

# geogram

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an informal branch newsletter  
un bulletin interne d'information



FROM THE DIRECTOR GENERAL

NOTES DU DIRECTEUR GÉNÉRAL

Things seem to be moving rapidly in the Department and in government these days, and anything contained in this editorial may well be out of date by the time it is printed. All of you are as familiar as I am with what has been happening in regard to reduction of government expenditure. The cuts that affect this and all other Departments have already been published in the newspapers. I should, however, attempt to make some comments on what I think they mean to the Geological Survey and its future.

The very large cuts affecting this Department were directed at transfer payments, of which two of the largest were oil import compensation and the Toronto-Montreal oil pipeline. In addition, the Department received a program cut of \$4 million, \$2 million of which is to be absorbed from Operations, and the remaining \$2 million by the Uranium Reconnaissance Program. This latter sum lies entirely within the Geological Survey. We were directed to reduce contract flying rather than in-house operations or personnel. In the event, we found that the commitments for gamma-ray spectrometry and geochemistry contracts came close to supplying the whole sum. These cuts were received without warning, and within a few days of the announcement, letters were sent by the Minister to the Provinces affected, and actions taken to inform the contracting companies. In a reply to a letter that I sent to our Deputy Minister shortly after we received news of the cuts, he stated "one could stipulate that the program's very success has resulted in a view that the Federal government can withdraw some of its support by virtue of the fact that uranium is plentiful and uranium exploration and discovery are being well served by the private sector. Without doubt, this has been stimulated by the high quality work undertaken over the years by the Geological Survey of Canada".

From a management point of view, we are deeply relieved that present indications are that we can retain in-house competence in radiometry and geochemistry. We hope that the changes in program necessitated by the cuts may, in the long run, work to our benefit in further development of methodologies in these fields. Furthermore we may grasp the opportunity of extending collaborative programs with regional geologists earlier than might have proved possible under the demands of running URP.

Other cuts that will affect you, involve a small reduction in our Capital Budget, and a 20 per cent reduction in conference travel. The Capital Budget for the Branch is administered centrally, and we hope that we shall still be able to keep up with essential equipment needs. As far as conference travel is concerned, each Division receives a fair proportion of the total money allotted, and I can assure you that every effort will be made to administer what remains equitably. Although it represents a relatively small amount of money, we all recognize that attending conferences is an important part of a scientist's activities. Unfortunately, it is also a highly visible activity from the point of view of politicians and accountants. I can see no immediate improvement in the present climate.

So where do we stand now? I am certainly not going to predict what is going to happen; you can judge as well as I whether the government is right in being concerned with reduction in public service costs. But I do feel confident that our role is appreciated within the Department, and that we are in good position to endure the siege we are certainly facing.

(continued on top of next page)

Le Ministère et le gouvernement connaissent des changements rapides depuis quelque temps et les propos du présent éditorial pourraient facilement être caducs lors de sa parution. Vous connaissez tout aussi bien que moi la situation des coupures budgétaires du gouvernement. Les journaux ont déjà fait état des coupures qui touchent tous les ministères, y compris le nôtre, J'essaierai toutefois, de vous faire part de quelques commentaires sur la répercussion des coupures sur l'avenir de la Commission géologique.

Les importantes coupures effectuées au Ministère visent surtout les paiements de transfert d'impôts, dont les indemnités des importateurs de pétrole et le pipe-line Toronto-Montréal sont les deux plus importants. De plus, le programme du Ministère a été amputé de 4 millions de dollars, dont 2 millions à l'exploitation et 2 autres au programme de recherche préliminaire de l'uranium. Cette dernière coupure touche uniquement la Commission géologique. On nous a demandé de réduire les dépenses des contrats de vols plutôt que celles des opérations internes ou du personnel. Nous nous sommes rendu compte que les engagements pris par contrat en spectrométrie par rayons gamma et en géochimie équivalent presque à ce montant. Nous n'avions pas été prévenus de ces coupures et quelques jours plus tard le Ministre avait fait parvenir des lettres aux provinces concernées et il avait mis les compagnies contractantes au courant de la situation. En réponse à une lettre que j'avais envoyée à notre sous-ministre, peu après, celui-ci déclarait: "On pourrait reconnaître que le succès qu'a connu le Programme permet au gouvernement fédéral de réduire son soutien parce que les ressources en uranium sont abondantes et que le secteur privé se débrouille très bien quant à la prospection et à la découverte d'uranium. Ces activités ont sans nul doute été stimulées par l'excellente qualité des travaux accomplis au cours des années par la Commission géologique du Canada."

D'un point de vue administratif, nous sommes profondément soulagés de voir qu'à présent tout indique que nous pourrions conserver notre compétence en matière de radiométrie et de géochimie. Nous espérons que les modifications apportées au programme et rendues nécessaires par les coupures, pourront, à longue échéance, nous profiter quant à l'élaboration future de méthodologies dans ces domaines. De plus, nous saisissons peut-être l'occasion d'étendre les programmes lancés en collaboration avec des géologues régionaux un peu plus tôt qu'il n'aurait été possible de le faire aux termes du Programme courant de recherche préliminaire de l'uranium.

Au nombre des autres coupures, soulignons une petite réduction dans notre budget d'immobilisations et une réduction de 20% au chapitre des voyages pour assister aux conférences. La gestion du budget des immobilisations se fait à l'administration centrale et nous espérons pouvoir continuer à répondre aux besoins essentiels en équipement. Quant aux conférences, la somme totale qui est allouée est répartie équitablement entre les divisions et je puis vous assurer que nous ferons l'impossible pour administrer équitablement le solde. Quoique cela ne représente qu'une petite somme, nous savons tous que les conférences constituent une partie importante des activités d'un homme de science. Malheureusement, du point de vue des politiciens et des comptables, c'est une activité très apparente. Je ne prévois pas d'amélioration immédiate dans les circonstances actuelles.

(suite au verso, bas de la 1<sup>ère</sup> colonne)



This leads me to make a comment concerning the visit to GSC by our new Deputy Minister, *Micky Cohen*, who spent nearly three hours this summer with *John Wheeler* and me and the Division Directors discussing the Survey's program. We had been warned before his visit that he did not want detail on our activities, and was more concerned with what he did and why rather than how we did it. "Give me the bottom line" we were told was his favourite phrase. Consequently, we set up a demonstration of the Divisional programs lasting one hour. Each Division Director was given five minutes to explain his output, with illustrations, and five minutes for discussion. This worked; after a five minute explanation the Deputy was ready for questions, and in this manner filled in for himself the additional information he wanted. Subsequently, *John Wheeler* and I, together with *John Keys* talked with him informally about program, management, and output. At the end we could not think of a single issue that we'd wanted to raise that had not been covered, many of them as a result of his questions.

On October 20, the Management Committees of the Branches of the Science and Technology Sector went to the Arnprior Conference Centre for a two-day discussion. The Deputy Minister together with the ADMs examined the program of the sector. This was not a "Star Chamber" in which we had to defend ourselves against hopeless odds, but an appraisal of the need for science and technology in government. We welcomed the opportunity of being able to explain however briefly, the meaning of a Geological Survey in a country such as Canada.

In my last editorial in *Geogram*, I gave you an example of "giving the bottom line", namely to explain the program of the Geological Survey briefly and meaningfully. The Arnprior conference was more of the same. (Incidentally there was a splendid misprint in the last *Geogram*. I suggested that trying to describe the Survey in a few words was a kind of parlour game - it came out as "king of parlour games", just two letters wrong, but look at what they did in the French translation!)

The appearance for the first time this year of the magazine *Episodes*, replacing the old Geological Newsletter format of IUGS has already been noticed in *Geogram*. Now that we have had three Numbers published, and can see what it looks like, I'd like to draw it to your attention once more as an excellent informative news and scientific journal and congratulate *Bill Hutchison* the editor and *Vera Lafferty* the managing editor on the amazing job they have done in starting it so quickly, having it published so promptly, and producing a most attractive and well printed format so cheaply. It deserves all our support. ■

#### Theophile-Eugène Poitevin

Dr. Poitevin, mineralogist with the Geological Survey for 44 years died on 22 June aged 89. He had a distinguished career with the Survey and has been described as the last of the "classic" mineralogists. Aside from his many contributions to mineralogical science, he will long be remembered by those who knew and worked with him for his cheerful and benevolent personality and for his many anecdotes of life in the Survey in early part of this century. ■

#### Lawrence Joseph Lajoie

Lawrence Lajoie died suddenly in hospital on 26 June. Lawrence was formerly Head of Branch Administration but took an early retirement on medical grounds. He was greatly enjoying his retirement, so sadly cut short at the age of 57. He is survived by his wife Sybil, his son Stephen and daughter Linda. ■

#### Ernest Charles Elliot

As we go to press we heard that Ernie Elliott had died suddenly aged 77 on 1 November. Ernie was head of our Photography Section for many years and known to many of us from the Museum days; he will be particularly remembered for his skill as a fossil photographer. He lived in retirement as a farmer at Cumberland, near Ottawa. ■

Où en sommes-nous maintenant? Je ne ferai certainement pas de prévisions; vous pouvez tout aussi bien que moi juger si le gouvernement a raison de se soucier de réduire les frais de la Fonction publique. Mais je suis convaincu que le Ministère reconnaît le rôle que nous y jouons et que nous sommes en bonne position pour soutenir le siège qui nous attend certainement.

Ce qui m'amène à une remarque au sujet de notre sous-ministre, *Micky Cohen* avec qui *John Wheeler* les directeurs de division et moi-même avons passé trois heures l'été dernier à étudier le programme de la Commission. Nous savions avant sa visite qu'il ne désirait pas connaître nos activités en détail, mais plutôt ce que nous accomplissions et dans quel but plutôt que de quelle façon nous nous y prenions. "Donnez-moi les grandes lignes" est son expression favorite. Nous avons donc élaboré une description des programmes de Division, d'une durée d'une heure. Chaque directeur de division disposait de cinq minutes pour décrire la production de sa direction au moyen d'illustrations et de cinq minutes pour un échange de questions et réponses. Le système a bien fonctionné; après cinq minutes, le sous-ministre était prêt à poser des questions et il pouvait ainsi obtenir lui-même les renseignements qu'il désirait. Après la rencontre, *John Wheeler*, *John Keys* et moi-même nous sommes entretenus avec le sous-ministre sur le programme, la gestion et la production. Finalement, la réunion terminée, nous nous sommes rendu compte que nous avions touché à toutes les questions qui nous importaient, en partie grâce aux questions qu'il nous a posées.

Le 20 octobre, les comités de gestions des directions du Secteur sciences et technologie se sont réunis au Centre de conférences d'Arnprior pour une séance d'étude de deux jours. Le sous-ministre et les sous-ministres adjoints ont étudié le programme du Secteur. Il ne s'agissait pas d'une "Chambre Etoilée", où nous avions à nous défendre sans espoir, mais plutôt où nous avons évalué la raison d'être des sciences et de la technologie au sein du gouvernement. Nous étions heureux de pouvoir expliquer brièvement la nature de la Commission géologique et son importance dans un pays comme le Canada.

