

geogram



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AN INFORMAL BRANCH NEWSLETTER
UN BULLETIN INTERNE D'INFORMATION

FROM THE DIRECTOR GENERAL

The first three months of each year, at least for the three years that I have been Director of the Survey, seem like a long dark tunnel through which one rushes at break-neck speed until light begins to appear about the middle of March. This year the tunnel seems to have been unusually dark and the speed unusually precipitous. Now that we are beginning to see light again, I should like to give you a few random comments on things that have been happening in the Geological Survey, in the "Black Tower" across the street, and even in the wider world of geology in Canada.

Program Forecast

The Program Forecast exercise is designed to describe needs for the fiscal year after the next. The process begins in the Fall, and rises to a crescendo in January with a presentation by Branches to the Departmental Executive and the Minister. Decisions are then taken as to what approach must be made to Treasury Board, within the guidelines laid down and in response to government priorities. In January 1975, this Branch was unusually successful at a time of increasing financial stringency. The Department, and subsequently Treasury Board accepted requests for additional man-years and money to strengthen the support base of the Survey's program, and for additional resources in our data base management system. During 1975 austerity increased, and our gains were reduced by a series of cuts, until we entered this fiscal year with no increases other than six man-years and a certain amount of money rigidly specified (coal and Uranium Reconnaissance). The Program Forecast begun last October and presented this January for resources required in the fiscal year 1977/78 was a more cautious affair. Very rigid guidelines have been laid down by Treasury Board, and it was suggested that demands for increased resources would be closely scrutinized. Final decisions have just been taken by the Department, during a meeting at which the Minister agreed to sign the Department's Program Forecast submission during this last week. The Geological Survey's budget has survived intact, with increased salary costs and a few modest requests in line with departmental and government priorities. These include funds to initiate oil sand and heavy oil appraisal; increases in resource data base management; environmental impact of coal and oil sands development; and one or two minor increases in administrative expenses. It must be emphasized that Program Forecast is only the first round of scrutiny by Treasury Board of a Department's requirements, and we shall not know until late in the year whether these demands will be accepted for estimates. Should the financial climate improve during the year, we might request additional funds for work in coal resource assessment and Huntect marine seismic systems. The imbalance in the ratio between support and scientific staff remains a major concern of management.

Changing Priorities

We have initiated several new programs over the last few years such as oil and gas evaluation, mineral evaluation, uranium exploration program, and others. The most important single problem in presenting our program is to protect what we call, for want of a better term, the geoscience base. These are the activities, such as mapping, regional description, correlation and standards, which are essential if the Branch is to remain capable of reacting quickly and in an informed manner to every demand now and in the future. There is an ever present danger of

NOTES DU DIRECTEUR GENERAL

Le premier trimestre de chaque année, du moins des trois années au cours desquelles j'ai été directeur de la Commission, est comparable à un long tunnel obscur dans lequel on se lance à une vitesse folle jusqu'à ce que la lumière commence à poindre vers le milieu du mois de mars. Cette année, le tunnel a semblé plus obscur que d'habitude, et la vitesse encore plus grande que d'habitude. J'aimerais profiter de cette époque de l'année où nous revoyons surgir la lumière pour vous faire part de quelques observations, à bâtons rompus, sur les choses qui sont survenues à la Commission géologique, dans la "Tour carrée", de l'autre côté de la rue, dans le vaste monde de la géologie au Canada.

Prévision des programmes

Ce qu'on appelle "prévision des programmes" consiste à décrire ce dont la Commission aura besoin au cours de l'année financière qui suivra la prochaine. Cette activité débute à l'automne et va crescendo jusqu'au fortissimo du mois de janvier, lorsque les directions soumettent leurs prévisions au Sous-ministre et au Ministre. Puis l'on décide de la façon dont on va les soumettre à l'approbation du Conseil du Trésor, en demeurant dans le cadre des lignes directrices établies et en tenant compte des ordres de priorité du gouvernement. En janvier 1975, notre Direction a été particulièrement privilégiée, malgré les restrictions financières du moment, de plus en plus sévères. Le Ministère et, par la suite, le Conseil du Trésor ont approuvé nos demandes d'années-hommes et de fonds additionnels pour consolider la base du programme de la Commission, ainsi que nos demandes de ressources additionnelles pour le système de gestion de notre base de données. L'année 1975 a été marquée par une plus grande austérité et ce que nous avons gagné a été réduit par une série de coupures, tant et si bien que nous sommes entrés dans l'année financière en cours avec, pour seules augmentations, un total de six années-hommes et certaines affectations rigoureusement définies (programmes de prospection préliminaire du charbon et de l'uranium). La prévision des programmes que nous avons entreprise au mois d'octobre dernier et présentée au mois de janvier de cette année pour obtenir les ressources nécessaires à l'année financière 1977-78 a été préparée avec beaucoup plus de prudence. Le Conseil du Trésor a établi des lignes directrices très rigides et a fait savoir que les demandes de ressources additionnelles seraient étudiées de très près. Les décisions finales viennent tout juste d'être prises par le Ministère au cours d'une réunion qui s'est tenue la semaine dernière et au cours de laquelle le Ministre a consenti à signer la prévision des programmes du Ministère qui lui a été soumise. Le budget de la Commission géologique a survécu et est demeuré intact: augmentation des dépenses salariales plus quelques demandes raisonnables qui tiennent compte des ordres de priorité du Ministère et du gouvernement. Ces demandes s'appliquaient aux crédits nécessaires pour entreprendre l'évaluation des sables bitumineux et de pétrole lourd; à une augmentation de dotation pour notre système de gestion des données sur les ressources; à l'étude des effets de l'exploitation du charbon et des sables bitumineux sur l'environnement; plus une ou deux augmentations peu importantes de nos dépenses d'administration. Il faut signaler que la prévision des programmes n'est que la première ronde de l'examen minutieux auquel le Conseil du Trésor soumet les demandes d'un ministère, et nous devons attendre jusqu'à la fin de l'année pour savoir si ces demandes pourront être incluses dans les prévisions budgétaires. Pour peu que le climat financier s'améliore au cours de l'année, nous pourrions être en mesure de demander des affectations supplémentaires pour l'évaluation des ressources en charbon et les réseaux sismiques marins de Huntect. Le déséquilibre entre le nombre d'employés de soutien et le nombre d'employés scientifiques demeure une des principales préoccupations de la direction de la Commission.

Nouvel ordre de priorité

Au cours des dernières années, nous avons mis en oeuvre plusieurs nouveaux programmes tels que l'évaluation du pétrole et du

living on capital in regard to our capacity to supply know-how and background experience required for a multiplicity of output.

Research Scientist Appraisal

The whole question of research scientists classification and pay schemes has a long history, and, unfortunately, since the Glassco Royal Commission recommendations on the number of pay categories in the government service came into effect, geologists have found themselves as a minority group in a large bargaining unit known as Scientific Research. There is probably no other single issue that causes management more concern than the current appraisal system and because of increasing visibility of the complex procedure, due to the Treasury Board-Union agreement, there is increasing dissatisfaction among research scientists. Although I speak with no inside knowledge nor with a feeling that I can influence events, nevertheless, it seems to me likely that the type of pay scheme we now have will continue relatively unchanged. The idea of merit is firmly entrenched for many professional groups, and as Treasury Board will never sign a blank cheque, some form of quota system appears inevitable. I hope it is generally realized that Branch management as a whole is deeply concerned both in improving the scheme itself, and in somehow finding the best possible way of administering it or a modified version of it.

Canadian Geoscience Council, Ad Hoc Committee

In consultation with the Canadian Geoscience Council, we have selected a six-man Ad Hoc Committee from industry, university, and provincial government to advise us on our program. The first meeting with this Committee was held at the end of February, and it promises to be of considerable benefit to the Geological Survey. It also gives an opportunity of demonstrating our activities and the reasons for them to influential earth scientists in Canada.

Earth Science in Canada

A recent article by Ward Neale and Hugh Wynne-Edwards suggests that "we enjoy a level of camaraderie and rapport between government, university and industrial geoscientists that we don't find in other countries". But the article also suggests that government science activities are concerned with data gathering and data analyses and are not generally likely to produce new syntheses, new ideas and new models. In order that the camaraderie and rapport might continue, I feel that the challenge of such a remark should be taken up. Who is willing to do so? Incidentally, what is the reference to the article of the two photographs of Sir William Logan with their references to his habits and health?

Alice Wilson Hall

Soon after I returned to Ottawa, I began trying to get a new meeting place suitable for groups up to about 80 or 90. D.P.W. finally agreed to a conversion of the rather nondescript area between the GSC and Surveys and Mapping Branch where the Credit Union formerly had its office. The new hall will be ready for use in a short time and is to be named in honour of Alice Wilson, a distinguished Canadian and the Survey's first woman geologist. It will be an attractive, air conditioned, well designed meeting place with new visual aid equipment, a lobby for coffee breaks, comfortable chairs, and total flexibility for board meetings, lectures, exhibitions or social gatherings. The hall will offer an excellent place for most Logan Club meetings. In the meanwhile, at repeated insistence, Camsell Hall will also be done up (in God's good time), and should finish up as a very much better environment for large meetings.

