of geochemical and glacial geological work in northern Sweden — a region that is similar to Canada's boreal forest. I then visited a field station and two tungsten-molybdenum prospects to see how the exploration programs were conducted.

I flew to the Norwegian Survey's office in Trondheim, where I learned about work being done on geochemistry in relation to health and disease, among other topics. I found that the seafood restaurants there enjoy a justifiably high reputation. From Trondheim I travelled inland along a scenic mountain valley towards Oslo, visiting a small area of vegetation poisoned by natural heavy metal contamination of groundwater. In Oslo, I visited the Viking Ships Museum, where the sleek, fearsome craft are enshrined, and the Norwegian Maritime Museum, where I saw the Gjøa - the tiny ship used by Amundsen to traverse the Northwest Passage in 1903-06.

Moving to Stockholm for the end of my tour, I visited the LKAB mining company and made a day trip to Uppsala to visit the Swedish Survey. A highlight of my visit to Stockholm was the Historical Museum's display of Viking artifacts and treasures, a special show loaned from several European museums. (Note that a similar exhibition will be held at the National Museum of Man in Ottawa between 16 December and 14 February).

During this trip I was treated to the warmest hospitality by the large number of people who acted as my guides. I hope that I can return the favour.

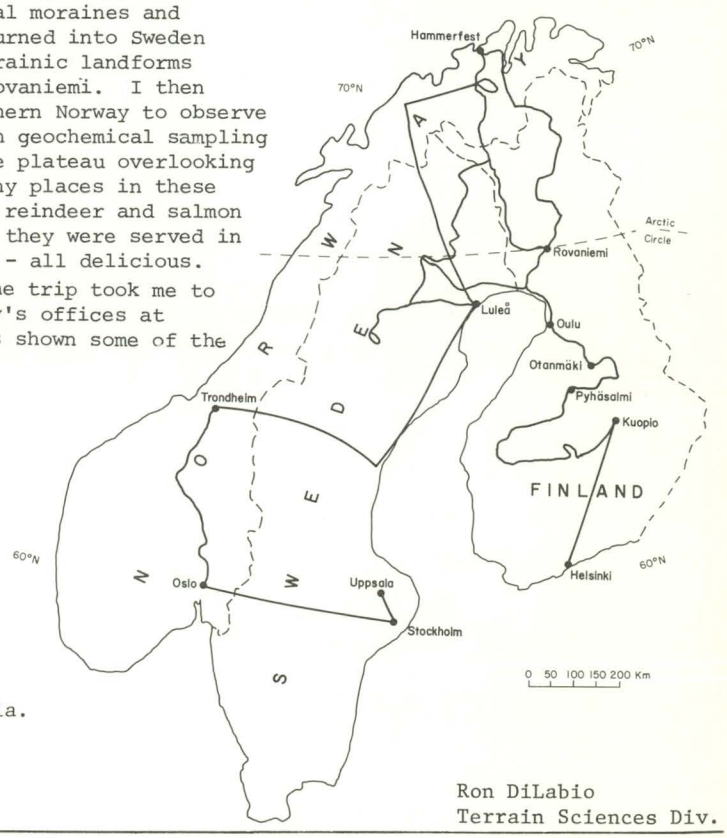


Figure 1.

Route of trip in Fennoscandia.

Ron DiLabio
Terrain Sciences Div.

Departmental Committee on Automated Administrative Support System

With the increasing popularity of word processors, microcomputers, and the other wonders of the Office of the Future, the Executive Committee of the department created a special committee to look into how Energy, Mines and Resources is using and planning to use advanced office systems. Neil Burk is the Earth Sciences Sector representative. In that capacity, Neil and Yvon Claude, attended a seminar in May, presented by Systemhouse Ltd. on 'A Guided Tour of the Automated Office' More recently, Neil prepared a report for the Computer Science Centre, describing his first years' experience with an Apple II personal microcomputer.

Other Projects

After two years of experiencing the joys of motorcycle touring Kay Gunn traded in her fully dressed Honda 650 this past summer. She has not given up the two wheel thrill, however, and can now be seen (as a blur) riding through the streets and byways of Ottawa on her new Seca 650 sport bike. She is the one in the green and yellow leathers with lots of reflective tape, on everything.

GEOREF to be Available on CAN/OLE

GEOREF, the database of the American Geological Institute (AGI), will soon be available for online searching on CAN/OLE.

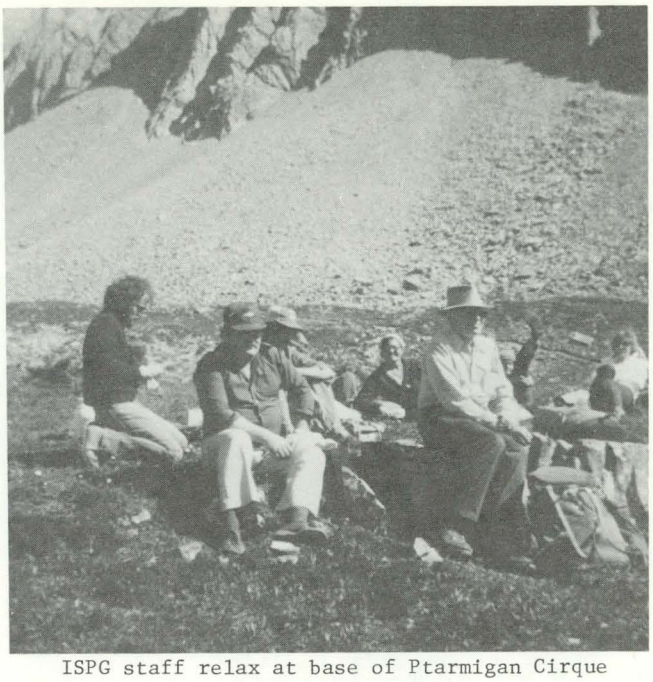
CAN/OLE is a Canadian online information retrieval system operated by the Canada Institute for Scientific and Technical Information (CISTI) of the National Research Council of Canada.

Presently, access to GEOREF is available only through American-based suppliers. CAN/OLE will be able to supply the same service at a much lower cost.

It is anticipated that within a year, GEOREF's coverage of the world's geological literature will extend back to 1785.

For a search or more information, contact: Judith Wilks
Library
601 Booth St.
995-4151

Lunch at Ptarmigan Cirque - or is that a poker game in progress?



ISPG staff relax at base of Ptarmigan Cirque with field trip guide Don Stott.

A road-stop during the Ptarmigan Cirque field trip. From left to right: Pearl Broad, Pat Dobell, Joyce Andrechuk, Earlena Ijeh, Barbara Fischer, Jean Dougherty, Glenn Edwards, Jean Spirritts, Aline Hennessey, Len Wardle, Al Higgins (in front).

ISPG Support Staff Take a Hike to Ptarmigan Cirque

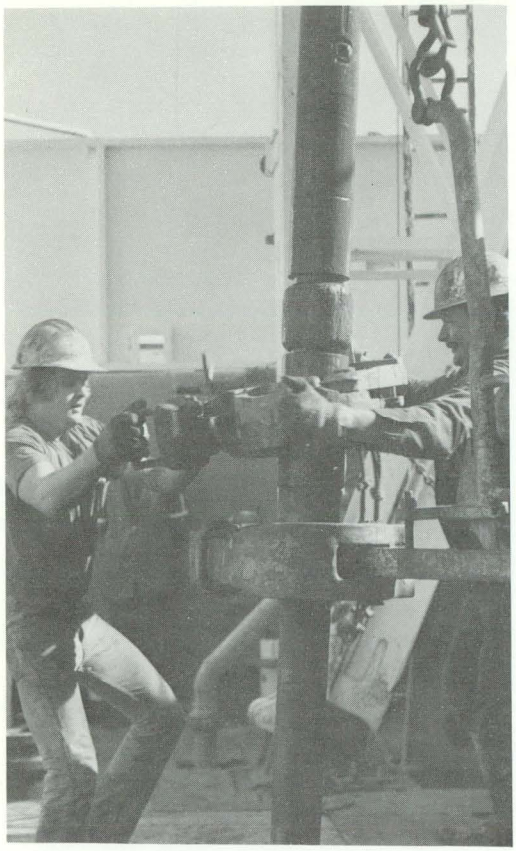
In mid-September twenty enthusiasts took part in the annual ISPG support staff field trip. The Saturday excursion was organized by geologists Don Cook, Wayne Bamber and Don Stott with the help of curator Margaret Halkett and took the party of ISPGers into Kananaskis country to look at geological features in the Foothills and Front Ranges west of Calgary at Ptarmigan Cirque (Highwood Pass), Barrier Lake and Mound Kidd. A number of road stops were made where the major rock units could be pointed out and thrust faults could be observed. For example, to the southeast of a road stop overlooking the Kananaskis Valley the group was able to examine the division in the Opal Range made by the Lewis Thrust where the Mississippian Mount Head Formation overlies the Triassic Sulphur Mountain Formation.