Dans mon dernier éditorial pour *Geogram*, je vous donnais un exemple de "grandes lignes" surtout pour expliquer efficacement et en peu de mots le programme de la Commission géologique. La conférence d'Arnprior allait dans le même sens. (Incidentement une superbe coquille s'est glissée dans le dernier numéro de *Geogram*. Je disais que vouloir décrire la Commission en quelques mots correspondait à "a kind of parlour game", mais cette expression est devenue "a king of parlour games" soit une différence de deux lettres, mais cette coquille à échappé au traducteur).

La première parution cette année de la revue *Episodes*, qui remplace l'ancien Bulletin de géologie de l'UISG, a déjà été signalée dans *Geogram*. Maintenant que trois numéros sont parus et que nous pouvons voir de quoi il s'agit, je voudrais vous la rappeler encore une fois en soulignant l'excellence de cette revue d'information scientifique et d'actualité. Je tiens également à féliciter *Bill Hutchison*, directeur, et *Vera Lafferty*, rédactrice en chef, du magnifique travail qu'ils ont abattu pour arriver à produire aussi rapidement une publication bien imprimée et des plus attrayantes à un coût aussi bas. Elle mérite tout notre appui. ■



**Gerard Charlebois**

Gerry's sudden death on 29 June aged 61 was a great shock to all his many friends at the GSC. He joined the Survey in 1948 after distinguished war service overseas with the first Canadian Parachute Battalion. For many years he was associated with stores and supplies and many hundreds of field party chiefs must have been grateful for the way Gerry looked after their needs. He was an expert golfer and a great enthusiast for the annual GSC golf tournament and his many friends felt it most appropriate that a trophy be named as his memorial (see photo). He is survived by his wife Joy, five children and two grandchildren.■



*Mike Lewis* formerly Head of Terrain Sciences Division, Marine Geology group has joined AGC's Environmental Marine Geology (EMG) Subdivision. From his new headquarters in Dartmouth Mike will continue his research with emphasis on ice scouring. Mike has also been appointed Head of the Coastal Geodynamics Section of EMG replacing *Brian McCann* who has returned to McMaster University. Brian has headed up the Coastal Geodynamics Section for the past two years and has been one of the main driving forces in pointing the Section towards research in Labrador and farther north. As well as participating in field programs and research in the north and in his pet area, the southern Gulf of St. Lawrence, a major accomplishment during his stay here was the organization of the Coastline of Canada Conference held in Halifax in May, 1978. A report on the proceedings appears elsewhere in this issue.■

**DIRECTOR GENERAL'S OFFICE**

*Digby McLaren, John Wheeler, John Brindle* and the Division Directors attended the Science and Technology Sector Meeting at the Government Conference Centre, Arnprior 20-21 October. The Deputy Minister and all Assistant Deputies were present and the Minister took part in a lively, after dinner discussion session.■

*Judy Smallbridge* was on a work exchange at the Atlantic Geoscience Centre in June. *Margaret MacDonald*, secretary to Director, AGC came to Ottawa as her replacement.■

*John Wheeler* had a busy summer visiting field parties and also found time to give the keynote address to the Association of Canadian Map Librarians in Victoria.■

In July, *W.W. Hutchison* attended as Secretary General of the IUGS, the Circum-Pacific Energy and Mineral Resources Conference at Honolulu; he also looked after the Geological Survey exhibit.■

*Digby McLaren* took part in an international conference on the Devonian at Bristol, England in September with a field trip to the type area of the Devonian. More recently he introduced the medallists at the GSA Annual Dinner in Toronto.■

We are glad to have *Bob Douglas* back at work after a long period of sick leave.■

In the personnel office *Joanne Trudel* left for a promotion and *Louise Heney* took her place as pay and benefits clerk.■

**ATLANTIC GEOSCIENCE CENTRE DARTMOUTH**

*Pat Purcell*, Head of AGC's Eastern Petroleum Geology subdivision, has left us to take up a new position as chief geologist with Husky Oil Limited in Calgary. During his stay in Dartmouth he contributed to the hydrocarbon inventory program and undertook extensive studies of the geochemistry of eastern offshore well samples in co-operation with geochemists in AGC's Environmental Marine Geology subdivision.■

*Ray Jubb* has joined AGC's Environmental Marine Geology Subdivision as a technician to the Coastal Geodynamics Section. Ray follows *Mike Lewis* in transferring from Terrain Sciences Division in Ottawa. Ray has already proved a valuable addition to AGC staff having participated with vigour on *Carl Amos's* Chignecto Bay cruise on *CSS Dawson*.■

*Ray Cranston* has returned to AGC's Environmental Marine Geology subdivision after spending three years at the University of Washington to obtain a Ph.D. While in Seattle he researched the chemistry of trace elements in seawater with special emphasis on chromium and improved his knowledge of manganese nodule formation.■

His return has brought some ideas and some new directions for inorganic geochemistry research at AGC and although he has not yet proposed any formal projects he will probably take part in a major cruise planned for 1979.■

One more important note about Ray, he has taken EMR's Energy Conservation Program to heart and recently purchased a custom designed and built solar heated home.■

*Dana Younger* has joined AGC's Administration Subdivision as mail and xerox clerk. In addition to her normal duties she finds time to assist in personnel, finance and inventory.■



*Ian Harris* one of AGC's in-house experts on Appalachian geology left the Eastern Petroleum Geology sub-division for greener pastures in Calgary. Ian is now working as a clastic sedimentologist with Petro Canada Exploration Ltd.■

*Susan Hubley* has joined AGC's Program Support Subdivision as a data clerk. Previous to working for AGC she worked in a florists shop, with various duties including designing, sales clerk, and some general office work.■



The City Centre crew pictured in their new home at 601 Booth: (left to right) *Gary Young, Ed Dumbrell, Herb Finn, Steve Gagnon, Mike Enright, Rick Perron, J-P. Corriveau, Rick Potvin, Don Brown, Larry Daley and Ian Coulthart.*

#### GEOLOGICAL INFORMATION DIVISION

Congratulations to *Yvon Claude* who has been appointed Administrative Officer to Terrain Sciences. He will be greatly missed in our Division but we are very glad that he will remain with the Survey.■

*Alicia Prata* started as Head of Technical Services on June 20. Alicia has a B.A. (Hon.) in Geography/Geology and received a Masters in Library Science from the University of California at Berkeley. Her work experience includes cataloguing at both Stanford University and the Massachusetts Institute of Technology libraries. Most recently, Alicia was Head of Serials at the University of Manitoba Libraries.■

*Myra Owen* joined the library as Head of Reference and Circulation on July 10. Myra has an M.A. from St. Michael's College in Vermont and a Master's in Library Science from McGill University. Her most recent experience includes three years as Assistant Head of Reference at the Agriculture Canada main library and one year as Manuscript Librarian in the Rare Book Division of the National Library. She replaces *Alice Solyma*, who is now working for Fisheries and Environment in Victoria, British Columbia.■

*Le'Anne Frieday* started as Assistant Cataloguer in June this year. A graduate of the University of Ottawa, Le'Anne has previously worked at the Department of the Environment main library and has worked in the GSC library for the past two years in various capacities.■

*Debbie Maxwell* and *Ingrid Weniger* joined the library on a term basis in October. Ingrid has a B.A. and a Masters in Library Science from the University of Western Ontario. She is a Reference Librarian and comes to us from the Canada Institute for Scientific and Technical Information. Debbie is a Cataloguing Librarian and received a B.A. from Queen's University and a Masters in Library Science from the University of Western Ontario.■

*Georgina Mizerovsky* joined the library in November of this year. She comes to us from Terrain Sciences Division and replaces *Sylvia Chartrand* who has gone to Atomic Energy of Canada.■

*Liz Frebold*, the Head of Information Services in the library, began French language training in mid-September. *David Reade* will be the acting Head of Information Services in her absence.■

Library renovations are now almost complete but the same cannot be said for cartography which has been in a state of virtual demolition for most of the summer. Things are now improving, not the least by the welcome return of the unit, long banished to City Centre.■

#### CENTRAL LABORATORIES AND ADMINISTRATIVE SERVICES

A lot of new faces have appeared in the corridors of 601 and CLAS Division is no exception. *Roger Gariépy* is our new assistant head of Branch Administrative Services. This position was vacated by *Jed Cochrane*, who left us for a position with the Canadian Transport Commission.■

*Doug St. Dennis* is taking care of business while the supervisor of our "Stores" section, *Dwaine Davidson*, is on language training. And just to make sure the shop is running smoothly, Manager *Cliff Blake*, keeps a wary eye so that everything is under control. *Larry Bonavia, Ron Falls, Bert Wings* and *Stephen Palombo* are always around to lend a helping hand.■

*Becky Taylor, Kathy Newberry, Margaret McDonald* and *Rick Casey* are new faces to our Accounts Section.■



Congratulations to *Debby Busby* who is the new Assistant Supervisor in the Word Processing Unit. Debby is dazzling everyone with the capabilities of the new Xerox 850 word processing machine.■

*Heather Mulder* and *Nellie Balderston* left Branch Registry this past summer and we wish them good luck in their new endeavours. We welcome *Joan Clark* (from Personnel), *Pat Belair* (formerly with Terrain Sciences Division), *Gord Currie* and *Matt Colterman*. It's good to have the mailroom running at full steam again.■

Welcome to *Cyril Bowstead* our Branch Financial Comptroller and also *Sam Greenspon* who has been seconded to the GSC from CANMET while *Alfred Tsang* is enjoying a holiday (?) in The Tower.■

Out with a familiar face, in with a new one- *Dyanne Bigras* ("Dynamic Dyanne" to her many friends) left *Bill Hutchison's* office for the Energy Conservation Office and we are pleased to have *Linda Aiken* in her place.■

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INSTITUTE OF SEDIMENTARY  
AND PETROLEUM GEOLOGY,  
CALGARY

Comings and Goings at ISPG

Some of these rolling stones are probably gathering a little moss as downtown petroleum companies continued their relentless raid on ISPG staffers during the first half of 1978. *Rick Young*, formerly responsible for the geology of the Mackenzie Delta region, was persuaded to join Home Oil, Calgary. Rick joined the Survey nine years ago after completing a Survey-supported Ph.D. at McGill. *Hugh Balkwill* who last rejoined the Survey in 1970, left his position as head of the Sverdrup-Mackenzie Delta Section to take a post with Panarctic where he will be involved in developing exploration plays in the Arctic region. Two of our most prolific and personable scientists, they will be sadly missed.■

The Petroleum Resources Section suffered particularly heavy losses when geophysicist *Ray Baird*, and geologists *Dave Wilson* and *Norm Häimila* left to join Global Arctic, Petro Canada and the Canadian Development Corporation, respectively. We look forward to joining them for lunch when they have their expense accounts firmly established.■

*Eric Thorsteinsson* of Terrain Sciences went to Pacific Petroleum and we still miss his cheerful chats in the coffee shoppe.■

Replacing our departed loved ones are a fine group of dedicated public servants.