I hope these random notes have been of some interest to some of you. Now that we have reached the end of the tunnel and the bulbs are sprouting, I should end by wishing those of you fortunate enough a successful and enjoyable field season.

gaz, l'évaluation des minéraux, le programme de prospection de l'uranium, pour n'en donner que quelques-uns. La plus grande difficulté à laquelle nous nous heurtons lorsque nous présentons notre programme est de préserver ce que nous appelons, à défaut d'un meilleur terme, notre base géo-scientifique. Il s'agit des activités, comme la cartographie, la description des régions, les corrélations et les normes, que la Direction se doit de poursuivre si elle veut rester en mesure de répondre, de façon rapide et documentée, à toutes les demandes qui lui sont et qui lui seront présentées. Il existe le danger toujours présent de vivre sur notre capital, et ce danger menace notre capacité de mettre à la disposition du pays, dans une multitude de domaines, les connaissances et l'expérience fondamentale que nous avons acquises.

Appréciation des chercheurs scientifiques

Toute la question de la classification et des modes de rémunération des chercheurs scientifiques a une longue histoire et, malheureusement, depuis que les recommandations de la Commission royale Glassco sur le nombre de catégories de rémunération au sein de la Fonction publique sont entrées en vigueur, les géologues se sont trouvés minoritaires dans une vaste unité de négociation connue sous le nom de "Recherche scientifique". Rien ne préoccupe probablement plus la direction que le régime d'appréciation actuel et, comme tout le processus, dans sa complexité, devient de plus en plus visible, du fait de la convention passée entre le Conseil du Trésor et le syndicat, on observe de plus en plus de mécontentement parmi les chercheurs scientifiques. En m'exprimant ainsi, je tiens à préciser que je n'ai pas d'intelligences dans la place ni l'impression que je puisse avoir une influence sur la tournure des événements, mais il me semble probable que le mode de rémunération actuel restera relativement inchangé. L'idée de la rémunération au mérite est solidement établie pour nombre de groupes professionnels et, comme le Conseil du Trésor ne signera jamais un chèque en blanc, une certaine forme de rémunération à la tâche apparaît inévitable. J'espère que tous se rendent compte que tout l'état-major de la Commission est intéressé au plus haut point à améliorer le régime en tant que tel et à trouver, de quelque façon que ce soit, la meilleure façon possible d'administrer ce régime ou une version modifiée de ce régime.

Conseil canadien des sciences de la Terre, Comité ad hoc

En concertation avec le Conseil canadien des sciences de la Terre, nous avons constitué un comité ad hoc composé de six personnalités de l'industrie, de l'université et des gouvernements provinciaux chargé de nous conseiller sur notre programme. La première réunion avec ce comité a eu lieu à la fin du mois de février et laisse présager de nombreux avantages pour la Commission géologique. Les réunions avec ce comité nous donnent également l'occasion de montrer aux spécialistes des sciences de la Terre les plus écoutés au Canada ce que nous faisons et pourquoi nous le faisons.

Les sciences de la Terre au Canada

Dans un article récent, Ward Neale et Hugh Wynne-Edwards font observer que "au Canada nous constatons qu'il existe, chez les spécialistes des sciences de la Terre des gouvernements, de l'Université et de l'industrie, un climat de camaraderie et d'excellentes relations qu'on ne retrouve nulle part ailleurs". L'article laisse toutefois entendre que les activités scientifiques des gouvernements sont orientées vers le rassemblement et l'analyse des données et que, de façon générale, elles ont peu de chance de produire de nouvelles synthèses, de nouvelles idées et de nouveaux modèles. Si nous voulons que se maintienne cette atmosphère de camaraderie et de bons rapports, je crois qu'il vaudrait la peine de relever de défi que nous lance une telle observation. Qui veut le faire? Soit dit en passant, que viennent donc faire dans l'article les deux photographies de Sir William Logan et les allusions à ses habitudes et à son état de santé?

Salle Alice Wilson

Peu après mon retour à Ottawa, j'ai essayé de trouver une nouvelle salle de réunions qui pourrait accueillir des groupes d'environ 80 ou 90 personnes. Le ministère des Travaux publics a finalement consenti à convertir à cet effet le secteur assez mal

suite page 20

STAFF NEWS

OFFICE OF THE DIRECTOR GENERAL

It was recently announced that R. J. W. Douglas has been chosen as the 1976 winner of the Logan Medal, the highest award of the Geological Association of Canada. Paul Kavanagh, Association President, said that it was a fitting tribute for Bob's manifold contributions to the advancement of geoscience in Canada. Congratulations!

ATLANTIC GEOSCIENCE CENTRE DARTMOUTH, NOVA SCOTIA

Postdoctoral Fellow Carl Amos will speak March 10 and 17 at Acadia University in Wolfville, N. S. Carl will discuss man's influence on the Minas Basin and his research on the sediment budget of the basin.

Shigeki Hada of Japan recently joined us as a Postdoctoral Fellow. Shigeki will study the compressional phase of the eastern continental margin and its influence on the structural evolution of the Mesozoic and Cenozoic Basins along the Atlantic continental margin.

Heiner Josenhans has rejoined Lew King's group in the Regional Reconnaissance Subdivision after a two-year absence. Heiner, prior to leaving for university, spent four years at BIO taking part in many early studies on the Scotian Shelf and adjacent areas. He will participate in the continuing studies of the surficial bedrock geology of the eastern Canadian continental shelf.

Jim Leonard has left the geochemistry group of the Environmental Marine Geology Subdivision to take up a new position with the Chemistry Division of the Atlantic Oceanographic Laboratory here at the Bedford Institute.

Bernard Long has joined us as a Postdoctoral Fellow; Bernard will study the sediment distribution and composition of the Minas Basin and Bay of Fundy areas.

Margaret MacDonald recently joined us as the Director's Secretary from Defence Research Establishment Atlantic. Margaret is also working towards her Bachelor of Arts degree at Mount Saint Vincent University.

Gerry Reinson recently transferred to AGC from ISPG; he is currently studying the geodynamics of Atlantic coastal environments with the Environmental Marine Geology group.

Judy Quinn is now secretary to the Program Support and Administration Subdivisions. Judy comes to us from the Nova Scotia Government Employee's Association.

Frances Wagner recently received her certificate and pin from Bosko Loncarevic in recognition of her twenty-five years in the Public Service of Canada.

Dauids Walker and Suzuki recently 'rapped' on the development and uses of scanning electron microscopes (AGC just bought a new one) for Suzuki's CBC-TV show "Science Magazine". The interview was aired February 15.

CENTRAL LABORATORIES AND ADMINISTRATIVE SERVICES

J. E. (Jed) Cochrane, an administrative trainee who has returned recently from language training, will be in charge of Accommodation, Vehicles and Parking while W. J. (Wilf) Lagroix, the successful candidate in a competition for that position, is on language training.

We welcome as continuing employees to CLAS Division: Nicole Bertrand (Chemistry Laboratory) and Richard Marleau (Mineral and Rock Sets Preparation Unit). Tom Wiles, a student assistant in past summers, is on staff as a casual employee in our chemistry labs.

Older members of the Survey will be sorry to hear of the recent death of Miss McKinley. Emmy was for many years head of the typing pool back in the old Museum days.

GEOLOGICAL INFORMATION DIVISION

Alice Solyma joined the Library staff in November. Alice has a B. A. from the University of Alberta where she also took her Library degree.

We also welcome Laurie Higgs who took the Library Technician's Course at Algonquin College and also Michael Foster who joined us as a library clerk. Harold Eyre, who has looked after the Open File System since it was started, recently won a promotion competition and is now a cataloguing assistant in the library. As Open File has now become an accepted form of publication, the responsibility for production and distribution has been transferred to Leona Mahoney and her staff. Custody of the files remains with the Library.

We were glad to welcome Lorna Nadon back again as Division Secretary after completing her language training in only a month and a half. This must be something of a record - congratulations Lorna.

There were several retirements from the Cartography Section at the end of the year. Henry Heyendal retired after 25 years with the Geological Survey, Nelson McCracken after 20 years and Bert Hill after 12 years. A farewell party was held in the Cartography Section. Presentations were made on behalf of the Department and the Branch by Digby McLaren and by Peter Harker on behalf of the Division.

Eddie Nunn retired after 46 years of service, 41 of them with the Cartography Section of the Geological Survey. He was honoured at a large gathering of colleagues and friends from the Branch and the Department in Logan Hall on 20th February. Eddie was one of the last of the older generation of the senior map makers of the Department and many interesting episodes of his career were recalled by Digby McLaren and in a memorable farewell address by Eddie.



Following this mass exodus we were fortunate in persuading John Bill and John Ferguson to join us from the Department of Agriculture. Both have had 12 years' experience in Land Capability and Soil Survey Maps. Louis Renaud, also from the Department of Agriculture, joined us as a junior draftsman.

INSTITUTE OF SEDIMENTARY AND PETROLEUM GEOLOGY, CALGARY, ALBERTA

Peter Graham is a new member of the Coal Section. He has come to us from Utah Mines Ltd. in Vancouver and is now working on coal seam stratigraphy in the final phases of the Saskatchewan Joint Federal-Provincial Coal Evaluation Project.

Curtis Stevens transferred from the Atlantic Geoscience Centre. Curtis is Data Manager to the Coal Section and will be working with the large data base developed by the Saskatchewan Coal Project. He will in future participate in coal data acquisition projects, and computer data base development.

Kenneth Nairn has joined the staff as Chief of Systems Development. He has come to us from Digitech, where he was Manager of Computer Services.

Gerry Reinson has transferred from the Arctic Islands Section of the Institute to the Atlantic Geoscience Centre.

Two new draftsmen have joined the staff. They are Peter Roode, a recent graduate of Algonquin College in Ottawa, and John Maher, formerly with Ekistic Design Consultants, Edmonton. Sheila Siewert and Jim Brown have both resigned from their positions as draftsmen.