About mid-day the group reached the area of Highwood Pass. Ostensibly the goal was to look at Mississippian fossils and stratigraphy at Ptarmigan Cirque and to see the morphological results of glacial retreat; in reality, this was a test to see if the crew was in shape! The ISPG stragglers were spurred on to the top of a 300 m climb by a transient wedding party. The bride wore a long white wedding dress, red socks and gorilla boots. Trumpets echoed through the hills, announcing the arrival of the betrothed to the spot where the picnicking ISPG staffers had collapsed near the cirque to have lunch. It was a glorious day for a hike for any reason, be it romantic or geological. After a good lunch of sandwiches and beer, the group continued up into the cirque to look for fossils; corals and brachiopods were plentiful.

After hiking back down the interpretive trail to their vehicles, the party headed towards Barrier Lake where they saw folding and faulting of the Rundle, Banff, Palliser and Fairholme sheets of the McConnell Plate. Another good example of folding came in the last few hours of the trip when the group stopped near Mount Kidd to see spectacular structures in the limestone there. A final view of the McConnell Thrust was made from the highway near Mount Yamnuska where middle Cambrian Eldon Formation formed the hanging wall and Upper Cretaceous Belly River Formation made up the footwall of the thrust.

It was now late afternoon and the group made one last stop to have buffalo stew at a Sarcee restaurant before returning to Calgary, a weary group but one that could truly appreciate the patience and hard work of the geological guides who had made the trip such a success.

Lynn Machan
ISPG



ABOVE

Elspeth Snow. (back to us), John Thomson, Ward Neale, Fontaine Hwang, Kazue Tazaki, Lachie MacLachlan, Paul Yeabsley, Dana Frank (back), share a joke before touring the Esso service rig.

LEFT

Roughnecks making a connection on Moose Dome 10-17 Well.

ISPG Drill Rig Tours

During the summer months ISPG support staff participated in three drill rig tours organized by geologists of Esso and Shell oil companies and the ISPG. The first tour took place in the Claresholme area and was sponsored by Esso. The efforts of the organizers were greatly appreciated. Vic Dudas, Completions Co-ordinator, Dave Evans, Service Rig Supervisor, Vern Sept, Toolpusher, Steve Cherimky, Drilling Supervisor and Bob Milne, Well Geologist, patiently answered questions and introduced the group to the operations of surface and oil rigs. Two tours were organized by Shell and saw two groups of about 20 people on different occasions visit the Shell et al. Moose 10-17 well (10-17-23-06 W5M) located on the eastern flank of Moose Dome in the Foothills. The second trip is described below.

Five vehicles left ISPG at 11:00 am on 30 September for Bragg Creek. At the Bragg Creek shopping centre the group met Art Rupp of Shell Oil and he directed us to a picnic area in the nearby provincial park. It was a beautiful sunny Indian Summer day, the poplars were yellow and dazzling in the sunshine. After the picnic, tables were cleared of food, a detailed diagram of an electric rotary rig was placed on one of them and the Shell geologist explained its various components and systems. Many people on the tour were struck by the complexity of the engineering aspects of an oil or gas rig; it is much more complex than most commonly imagined. After all, the majority of us have seen nothing beyond a few film clips showing roughnecks changing drill bits. Mud pumps, shale shakers, and inactive blow-out preventers are just not glamorous enough for the celluloid treatment! But we were to see it all in action that day and to realize that a great deal of energy and technological expertise goes into tapping hydrocarbon energy sources.

Art answered many questions about the various functions of the rig components and explained the geology of the area. Schlumberger logs and structural cross-sections were examined by the group and interpreted. The log section of interest to us was called Sheet IV-V and covered an interval from 2500-4500m of faulted beds of alternating Jurassic shale and Mississippian limestone. We saw regular patterns in the gamma and velocity records. In the series of small faults target areas were identified where it was thought that highly porous gas-bearing rock would be found.

We got into our vans and took the back roads to the Bow/Crow Forestry Reserve through rolling hills, past sparkling greens and radiant yellow trees, over texas gates, into an area of spindly pines and onto a private road (which cost the oil company $400,000 to build) that led to the rig site. At the rig we were met by George Cormack, a consultant and former employee of Shell for 35 years, and Jim Thorkman, Toolpusher for Bawden Drilling, the contracting firm working for Shell at this site. After a tour of the various pump houses, electrical systems sheds and around the site to see drill bits and pipes, we climbed up the stairs to a platform where the travelling block was engaged. Here we saw two roughnecks and a motorman "make a connection". A drillman controlled the switching over of a pipe to be added to the drill string already bottomed at 2600 m. This well has been operating for some time now and has sunk about 2 km of drill string weighing about 12 000 kg to this stage. It was pointed out to us that the weight of the piping is enough to damage the tungsten carbide drill bit, and so an automatic breaking mechanism is built into the system to ensure that just enough pressure is maintained on the drill bit to keep it cutting rock and not too much to damage it unduly. At a cost of between $9000 and $12 000 per bit, it is prudent to ensure that they last as long as possible. Since bits last for about 50 hours of drilling and the drill averages 4m of depth per hour, the work of the

drillman must be efficient. His controls indicate how much pressure may be brought to bear on the bit itself as it rotates through the core. At his control panel, we could see the read-out in 20 minute intervals of drilling activity. Such controls monitor torque pressure, rpm of the drill and depth at which it is sinking. We learned that the rock itself is broken by a combination of factors; torque, water pressure and mechanical pressure of the drill bit. These variables have to be worked out carefully by the drillman to obtain maximum results from the mechanical system. In addition, the drillman determines the amount of water pumped into the system. Water loss is a factor influenced by both the type of material being drilled and its porosity. Again, knowledge of the composition of the rock being drilled is of great importance in planning water usage. And blow-outs are always a possibility when unexpected pressure pockets of gas are encountered. As we watched the two roughnecks and a motorman "make a connection", we were impressed at how all these physical elements came together in the whizz of flying tongs and mud. George Cormack explained the use of two types of drill bits, the tungsten carbide button type and the iron tooth type. He showed us the chewed remains of a bit which had only gone through 2 m of core and had been worn out (after ½ hour of drilling!). We also traced the flow of mud through the rig and back out again and into the shale shakers and extracters. Art Rupp estimated that the fluids were coming out at approximately 40°C higher than at surface from a depth of 2600m. In spite of the noise, and it was pointed out to us that the electric rotary rig is quieter than most other mechanical systems, we did get a great deal of information from our hosts and left the site quite impressed with the drilling process. Over coffee and cookies we talked with our hosts and Bill Vermette of ISPG Cartography Division thanked them on our behalf for all the interest and kindness they had shown us in taking us through the site. We headed back to Calgary satisfied that we had been given a very good overview of what was actually involved in drilling for gas and oil.