*Jim Dixon* a recent Ph.D. from the University of Ottawa, has left Petro Canada to join our research effort in the Mackenzie Delta region. *Nick Ioannides* has joined the Paleontology Section and will be studying Mesozoic-Tertiary palynology in the Beaufort-Sverdrup-Mackenzie Delta region. Nick graduated in Athens, did a Ph.D. at Sheffield and post-doctoral studies at Kings College, London. Then he spent four years with Esso in Bordeaux, France, before coming to ISPG.■

*Rae Quarry* is our new Paleontology Subdivision secretary and comes to us from Veterans Affairs, Calgary. *Lynn Machan* from the Translation Bureau in Ottawa, was hand picked to join the wild ones in the library. *Pamela Van Duffelen* shifts from the mailroom to be the new acquisitions clerk in the library. She is expected to lend stability and decorum to the licentious library tea parties.■

*Monica Wade* has joined *Nita Penley* in the mailroom, and comes to us from Flint Engineering and Construction in Calgary.■

*Nick Parrish* has joined *Marg McKenzie* in the Curation Section. *Hugh McLean* has replaced *Al Bjarnason* in the core lab.■

The library lost a delightful spark when *Linda Sharp* left to study Library Sciences at UBC, and a pillar of strength and stability when *Hazel Harrison* accompanied her husband on a move to Suffield. *Norma Poole* left the mailroom after a brief stay and is now training to be a radar technician in the navy. *Gail Strikes-With-A-Gun* has left the typing pool but her name remains in our hearts.■

*Milt Fuglem* has recently joined the Energy Subdivision as a specialist in petrophysics. Milt comes to us from a position with DINA in Ottawa. Prior to that, he worked for many years with Husky Oil and the Conservation Board in Calgary.■

Retirement

*Al Bjarnason* retired on March 8th of this year. He came to us from the Department of Transport in November 1968. A Saskatchewan native, many will remember Al for the sterling services he rendered working in the Core and Sample Repository. He received an elaborate clock-radio as a present from his colleagues and as a long-time employee was presented with the ISPG rock memento by *Director Stott* during a formal retirement ceremony on our foyer gallery.■

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REGIONAL AND  
ECONOMIC GEOLOGY  
DIVISION

*Maria Tomica*, palynology laboratory technician, resigned in May to accompany her husband to Calgary. Her position was filled in September by *Elizabeth Sandi* a recent graduate of the University of Ottawa.■

*F.M. Murphy* ("Flo" to her many friends) retired in May, after more than 10 years as secretary of Eastern Paleontology Section. Her position was filled in September by *Robbie Lennox* of REG divisional office.■

"*Charlie*" *Brown*, paleontology laboratory technician, resigned in September to resume studies.■



Colin McGregor attended the Symposium on the Devonian System in Bristol, England, September 3-23. He presented a keynote address on biogeography of Devonian palynology of the World.■

Murray Copeland and Godfrey Nowlan attended the Eastern Canada Paleontology and Biostratigraphy Seminar and field trips in Cornerbrook and western Newfoundland, September 20-25.■

The arrival of Dave Garson at the beginning of September means that the Mineral Data Bank Unit now has a full complement (euphemism for three) of staff. Dave obtained a B.Sc. Honours degree (cum laude) from Ottawa U this spring. Besides his obvious academic credentials, he brings to the job field and office experience with ODM and GSC. Dave's principal task will be to mediate confrontations between file users and a wizard known as CYBER.■

Charlie Reith resigned in February to accept a position in Eldorado Nuclear's Ottawa laboratory. Charlie spent three years with us during which time he became proficient in the operation of vacuum apparatus used for sample preparation and mass spectrometric analyses. We wish him well in his new endeavours.■

David Lapierre who hails from Chesterville, Ontario joined our staff in June and has been busily engaged learning the intricacies of solid source mass spectrometric analyses.■

TERRAIN SCIENCES  
DIVISION

Larry Dyke joined the permanent staff of our Geomorphic Processes Section in April, after having completed his course work and the residency requirements for his Ph.D. at Texas A&M University, College Station, Texas. Larry is an environmental-engineering geologist with specific interest in geotechnical study of rock heave in the central Arctic.■

Lionel Jackson joined the permanent staff of our Geomorphic Processes Section in April, after one year as a term employee. He is working in our Calgary office studying the geologic aspects of environmental problems related to coal resource development and is continuing stratigraphic investigations in southwestern Alberta.■

Art Dyke joined the permanent staff of our Regional Projects Section in April. Art received his Ph.D. from the University of Colorado last December. He has acquired extensive experience in mapping surficial materials and geomorphology of north-eastern Canada in connection with his thesis work and through term employment with the Division.■

Don Proudfoot resigned from his position in September to take a position with Bell Canada as supervisor of Data Systems, Marketing Research. We wish him all the best in his new job.■

Betty Lisle transferred to this division in June 1978 from the Accounts Section of this Branch, and is working for our Administrative and Financial Services Unit.■

P.B. Fransham resigned in August to take a teaching position with the University of Waterloo. We wish him well in his new endeavours.■

L.A. (Les) Jackson retired at the end of October after more than 10 years service as Administrative Officer with this division, following a 31-year career in the Royal Canadian Navy. He also served as Acting Head, Branch Administrative Services from August 1974 to July 1975. Les, who was Terrain Sciences first Administrative Officer was responsible for setting up the various procedures required for the utilization of the Division's resources.

On the afternoon of October 27 Les' many friends in the GSC gathered for a farewell ceremony in his honour. John Scott presented him with a gift from the staff, a congratulatory certificate, on behalf of the Government, and a silver medallion for his long years of efficient service. One of the gifts was a miniature brass ships bell, and at the close of his short farewell speech Les rang eight bells in naval fashion indicating that his watch was finished. We wish Les and Barbara a long and happy retirement.■

Western Roundup

So much happens here continually that we are hard pressed to distill all our accumulated news into capsule form suitable for less fortunate readers. Especially hard as we have been involved in a multitude of current activities which included the annual staff field trip on September 22 into the Waterton/Glacier International Peace Park of Alberta and Montana under the leadership of Don Norris, with help from Don Stott, Don Cook, Dave Hughes, Gale Koch, Dave Morrow, and Gord Taylor.■

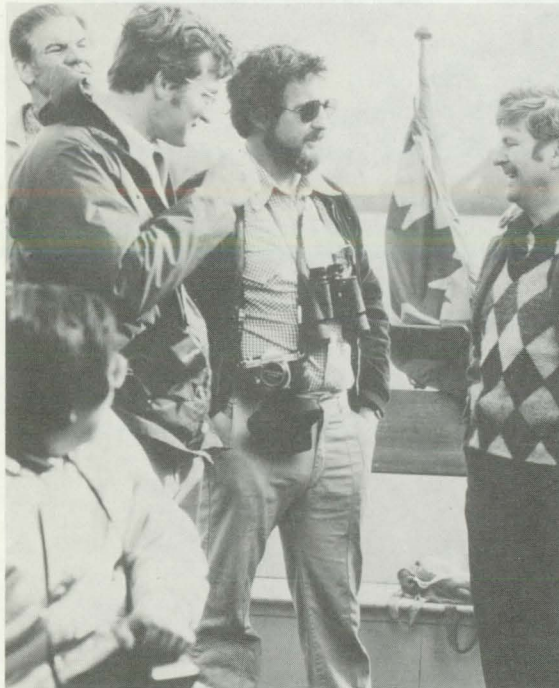
ON INTEREST TO GSC SCIENTIFIC STAFF

As you know the GSA Bulletin will change to a two-part format in January 1979. Part I will appear in traditional printed form and will comprise summary reports none of which is to exceed two printed pages. Complete reports will be published on microfiche in Part II. In late September the Executive Committee of the GSA announced that 50 free paper-copy reprints or 50 free copies of the microfiche Part II articles would be offered to authors during 1979. This will allow the traditional exchange of reprints with those most likely to make use of "hard copy" to continue while at the same time enabling the GSA to meet the requirement of keeping its publication costs under control. The GSA Bulletin is widely distributed and highly regarded and should be kept in mind as a publication vehicle.



Guidebooks and supplemental reading lists were distributed and dark circles were soon seen under the eyes of the keen ones such as Gary Brown, Murray Wade, Lynn Machan and Jim Waddell, who were determined to ask the right questions on the outcrops this year. We thank Brian Rutley for his shutter finger and the excellent pics of both the rocks and the participants.

Don Norris and Ross McLean organized an earlier Waterton trip May 24-28 with a starry group of leaders that included Bob Douglas and Archie Stalker from Ottawa and Pete Gordy of Shell Canada. The 36 participants were chiefly from the Institute but also included some from the Vancouver office and also British Columbia and Alberta government scientists. The trip covered stratigraphy and structure and Pleistocene geology from Turner Valley south to the Marias Pass area of Montana. →



Trip leader Pete Gordy (left) glowers over the shoulder of Dave Morrow, who, together with Australian tourist Bruce Marchioni, is amused at the quips of irreverent paleontologist Walter Nassichuk during a boat cruise on Waterton Lakes. Tom Uyeno crouches in the foreground - fearful that paleontologists will never be allowed on any more of Gordy's structural trips. (ISPG 1161-4)

Marg McKenzie and Keitha Bear were voted as potentially the most promising geologists on the trip. Bob Thompson and Don Cook were in the running for these honours but faltered on the last day due to two late nights on the shuffleboard courts.

D.L. "Bruce" Marchioni never had a chance, he missed the bus at a W.C. stop and when he finally caught up with us he was two stages behind in the deformational history. The only sad note to a very successful excursion was Bob Douglas' illness immediately afterwards. We are all pleased to hear he is well on the road to recovery and might again lead us through this area which he and Don Norris mapped long ago. ■

The C.S.P.G. Meeting

This international conference in June on facts and principles of world oil occurrence attracted international attention through its outstanding papers including the keynote address of Sheikh Yamani, Minister of Petroleum Resources in Saudi Arabia and "the most powerful oil man in the world". The Institute was deeply involved in the program from the very beginning as our Director, Don Stott, is president of the Canadian Society of Petroleum Geologists during this, its 50th Anniversary Year (see photo).

While Don manned the podium and head tables, five of our people were involved on the firing lines delivering especially invited papers. Lloyd Snowdon talked on oil and gas maturation in the Mackenzie Delta, Trevor Powell talked on petroleum geochemistry of the Canada Basin. Tony Foscollos discussed his findings on clay mineral diagenesis in relation to petroleum generation and Eric Dahlberg talked about the pros and cons of Zipf's Law as a resource appraisal tool. →



C.S.P.G. President Don Stott chats with Sheikh Yamani of Saudi Arabia concerning the serious state of world energy resources. (ISPG 1166-1)

The indefatigable Andrew Miall who has just completed editing of an 800-page C.S.P.G. volume, has now cheerfully undertaken to assemble, edit and publish the 34 papers of this momentous 50th Anniversary conference. ■

Surprise!

Exotic Institute travel is not confined to Institutionalized males. June Graff finally got the nod for an all-expense paid trip to the annual meeting of the Canadian Library Association. And, believe it or not, Cathy Findlay received approval for official participation in the annual meeting of the Association of Earth Science Editors at beautiful Butte, Montana which lies well beyond our longest streetcar lines.

Denise Armstrong got her miles in without applying for a conference grant. She joined Gord Taylor's field party in northeastern British Columbia as a junior assistant this summer. She now qualifies as the Institute's all around Reconnaissance Woman: typist, secretary, draftsman, lab assistant, volleyball champion, intramural ice hockey star and now GEOLOGIST. WOW!