Glenda Wilson, formerly an employee at Mount Royal College, is now a member of the library staff at the Institute.

Lloyd Bligh, after working as an accounts clerk on a term basis, has joined the permanent ranks as a paleontological technician.

Pat Greener has transferred from the library to the accounts office where she takes over the position vacated by Marlene Ajram.

Patrick Michael, a recent graduate of SAIT, has joined the Geochemistry Section as a technician.

Charles Brown has transferred from the Atlantic Geoscience Centre and is now working for Curation and Technical Services as a technician in the carbonates and sedimentology laboratory.

Joyce Andrechuk, formerly with Computer Services at the University of Calgary, has joined the staff as secretary to the heads of the Paleontology and Regional Geology Subdivisions.

Additions to the typing pool include Victoria Rendall, Romaine Rasmussen, and Deborah Somers.

Deberah Shooks has taken over the position as mail and registry clerk.

Linda Heisler has resigned from her position as technician in the conodont laboratory to take up a career in sales with Superior Steel-Desk (Mfg.) Co. Ltd.

Helen Belyea was honoured recently by her appointment as an Officer of the Order of Canada in recognition of her scientific work in the field of geology and was also made an Honorary Member of the Canadian Society of Petroleum Geologists. Don Norris received the 1974 Medal of Merit of the Canadian Society of Petroleum Geologists for the best paper of the year. His paper was entitled "Northern Canadian Cordilleran Tectonics".

F. G. (Rick) Young presented a series of lectures to geology students at the University of Toronto on the methods used in analysis of a sedimentary basin.

Potter Chamney has been appointed to the steering committee of the centennial project for Calgary by the petroleum industry. Subscriptions to the amount of 3.5 million dollars are to be raised for a new natural history interpretive centre and park at the Calgary Zoo.

A. E. (Tony) Foscolos is teaching a credit course in soil analysis, oriented to archeologists, at the University of Calgary.

REGIONAL AND ECONOMIC GEOLOGY DIVISION

Al Jones, who has been with the Geochemistry Section as an analyst for over two years, will be leaving soon, possibly to go to work for Customs and Excise as an Inspector. He has enjoyed the time he spent working at the Survey and will miss all the people he has been working with.

Andy Dumont has spent the past three years working for R. W. Boyle as his technical assistant. He is looking for a position which would enable him to do field work in geology, or preferably geochemistry. He is at present working to complete his Honours B. Sc. in geology at Carleton University.

Fred Zieman, who retired from the Public Service on December 31st, 1975, first worked for the GSC in the old Aeromagnetic Compilation Section. He came to the Survey in 1958 after retiring from the Royal Canadian Air Force. In 1967 he joined the Digital Compilation Section where he continued to work until retirement.

H. E. (Hugh) Dunsmore, born and raised in Barrie, Ontario has joined the staff of the Uranium Resource Evaluation Section as a research scientist. Hugh has several years experience in western Canada. He obtained his B. A. and honours B. Sc. in geology and physics from Queen's University, his M. Sc. in Sedimentary and Petroleum Geology from University of Calgary, and recently completed his Ph. D. at Imperial College, University of London. His Ph. D. research involved Sedimentology and Diagenesis as related to ore deposits in sandstones and carbonates. Hugh's assignment will be to evaluate the uranium potential of the Permo-Carboniferous basin of the Atlantic Provinces.

J. (John) A. Kerswill, another addition to the staff of the Uranium Resource Evaluation Section was born in London, Ontario, raised in St. Andrews, New Brunswick and spent some time in Montreal. He obtained his B. Sc. in geology from McGill University and M. Sc. from Western. The subject of his thesis was the geology and geochemistry of the Hotailuh Batholith in northern British Columbia. John has many years experience with exploration companies in eastern and western Canada.

Cordilleran Subdivision, Vancouver

A recent addition to the staff of the Cordilleran Subdivision is Glenn Woodsworth, a graduate of U. B. C. and Princeton University. Glenn brings to the survey a wealth of geological experience gained in studies of the Coast Mountains and Intermontane Belt. His first project will contend with the many problems posed by the geology in the region of Skeena Arch and eastern Coast Plutonic Complex.

Janet Hinchliffe has joined the Information Services Unit as a library technician. Her appointment completes an energetic foursome of Mary Akehurst, Alice Marble and Judith Velker to contend with the demands of library services and sales.

Georgie Heather resigned from her position as Subdivision secretary and her experienced assistance is greatly missed. After three and one-half years she had become remarkably adept in translating the assorted hieroglyphics presented to her by the staff under the guise of manuscript material.

RESOURCE GEOPHYSICS AND GEOCHEMISTRY DIVISION

John Lobach joined the Electrical Methods Section to work with Peter Annan and Les Davis on the Radar Project. John is taking over the job formerly held by Dean Butterfield. He joined the Section on February 6th this year.

Odette Prieur has been working for the Electrical Methods Section since January 5th. She is working for John Katsube on the electrical properties of rocks.

Bill Hyatt and Ken Ford joined the Radiation Methods Section as Radiometric Technologists. Both of them have field experience with the GSC, while a student Bill worked for two summers for Jim Hunter in refraction seismic. Ken was a summer student in the Radiation Methods Section for two seasons. They started work as term employees on October 19th, 1975 and became permanent employees effective from January 1st, 1976.

Zita LeBlanc has joined the Geochemistry Section as section secretary. She started work on November 17th.

Bob Newton arrived in Ottawa on January 15th as a postdoctoral fellow with the Radiation Methods Section. He will be studying methods of interpretation of gamma-ray spectrometry, with a particular view to getting lithological information out of the radiometric data. This will involve the comparison of airborne gamma-ray spectrometer measurements with aeromagnetic maps, air photos and E. R. T. S. imagery. Bob come to us from the University of Capetown where he received the Ph. D. in Geology for his studies of the Cape Fold Belt. At the University of Capetown he was the senior lecturer in Geology.

Bob Grasty has returned to the fold after spending a year in Victoria, B. C. studying the use of optical scanners in marine pollution. During his stay in the west his family was increased by one, a son, Kevin. Congratulations and welcome back.

TERRAIN SCIENCES DIVISION

Peter Carr transferred to the National Energy Board in December 1975 to accept the position of Chief, Environmental Assessment Division. One of Peter's main duties was Head of our Engineering and Environmental Geology Section. He is replaced in this capacity by E. B. Owen formerly of our Special Projects Section.

B. R. Pelletier, who joined the staff of Terrain Sciences Division from AGC during the summer, is now working as Branch Co-ordinator of the Arctic Archipelago Program, he is assisted by Sue Costaschuk.

R. G. Skinner was transferred to Headquarters as of January 1, 1976 as Adviser, Environmental Matters in the office of the Assistant Deputy Minister, Science and Technology. Bob takes with him many of the responsibilities and duties that he had while he was filling in as Co-ordinator of Environmental Program for John Fyles, who is on loan to the Berger Inquiry. As Environmental Adviser, Bob will be representing the Department in a variety of liaison functions relating to environment, land use, the roles of resource technology and earth sciences in environmental matters, and their interrelation with Departmental concerns over energy and minerals. He will be advising the Department in these areas and will co-ordinate Departmental input to Federal environmental policy matters and will be co-ordinating certain Departmental activities which contribute to interagency environmental programs.

OF GENERAL INTEREST

Yofortierite

Our former Director, Dr. Y.O. Fortier, is the newest member of a select group of Survey Officers to have had minerals named in their honour. Yofortierite, $Mn_5Si_8O_{20}(OH)_2(OH_2)_4 \cdot 4H_2O$ - a member of the palygorskite family of minerals - is now an approved mineral species. First collected at a quarry on Mont Saint Hilaire, Quebec, and since identified in Greenland, the lilac-coloured mineral was described and named by Dr. Guy Perrault, formerly of Ecole Polytechnique and now Vice-President, Research, SOQUEM. A feature story on yofortierite appears in the Fall, 1975, issue of GEOS.

Other Survey Officers similarly honoured are: W. H. Collins [*collinsite* $Ca_2(Mg, Fe)(PO_4) \cdot 2H_2O$]; Sir J. W. Dawson [*dawsonite* $NaAlCO_3(OH)_2$]; J. A. Dresser [*dresserite* $Ba_2Al_4(CO_3)_4(OH)_8 \cdot 3H_2O$]; W. F. Ferrier [*ferrierite* $(Na, K)_2Mg(Al_3Si_{15})O_{36}(OH) \cdot 9H_2O$]; H. C. Gunning [*gunningite* $(Zn, Mn)SO_4 \cdot H_2O$]; H. How [*howlite* $Ca_2B_5SiO_9(OH)_2$]; J. L. Jambor [*jamborite* $(Ni, Fe)(OH)_2(OH, S, H_2O)$]; Sir William E. Logan [*weloganite* $(Sr, Ca)ZrNa_2(CO_3)_6 \cdot 3H_2O$]; A. P. Low [*aplowite* $(Co, Mn, Ni)SO_4 \cdot 4H_2O$]; E. Poitevin [*poitevinite* $(Cu, Fe, Zn)SO_4 \cdot H_2O$]; S. C. Robinson [*robinsonite* $Pb_4Sb_6S_{13}$]; T. Sterry Hunt [*sterryite* $Pb_{12}(Sb, As)_{10}S_{15}$] and J. B. Tyrrell [*tyrrellite* $(Cu, Co, Ni)_3Se_4$].