Lynn Machan
ISPG

ISPG Swings Again

It was a foregone conclusion. Even though he was off his game, our new storeman, Matt Hall, walked away with the ISPG Championship with an 82 gross. The rest of use battled it out for an incredibly large assortment of lesser prizes on 15 September on the scenic Carstairs course about 50 km north of Calgary.

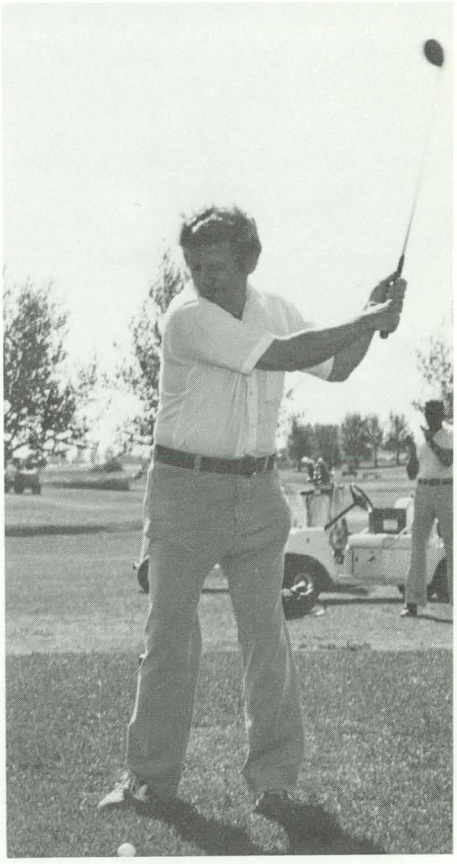
Steve Orzeck, heavy-hitting draftsman, copped an 89 and the classic's Low Net Trophy with a Calloway adjustment that brought him down to 73. Steve also won a "Closest to Pin" award. Some of the other winners were: Margo McMechan who won the best dressed title as she came equipped with snorkel, goggles and flippers to combat the well advertised water hazards of Carstairs. Gord Taylor won a "Closest to Pin" prize and also the "Low Hidden". Bryan Rutley, who put 3 into the pond on the 10th hole, won the Fisherman's Trophy. Buck Serafini had no difficulty walking off with the Lost Ball Award and Denise Then won the "High Hidden Hole" with similar ease.

Spouses were invited this year and had their private tourney which was won by Audrey Peatman, closely followed by Joanne Vermette. Amid loud boos and catcalls, Ward Neale won a beautiful and costly golf bag when Walter Nassichuk unfortunately left his name tag in the hat during the elimination draw.

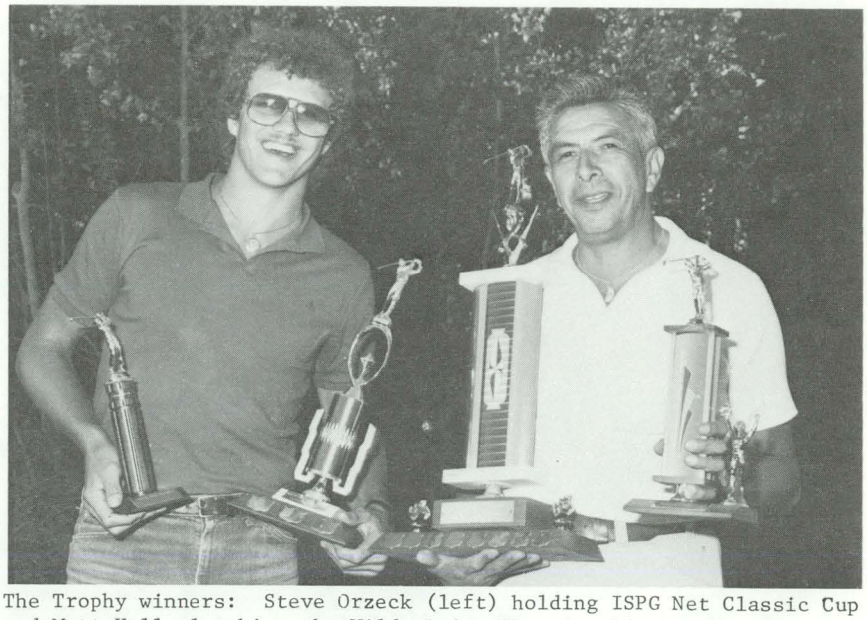
The multitude of expensive trophies and prizes left the participants gasping. The reasons: (1) Dennis Peatman, about to retire, threw civil service caution to the winds and hit ISPG suppliers such as Air Canada and Wilde Leitz for donations; (2) Bill Vermette can make deals for trophies and equipment like you wouldn't believe. Result: the Wilde Leitz Championship trophy that Matt Hall carried home with him makes the U.S. Open Trophy look like a shaving mug in comparison.

The tournament was followed by an outdoor barbecue where, over steak and ruffino, the non-winners such as Wyn Irish, John Thomson, Wayne Bamber and Bob Davidson could commiserate with each other about the missed putts and the balls that went out of bounds.

The evening ended with the usual hearty vote of thanks to Bill Vermette, organizer supreme, and Dennis Peatman, our host at the Carstairs Links.



Walter Nassichuk shows style off end tee that encourages his colleagues, "If I can do it, anyone can do it!"

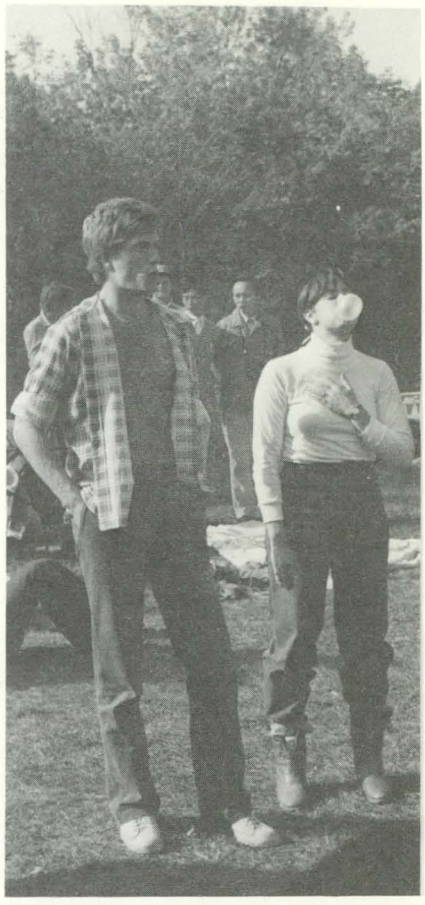


The Trophy winners: Steve Orzeck (left) holding ISPG Net Classic Cup and Matt Hall clutching the Wilde Leitz Championship Trophy.