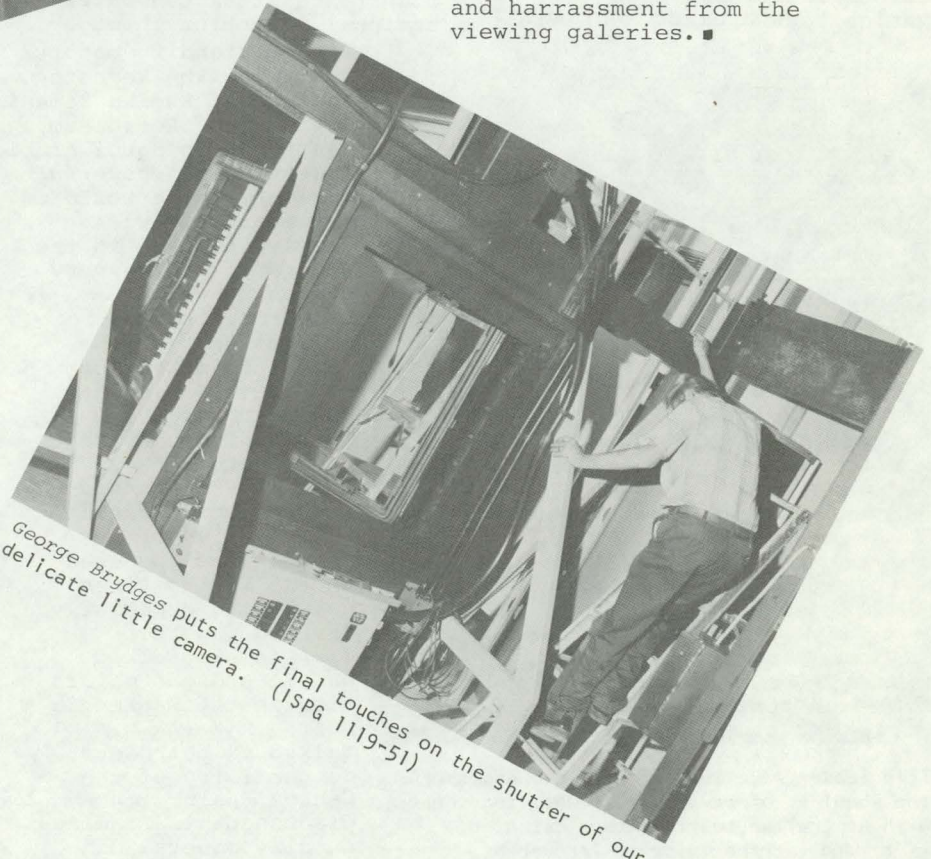
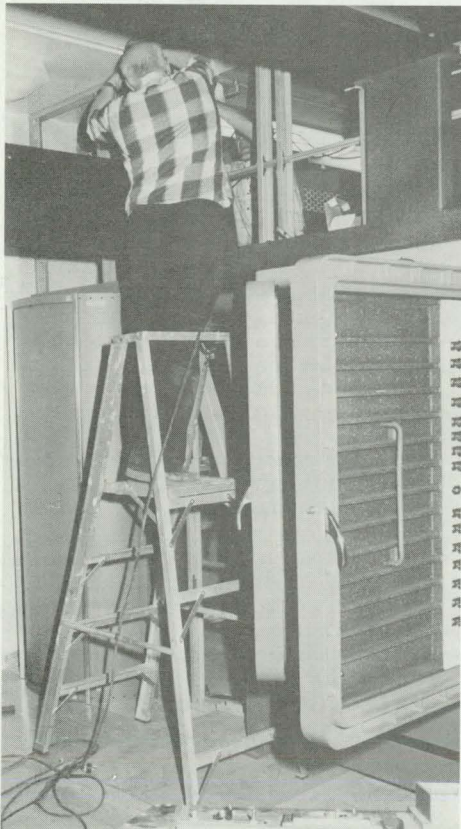
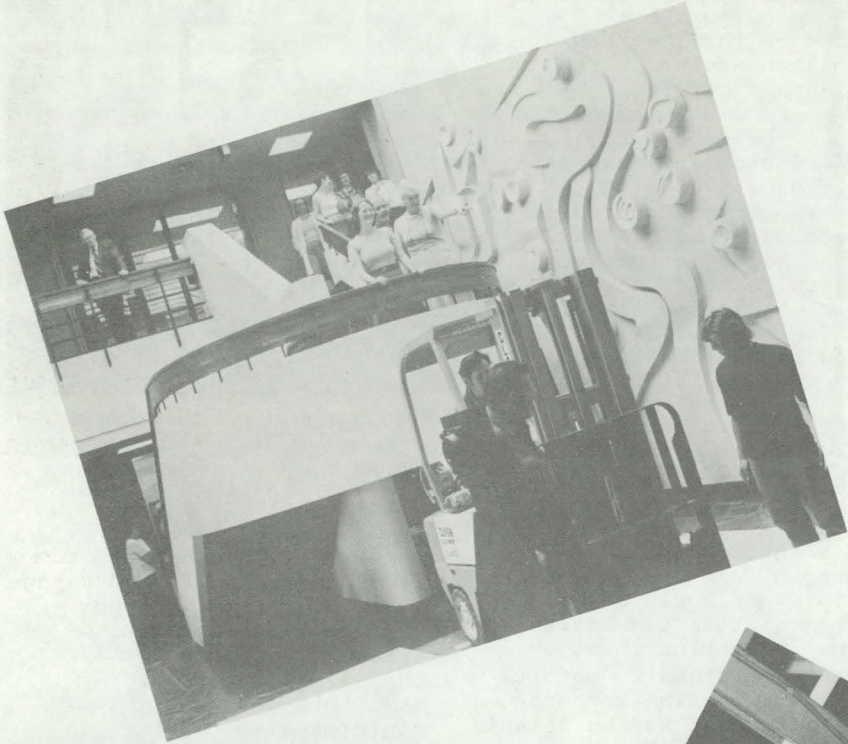
E.R. Ward Neale  
I.S.P.G.



Installation of a 50-ton camera in the ISPG Photomechanical Lab required participation of most personnel. Here *Marion Jones* and *Linda Sharp* direct operations from the lower gallery while other sidewalk supervisors eagerly wait to take over their vantage point. (ISPG 1119-20)

New Equipment

The biggest single event (in terms of tonnage) to ever take place at the Calgary Institute was the installation of *Len Wardle's* pet 50-ton camera. To move it into place, part of the front of the building had to be dismantled and a front-end loader wheeled into our foyer to raise giant beams to their second-story resting place. What a challenge for our new building superintendent, *Cliff Jermy* and his capable charge hands *Art Hoffman*, *George Brydges* and *Earl Clayton*. They did it without a scratch despite almost constant directions and harrassment from the viewing galleries. ■



*George Brydges* puts the final touches on the shutter of our delicate little camera. (ISPG 1119-51)

*Earl Clayton* has his head in the clouds as he bolts on the camera's enormous suspension beams. (ISPG 1119-49)



C.S.P.G. Exhibit

A highly successful educational exhibit was prepared for the C.S.P.G. meeting. It was put together by

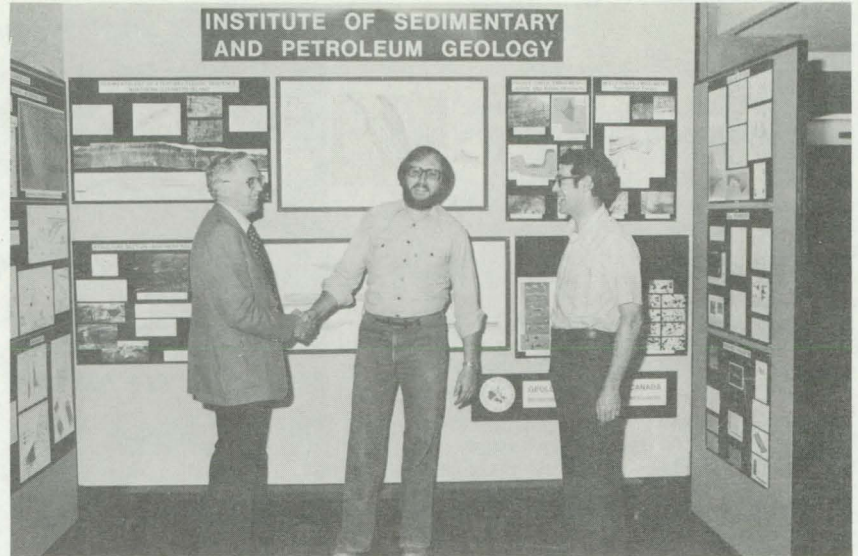
*Don Walter* and *Brian Ortman* (see photo) from contributions by a dozen ISPG scientists. *Neil Ollerenshaw*'s newly published 1:250 000 geological map of Calgary area is the centerpiece and it is flanked by samplings of the Institute's work in sedimentology, structural geology, paleontology, stratigraphy, coal geology and petroleum and gas resource estimation. The display was manned during the meeting by a roster of ISPG scientists who fielded the questions of many interested visitors. It will go on tour to various western Canadian universities beginning in October. In some cases, the universities have agreed to send us their displays in exchange so that we can become more informed of their research and teaching activities. ■

Congratulations to *J.A. Jeletzky* who became the first holder of the Elkanah Billings medal for paleontological research awarded by the Geological Association of Canada.

Travel

*Bob Christie* spent a summer doing field work in Greenland and is currently writing up his research in Copenhagen. *Andrew Miall* is visiting Poland as part of a coal and clastic sedimentology research exchange program. *Jim Aitken*, accompanied by *Paul Hoffman* (GSC, Ottawa) and *Hans Hoffman* (McGill University), is presently spending two months in China studying Proterozoic geology - he has sent us all postcards concerning the price of tea and similar cultural notes.

*Tom Uyeno* is on a four-month sabbatical leave at the University of Waterloo. Tom will be studying Early Silurian conodont faunas from the Hudson and James Bay lowlands in the presence of an awesome number of fellow conodontologists.



C.S.P.G. President *Don Stott* congratulates *Brian Ortman* (centre) and *Don Walter* (right) for assembling a display which most visitors agreed was the best at the Conference (ISPG 1121-36)

*Tony Foscolos* travelled to England where he gave a presentation on his studies of clay mineral diagenesis and research into improving reservoir permeabilities at an International Clay Mineral Conference. Tony also gave a series of lectures in Greece. *Willy Norris* and *Alan Pedder* were also in England attending the International Devonian Symposium at Bristol.

*Lachie MacLachlan* attended the Canadian Cartographic Association Conference in Vancouver. *Bill Vermette* went on a junket to Ottawa which included attendance at the Ontario Institute of Chartered Cartographers. ■

Editorial Workshop

ISPG's first informal workshop on editorial policies and procedures took place on May 12, *Leona Mahoney* (see photo), came from Ottawa and over 70 people crowded into our little boardroom to discuss refereeing procedures, layout problems, illustration requirements and length restrictions of GSC publications. Incendiary contributions from *John Thompson* and *Bill Vermette* kept everyone on the edge of their chairs for over 2 hours. There is a

strong demand for more of the same so the McConnell Club invited *Wendell Cochran*, Editor of *Geotimes*, to speak to us on "Geowriting". This will be followed by a November workshop session on illustrations organized by *Lachie MacLachlan*. ■



*Leona Mahoney*, recent winner of the Queen's Medal, holds court during a recent visit to Calgary. *Brian Norford* kneels before her as *Don Stott* and *Owen Hughes* stand attendance in the background. It was a great opportunity for *Leona* to renew old friendships. (ISPG 1166-2)

Congratulations to *F.P. Agterberg* who became the third holder of the William Christian Krumbein medal of the International Association for Mathematical Geology.