For their part, Survey mineralogists have established a good track record in this field. Since 1952, Bob Traill and staff have described and named about 25 new minerals, or approximately one per cent of all known species. Keep submitting your unknowns or 'appears-to-be's' for identification. Only a tiny fragment is needed, and often sufficient can be lifted directly from a thin section. Who knows? Perhaps your mineral will be a new species.

H. R. Steacy

Canadian Geoscience Council Advisory Committee

In his editorial for the last issue of GEOGRAM, John Wheeler discussed the proposed formation of an ad hoc committee of the Council to examine the program of the GSC. A committee was appointed including representatives from industry, universities and provincial governments, consisting of the following members - J. A. Coope, M. J. Keene, J. D. Mollard, D. W. Strangway, A. Sutherland-Brown, and J. D. Weir. The group met in Ottawa on February 26th and spent a long day hearing presentations on various aspects of the GSC program. It proved to be a most useful and fruitful exchange and preliminary reports suggest that they were extremely interested in all they heard and saw.

The following day, the members monitored a meeting composed of J. O. Wheeler (Chairman), J. E. Brindle, L. S. Collett, B. G. Craig, A. G. Darnley, G. B. Leech, B. D. Loncarevic, J. A. Maxwell, J. E. Reesor, D. F. Stott, and T. E. Bolton (Secretary), which was called to consider recommendations received from 6 descriptive-oriented subcommittees regarding 1976-77 EMR Research Agreements. Relevance and contribution to the Department's objectives and priorities, particularly in the field of energy, were the principle criteria applied in the evaluation of the applications. Fifty-nine projects were recommended for support, including renewal of a number of existing agreements.

GSC Christmas Party

A most enjoyable and successful party was held at the Canadian Forces Golf Club on December 18. Over 200 tickets were sold, the food was good, the music was lively and noisy (and so was the company). Congratulations and thanks to Sandy Lowdon and his committee - Sandy would welcome suggestions for next year's party.

Nuclear Waste Management

Nuclear power, a present reality in Ontario and currently under development in Quebec and New Brunswick, could provide about one quarter of Canada's energy requirements by the end of this century. Attainment of this benefit would be through the use of uranium, a resource of little use other than for the production of heat and power, and through the diversion of increasingly expensive and declining oil and gas reserves from electric power generation to other uses for which these resources are uniquely suited.

One of the major considerations in nuclear power development is the management of radioactive wastes arising from the operation of nuclear reactors and from such fuel reprocessing plants as may be built in the future. Within Canada, the responsibility for managing radioactive wastes rests with Atomic Energy of Canada Limited (AECL). As a part of this responsibility AECL have prepared a number of publications describing various aspects of radioactive waste management. One of these publications, entitled "Managing Nuclear Wastes" (AECL No. 5136, May 1975) by Dr. Peter J. Dyne of the Whiteshell Nuclear Research Establishment, provides a particularly useful perspective on the characteristics of nuclear wastes and on the steps being taken to ensure that radioactive materials are always handled and stored so carefully that only insignificant amounts can ever escape to the environment.

As pointed out by Dr. Dyne: "The by-products and wastes from a nuclear reactor differ in several important ways from industrial wastes as we normally think of them. First, the amounts are small. Second, one of the by-products is a new heavy element, plutonium, which itself is potentially a valuable energy source. The plutonium in a spent fuel bundle, if extracted and put back into a reactor, could produce almost as much energy as was obtained from the uranium in the first place. With our concern for thrift in the use of energy it would seem imprudent not to use it. The true waste materials, the ashes of the nuclear fuel, are called fission products. Plutonium is radioactive and so are some fission products.

Radioactive materials can be dangerous if handled carelessly, particularly if allowed to spread indiscriminately into the environment, into the air we breathe or the water we drink. . . .

There are three steps in managing nuclear wastes: used spent fuel bundles have to be taken out of a reactor and stored. Next the spent fuel bundles may be reprocessed to recover the by-product, plutonium. Lastly, the fuel bundles, or the radioactive wastes removed in the plutonium extraction process, must be sealed up securely to prevent escape of radioactive materials and be put away safely. (The low level reactor wastes likewise have to be stored, sealed up and put away.)

Because the spent fuel is radioactive, the container in which the materials are to be kept must do a number of jobs. Some of the radiations given off by radioactive materials are very penetrating, like X-rays. Like X-rays, these radiations can be harmful. Radiation is prevented from escaping from intensely radioactive materials, such as spent fuel bundles, by surrounding

them with walls of concrete or rock, or by putting them under water. For very active spent fuel about three feet of concrete or ten feet of water are sufficient. These thick walls provide shielding from the radiation.

Radioactive materials give out energy, so the material and some of the shielding may get hot. They have to be cooled to prevent them from overheating and damaging the container or the shielding.

Besides cooling and shielding, radioactive materials must be isolated, preventing them from getting into the environment.

Radioactivity decays with time; the radiation intensity from a spent fuel bundle five years after it has been taken from the reactor is only 1/10th what it was one year after it was removed. After a sufficiently long time, for practical purposes, no radioactivity is left.

Some fission products decay so rapidly that, after a few days, they are completely changed to stable materials. Most fission products decay to about 1/1000th of the original level of activity in 300 years and to about 1/1 000 000th in 600 years. By contrast, plutonium decays more slowly; the reduction to 1/1000th of the original level takes about 250 000 years.

These differences in decay rates and differences in the types of radiation emitted mean that the need for shielding and cooling decreases more rapidly than the need for isolation. The short-term objective of radioactive waste management is adequate *shielding*, *cooling* and *isolation*. The long-term objective is simply *isolation* from the environment.

The short-term waste management objectives are being met by engineered surface storage facilities. Active consideration is being given to various methods for attaining the long-term objective of environmental isolation. One such method, which is receiving increasing international attention, is the use of the geological subsurface for disposal of radioactive wastes. Because of this increasing interest, AECL approached EMR for assistance in a program for evaluating the feasibility of geologic disposal of radioactive wastes.

In response to this request the Department of Energy, Mines and Resources has commenced an investigation to determine the feasibility of utilizing a mined cavity facility for retrievable storage and ultimate disposal of high-level radioactive waste. The Geological Survey of Canada is acting as prime consultant on geological and geotechnical matters to AECL with relevant expertise being provided by Earth Physics Branch and CANMET. J.S. Scott, as chairman of the EMR Committee on Radioactive Waste Disposal, is responsible for the co-ordination of Departmental participation in the project. E.B. Owen is acting as technical co-ordinator.

Plutonic crystalline rocks, salt beds, shale, and serpentinite are being considered as potential host rocks for the proposed underground facility. At present, however, emphasis is being placed upon crystalline rocks (hard rock) and salt. J.E. Gale (TS) is supervising the hard rock program. Associated with Dr. Gale are J.G. Bisson, J.J.B. Dugal, K.W. Raven, and P.A. Brown; the latter recently joined the GSC from the Memorial University, Newfoundland. The

efforts of this group presently are being directed towards the selection of potential radioactive waste disposal sites by aerial photograph interpretation, review of geological literature, and discussions with GSC field geologists. A field reconnaissance of the most favourable sites will be conducted during the 1976 field season. The group also is compiling data pertaining to structural and groundwater conditions at several mines in Ontario and Quebec and has established a test site on a small granite pluton at White Lake near Ottawa which will be used to test equipment and theoretical concepts being developed.

The salt program is under the supervision of B. V. Sanford (REG) assisted by R. D. Howie (AGC) and G. R. Davies and N. C. Meijer-Drees (ISPG). This group presently is conducting an office study of the salt basins in Canada to delineate those regions in which geological conditions appear favourable for the development of an underground storage facility. Subsequent to this, the group intends to make a comprehensive subsurface evaluation of the most favourable areas, included in which would be a drilling program.

R. Tervo of CANMET is investigating the feasibility and expected costs of conducting underground heater emplacement tests in hard rock to simulate the heating effect of radioactive spent fuel waste. N. Toews of CANMET is modifying existing computer programs to generate plots of temperature and stress distribution around proposed underground openings. Earth Physics Branch is providing expertise in the fields of seismicity (P. W. Basham), geothermal considerations (A. M. Jessop), and rock physics (M. Dence).

E. B. Owen

Prospecting Activity in the Soviet Union

An article in "Economic Newspaper" No. 39 for September 1975 suggests that in the USSR increasing attention is being given to assessing the cost effectiveness of geological surveys, that more attention is being given to broadening the data base and that in many ways their objectives are similar to ours - to determine the mineral and oil and gas potential thereby assisting in long-range economic planning.

Unlike the GSC the Ministry of Geology is actively engaged in prospecting and from the beginning of the ninth Five-Year Plan more than 2000 new mineral deposits have been discovered and over 4000 have been brought into production. In addition 130 oil and natural gas fields have been found. A tangible measure of the increased activity is the amount of drilling being done. Relative to 1970 deep prospecting drilling for oil and gas is up by 30 per cent, hard rock drilling by 14 per cent and underground mining (drilling?) by 28 per cent. In 1975 the Ministry of Geology planned to drill more than 2.7 million metres of deep prospecting holes, 18.4 million metres of column wells (?) and almost 300 000 metres of underground drilling. When the article was published, these quotas were being attained by the agencies of the Ministry of Geology in

most of the constituent republics of the USSR. It was pointed out that thanks to improved prospecting methods and to the proper application of material and technical resources, it was possible to save more than 2000 tons of pipe, more than 1700 tons of cement, 9000 tons of fuel-lubricating materials and 4.5 million kw/hours of electric power.