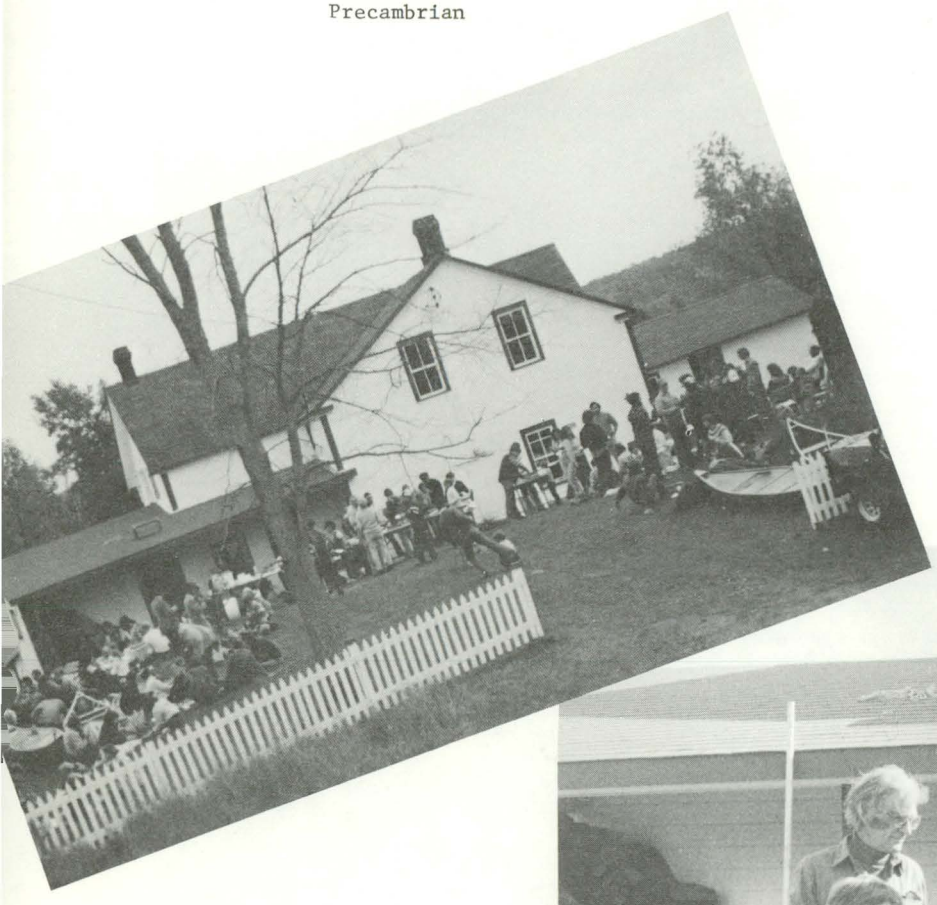
2nd Logan Day in the Capital

Geologists from our local universities, industry and the Geological Survey gathered October 4 at a Calabogie site to commemorate Logan's day. This day, a special end of field season get-together for geologists, Survey staff and their families, was started several years ago on the west coast and welds the hale and hearty newly returned geologists with the fine veneer of civilization. Feats of strength were followed by the delicate inhumation of whole roasted pigs, and chickens served from the tip of a machete. These pictures tell quite a story! Plan to attend next year - on September 27.

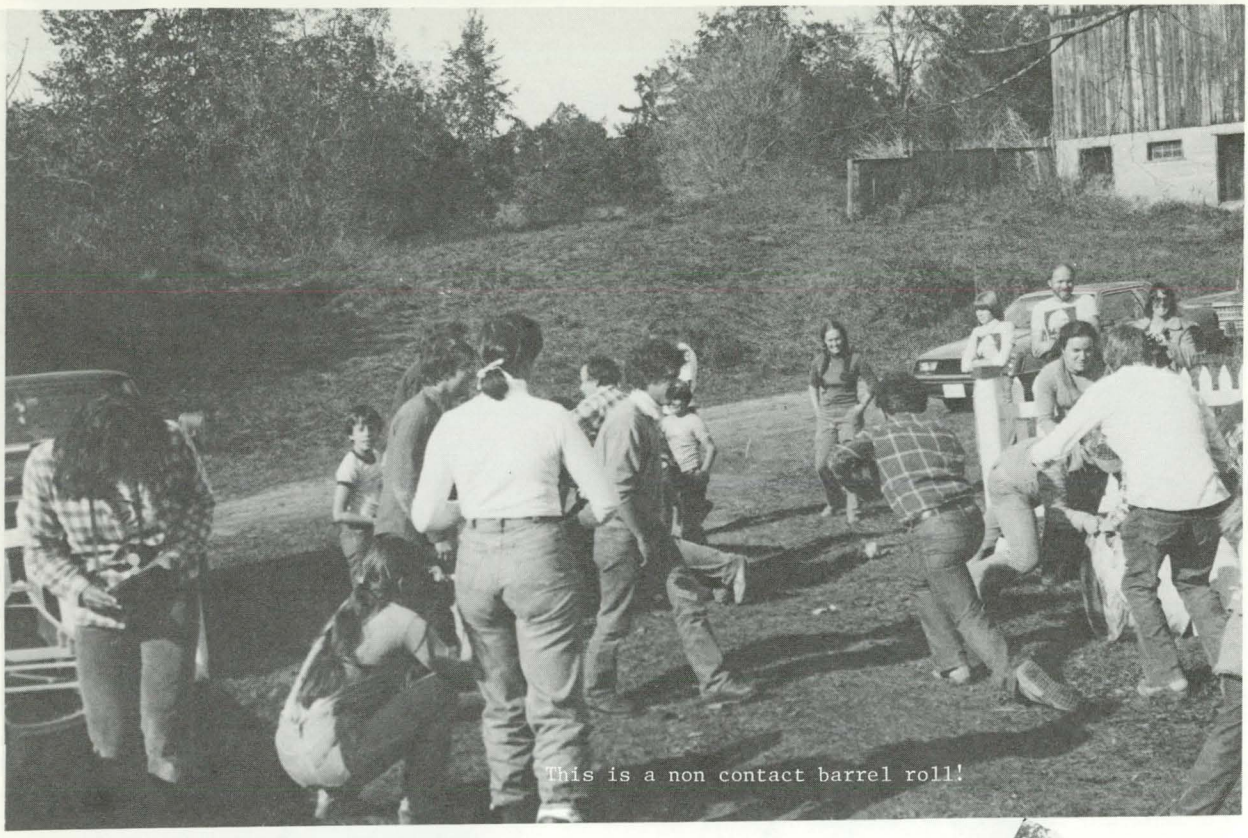
Mikkel Schau
Precambrian



I'm always blowing bubbles...!

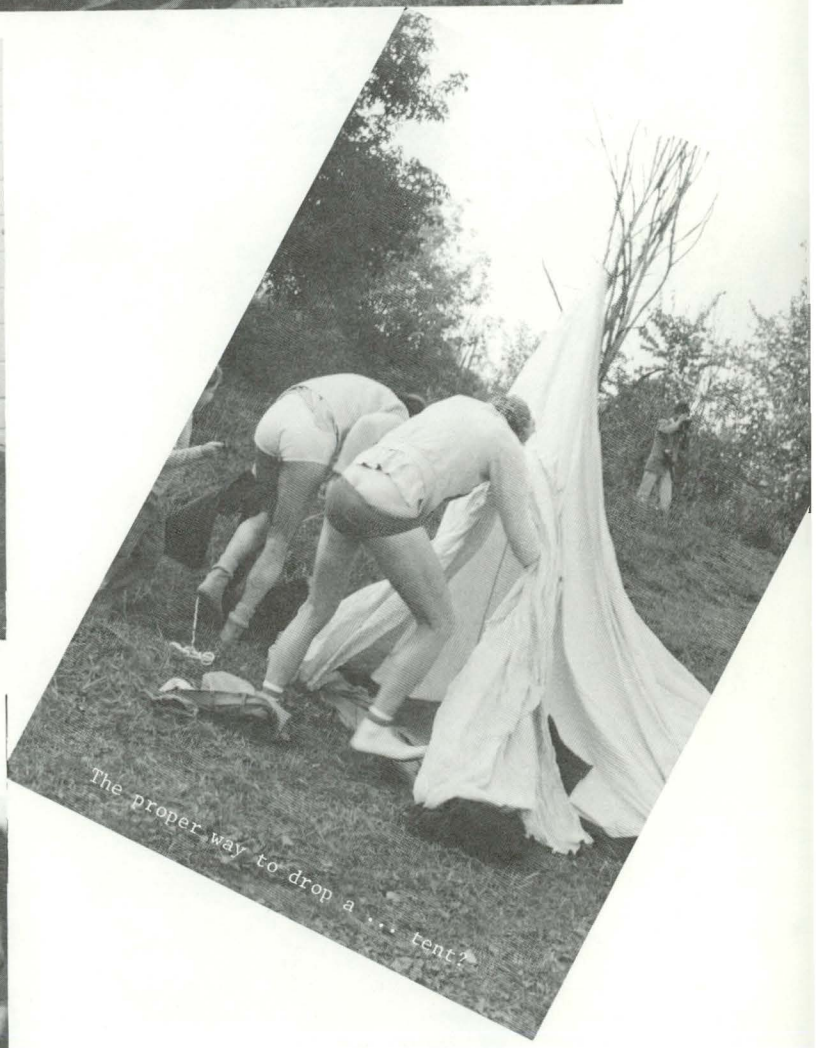


Strategy meeting; Ingo on a barrel of "RADWASTE".