OF GENERAL INTEREST

PETROGLYPHS AT KEJI

REG undertook a resource study of Kejimikujik National Park during the past summer. "Keji" is one of the two national parks in Nova Scotia and is a fine wilderness, camping, canoeing and hiking complex. It lies in the heart of Nova Scotia's western lake country and is representative of the province's Atlantic Upland Region.

The eastern half of this 145 square mile park is underlain by slate and greywacke of the Goldbearing (Meguma) Series. Granite of the western half of the park is part of the South Mountain Batholith, formed by melting of the Meguma sediments.

Several of the outstanding features of the park include (in order of their geological age):

1. quartz veins and abandoned gold mines of the West Caledonia Gold District;
2. a glaciated landscape composed of a swarm of 300 drumlins;
3. high erratic blocks of granite measuring up to 35 feet in height and 55 feet long;
4. diatomite deposits;
5. petroglyphs of the Micmac Indians.

The petroglyphs occur on smoothly glaciated surfaces of Halifax slate of the Goldbearing Series, as exposed along the edge of Kejimikujik Lake. As many as 400 of these aboriginal drawings may occur in one outcrop area. Many of these picture-writings are now obscure, due to weathering those shown above have been accentuated by use of chalk and white ink. The petroglyphs of Kejimikujik are unique and there is no other concentration of such sites in eastern Canada.

- Bud Cumming  
REG



Micmac petroglyph on a smoothly glaciated outcrop of Ordovician Halifax slate at Kejimikujik National Park. This petroglyph shows a typical "hump back" Micmac canoe and an X-ray view of the catch. The Indian script and the date may be later than the drawing. (GSC 202821-C)



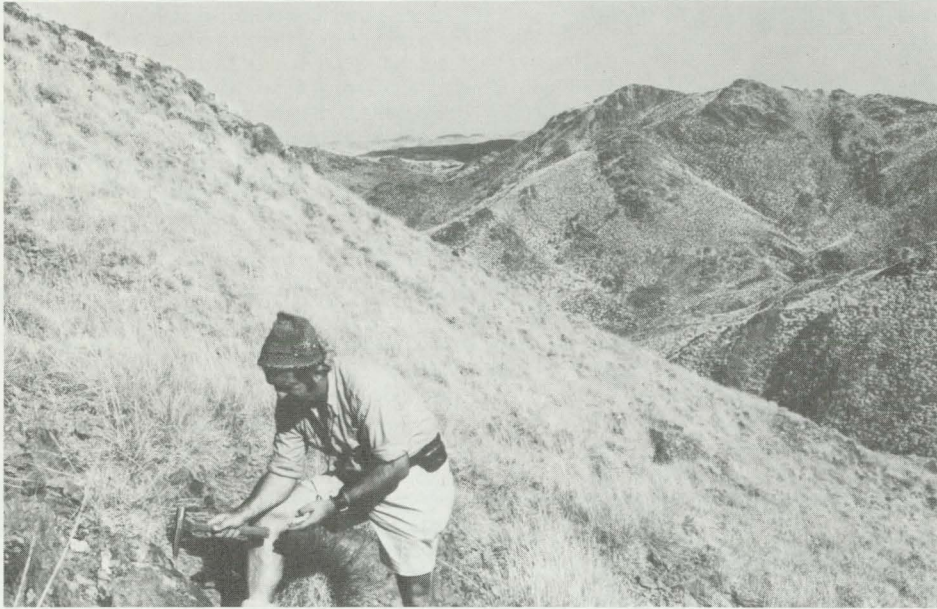
Micmac petroglyph on a smoothly glaciated outcrop of Ordovician Halifax slate at Kejimikujik National Park. Note the boudinage of a sandy layer in the direction of the pervasive slaty cleavage. This petroglyph depicts the harpooning of a whale as told in a Glooscap legend. (GSC 202821-B)



AUSTRALIAN EXCHANGE VISIT

Don Sangster recently returned to Ottawa from a successful "sabbatical" at the Canberra office of the Australian Bureau of Mineral Resources, Geology and Geophysics. The main objective of the exchange was to initiate a technology transfer of mutual benefits to the scientists at BMR and GSC.

During the year Don made field visits to 55 lead-zinc mineral deposits, all in the company of exploration or mining personnel who were familiar with the deposits examined. Also, 26 invited lecturers were presented including participation in three mineral exploration symposia. Geoscience research organizations and university geology departments were also visited at the following centres: Adelaide, Armidale, Broken Hill, Canberra, Hobart, Melbourne, Perth, Sydney and Wollongong, N.S.W. ■

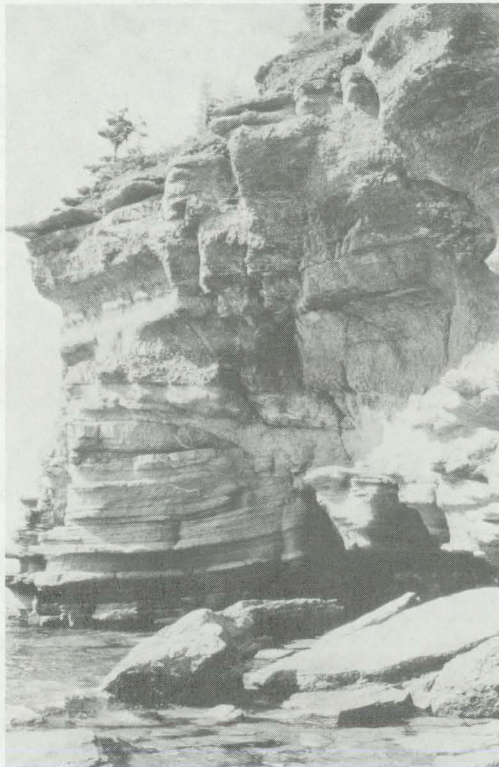


Outcrop of main ore zone at the Big Stubby Zn-Pb-Ba volcanogenic massive sulphide deposit, Pilbara Block, western Australia. This is one of the oldest deposits of this type in the world having been dated at 3453 Ma. (GSC 202229-F).

MINGAN ISLANDS VISITED

At the northeastern end of Quebec Highway 138, 196 km east of Sept-Iles, lies the settlement of Havre St. Pierre. This town, with a population of about 5000, is one of the major ports of call for vessels servicing the north shore of the Gulf of St. Lawrence. A titanium mine at Allard Lake, some 25 km distant provides the major source of employment for the town. Havre St. Pierre is also the most central point of access to the Mingan Archipelago, a group of 23 beautiful islands, some dozen islets, and several small reefs, which stretches for about 90 km to the east and west. There are no permanent residences on the islands, but several cottagers and two lighthouse keepers and their families maintain summer residence. Except for thin glacial deposits and overlying vegetable matter (many components of which are specific to the archipelago) the islands are composed of Ordovician limestone and dolostone,

with minor amounts of sandstone, shale, and siltstone. The islands form two chains parallel to the shore.

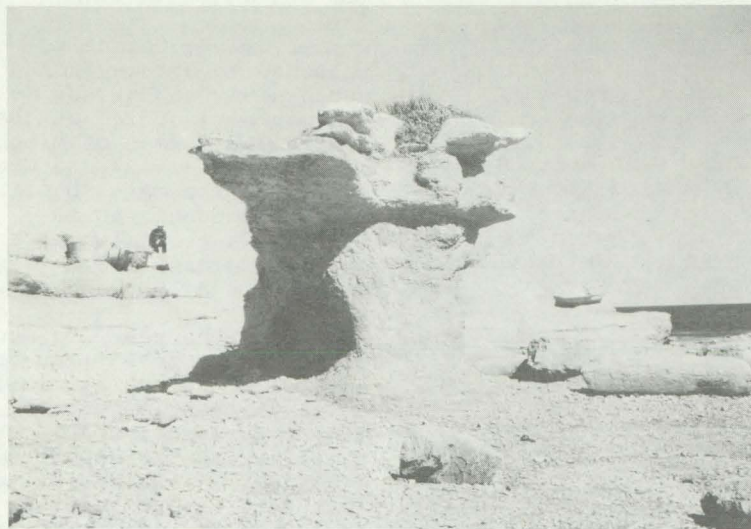


Strata of the lower part of the Mingan Formation, southeastern Quin Island, Mingan Archipelago. (GSC 203106-L)

The inner one is composed of dolostone of the underlying Romaine Formation and the outer one is made up of some Romaine, but mainly of the overlying Mingan Formation. A high cliff is developed at the north end of each island, and elevation gradually falls away, more or less on a dip slope, to the southern shores, which are studded with magnificent hoodoos developed by erosion of the upper strata of the Mingan Formation.

Waters around the islands are treacherous, both in terms of physical obstructions and powerful currents generated by the ever variable combination of wind and tide. This summer, Tom Bolton, Murray Copeland and Godfrey Nowlan ably assisted by Simon Coutu used a 36-foot boat to circumnavigate the islands, landing on the coast in a small dory. Only minor cases of sea-sickness were recorded! Greater turmoil was caused by the profusion of names available for each island, names on the topographic map usually being at variance with a variety of local usage, leaving most islands with at least three synonyms. →





Hoodoo developed in strata of the Mingan Formation, southern shore of Large Island, Mingan Archipelago. (GSC 203106-K)

The exposed Ordovician strata represent shallow water deposition at the margin of the craton. The Romaine Formation which has been entirely dolomitized is of Early Ordovician age and separated by a rolling disconformity from the overlying Mingan Formation which is Middle Ordovician in age. The disconformity is spectacularly exposed, showing an irregular, undulating surface of Romaine dolostone, with the depressions locally infilled by coarse friable sandstone and highs covered by the succeeding shale unit.

The magnitude of the break between these two cycles of deposition, and the age limits of each cycle, are poorly known. Furthermore, these relationships need to be compared to roughly correlative breaks in deposition all along the eastern margin of North America.

To this end, the relatively abundant megafossils of the Mingan Formation and more sparse but locally well preserved megafossils of the Romaine Formation have been collected. These collections are tied in to 20 measured

sections, in which conodonts and ostracodes occur. Magnificent examples of Middle Ordovician reefs were discovered in the Mingan Formation, dominated by a coral-sponge association, and providing a great variety of fossils in flanking beds. The fact that these strata have been collected for a wide variety of biostratigraphically important groups in a coherent manner, will provide necessary information on relative ranges of species in each group. This 'multi-faunal' approach has seldom been used and should provide useful cross-checks on zonations in each faunal group. Preliminary results suggest that conodonts are present throughout the entire sequence.