The article goes on to say that the government of the USSR allots a considerable amount of money annually for geological surveys and that it is necessary to use this properly. A one per cent saving in 1975 would be the equivalent of 28 million roubles (official rate in March 1976: 1 rouble = \$1.30 Canadian).

During the July 1975 meetings of the Supreme Soviet of the USSR, considerable attention was given to the quality of the geological work being done. At present there are wide variations in the quality of geological surveys. Mining enterprises have been designed on an incomplete or insufficient data base because insufficient prospecting and poor exploration led to errors in the evaluation of the deposits. The task is not only to increase the number of mineral deposits but also to increase the quantity and improve the quality of the information.

The article points out that effective results from geological studies depend on improving existing methods and developing new techniques and methods of geological research, on the level of scientific foresight and forecast, well-grounded basic trends of prospecting, and the correct estimation of their economic potential. It is felt that there is every possibility to successfully resolve these tasks. There are about 400 Doctors of Science and more than 4500 Candidates of Science, and 43 scientific and research organizations in the system of the Ministry of Geology of the USSR. Besides that, industrial subdivisions include a great number of the thematical groups and field parties concerned with resolving scientific questions.

However, it is claimed that the Ministry of Geology of the USSR does not always apply the creative capacities of its scientific organizations properly. One of the serious shortcomings in the activities of the scientific-research organizations is their poor participation in the solution of the problem of increasing the economic efficiency of the geological surveys. As yet the article claims they have no scientific methods of determining the economic efficiency of geological survey work in application to the types of minerals and specific regions. At present not enough research is being done to develop new methods of exploration for oil and gas. These problems are said to result from the fact that at present economic research is given second place in the work of the scientific organizations of the Ministry of the USSR.

To those of us who are used to reading about Soviet achievements in terms of quotas - whether kilos of grain, metres of new railway built or mineral prospects found, this shift of emphasis, slight though it may be, from quantity to quality is of interest.

ACSN, GSC, and matters stratigraphic

In case you're wondering, ACSN = American Commission on Stratigraphic Nomenclature, the originator of the Code of Stratigraphic Nomenclature. There are three GSC representatives to the 22 member Commission (currently Jim Aitken, Calgary; John Henderson and Bern Pelletier, Ottawa). The Commission meets formally once a year, at the annual GSC meeting. Canadian content of this group totals 7, including two representatives each from the Geological Association of Canada (GAC) and the Canadian Society of Petroleum Geologists. Recently ACSN has been working in what classical stratigraphers will consider to be rather unusual areas – magnetostratigraphy, terminology for certain types of igneous and metamorphic rocks, and oceanic formations.

ACSN's magnetostratigraphic activities began as a response to a letter from GSC's Walter Fahrig, who asked the Commission to recommend a nomenclature for magnetic reversal units – a nomenclature that would dovetail with existing stratigraphic units and principles but would be simple. To look into this and other matters, a four-man ACSN committee was set up, including Steve Oriel (USGS), Jack Wilson (University of Texas) and Roger Macqueen (ISPG), with Brent Dalrymple (USGS) as an advisor. Recommendations are published in the February 1976 AAPG Bulletin, and involve three kinds of units – magnetopolarity, polarity chronostratigraphic, and polarity chronologic units. These seem workable, although they are not as simple as Walter (and the committee, initially) had hoped for.

ACSN activity on nomenclatural terminology for intrusive igneous and high-grade metamorphic rocks began via a request from the U. S. Geological Survey. Unlike GSC, which merely recommends that the Code of Stratigraphic Nomenclature be adhered to in proposing new names, the USGS has a Geologic Names Committee to ensure that the Code is rigorously followed. This leads to some novel kinds of "formations" and "groups" for non-stratiform rock bodies in igneous and metamorphic terrane*. Again, ACSN set up a committee, with GSC's John Henderson as chairman, Glen Caldwell of the University of Saskatchewan (a GAC representative to ACSN), and Jack Harrison of the USGS. Glen polled earth science departments across Canada for suggestions: returns ranged from "why bother with problems like this!" to genetic classifications of igneous rocks. Jack Harrison and some USGS colleagues prepared a fine draft, suggesting use of the term "complex" in terranes made up of two or more classes of rocks (igneous, sedimentary, metamorphic; e.g. Shuswap Metamorphic Complex), and "suite" for a single class of rocks, e.g. Tuolumne Intrusive Suite. As committee chairman, John Henderson did an outstanding job of shepherding the draft through many revisions and critiques by commissioners and interested bystanders: recommendations will be published in an early issue of the AAPG Bulletin. If accepted and widely used, the recommendations should provide a greater measure of standard-

* GSC Guide to Authors, p. 105.

ization, objectivity and, hence, reproducibility for those wishing to name units and provide type or reference localities in intrusive igneous and high-grade metamorphic terranes.

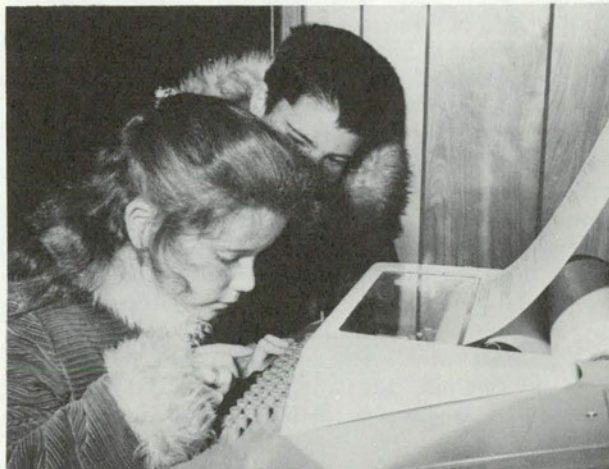
The vast amount of new data from the Deep Sea Drilling Project, much of it stratigraphic, has led some workers to propose that new kinds of stratigraphic approaches and units are necessary. In contrast, Harry Cook of the USGS, a participant on one leg of the Deep Sea Drilling Project, recently provided an eloquent defense of the ACSN Code as applied to oceanic units (May 1975 AAPG Bulletin). Nevertheless, some modifications are needed to the existing Code to encompass the unique properties of oceanic formations, and Bern Pelletier, GSC's first marine geologist, will be advising on these changes.

Other current ACSN activities include possible Code revisions to more adequately deal with Precambrian stratigraphic units, and introduction to the Code of some international concepts such as boundary stratotypes for System and other significant boundaries.

R. W. Macqueen
ACSN Chairman, 1974-75

Bedford Institute of Oceanography

The Bedford Institute of Oceanography held its first open house in four years recently and by all indications it was a very successful and well attended event. For its part, the Atlantic Geoscience Centre offered, among others, explanations and exhibits on the powerful uses of the scanning electron microscope, and the ecological effects of industrial development on the Canso Strait and of causeways and dams in the Bay of Fundy.



Children were among the most fascinated of visitors during the Bedford Institute of Oceanography's Open House held November 20-22, 1975.



Carl Amos of AGC explains to visitors during the BIO Open House how the shape of the Bay of Fundy contributes to the world's highest tides.

The Logan Club

On the 18th of February the members of the Logan Club were invited to hear Bob Newton (Postdoctorate Fellow) present a talk titled "A Gravity Sliding Model for the Cape Fold Belt and a Possible New Triple Junction". The talk was scheduled for Logan Hall. The members met, projectors were ready, the audio system was switched on and the fire alarm rang. Presently the kindly Commissionaire came in and told the assembly "clear the hall please gentlemen, there may be a bomb in the building". With little disorder all eventually retreated out to the street. Finally the meeting was re-assembled in the Conference Room at 555 Booth Street. Bob's talk was successful in presentation of information, ideas, and in stimulating discussion. Once again, in the face of adversity science marches on.

New Assistant Deputy Minister (Science and Technology)

Dr. John Keys was appointed out new ADM in February succeeding Dr. Y.O. Fortier, former GSC Director. Dr. Keys was with the Mines Branch and later Inland Waters Branch of EMR from 1958 to 1970. He joined NRC in 1971 and in 1974 was appointed Vice-President (Program).

Geostatistics and Project Appalachia

The Geostatistics Section consists of five people working on the application of mathematical statistics and computers for solving geological problems. The main objective is development of geologically-based quantitative methods for regional mineral resource appraisal. Initial work along these lines had been performed between 1968 and 1972 on parts of the Superior Province of the Canadian Shield; however, the study area was shifted eastward when Project Appalachia began in 1972. The Appalachian Orogen was selected as the main testing ground for newly developed methods because of its relatively well known geology and the diversity of its mineral deposits.

Frits Agterberg is co-ordinating the statistical work performed by members of the section, improving upon the quality of the probabilistic models which have been used previously, and keeping abreast of various developments in the new field of quantitative resource appraisal. Andrea Fabbri, an expert in methods of cluster analysis, is applying these methods to data from Project Appalachia. He is also investigating how newly developed textural analyzers such as the QUANTIMET 720 can be used for the systematic quantification of regional geological parameters. Felix Chung is a statistician engaged in discriminant analysis applied to Project Appalachia data. He is collaborating with the Uranium Resource Evaluation Section in a resource appraisal of the Elliot Lake area. In this second project, use is made of a geostatistical approach previously applied to evaluate the sulphur content of coal in the new Lingan Mine on Cape Breton Island. Rao Divi is studying in detail the statistical relationships between geological and mineral deposit parameters from the Appalachian Region using the technique of canonical correlation. Robert Laramée has become an expert in computer programming and works full-time on data management and systems development for the CANMINDEX and M-2 mineral deposit files.