This is a non contact barrel roll!

Winners of the barrel roll!



The proper way to drop a ... tent?

Isometric excercise.

10th Geochautauqua

A two-day Geochautauqua on computer applications in the earth sciences is held annually. The first eight Geochautauquas were held at Syracuse University, New York, and the ninth one at the University of Miami. The word "Chautauqua" originated from a summer school for Sunday School teachers first held in 1873 at Lake Chautauqua, New York. In Canada, Chautauqua became a household word when, from 1917 to 1935, troupes of entertainers and lecturers travelled across the country.

The tenth Geochautauqua on Computer Applications in the Earth Sciences was held in Camsell Hall on 23 and 24 October, 1981. The theme of this conference was "Use of Computers in Mineral-Resources Evaluation" which constitutes a principal challenge for resources studies in the 1980s. Twenty-three speakers, many of them internationally known authorities presented papers on such topics as computer-based systems for resource analysis, integration of geological, geophysical and geochemical data, computer simulation of ore-forming processes and multivariate statistical analysis of geoscience map data.

There were over 100 participants from ten countries including Australia, England, France, F.R. Germany, Israel, Norway, Peoples Republic of China and Scotland. The meeting was attended by many Ottawa-based geoscientists. It was co-sponsored by the Geological Survey of Canada, The International Association for Mathematical Geology and the International Geological Correlation Programme.

In his opening address, Bill Hutchison, ADM, Earth Sciences, pointed out that the use of computers in resources evaluation was a relatively new endeavour. Moreover, it required new skills as reflected by the breadth of background and the wide range of agencies represented by the geoscientists who attended.

The 10th Geochautauqua was preceded by a 3-day workshop on Interactive Graphic Computer Programs. At the beginning of this separate event, John Fyles welcomed the 37 workshop participants, most of whom represented geological surveys in different countries. Also as part of the opening ceremony, Ken Pulfer, Vice-President of the National Research Council of Canada in charge of laboratories, described how several of the techniques used in the workshop experiments resulted from an informal but highly effective collaboration between personnel of Geomathematics Section in GSC and the Computer Graphics Section of NRC. This successful workshop was the first event of its type in the earth sciences.

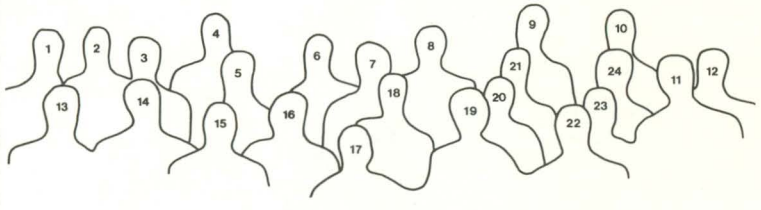
The 10th Geochautauqua provided an opportunity for several other international gatherings of mathematical geologists and computer systems experts. On Friday night, 23 October, following the buffet dinner, participants in the International Geological Correlation Programme (IGCP) held an Open Meeting dealing with quantitative IGCP projects. Its purpose was to discuss co-operation between projects and planning of future activities.

In his closing remarks, convener Frits Agterberg (EG) thanked all those who helped to make the Tenth Geochautauqua a resounding success.

Meeting of Quaternary Glaciation Northern Hemisphere Project Japan, 1981

The 8th session of the International Geological Correlation Project 24 was held on 28 July to 6 August in Japan. It consisted of a three-day symposium in Kyoto followed by a five-day excursion in the Japanese Alps. About 50 people (17 from outside Japan) attended the symposium and 18 (15 from outside Japan) took part in the field trip. I was one of four North American representatives. Japan lies in the zone of collision between two crustal plates - volcanoes and violent earthquakes being the prime evidence. The country is predominantly one of youthful mountains, which, through faulting and warping, have been segmented into clusters separated by small lowlands with dissected plains. As a consequence, river valleys are generally short and begin as steep gradient mountain valleys, passes through mountains are high, and construction of travel

Four United Nations Fellows from the People's Republic of China spent the month of September in the laboratories of the CLTS Division. Mr. MA Guang Tzu, (top right) Mrs. LI Jau Xu, (bottom right) Mrs. ZHANG An Di, (bottom left) and Mr. WANG Zhong Liang, (top left) all from the Academy of Geological Sciences, Ministry of Geology, in Beijing, studied the methods and procedures used in the chemical and mineralogical laboratories, and examined all aspects of laboratory operations. They also visited related laboratories in CANMET, Department of Agriculture, NRC, Carleton University and Bondar-Clegg and Co. Ltd. Hal Steacy, Ann Stenson, George Plant and Sydney Abbey accompanied them on a field trip to various mineral localities in Quebec. They also spent a long weekend in Toronto where they attended a Scientific Suppliers Symposium. The four scientists very quickly established a warm rapport with the staff and led a very active social as well as scientific life during their stay. They came as visitors, they left as friends.



Answers to the pictorial quiz on page 21

1. Digby McLaren	9. Win Sinclair	17. Alma Stafford
2. Willie Norris	10. Brian Norford	18. Francis Wagner
3. Peter Harker	11. Colin McGregor	19. Alice Wilson
4. Andre Matt	12. Reggie Shea	20. Lillian Shields
5. Paul Sartenaer	13. Bert Botte	21. Murray Copeland
6. George Jeletzky	14. George Prudhomme	22. Walter Bell
7. Tom Bolton	15. Frank McLearn	23. Tom Uyeno
8. Tim Tozer	16. Hector Claude	24. Jack Callahan

Mike Cecile, Elliot Borden, Eric Hussey, Karen Dudley-Wallace and Donna Moncrieff inspect the Okulitch home-made oven top over the pig's pyre.

Okulitch Gang and, of course, Betsy Nicholls) used every trick (including weighting their team by having twice as many players as had the East) to block the plays of Captain John Maher and his eastern stars (Elliot Burden of the University of Calgary via Newfoundland) and Scott Stoyles (Tiber Resources). After the cow dung had settled it was all over with a tie of 6-6.

On the round up. Every year after the cow patties have been allowed to set up again and the crowd has pushed off the field, the toastmasters remind participants of the raison d'être of their gathering together. Why, to drink of the Logan spirits, of course. Iris Powers, a senior student of geology from St. John's, Newfoundland, poetically toasted those who are determined to master all they survey.

Toastmaster Tom Oliver, Dean of Science at the University of Calgary, recited an Ode to the Rock Stars written by Priscilla Binks, (a 2nd cousin of Sarah). The last verse sums up the enthusiasm of a crowd which has found human energy reserves on a field in wind-whipped Turner Valley one cold September weekend:

"A final toast to those who founded
Schools mineral and fossil.
With admiration quite unbounded
We drain the cup of wassail."

So, do like Ted and Sheila Irving, who had recently drifted up to Calgary from Victoria and were found sharing good times with the Logan Day crowd - if you are Alberta-bound in late September and want to find out how Calgarians keep warm in the freezing dark, come out to Logan Day weekend festivities in the Bow Crow Forest.