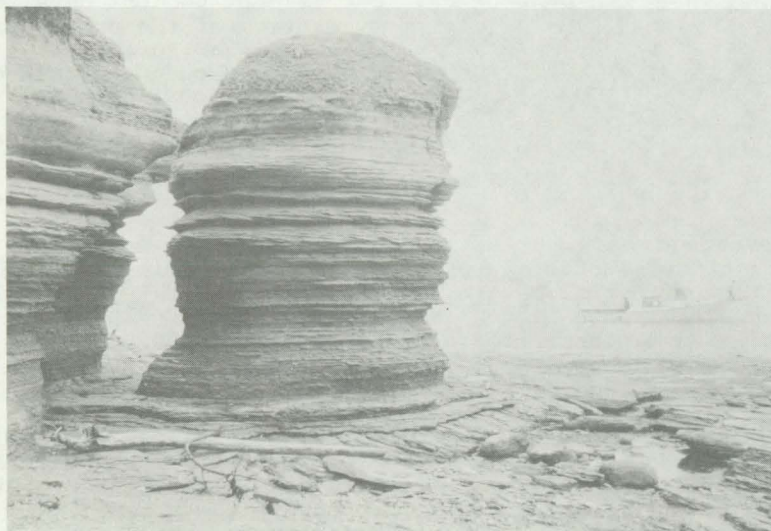
The considerable amount of data collected in this single field season should provide critical information on the magnitude of the late Early Ordovician regression in the area, allowing future comparison with other areas such as western Newfoundland and eastern Ontario.

G.S. Nowlan  
REG

Bud Cumming recently served as a judge of earth science exhibits at the Canada-wide Science Fair and presented the Geological Association of Canada prize at the Awards Dinner at Laurentian University.

This national event is organized by the Youth Science Foundation and is held annually at varying sites across Canada. The 17th annual fair in Sudbury made use of the excellent facilities of Cambrian College (Barrydown campus), a new community college serving northern Ontario.

Several of the most coveted prizes awarded to high school students at the close of the 1978 Science Fair included all expense tours to Rockwell International in California; Bell Northern Laboratories in Ottawa; and the London International Youth Science Fortnight in England. ■



Sea stack on the southwestern point of Sea Cow Island, Mingan Archipelago. (GSC 203106-J)



## GEOANALYSIS '78

"What? Another compound word? Will there be no end to this polyverbal gobbledygook?"

No, Geoanalysis '78 is not a mental health program for this year's geological field work. It was merely the title of a three-day symposium (May 15-17) intended as "...a forum for the exchange of information among specialists in the analysis of geological materials...".

John Maxwell and George Plant, of GSC, were co-chairman of the organizing committee, other members being Jane Clemmer, Gwen Hall and Sydney Abbey, of GSC; Jack Hole, Gerry Hunt and Ray Sabourin, of CANMET; Jim Crocket, of McMaster University, and Wes Johnson of the British Columbia Ministry of Mines and Petroleum Resources.

Some 200 chemists, geochemists, geologists, and others gathered at the Government Conference Centre to hear ADM (Science and Technology) John Keys welcome one and all. Most of the registrants came from across Canada, but there were a fair number from the U.S.A. and a scattered few from France, Italy and India. They heard a varied program of 23 invited papers (19 from Canadian sources) covering topics from a "review of established methods and new techniques" through determination of trace elements, analysis of waters and of ores and processed materials, to sampling and reference standards.

Direct contributions from EMR included papers read by Lloyd Dalton and Henry Steger, of CANMET, and by George Plant and Sydney Abbey, of GSC. However, the honorary prize for most contributions must go to the University of Toronto, from which papers were heard by C.L. Chou, M.P. Gorton, J.C. Rucklidge, and J.C. Van Loon.

The program provided ample opportunity for both formal and informal exchange of views, with a half-hour coffee break in the middle of each session, a round-table discussion at the end of each session, a wine-and-cheese reception for all registrants and a luncheon for the invited speakers.

Final texts of all papers presented at Geoanalysis '78 will appear in a special GSC publication. Some of those attending the symposium also visited GSC and CANMET laboratories on the following day. Others were heard enquiring whether Geoanalysis was to become an annual event. Perhaps once in three or five years might be more realistic.

Sydney Abbey  
CLAS

#### CRUSTAL PROPERTIES ACROSS PASSIVE MARGINS

This symposium took place in Halifax, June 19-23, 1978. There were three days of excellent talks, followed by a field trip to study various aspects of Appalachian geology.

There were about 60 participants, with North Americans outnumbering European representatives. Thirty-three papers were presented, which ranged in scope from studies of creep in the upper mantle beneath oceans and continents to geological studies of sedimentary basin formation. The program is available from the ICG Secretariat.

The meeting was organized by a local committee with Charlotte Keen, (AGC) as chairman, and was held at Dalhousie University. It was sponsored jointly by the ICG and the National Research Council of Canada. A business meeting of Working Group 8 was held at the conclusion of the oral presentations.

A publication including many of the papers presented is planned, probably in Tectonophysics.

The meeting was of particular value because of the diversity of approaches applied to continental margin studies and the range of geographical areas described. Several papers were concerned with rheological models of the upper mantle and their implications for isostatic adjustment and creep at continental margins. There appears to be no clear consensus regarding the validity of visco-elastic versus elastic-plastic models of the lithosphere. The need for future rheological studies

and the effects of particular rheologies on crustal loading and thinning was clearly demonstrated.

Observations of subsidence, the geographical distribution of sedimentary basins, and seismic stratigraphics at continental margins were discussed in relation to the thermal history, eustatic sea level changes and sedimentation at rifted margins. These talks illustrated the usefulness of good multi-channel seismic data and deep exploratory well data in describing the evolution of the margins. The seismic data has also been invaluable in defining the configuration of rotational faults in the upper crust, postulated to be the result of crustal thinning, which is underlain by unfaulted crustal material perhaps thinned by plastic deformation. Thus it provides the most direct evidence of processes within the crust during the early history of a rifted margin.

Among technicians described, whose application has thus far been limited at continental margins, are time variations of the geomagnetic field, surface wave dispersion studies, and the use of compressional to shear wave velocity ratios in determining rock type. The latter may be important in distinguishing oceanic volcanic rocks from high velocity sediments.

The eastern and western sides of the Atlantic were discussed in some detail and allowed comparisons of conjugate margins to be made. Ocean-continent boundaries, marked by magnetic and isostatic gravity anomalies, in conjunction with the earliest sea floor spreading magnetic anomalies were used to define early plate motions. Geological trends, often traced offshore as trends in the gravity or magnetic anomalies were used to compare, in some detail, the continental geology of the Canadian and European margins. Anomalous "transitional" areas such as Rockall Trough, the Labrador Sea margins, the South-East Newfoundland Ridge, the Voring Plateau, and Orphan Knoll, provide puzzles not



yet completely understood but which may contain clues to the early history of margin formation. Studies of the Beaufort Sea slope and rise provided exciting new data from one margin of the Arctic Ocean.

In order to put the geophysical studies in perspective,

two talks were given on the geology of the Appalachian region, interpreted as an ancient continental margin. The diversity of the present geology and its interpretation is rather sobering, and points to the gross simplifications many of us make in studies of modern margins.

C.E. Keen  
AGC

there, as wrongly believed, but because he was busy in obtaining evidence and instruments with which to return to Canada to solve a long standing geological dispute. The Logan toast was preceded by a toast to Alexander Murray, Logan's first assistant on the Survey, to Sir James Hector pioneer western geologist and to Ted Link, a highly respected

western geologist. These informal wild west events were organized by Mike Cecile, a recent recruit at ISPG, the Survey's Calgary division.

Meanwhile warm sunshine and balmy breezes ensured the success of our national day in Vancouver where dynamic Dirk Tempelman-Kluit of our Pender Street office organized a boat cruise to the Gulf Islands. Once arrived the 300 participants had to participate in vigorous geological games before earning the right to sail home to the tune of a dance band and soft moonlight.

Even without the help of Logan's successors, the day flourished in other parts of the country. In Saskatoon, the University Department of Geology advertised an open house to which everyone in town was invited to bring their pet rocks and fossils to be identified. Children were invited to participate in dinosaur drawing contests and 450 arrived in response to the invitation. In Winnipeg the local Geological Association section staged a family picnic and fossil hunt. In London, Ontario students answered Prof. Gordon Winder's call to salute his revered Sir William Logan with festivities in a local park. Next year we expect this celebration will spread into Sir William's old stomping grounds of Quebec, Ontario and the Atlantic provinces. Members of the scientific and support staffs of the GSC in Ottawa are already racking their brains to think of some original way to celebrate national geoscience day on the first weekend of October 1979 in the Nation's Capital.

Ward Neale  
ISPG

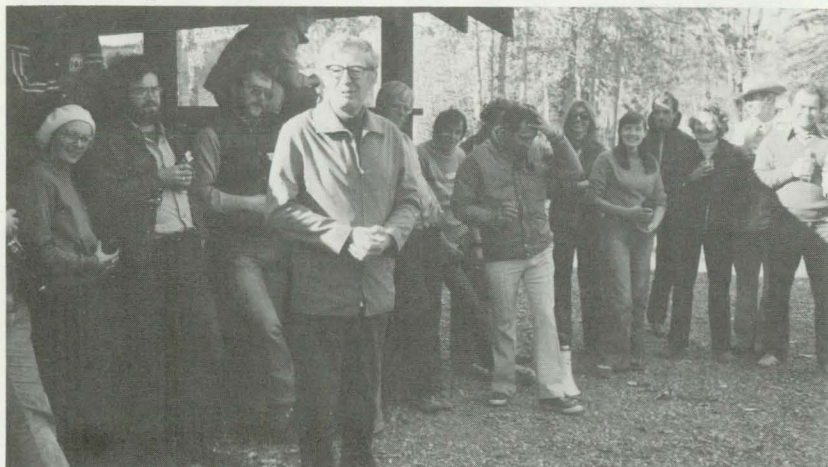
#### LOGAN'S SUCCESSOR IS PRESENT ON LOGAN DAY

Geri Eisbacher of the Survey's Vancouver office started the ball rolling when he suggested in letters to the national magazines *Geology* and *Geoscience Canada* that we should have a national geoscience day on which friends of the earth sciences gathered together in a dignified manner to celebrate the national origins of our science. He suggested that it be called Logan Day to honour the founder and first Director of the Geological Survey of Canada.