Quantification and statistical analysis of geological data have become increasingly important for the purpose of numerical mineral resource evaluation. However, as it is exceedingly difficult to express geological data and concepts in terms of formulae, geological judgment is required at all stages of the operation, especially if the formulae are to be used for further derivations. Exploratory research is needed at present. Geostatistics is interdisciplinary and aims to bridge the gap between geology and formulae. Statistics in geology is not yet a subject widely taught at universities.

An important characteristic of Project Appalachia is that the choice of the variables considered in the statistical models is closely guided by experienced geologists with first-hand knowledge of the Appalachian Region and its mineral deposits. Since the summer of 1974, the project has moved from the input stage into the output stage. New results are periodically reviewed at meetings chaired by Geoff Leech at which Bill Poole and Don Sangster are present to critically review the usage of data on regional geology and mineral deposits, respectively. The group discussing the usually thick

piles of computer output with the geomathematicians is often assisted by other geologists, mainly from the Mineral Deposits Geology Section.

The mathematical expertise of the group is reinforced by continuing education. For example, the two geologists and the statistician in our group have jointly taken last semester's graduate course on multivariate analysis in the Mathematics Department of Carleton University. Last year, mathematical consultants were brought in twice: Pierre Delphiner, then on sabbatical leave with the Statistics Department of Princeton University, U. S. A. , advised us on potential usage of stereological and geostatistical methods recently developed at the Centre de Morphologie Mathématique in Fontainebleau, France. Later, Andrew Vistelius who heads the Laboratory of Mathematical Geology of the Steklov's Mathematical Institute in Leningrad, U. S. S. R. , and who was visiting on this continent, explained his approach to the quantification and statistical analysis of geological data.

In the near future, we hope to have as a visitor Dan Merriam, Chairman of the Geology Department at Syracuse University and Editor-in-chief of both the Journal of Mathematical Geology and the new periodical Computers and Geosciences. He has wide experience in the application of computers to geological problems.

Although most activity of the section is directed toward probabilistic resource appraisal problems in the context of Project Appalachia, another function is to provide statistical advice to Geological Survey staff. Customers can and do arrive at all possible times but last year, immediately after Easter and after Christmas, we observed distinct peaks in the pattern of demand for statistical assistance. So far, we have not been

able to explain the significance of this correlation between statistics and festivities, and we are open to suggestions.

F. P. Agterberg

News from Vancouver Office

Renovation of the sixth floor in the Sun Tower Building has been essentially completed. The space is divided into three parts — library, publication storage and a self-service sales area. The self-service system begun in 1975 is working effectively judging from public response.

A winter works program has been a great asset to the Subdivision. As many as twenty-five additional staff have been accommodated, somehow, into the program with minimal problems of crowding. Petrographic, lapidary, draughting and laboratory (and lavatory) facilities are being taxed to the utmost.

N. B. Correction

There was a misprint in the article Geophysical Research in Permafrost by J. A. Hunter (Page 12 of the November Geogram) which has bothered Peter Annan and Les Davis of the Electrical Methods Section for weeks. Please note that the radar experiments at the Tuktoyaktuk site were successful, not unsuccessful as previously reported. Peter and Les point out that they would never spend all that time processing data from unsuccessful experiments.

MEETINGS AND VISITS

Visit of Soviet negotiating group on USSR/Canada co-operation - the Industrial Applications of Geology

Last fall a Canadian team met with their Soviet counterparts in Moscow and a return visit was made by the Soviet group to Ottawa March 3-11. Gordon Gross met the delegation at Mirabel. The leader was V. V. Burtsev of the Ministry of Geology assisted by P. P. Lebedev and Mrs. R. M. Kopeleva. After introductory formalities the two teams settled down to some serious sessions in the Board Room with D. J. McLaren, Arthur Darnley and other senior officials of the Survey. A draft agreement was signed before the Soviet delegation left on March 11. The delegation was also able to meet with members of the Canadian Geoscience Council. Several social events were arranged and there were many opportunities for the exchange of ideas. Mrs. Kopeleva took an active part in the negotiations and proved to be a charming and fluent interpreter. The GSC was ably assisted by Tania Thorpe from the Department of the Secretary of State. Tania set up a 'Russian' office on the second floor and was a very welcome visitor at the Survey. It was a new experience for us to see her

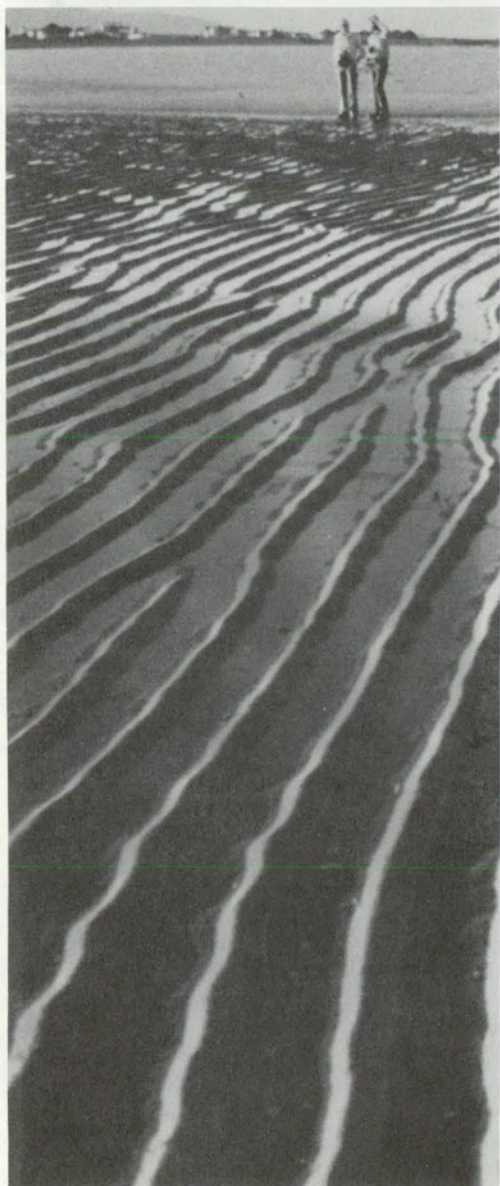
busy with her stenographer turning out documents in Russian on a (Canadian made) Russian typewriter.

Colorado River Delta Workshop

A geological field workshop was held during the last week in January in the general area of southern California and northern Mexico. The purpose of the field trip was to study the Colorado River delta sediments and environments of deposition in order to interpret similar sequences in ancient rocks for potential oil and gas reservoirs. Eight geologists from ISPG and two from the Vancouver office took part in the workshop which was organized by Dave Gibson and led by Prof. Don Gorsline of the University of Southern California.

Exhausting days were spent in the Mexican desert of Baja California traversing outcrops by foot and by 4-wheel drive vehicles while putting up with 80°F weather and choking dust. Nights were spent sleeping out under the stars in near-freezing temperatures.

Interesting sites included the Algoma sand dunes (a location commonly used for Sahara scenes in movies) and the Salton Sea (a salient depression 235 ft. below sea level). The photographs on the next page represent some of the challenging localities of the area.



The Colorado River Delta deposits in the Baja California offer textbook examples for most of the possible environments to be found in known deltas. The intertidal zone south of San Felipe exhibits all variations to ripple-mark structures. The lower left photo shows flat-top crests in straight linear arrangement suggesting falling water level of ebbing tide. The high relief of the surrounding uplands provides additional study of both sedimentary fans and igneous intrusives (top). Siberia has nothing on this for salt flats (middle right) nor the Sahara for star sand dunes (centre)! You can stop anyplace to camp overnight providing you have water (lower right).

Photo credits: D.W. Myhr, T.P. Chamney.

Visit of Chinese Geophysicists and Geochemists

During the four-week period September 13 to October 11, 1975, a delegation of seven Chinese geophysicists and geochemists toured Canada to learn about Canadian methods and techniques in mineral exploration. The Department of Industry, Trade and Commerce (ITC) was the official Canadian government host to the group which was led by Niu Hsing-Ping, Vice Director, Production and Techniques Section, Bureau of Geology, Peking. Jim Kiely of ITC was responsible for the tour arrangements; Peter Hood assisted in the technical aspects of the tour and coordinated the visit to Energy, Mines and Resources, and Jean Duval of the Secretary of State's Office was the official Canadian interpreter.

The tour commenced in Vancouver with a visit to the University of British Columbia on the morning of September 15, where the group was received at the Department of Geophysics and Astronomy by Dr. R. D. Russell. Dr. Russell summarized the research activities of his department and described the training that a typical exploration geophysicist might receive at UBC in obtaining a bachelor's degree. After lunch with Sir Edward Bullard at the Faculty Club, the group visited the Department of Geology and from thence to the Geological Survey of Canada Vancouver office in the Sun Life Building where they were met by Hugh Gabrielse. As most of the group were geophysicists, the offshore geophysical survey work being carried out by the GSC on the West Coast received the main attention. The following day, a visit was made to Gestalt International to see the company's photomapper GPM which produces orthophotos. In the evening the Chinese mission travelled to Uranium City where they visited the Eldorado mine site and took part in an airborne Tridem electromagnetic survey being carried out by Scintrex using an Otter aircraft.