Lynn Machan
ISPG

DO YOU REMEMBER THEM?
PHOTO TAKEN IN 1960
ANSWER ELSEWHERE

Logan Day Celebrations,
Turner Valley, Alberta

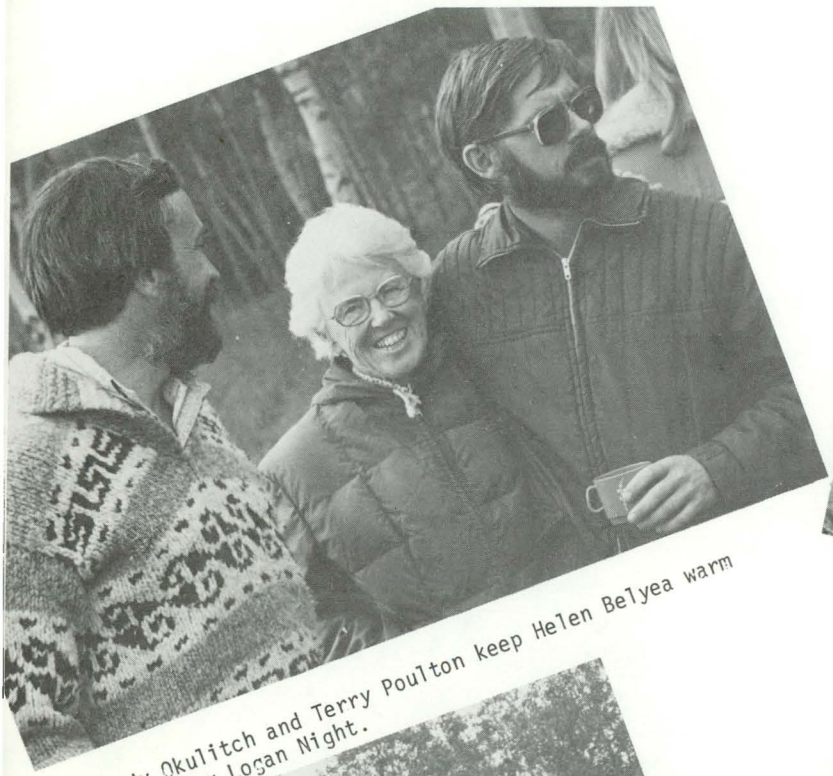
Just to prove to Easterners that the Calgary-based geological community has mastered the fine art of freezing in the dark, a huddle of Logan Day enthusiasts gathered for a frosty weekend celebration late in September in the Sandy McNabb wilderness area of the Bow Crow Forest, Turner Valley, Alberta. They pitched their tents, arranged provisions of wassail and food and sat around a glowing bonfire to break the chill with their camaraderie. Off in the shadows beyond the firepit the first night the Spirit of Logan was heard to say "Gotcha".

And spirits rose and were downed to the last dram that windy eve. Gisele Geldsetzer warmed the traditional gluhwein and Andy Okulitch and Mike Cecile prepared the pig sacrifice for carving. By 9 o'clock the only crackling left was that of the fire.

Alex Christie and John Dudley performed on guitars and their voices were joined by the well-fed crowd as the evening wore on. The brave returned to their tents and snuggled in for the night.

After griddle breakfasts, the games began. Horseshoe and egg-catching contests (ever tried catching a grade B medium at 50 paces with your fingers numb? - now that's a challenge) were two of the events. Eric Hussey (of Texaco) and Michael Cook (Cook 'the Kid') won the egg tossing contest with a smashing 20 m toss. Eric Hussey teamed up with geological consultant Doc Roberts to beat out Mike Cecile and Don Cook in a tense match of horseshoes.

The Big Event , of course, was the East-West soccer championship. And it was dirty. The cows again had decorated the field; the kicking was fierce, the crash landings frequent. The West was relentless;they (Hans and Susan Bielenstein, Don Cook and the "Kids"),the Christie Mob, the



Andy Okulitch and Terry Poulton keep Helen Belyea warm on frosty Logan Night.

Bob and Audrey Christie stuck to milk on the morning after the feast.

Iris Powers (left), distinguished visitor from St. John's, swaps yarns with Ted and Sheila Irving from our Pat Bay Office.

Daniel Okulitch is given the honour of the kickoff in the great East/West soccer game.

links between the separated lowlands has been difficult. Despite its large population (near 120 million) only 15% of the country is arable with the remainder largely uninhabited, forested mountains. Japan is far enough south so that even though it is mountainous (Fujiyama, 3775 m), at present it nourishes no glaciers.

Paper Session

The paper session consisted of 12 communications related to Japan and 10 to other areas. About half of the Japanese papers were concerned with general problems of the extent and nature of Quaternary glacier activity in Japan with the others related to work on Lake Biwa cores. Current ideas on Quaternary glaciations in Japan were presented in several papers. Glacial stratigraphy is difficult in Japan. At present there are no glaciers so it is not possible to start with modern ice fields and count moraines back in time. The mountains are steep and the potential ice catchment area at high altitude is small so that a major lowering of snowline is necessary to develop piedmont ice tongues. The dominant glacial landforms are those associated with cirques and small steep gradient ice tongues. Locally, as many as four tills have been reported but there are problems in differentiating various colluvial and volcanic diamictons from till. Glacial stratigraphy is poorly known but the general idea is that two ice advances occurred during the last hundred thousand years: one in the general 10 000-25 000 year period and the other about 50 000 years ago. The lowest striated rock surfaces associated with these periods of glaciation are at elevations of about 2500 m; widely scattered but convincing evidence also exists of older glaciations as low as 1000 m.

The Lake Biwa coring program was initiated to provide Quaternary stratigraphic and paleoclimatic data. Lake Biwa was chosen because it was known to be an old lake basin (5 million years) and because it was felt that a lake such as Biwa would contain a more continuous record than could be found in the oceans. So far 200 and 1000 m-long cores have been obtained. The reports related to Biwa covered paleomagnetism, organic material content, fatty acids, and paleolimnology. An attempt has been made to correlate the Lake Biwa record with the world-wide climate fluctuations suggested by high latitude glaciations but they would also like to develop a Japanese Quaternary glaciation record and correlate with it. Unfortunately little hard data relative to Quaternary glaciation of Japan is available.

The non-Japanese papers covered all parts of the northern Hemisphere: Quaternary paleosols of Europe; terrace gradients and tilting and how paleosols of quite different ages can be brought into juxtaposition; the use of tephra stratigraphy and paleomagnetics to sort out correlation problems of older Pleistocene tills in mid-western United States; paleoclimatic data for the last interglacial in Europe; thermaluminescent data from Siberia; update of the stratigraphy of the Alpine foreland of Switzerland; Quaternary framework of eastern Canada; Quaternary chronology of the Canadian Cordillera; magnetism as the main control on the earth's climatic anomalies; calculation of snowline for the Alps used to correlate late glacial moraines.

Field Excursion

Lake Biwa. A one day visit was made to the Institute of Paleolimnology and Paleoenvironment on Lake Biwa. The facilities are mainly for reception of lake cores, storage of unused core, and administration. The Institute does not have its own research staff but rather relies on the work of University researchers from across Japan.

Japanese Alps. The trip to the site of the main field excursion took us around the southern end of Lake Biwa, across the north end of a marine Quaternary basin at Nagoya and through the central Japanese Alps into a major north-south tectonic trough on the east side of the northern Alps. The main mountain valleys contain thick fills of Quaternary sediments which are dissected and extensively terraced but apparently have not been studied in any detail. The slopes are steep and cut by deep narrow valleys and gullies so that the mountains have an unglaciated appearance. Fans and terraces are obvious at the mouths of many tributary valleys but we were told that tying these into a coherent Quaternary stratigraphy was extremely difficult because of intense and complex Quaternary tectonism (Japan is said to have been uplifted 1500 m during the Quaternary).

The excursion took us deep into the mountains in several places. I think that everyone present was impressed with the difficulty of carrying out glacial stratigraphic studies in these areas. Glacial deposits only occur with any abundance well back in the mountains. Slopes are steep with a think vegetation cover. Glacial landforms as we know them are virtually nonexistent. Exposures are few and far between and consist mainly of a bouldery diamicton which might be till, colluvium, landslipe deposits, avalance debris, or volcanic mudflows. We did see two or three good multiple "till" sections; however, these contained diamictons of questionable parentage in addition to deposits that everyone could agree were tills. Even though Quaternary volcanism has locally produced diamictons that can be confused with tills, it has resulted in abundant tephras which can be used as time horizons. In areas of moderate relief adjacent to the main trough we saw several exposures of paleosols developed in tephra and loess. In North America or Europe these would have been exhaustively studied, but because research in Japan has not been oriented towards the stratigraphy of terrestrial Quaternary deposits, little work has been done on these materials. Unfortunately no Japanese tephra experts attended the meeting so that we could not become acquainted with their current progress on tephra research. The former extent of glaciation remains a major unsolved problem. The limits of the last two glaciations are relatively well known but weathered tills, striated boulders, and uplifted valley floors with glacial aspects are found beyond these limits. Speculation runs as far as a controversial hypothesis which brings an earlier glaciation as low as 600 m (almost 1500 m below the level of the last glaciation).