We now have the beginnings of such a national day. It was celebrated in grand style in four western cities and in one central Canadian city on October 1st of this year. It wasn't specifically called Logan Day everywhere but it was in Calgary, Alberta and this is where Dr. Digby J. McLaren, 12th Director of the Geological Survey, appeared on the scene to offer a toast



to Logan in the presence of 127 Calgarians and their families (and dogs!). The event took place in a Foothills wilderness area, about 35 miles from Calgary and about 5 miles from Logan's Ridge. Dr. McLaren pointed out many hitherto unknown facts about Logan and the fact that when he died in Wales, it was not because he had chosen to retire





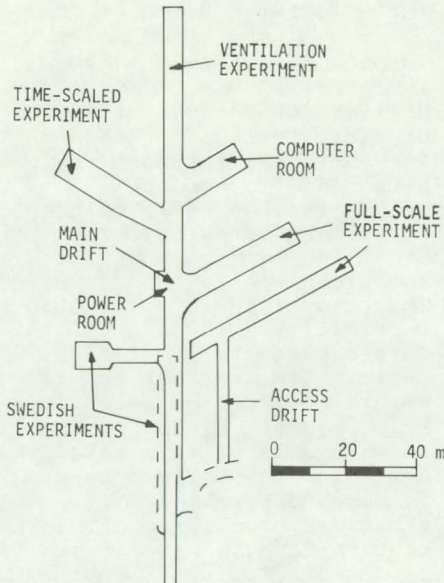
SWEDISH-AMERICAN CO-OPERATIVE PROGRAM ON RADIOACTIVE WASTE STORAGE

For a period of one year between August 1977 and September 1978 I was on leave of absence from the Geological Survey and on loan to Lawrence Berkeley Laboratory (LBL), University of California, Berkeley, working as a field manager of the Radioactive Waste Storage Program in Sweden. The program is a co-operative research project whereby scientists from the United States and Sweden are assessing the suitability of crystalline rocks as permanent repositories for nuclear power wastes.

In July 1977 the Swedish Nuclear Power Supply Company and the Lawrence Berkeley Laboratory joined in a feasibility study on the storing of radioactive wastes in mined granite caverns. Scientists from both countries selected an abandoned iron ore mine at Stripa, Sweden as the project site. Some 200 km west of Stockholm, underground tunnels of the mine form a labyrinth covering approximately 25 km on 15 levels. Opened in 1485, the mine closed and reopened several times over the next five centuries, continuing to produce ore until late 1976. Its excellent operating conditions, accessibility, and physical similarity to granite caverns in the United States contributed to its selection as an ideal experimental facility.

The program has three major components - full scale heater experiments, a time-scaled heater experiment, and fracture hydrology studies. These major tasks are complemented by several supporting tasks which include geophysical assessment, laboratory measurements of material properties, mass transfer of water, and in situ stress measurements of Stripa granite.

The full scale heater experiment is designed to simulate emplacement of canisters containing hot radioactive wastes in granite. Energy output from an actual canister can be as high as 5 kilowatts,



General plan of the test site.

which should cause significant heating of the surrounding rock. The effects of this heating are studied, using electrical heaters with the same size and energy output as typical canisters containing radioactive wastes. Two separate full scale heating tests are being performed in the mine. Each test site is instrumented elaborately to measure changes in rock temperature, stress, and deformation. One heater assembly is designed to heat the rock to an expected failure condition so that design limitations may be established for an actual repository.

Over a period of 10 to 100 years, rock temperatures around a working repository are expected to increase significantly. Unfortunately, full scale heater tests cannot practicably check these long-term effects. By using the laws of heat conduction, however, results from a two-year time-scaled heater experiment can be projected to predict thermal effects over a 20 year period. Results of this experiment should enhance present capabilities for theoretically predicting long-term repository performance.

Some granite formations are considered to be nearly impermeable and thus are desirable environments for radioactive waste storage.

Minute amounts of water, however, flow through fractures in the rock. Because groundwater movement is a potential path for release of radionuclides into the biosphere, extensive research and testing are in progress in Stripa to improve capabilities for the understanding and prediction of groundwater flow.

During the preparatory stages (August 1977 to March 1978), six large test chambers were excavated in the Stripa mine at the 336 m level to facilitate installation of the heaters, instrumentation, computer monitoring system, and other test devices. In addition, more than 160 boreholes, exceeding 3000 m in total length, were drilled for future testing and instrument installation. After several months of intensive work, all instruments and heaters were installed, the computer was assembled, and the entire system was tested successfully by the end of May 1978. On June 1, 1978, with representatives of the United States and Swedish government present, the time-scaled heater experiment was started. After data from the first month of operation were collected and analyzed, the heaters for the full scale experiment were turned on in July 1978.

Several associated activities were conducted concurrently with the drilling operations and the heater experiments. Geophysical surveys were carried out both on the surface and underground using conventional and special experimental techniques. As part of the overall assessment of fracture hydrology, the following activities were undertaken: general and detailed geological mapping, TV logging, fracture mapping and evaluation, water inflow measurements, pressure and injection tests, and geochemical sampling.

Scientists from government agencies, universities, private consulting firms, and research laboratories from the United States, Sweden, Canada, England, France, and Austria participated in the program. →



Frequent visits of scientists and politicians from all over the world documented the interest shown in the field of radioactive waste disposal and the need for the international exchange of information and ideas.

P.J. Kurfurst  
Terrain Sciences

#### OBS NEWS

Dave Heffler (AGC) spent two beautiful weeks on Lopez Island, in the San Jaun Islands, Washington State and wasn't on holiday. During the last few years Dave has spent most of his time designing the Ocean Bottom Seismometer (OBS) system at the Bedford Institute. He and all the other OBS designers in North America (about 30 in all) took their instruments to Lopez Island to calibrate them. More important than the calibration was meeting such a large group of fellow workers and comparing methods and experiences.

The OBS system has not only been used successfully on several AGC cruises, but was the first OBS system to be used under ice.

Robin Falconer (AGC) and Dave participated in an acoustic study of the Canada Basin on the ice 200 miles north of Alaska in March and April 1978. The program sponsored by the U.S. Office of Naval Research and in co-operation with Massachusetts Institute of Technology, Wood's Hole Oceanographic Institute and Lamont as well as AGC saw the OBS's system work faultlessly.

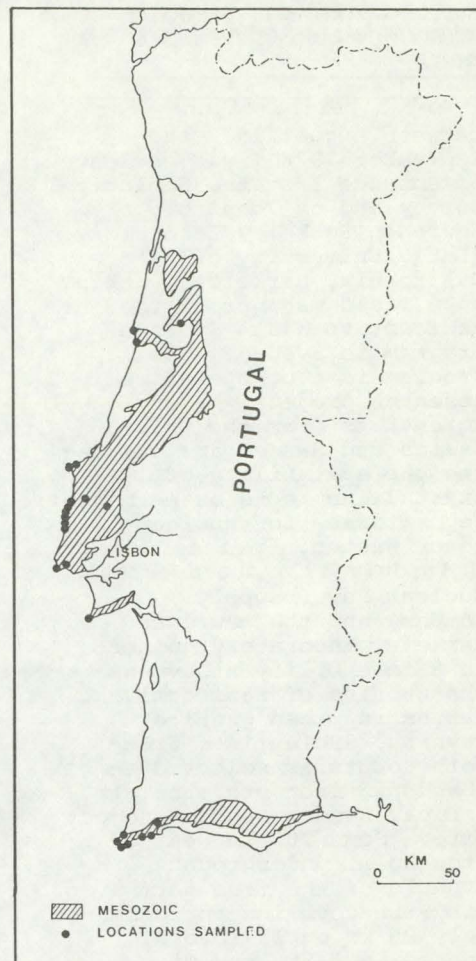
The system was used again this fall to complete a seismograph network in Baffin Bay. The network which included instruments operated by Earth Physics Branch and the Greenland Geodetic Survey monitored the area for earthquakes. ■

#### ON THE ROAD TO PORTUGAL

On April 1, 1978 Lubos Jansa and Felix Gradstein left Halifax for Portugal to participate in a workshop on the Portuguese Mesozoic in Lisbon and to conduct a reconnaissance study of the Portuguese Jurassic. The accompanying map shows the locations visited and sampled. They travelled to Montejunto to visit the Middle and Late Jurassic of the Lusitanian Basin. Its northern end is separated from the Atlantic by a basement high. On the seaward side of this basement high the Galicia Bank is more comparable stratigraphically to offshore Eastern Canada.

The late Jurassic in the northern part of the Lusitanian Basin is developed by a facies characteristic of the southern part of the Scotian Basin and is in turn overlain by a clastic sequence comparable to the Missisauga Formation. This may indicate that the Lusitanian Basin has more lithologic similarity with the Scotian Basin (both regions are presently located at the same latitude) than with Grand Banks. The Portuguese Jurassic carbonate sequences show several similarities with the sequences present at the Canadian Margin. Small coral-stromatoporoid bioherms are developed in the Middle and Late Jurassic in Algarve. The majority of carbonate rocks lacks porosity. An exception is the thick dolomite sequences of Late Jurassic age, exposed in the Algarve region. This dolomite is probably secondary but its origin is unknown. It has the potential of forming excellent hydrocarbon reservoirs. Rocks with a source rock potential were found to be present in Callovian (Montejunto region), as in the Late Pleisbachian (Cabo Mondego).

The foraminiferal biostratigraphy of the Jurassic of Portugal and the Grand Banks show many differences.



Sample site locations.

Preliminary comparison with known Portuguese foraminiferal assemblages permits correlation with only one late Early Jurassic and three Late Jurassic Grand Banks foraminiferal zones. For one zone, chronostratigraphic interpretations differ.

A qualitative biogeographic analysis of Grand Banks Jurassic foraminiferal assemblages indicates an 'Old World' affinity, consistent with Jurassic paleogeographic reconstructions of the North Atlantic realm. Locally there appear to be differences in microfaunal composition between the Grand Banks and Portugal probably related to the tectonic setting of the basins, as mentioned earlier. ■



PROJECT 27 IGCP THE CALEDONIDE  
OROGEN ANNUAL MEETING AND SYMPOSIA  
AUG 17 - SEPT 2  
DUBLIN, EIRE

"In Dublin's fair city,  
where girls are so pretty,  
twas there I first wooed the  
IGCP" (to paraphrase the song).

Project 27 of the International Geological Correlation Programme (of which our Director General is currently chairman and *Tim Tozer* is secretary) is entitled "The Caledonide Orogen". A volume of contributions to Project 27 has already been published as GSC Paper 78-13 under the title Caledonian-Appalachian Orogen of the North Atlantic Region. Tim Tozer undertook the somewhat onerous task of preparing the papers for publication and the volume has been very well received. Because of the extent of the work done on the North American portion of the Orogen (locally called the Appalachian Orogen) the title of the project is popularly changed to the Appalachian-Caledonide Orogen by most of the North American participants. The IGCP events took place in Dublin. The first was the annual meeting of the Project 27 International Working Group, which is made up of two delegates from each participating country. I joined Paul Schenk of Dalhousie University, Canadian leader of Project 27, in the two days of discussion about the project, to see the other members' reactions to including marine geological and geophysical work in the project. For three years I had been working directly on the problem of the extrapolation of Appalachian structural elements from Newfoundland to the continental margin, and had been keeping a watching brief on the problems of doing the same thing in the opposite direction for elements of the British Caledonides. In addition the precontinental drift reassembly of the continental margin north of the Grand Banks has been tackled by

WHO IS RALPH?

RALPH is not really a who but a what. RALPH is a data acquisition device which is placed on the seafloor to monitor sediment transport processes. RALPH should be ready for in-the-water testing by next field season.

In an attempt to discourage the proliferation of acronyms, the designers of RALPH simply named it RALPH. RALPH is not an acronym, many attempts to resolve it into a group of intelligible words have failed.

If anyone thinks he can defeat RALPH's designers in their attempt to use an acronym proof name, send your suggestions to:

*Lionel Carter*  
Atlantic Geoscience Centre  
P.O. Box 1006  
Dartmouth, N.S.