The second week of the tour was spent in Toronto visiting the various geophysical instrument and contracting companies as follows:

- September 22 – presentations at the Ontario Science Centre by Geonics, Apex Parametrics and Varian;
- September 23 – Barringer Research, Dighem and Exploranium;
- September 24 – Scintrex and Northway Survey;
- September 25 – McPhar Instruments, Crone Geophysics and Control Data Corp;
- September 26 – Hunttec, Dataplotting Services and Allan Spector and Associates.

At the weekend, the group spent the Saturday (September 27) seeing Niagara Falls and the following day visited the birthplace of Dr. Bethune, who was a surgeon in the Chinese Army during the struggle against the Japanese. Because Chairman Mao Tse-Tung wrote an essay shortly after Bethune's death in 1939, in which he depicted the selflessness of the Canadian as an example to the Chinese people to emulate, Dr. Bethune is well-known to all Chinese and indeed increasingly so to citizens of his own native country.

The third week was spent at the Cavendish geophysical test range where demonstrations of ground geophysical and geochemical equipment were made by the various instrument companies in Toronto. A mess tent was set up at the test range during the exercises, close to Line C and Jim Kiely kept a supply of hot tea and coffee available at all times for those taking part.



The photograph shows part of the group on Line C (with Peter Hood behind) learning about the operation of the Pulse EM receiver of Crone Geophysics.

The group elected to work on October 1 which is the Chinese National Day; however by arrangement with the management of the Hospitality Inn in Minden, where the group stayed, the kitchen was turned over to several members of the Chinese mission who prepared a superb Chinese meal. This culinary delight was followed by a display of fireworks on the shore of the nearby lake. No doubt a firework display on October 1 must have mystified the local inhabitants.

The last week of the tour was spent in Ottawa and commenced with visits to Sander Geophysics and Geotrex on October 6. A lunch was given for the group by the Chinese Ambassador, Mr. Chang Wen-Chin at the Chinese Embassy on St. Andrews Street in Ottawa. The following day, the group was received by the Director General, D.J. McLaren, in the GSC Board room. The leader of the delegation, Mr. Niu Hsing-Ping, was presented with a copy of the publication 'Geology and Economic Minerals of Canada' (EG 1). He in turn presented Dr. McLaren with a set of mineral specimens from China contained in a special section-alized box. These were displayed in the lobby of 601 Booth Street during the month of November. The rest of the morning and the afternoon was spent with the Resource Geophysics and Geochemistry Division learning about the various projects which are being undertaken by individual geoscientists. The Assistant Deputy Minister (Science and Technology) Dr. Y.O. Fortier, together with the Director General joined the group for lunch in the GSC Board room.

The following morning, the Chinese delegation visited the GSC airborne geophysical survey facility in the Alert Hangar at Uplands and were also able to

see the Inco Twin-Otter EM aircraft in the Survair hangar. In the afternoon of October 8, the group visited the Gravity Division of the Earth Physics Branch where they were received by Dr. J. Tanner.

The last day of the EMR visit was spent initially at the GSC to learn something about the Uranium Reconnaissance Program and this was followed by a brief visit to the Surveys and Mapping Branch to see a satellite positioning system in operation. The afternoon was spent in a tour of the Canada Centre for Remote Sensing at 717 Belfast Road.

On October 10, the last day of their visit to Canada, the Chinese delegation themselves made a presentation on the status of geophysics in China to a group of Canadian geophysicists from industry and government at the Department of Industry, Trade and Commerce facilities in Tower B, Place de Ville. The main presentation was made by Yuan Hsueh-Cheng, who is the Responsible Member in charge of techniques at the Bureau of Geology in Peking. He imparted a considerable amount of information on Chinese geophysics; for instance, that they have a 458Hz Rio-Mullard type airborne electromagnetic survey equipment installed on an AN-2 aircraft. The separation between the wing-tip mounted coils is 21 m, and the system measures both the in-phase and out-of-phase components with a noise level which is less than 5 ppm. Lunch on the last day of the visit was an official one hosted by ITC for the Chinese mission and also for a Chinese mission on Large Dam Foundation construction who were visiting Canada at the same time.

In a visit extending over a period of several weeks there is usually at least one amusing story, and the Chinese visit was no exception. The Chinese group were not specifically asked to bring field clothes for the field work at the Cavendish geophysical test range. As October can be a rather cool month in Ontario, Jim Kiely approached the Canadian Army for parkas, trousers and boots for the group. These were eminently suitable (see photo) especially early in the somewhat cool mornings. We had two station wagons for transportation between the Cavendish geophysical test range and the Hospitality Inn. I drove one station wagon and Jim Kiely drove the other. It transpired that on the first day in returning to the Hospitality Inn, I overshot a right-angled turn and because of the narrowness of the dirt road was obliged to go into the yard of a house in order to turn. A man, presumably the owner, happened to be crossing the yard going towards his house when he saw this station wagon full of Chinese in army uniforms invade his front yard. From the look on his face he was clearly perplexed not knowing whether to approach the group or to continue to the safety of his house. Fortunately for him the station wagon stopped, backed out, turned and departed. Because the Chinese group had obviously witnessed his consternation, I thought it best to say something. I therefore said "If that man tells his wife that a party of Chinese in army uniforms just drove into our yard" she will think he is drunk. This was duly translated into Mandarin by Jean Duval to the Chinese, who greatly appreciated the

humour of the situation. Legends must be created from similar situations.

Peter Hood
(or *Barbarian Virtue* in Mandarin)

Uranium in Wyoming and New Mexico

The well known uranium deposits of Wyoming and New Mexico were visited by six members of the Geological Survey of Canada in early June. The excursion was organized in co-operation with branch offices of the U. S. Energy Resources Development Agency at Casper, Wyoming and Albuquerque, New Mexico.

In Wyoming three uranium-bearing structural(?) basins were visited, the southern Powder River Basin, the Gas Hills in the southern Wind River Basin and the Shirley Basin. Typical uranium roll fronts were well exposed in the open pit mines. The host rock in all three basins is Paleocene or Eocene fluvial arkosic sandstones. The source of the uranium has been attributed to surrounding granitic basement highs by some, to overlying tuffs of Oligocene age by others.

In New Mexico three areas were visited. At Ambrosia Lake the uranium is mined in underground operations from an arkosic member of the Morrison Formation of Jurassic age. The uranium occurs in stacked lens-shaped bodies which have been impregnated by organic matter. At the Paguate open-pit mine uranium ore is mined from an arkosic sandstone member of the Lower Morrison Formation. The deposit has a roughly tabular shape and is wedged between impermeable clay horizons. The uranium for the Ambrosia Lake and Paguate deposits was probably leached from an overlying tuffaceous member of the Morrison Formation and reprecipitated below during a prolonged hiatus period prior to the deposition of overlying Cretaceous sediments. The last stop of the excursion was in abandoned pits near Grants, New Mexico, where uranium ore had been mined from a fractured limestone of Jurassic age. The origin of the uranium has been interpreted as hydrothermal or as a precipitation from stagnant seawater.

R. T. Bell, A. Boyer, H. Geldsetzer, J. Y. H. Rimsaite, L. P. Tremblay and M. Turay may be contacted for further information.

In early September, in co-operation with the branch office at Casper, Wyoming, R. T. Bell visited several uranium occurrences in North and South Dakota. These are in lignites enclosed in sandstones of Paleocene age. The source of the uranium has been attributed to overlying tuffs and tuffaceous sediments of Oligocene age. Suites of samples have been collected at each of the above localities.

The Atlantic Geoscience Society held its second colloquium in Wolfville, N. S. on January 23 and 24 with the Geology Department of Acadia University acting as host. The theme, natural resources of Atlantic Canada, did not include Anne Murray, much to everyone's disappointment. Nonetheless the colloquium was successful: over 200 people attended and very few went skiing during the technical sessions despite the beautiful weather.

Thursday Seminars

The Precambrian Subdivision continued its winter series of informal seminars this year. These seminars provide a forum of peers for new, controversial, or unusual ideas prior to their formal presentations, and as such are, on occasion, quite boisterous. This year the series focussed on the relationships between older gneisses and younger sediments.

Older gneisses behave quite differently where deformed in different geological environments. We heard Paul Hoffman describe what seems to be low temperature "ductile" flow resulting in a peculiar geological condition: a folded unconformity with short portions of an upper limb overturned so that gneisses, which unconformably underlie sediments, appear above them in section and outcrop. Overturned gneiss sheets were also described by A. Okulitch from Baffin Island and central British Columbia, but the country rock was of much higher metamorphic grade so that the ductile behaviour of the gneiss doesn't seem unusual. J. R. Henderson described free floating and apparently rising gneiss sheets within high grade metamorphic rocks in the Penrhyn Group of the Foxe fold belt. This contrasts with the diapiric rising of the Round Lake Batholith into low grade rocks of the Abitibi Supergroup described by R. Ridler. P. Thompson thought that maybe the basement (Hermon Group) was only strained and not refolded at all when the overlying sediments of the Flinton Group were isoclinally folded.

Another general tool used was the projection of map patterns along the plunge to produce composite cross sections. These projections showed large floating gneiss allochthons (J. Henderson) or two periods of folding (T. Rivers). Some discussion centred around the correctness of the assumption of uniform dip of plunge and the cylindrical nature of the deformation. Sceptics noted that faulting normal to the trend of tectonic belts, as well as evidence of conical folding, would invalidate the projections.

Minor folds have been used as an important tool in structural analysis, but their paucity was noted on Baffin Island (A. Okulitch) requiring new approaches to be developed (L. Westra).