Summary

The session offered a good opportunity to obtain first hand information on Japanese Quaternary work. In general the emphasis of their work is different from ours. A fair proportion of their work is conventional stratigraphy and biostratigraphy on marine Quaternary sediments outcropping along the coast and on material obtained from boreholes. In addition, periglacial deposits and landforms in the mountains are attracting the attention of geomorphologists. Quaternary glacial deposits are of limited extent and difficult to work with because of access and thick vegetation cover problems. As a consequence glacial stratigraphy as we know it is not far advanced. The Lake Biwa coring has stimulated the research on various laboratory techniques (mainly biochemistry and geochemistry) and the adaptation of these to the study of Quaternary problems.

Bob Fulton
T.S.

PLAQUE COMMEMORATING ROBERT BELL

Speech by John Fyles,
Acting Director General, GSC

Today we honour Robert Bell for his achievements as an explorer, geologist, surveyor and naturalist. Bell was one of a handful of survey geologists who gained fame and recognition for their exploits during the decades following Confederation in 1867. This was a period of remarkable exploratory surveys of the remote and relatively little-known parts of Canada...surveys that provided not only our first knowledge of the geology but also topographic maps and museum specimens, together with information on mineral resources, transportation routes, agricultural possibilities, flora, fauna, and cultures of the native people.

Bell's varied capabilities and interests were ideally suited to these tasks: he epitomized the concept of the "Geological and Natural History Survey" that is contained in the Act of 1877 and that dominated the program of the Survey for a generation.

Robert Bell was born near Toronto in 1841, a year before William Logan was appointed to commence the Geological Survey. Bell's father, the Rev. Andrew Bell was a friend of Logan and discussed with him plans for the Geological Survey's first field program. Following Andrew Bell's death, Robert Bell became a protégé of Logan's and by the age of 15 was acting as a field assistant and by the age of 18 was heading his own field party.

Robert Bell graduated from McGill in 1861 with a degree in civil engineering. He attended lectures in medicine while taking his degree and was granted an M.D. in 1878. Robert Bell had a great empathy for the native peoples he met during his many years of field work and considered that his medical training would enable him to attend to their wants. It seems that his affection was reciprocated, for Bell was made an honorary chief of the Grand Lake Algonquins.

When he died at Rathwell, Manitoba in 1917 a series of signal fires from the nearby reservation is said to have carried the news of his death across the prairies.

Following a posting as interim professor of Chemistry at Queen's, Robert Bell joined the Geological Survey permanently in 1869. For over three decades he served primarily as a field geologist -- an explorer. His work ranged from the plains of Saskatchewan to the oil sands of the Athabasca and north to Great Slave Lake and Baffin Island. Above all, he was devoted to northern Ontario and Quebec, the area draining into Hudson Bay. He spent many seasons travelling the great rivers of this region by canoe, even after he became Acting Director.

Although geology was his first love, his scientific interests were far ranging. He made his own topographic maps. He was especially interested in ethnology and anthropology; Canada's forest resources were the subject of numerous papers; he made observations on soils, vegetation, climate, transportation, waterpower, agriculture, botany and zoology. Indeed Bell's last published scientific contribution was a 10 page paper on the Canadian porcupine.

Bell's 1882 field season is of special interest in the light of our current concerns about hydrocarbon resources. He was instructed to explore the Athabasca River area with particular reference to the occurrences of "petroleum and asphalt". His report, published in 1885 is full of observations on the well-known "Tar Sands". Nearly a century ago Bell was advocating the construction of a pipeline to Churchill to exploit this resource and to encourage economic activity around Hudson Bay.

In 1901, Bell was appointed Acting Director of the Geological Survey following the sudden death of G.M. Dawson, the third Director. Bell had always considered himself the true successor of Logan and had long been part of a group that challenged the direction the Survey had been taking.

Consequently, it was a great disappointment to Bell that his superiors never felt it possible to confirm him as Director, and instead appointed A.P Low in 1906. Nonetheless, the 5-year period of his leadership was one of great advance. It coincided with a period of national expansion. The government of Sir Wilfred Laurier recognized the role the Survey could play and loosened the purse strings. Bell was dedicated to the task of completing the reconnaissance geological exploration of Canada. He more than doubled the number of field parties, he secured university professors to lead them. Further he encouraged the morale of the permanent staff by increasing salaries and field allowances and by broadening attendance at scientific meetings. It was during Robert Bell's period of office that plans were prepared and work started on the Victoria Memorial Museum which brought the Survey's many activities under one roof and which was to be our home until 1959 when we moved here.

During his lifetime, Robert Bell was accorded recognition in many ways. He was a Fellow of the Royal Society and was the recipient of the Patron's Gold Medal of the Royal Geographical Society. He was awarded an honorary Doctor of Laws degree from Queen's and honorary Doctor of Science degrees from both Cambridge and McGill. He was asked by the Governor General, the Marquess of Lorne, to be a founding Fellow of the Royal Society of Canada.

This further honour for Robert Bell, bestowed today 75 years after his retirement from the Geological Survey, is indeed fitting. On behalf of the Survey I extend a vote of thanks to the Historic Sites and Monuments Board of Canada.

Speech by Honourable Judy Erola,
Minister of State for Mines.

Distinguished guests of honor, members of the Geological Survey of Canada mes chers amis.

J'ai le double plaisir aujourd'hui, à la fois d'agir comme ministre des Mines et de la Commission géologique du Canada. Mais aussi, au nom de l'honorable Roberts, ministre de l'Environnement, responsable de la Commission des lieux et monuments historiques du Canada; afin de rappeler l'oeuvre du docteur Bell, son influence marquante auprès de la Commission géologique du Canada. ainsi que son apport exceptionnel à la connaissance du Grand-Nord canadien.

Today, I have the honor and privilege of fulfilling two rewarding roles delegated to political figures. As the Minister of State for Mines thus representing the Geological Survey of Canada, it is an honor for me to participate in the commemoration of Dr. Robert Bell, surely one of the pioneers of the Survey. Also, and of special importance to me, I am acting on behalf of the Honourable John Roberts, Minister of the Environment, the Department responsible for Parks Canada which I understand has the mandate to ensure the preservation of our Canadian Heritage This role is accomplished by his active support for the recommendations made by the Historic Sites and Monuments Board of Canada.

These recommendations range from the recognition of the National Historic significance of a person, place or event, by a plaque, as we are doing

ASSOCIATION OF EARTH SCIENCE EDITORS (AESE)

This year's annual meeting was held in Denver, Colorado in early October. The main theme was how to expand the public's knowledge of science in general, and earth sciences in particular. John Heller (USGS) arranged an informative and varied program, and an interesting field trip on the environmental geology of the Denver area.

Canadian participation was again high, and we all enjoyed the sunny, 25°C weather during the meeting. The accompanying photo shows most of the Canadians present.

Left to right, back row: Cyril O'Driscol (NFLD Dept. of Mines and Energy) Roxie Neale, Jean Spencer Jenness (GEOCOM-AGI), Helen Dumych (T.S.), Stuart Jenness (NRC), Ward Neale (ISPG), Val Donnelly (Communications EMR), Bob McNutt (Geoscience Canada), Roger Gagnon (Ministère des Richesses naturelles, Québec); Catherine Findlay (Can. Pulp. and Paper Association) in middle.