French and English submissions only please.■

*Sheri Srivastava* of AGC as a result of our Labrador survey work. South of Grand Banks I had been co-operating with Jean-Pierre Lefort (University of Rennes) who spent the summers of 1976 and 1978 at AGC in identifying geological markers on the coast of France, south to Morocco to correlate with North American margin structures. Having canvassed my Canadian colleagues about the merits of getting more international co-operation through IGCP, I went to Ireland to state my case that without a close look at the 1000 km wide zone between the continental shelf that separated the Caledonides and the Appalachians before the present Atlantic Ocean opened, much of the work in correlating between the Appalachians and the Caledonides is pure speculation. My proposal was well received, not only for providing constraints for an Appalachian-Caledonide correlation but also in the application of geophysical methods that might discover, for example, Appalachian Structure beneath the Coastal Plain cover of southeastern United States or the presumed

QUI EST RALPH?

RALPH n'est pas vraiment un "qui" mais un "quoi". RALPH est un système d'acquisition de données afin de surveiller les processus de mouvements sédimentaires. RALPH devrait être prêt pour les essais en mer à la prochaine campagne de recherche.

Dans le but d'éviter la prolifération de sigles, les inventeurs de RALPH l'ont simplement appelé RALPH. RALPH n'est pas un sigle, de nombreux essais pour le transformer en un groupe de mots intelligibles ont échoué.

Si quelqu'un pense pouvoir montrer que les inventeurs de RALPH ont tort et que RALPH peut être un sigle, qu'ils envoient leur suggestions à

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Dartmouth, N.S.

Seulement des soumissions en français ou en anglais, SVP.■

offshore source of the huge nappe structures of northern Norway. I have been given a year in which to assemble an International Working Group to address these questions and to define whether we can integrate with other working groups (structural, deformation, stratigraphy, etc.) or whether we need to be a separate group within Project 27 because of interaction with all the other groups.

The second event was a two day symposium organized by the IGCP Project 27 on "Caledonides of the British Isles - Reviewed". The symposium was divided into sessions according to the subject matter of the separate working groups. For each session there was a review paper, and despite there being two simultaneous sessions, careful program planning made it possible to hear all except one of those reviews. The reviews were generally well done, with Janet Watson setting a high standard for the subsequent speakers with her overview of the structural setting of the Caledonides. This was →



accomplished despite the problems of being first speaker ever in the auditorium of the new Trinity College of Arts building (so you can imagine the horrors of focussing slides, finding right light switches, microphone cords, extension cords, that occurred). The major criticism of the symposium for several European and most of the North American contingent was that the individual speakers were parochial in their outlook. Much of the area under discussion has been mapped over three times in successive detail, therefore the speakers were dealing with geology of only a few square kilometres, the identification of those areas by the audience being made more difficult by lack of index location slides. Even where the areas were recognizable and where the intricacies of speakers' arguments concerning the geological development could be followed, there were few attempts to relate any conclusions to the overall development of the Caledonides. In some cases we were even treated to two successive papers whose conclusions for the same area were diametrically opposed because of fundamental differences between the

structural deformational history sequence argued by the speakers. Such differences were often apparent to me but it was sad to hear that this was so for many of the other attendees both Caledonide and Appalachian. In many cases I will have to wait to see details in the printed version of the papers which will appear in a special volume published by the Geological Society of London.

The third event, which was effectively added to the symposium, was a discussion of metamorphism and deformation in the Appalachian-Caledonide Orogen. This gave all participants a chance to speak (therefore enabling one of the two government of Canada employees attending the meeting to better justify his attendance to Treasury Board) and papers were generally presented in geographical order from the southern U.S. to northern Norway. After a session of survey papers it was all over until we meet to assess the new developments at a meeting in the U.S. next year when it will be "Caledonides of the U.S. - Reviewed".

Dick Haworth  
AGC

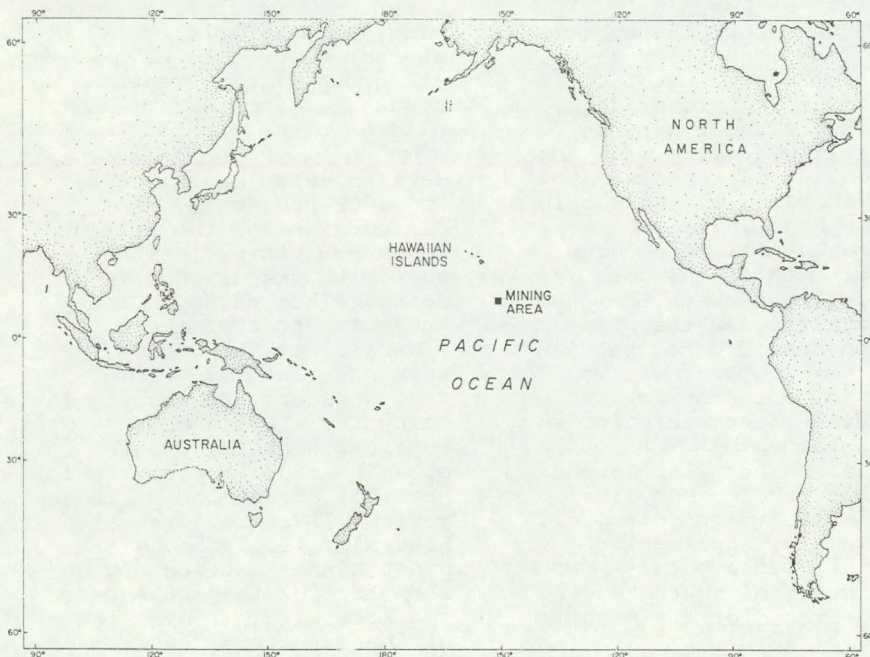
#### FOLLOWING THE DEEP SEA MINING SHIP SEDCO 445

During March and April 1978, Ocean Management Inc. (OMI) carried out an experiment to retrieve manganese nodules from the seafloor of the Pacific Ocean south of Hawaii (see location map). The manganese nodules and surface sediment were scooped up by a collecting unit on the bottom of the ocean and a mixture of bottom water, sediment and nodules was pumped to the surface through a pipe of the Drill ship SEDCO 445.

The effect of the mining activity on the environment was monitored by members of the Deep Ocean Mining Environmental Study (DOMES) project, which is administered by the Pacific Marine Environmental Laboratory of NOAA in Seattle, Washington. The Oceanographic surveys associated with the monitoring were carried out from the NOAA ship OCEANOGRAPHER.

During the mining operations, OCEANOGRAPHER monitored the extent and characteristics of the suspended sediment plume spreading from the mining vessel and from the sea bottom collection. Resuspended material was collected and oceanographic parameters measured within the euphotic surface zone and close to the bottom as part of a study of plume dispersal patterns and mechanisms. Post-mining operations consisted primarily of a systematic collection of benthic faunas, which will be compared with the baseline information obtained prior to the mining.

Gus Vilks (AGC) participated in the post-mining operations. Sampling stations were chosen randomly within a 9 x 11 km rectangle, where the mining activity had taken place. The exact sampling sites were established with Acoustic Transponder Navigation (ATNAV) system using 14 reference transponders on the sea floor.





Manganese nodules were found lying on top of the surface sediment in each of the boxcores taken. The estimated average bottom surface covered by the nodules is 25 per cent of the 2500 cm<sup>2</sup> taken by each boxcore. The maximum estimated area covered by the nodules is 80 per cent and the minimum about 1 per cent. The depth of water or the slope of the seafloor in the vicinity of the sampling site do not correlate with nodule abundance.

The lithologic evidence suggests pelagic sedimentation followed by a period of erosion ending at least 17 000 years before present, followed by a period of normal pelagic sedimentation. Erosion occurred more frequently at the base of the abyssal hills where there is a wide range of slopes. However, these distribution patterns can be explained as well by non-uniform sedimentation since the erosional event. Winnowing of fine grained material from around the base of abyssal hills may have produced thinner deposits of posterosion sediments in some locations, allowing the boxcore to penetrate to the much older consolidated sediments below. Detailed biostratigraphic studies of these cores are needed to describe the sequence of sedimentation events.

COASTLINE OF CANADA CONFERENCE  
HALIFAX, MAY 1-3, 1978

The conference, sponsored by the Geological Survey, was the first national meeting to focus attention on littoral processes and shore morphology around the coastline of Canada. The 120 participants heard 37 papers dealing with a variety of topics from widely separated parts of the Canadian coast, and three keynote lectures by distinguished foreign scientists. *John Wheeler*, Deputy Director General of the Survey, in his introductory remarks, commented on the timeliness of the meeting and the size of the task facing a relatively small group of coastal scientists. *Ed Owens*, formerly with AGC,

now at Louisiana State University, returned to the same theme in the final paper reviewing the status of coastal research in Canada, noting how little was known about many parts of the coastline.

Sixteen of the 37 papers dealt with different aspects of the Atlantic coast south of Labrador, and of these, five were concerned with the sedimentary regime of the Minas Basin, Bay of Fundy. There were six papers on Great Lakes shoreline characteristics and processes, three each on Arctic coastal topics, Hudson and James Bay shorelines, and the coasts of Labrador and south-eastern Baffin Island, and two dealing with the Pacific coast. The regional distribution of papers is fairly representative of research efforts and directions over the past few years, and the meeting was attended by most of the scientists studying coastal processes, landforms and sediments in Canada at the present time. Abstracts of papers will appear in *Maritime Sediments* and a full proceedings volume will be published by the Survey in 1979. Eleven of the papers were contributed by present or former GSC scientists, and the research described in six other papers had been supported in part by E.M.R. research agreements.

*S.B. McCann*  
AGC

CHRISTMAS PARTY 1978

It's too late to urge you to get your tickets for this year's party, but as we go to press tickets are going well. We are asked, however, by *Paul Egginton* (Terrain Sciences) who is this year's chairman that ideas and volunteers will be needed for next year's committee. Don't stand on the sidelines and criticize, come forward and give us a hand.



Three generations of the Department - *Dr. Alice Wilson*, *Peter Harker* and the author of the new Energy Map of Canada, *Paul T. Harker*. About 1951 on the dock at Cumberland Ferry.





GEOLOGICAL SURVEY OF CANADA - PROGRAM REVIEW 1978

A. Laroche	D.C. Findlay	C.C. Bowstead	D.W. Stalker					
M.J. Keen	A.G. Plant	E. Hall	J.G. Roberts	N. Forbes	D.G. Benson	W.H. Poole	J.S. Scott	
	B.G. Craig	M.A.F. Casey	D.F. Stott	R.G. Blackadar	J.A. Maxwell	R.J. Traill		
A.G. Darnley	J.O. Wheeler	D.J. McLaren	J.E. Reesor	P. Harker				

The editor apologizes to all our enthusiastic contributors for the delay in getting this issue of GEOGRAM ready. It got caught up with symposia, Current Research and other big jobs in our editorial office - at least we can now say *Merry Christmas - Joyeux Noël* and many thanks for your contributions to this bumper issue.

*Material for the next issue of GEOGRAM should be sent to your Division office or to Lorna Firth.*

*Les articles pour la prochaine parution de GEOGRAM devront être dirigés au secrétariat de votre Division ou à Lorna Firth.*

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