Front row: Lynn Machan (ISPG), Jane and Mike Latremouille (Bedford Institute), Rex Gibbons (NFLD Dept. of Mines and Energy), and Peter Griffin (GID).

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today, to the acquisition of a property by the federal government for the purpose of creating a Historic Park. Certain homes of former prime ministers are fine examples of this fact.

However, the erection of a bronze plaque is the most important and basic tool used for the commemoration and remembrance by the Historic Sites and Monuments Board of Canada, the Minister and his department. This is illustrated by the fact that in 1922, the first plaque erected by the Historic Sites and Monuments Board of Canada was unveiled during a ceremony such as the one of today, at Port Dover in Ontario. More than 750 plaques are now in existence throughout Canada. The City of Ottawa, once again, being proud of its historic past is the home of more than 15 Historic Sites and Monuments Board of Canada commemorative plaques.

This year, as Dr. Fyles so justly outlined, marks the hundredth anniversary of the installation of the Geological Survey of Canada in Ottawa, and as you know, in the field of land surveying, being able to reach a bench mark is extremely important.

By commemorating today, Dr. Robert Bell, as one of the great explorers of the Canadian North, in the presence of a member of his family, the Historic Sites and Monuments Board of Canada is planting a new bench mark for the Geological Survey of Canada and for the Department of Energy, Mines and Resources.

En terminant, mesdames et messieurs, je me dois de vous dire, que ce fut pour moi un plaisir, et un honneur de participer à cette cérémonie en l'honneur d'un grand canadien, le Dr. Robert Bell.

So, in conclusion, I must say again, how delighted and honored I am, to be involved in commemorating a great Canadian.... Dr. Robert Bell.

FUTURES CONFERENCE

GSC Futures Conference was held at Glenn House Resort, Landsdowne, near Gananoque Ontario, from the evening of Tuesday 1 December through to the afternoon of Friday 4 December. The conference was attended by 72 people from all Divisions and Institutes of GSC, including representatives from Headquarters and other Branches within the Earth Sciences Sector. "Futures Conferences" are being convened by all Branches of the Earth Sciences Sector so that Bill Hutchison, ADM, can determine how to increase the strength of the earth sciences to become more tuned to serve Canadian needs in the next 20 years.

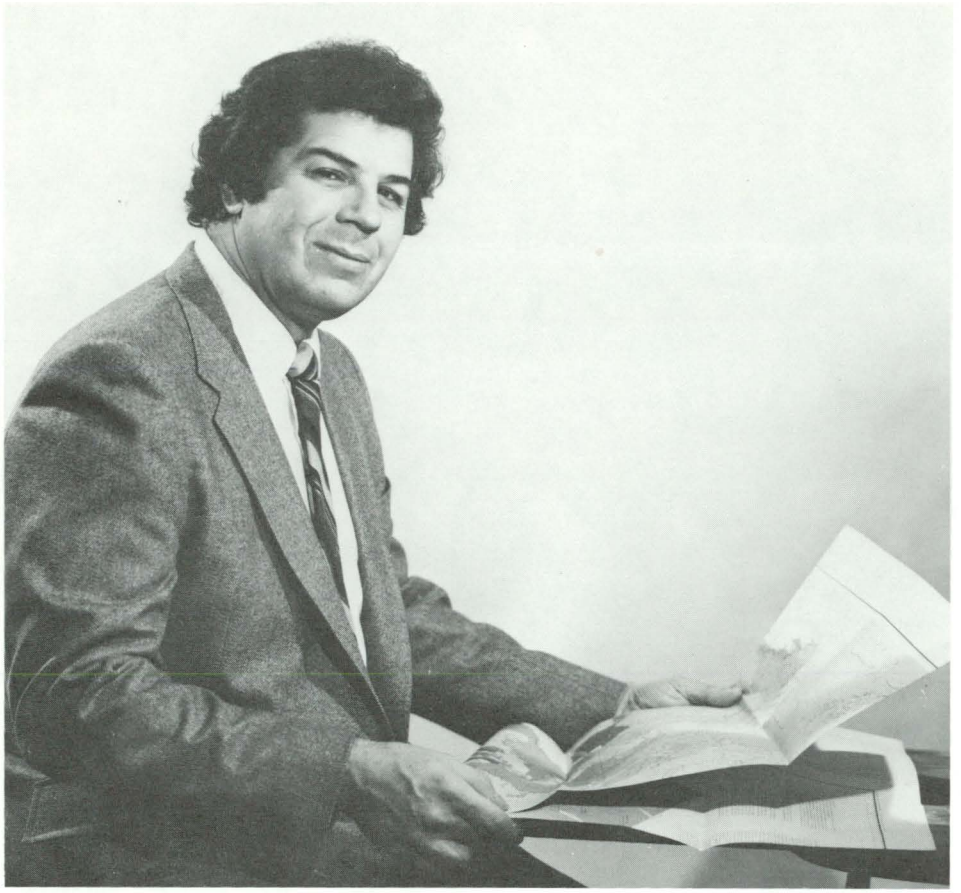
The meeting was a great success and received much stimulus from ideas and concepts from younger scientists and managers. Topics covered during Workshop Sessions included: Lithoprobe; Mineral Deposits Research Institute proposal; 1:250 000 mapping; Atlas of Canada; mineral, fuel and water resources; engineering and environmental geoscience - earthquake and volcanic hazards, acid rain, radwaste, coal pollutants; the role of GSC within EMR; regionalization versus centralization; science or service; client and customer relations; information processing and information products.

Many thanks to those who contributed to this issue of Geogram and to Diane Tremblay who typed the numerous articles.

Material for the next issue for Geogram should be sent via your Division Office to GID

Les articles pour la prochaine parution de Geogram devront-être dirigés au secrétariat de votre division et de là acheminés à la Division de l'information géologique.

Merry Christmas – Joyeux Noël, and a grand Hogmanay!



APPOINTMENT OF NEW DIRECTOR GENERAL

On 1 December, 1981 Dr. W.W. Hutchison, ADM, announced the appointment of Dr. R.A. Price as the 16th Director/Director General of the GSC, effective on 1 January, 1982.

Dr. Price, a graduate of University of Manitoba (B.Sc., 1955) and Princeton University (M.A., 1957; Ph.D., 1958), joined the GSC in 1958 and was at Queen's University from 1968 to 1981 (Associate Professor, 1968-1970; Professor, 1970-1981; Head of Department, 1972-1977).

Ray is an international figure in the world of geology, renowned for his scientific contributions to regional tectonics and structural geology in the southern Rocky Mountains of British Columbia and Alberta. He is noted for his scientific leadership in national and international circles, and his list of current activities in this field is as impressive as his list of scientific publications.

Congratulations Ray. We look forward to many years of guidance under your leadership.

NOMINATION DU NOUVEAU DIRECTEUR GÉNÉRAL

Le 1er décembre, 1981, M. W.W. Hutchison, sous-ministre adjoint, annonçait la nomination de M. R.A. Price au poste de directeur général de la C.G.C. Il devient le seizième directeur de cet organisme et entre en fonction le 1er janvier, 1982.

M. R.A. Price est diplômé des universités du Manitoba (B.Sc., 1955) et de Princeton (M.A. 1957; Ph.D., 1958), il devient membre du personnel de le C.G.C. en 1958 et se joint au corps professoral de l'université Queen's de 1968 à 1981 et y occupe différentes fonctions: professeur associé de 1968 à 1970, professeur de 1970 à 1981 et chef de département de 1972 à 1977.

M. Raymond A. Price a acquis une réputation internationale en géologie par ses contributions en tectonique régionale et en géologie structurale des Rocheuses méridionales en Colombie-Britannique et en Alberta. Il s'est particulièrement distingué comme leader scientifique dans les milieux nationaux et internationaux par un nombre impressionnant de publications et de projets de recherche originaux.

Tous, félicitons notre nouveau directeur et souhaitons-lui un long et fructueux règne.