The change of style of folding with metamorphic grade was commented on (A. Okulitch), and the change of rock types with metamorphism was demonstrated by clayey marls becoming amphibolites and schists, gneisses (R. Brown). The change of shape and volume of metamorphosing and straining calc-silicate rocks was greater than expected by a majority of geologists (P. Thompson).

The problems of dating the absolute, as opposed to relative ages of basement and sediment, were treated from radiometric (T. Frith) and magnetostratigraphic viewpoints (W. F. Fahrig). The discussions revealed how dependent models are on the interpreted validity of the basic data.

These general geological conclusions and methodologies were tested in a day-long seminar devoted to the Grenville Structural Province. Rather detailed mapping of T. Rivers, P. Thompson, R. Chappell and R. Moore, were placed in context of the whole province

by A. Baer. The detailed studies showed that large refolded folds characterize the area and that the deformational pattern is linked to the emplacement of large granitoid bodies. The gneiss belts, usually dismissed as barren of geologic history, yielded a wealth of fascinating relationships near the Grenville Front (R. Moore). It became apparent that very careful mapping in critical areas must be combined with a regional co-ordination and compilation (A. Davidson). How this might be best achieved centred around the political questions of financial support for geological studies by universities and government, or manpower being assigned to such duties by government bodies.

M. Schau

Benthonics '75

The First International Symposium on Benthonic Foraminifera, was organized as a result of the interest expressed in such a meeting at the 3rd Planktonic Conference in Kiel, Germany, in 1974. The Symposium, held in Halifax, in August 1975, was hosted jointly by Dalhousie University and AGC. The Technical Program consisted of three parallel sessions over four days: topics within each session focussed on areas of specialization such as quantitative distribution, ecological relationships, biology of Foraminifera, Pleistocene-Holocene paleoecology, offshore recent Foraminifera, systematics, and Mesozoic paleoecology and biogeography. All sessions were held in the mornings; workshops were held in the afternoons. About seventy-five papers were presented throughout the week, and four major reviews by well-known scientists in the areas of ecology, systematics, paleoecology, and biostratigraphy were also presented. More than 23 nations were represented and about 200 specialists attended. The proceedings of the symposium, including workshop discussions, will be available by June 1976.



Hands joined and feet-a-stamping the micropaleontological social event of the year gets into full swing.

Of course, no Symposium would be complete without a little down country entertainment to take people's minds off all the things that were left unsaid during the various meetings. In this instance the Benthonics '75 entertainment coordinator, Iris Hardy, (who is somewhat of a micropaleontologist in her own right, but does not like to talk about it) organized a good old Nova Scotian square dance and lobster dinner, complete with a small Newfoundland-style group and a caller. During the dance, Nova Scotian Order of Good Cheer certificates were presented to the four guest speakers. Meanwhile the participants enjoyed lobsters and imbibed a respectable volume of beer and ale. For more information contact C. T. Schafer, who was actively involved in preparing Benthonics '75.

Four guest speakers and the Co-chairmen of the Symposium nervously pose behind a beer filled dory following the Order of Good Cheer presentation



Right to left: C. T. Schafer, B. I. O., F. B. Phleger, Scripps Inst., H. Tappan, U. S. C., C. W. Drooger, Univ. of Utrecht, R. G. Douglas, U. S. C., and G. Bartlett, Queens Univ.

Calibration of AGC Askania GSS-2 Sea Gravimeters Over a Large Latitude Range.

Since 1970 the Atlantic Geoscience Centre has been measuring gravity at sea between Dartmouth, N. S., and the Eastern Canadian Arctic regions, usually with calibrations at Thule or Godthaab, Greenland, and Dartmouth, Nova Scotia. During these surveys it has been difficult to produce the gravity data to the required survey accuracies. The calibration factor for each gravimeter is defined as a constant for all latitudes by the manufacturer. It is now almost certain that this is not true from the comparison of gravity data from the multidisciplinary surveys of 1974 and 1975, in which there was more than one gravimeter on each ship. The calibration factor appears to vary with latitude or other large changes in the gravity field and is not a constant. Therefore, to produce gravity data to the required survey accuracies over the areas to be covered by the future multidisciplinary surveys

requires that the AGC GSS-2 Gravimeters be calibrated over a large gravity range of approximately the same value as the gravity field from Dartmouth to Resolute.

The calibration will be carried out over the European Gravity Base Station Grid between Munich, Germany, and Hammerfest, Norway. The Gravity Base Station used will be spaced at approximately 150 mgal. spacings. The calibration will begin in Hamburg, Germany, with a short closed loop — Hamburg to Munich to Hamburg — completed. Then a longer calibration — Hamburg to Hammerfest, Norway, to Hamburg — will be completed possibly repeating the Hamburg to Munich to Hamburg loop if required. The distance is approximately 8000 km total.

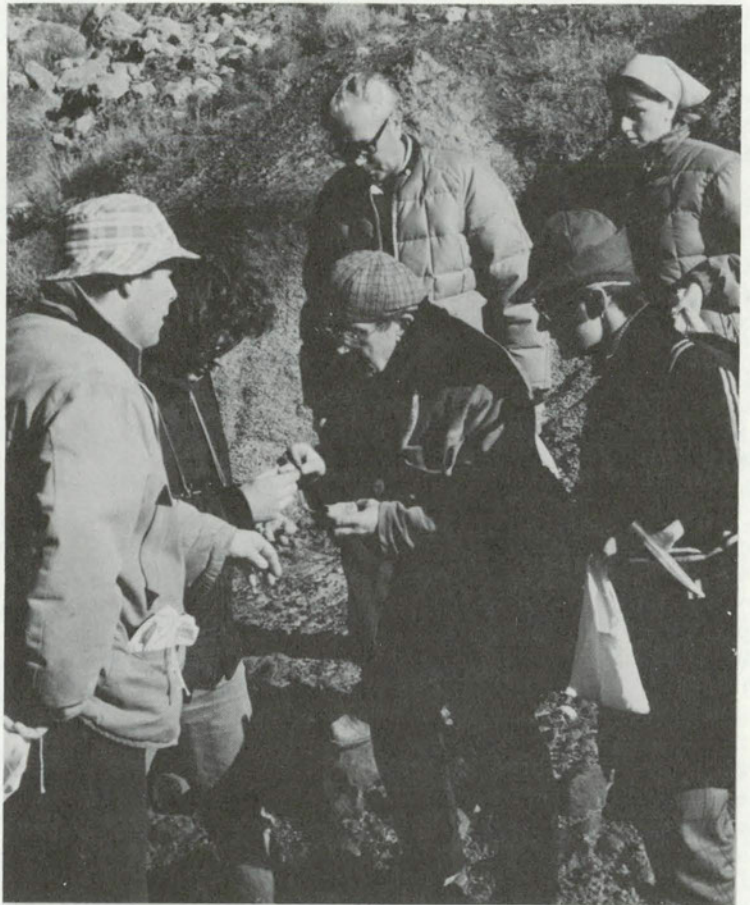
This project will be carried out in co-operation with U. Fleischer of the German Hydrographic Institute in Hamburg, Germany, who will provide us with a base to work from at the Hydrographic Institute, equip the calibration van, and take part in the calibration project by calibrating two of their new Askania GSS-3 Gravimeters.

Two persons from AGC and one or two from the German Hydrographic Institute will participate on the traverse at any one time. The people concerned with the project at present are: Uwe Carstens from the German Hydrographic Institute, U. Fleischer from the German Hydrographic Institute, and K. S. Manchester, M. Hughes, and A. Folinsee from AGC.

The project planning began in November 1975 and the gravimeters will be shipped to Germany during February 1976. The calibration trip is planned to take place between April 19, 1976 and May 15, 1976 with the AGC gravimeters being returned to AGC by early June 1976. These meters will then be used for this summer's field projects. One will be installed on the CSS HUDSON for use between Dartmouth and Barrow Strait, the second meter will be used on the MARTIN KARLSON which will be used in multidisciplinary surveys in the Labrador Sea during the summer of 1976.

ISPG Support Staff Field Trip

The second annual support staff field trip, held in early November, was conducted in the world-famous dinosaur badlands of the Red Deer River east of Calgary in the vicinity of Drumheller. Thirty staff members participated in the trip, which was organized by Potter Chamney and Dave Haden. The pictorial layout (next page) portrays a few of the interesting fossil sites, stratigraphy and landforms visited.



Spectacular badland topography in the Upper Cretaceous of Alberta include "hoodoos", buttes, outliers and crevasses. These features result from differential erosion and controlled erosion effected by the bentonite composition of the sediments. Fossil hunting is the most challenging aspect of the badlands. Representatives of the following classes of organisms can be found: vertebrates - dinosaurs, crocodiles, turtles, rodents and fish; invertebrates - oysters, clams, snails and ammonites; plants - sequoia cones, seeds, variety of woods and plant leaves.

Photo credits: D.G. Lawrence and Marg McKenzie.



On December 13, 1975 Mr. N. Narayanan, executive engineer with the Department of Public Works of Singapore visited the Urban Geology Unit, Terrain Sciences to discuss the development of a data system for Singapore. Mr. Narayanan, visiting Canada under the sponsorship of the Canadian International Development Agency (CIDA), was interested in the design of a manual system for gathering, storing, and retrieving borehole data from Singapore. As most of the Singapore area of approximately 1300 km² is urbanized, Mr. Narayanan was interested in the Urban Geology Automated Information System (UGAIS) that has been developed by GSC. Although the system envisioned for Singapore would not utilize a computer, it was agreed that the system should be designed so that computer storage and retrieval could be instituted at a future date.

During the past five years, the GSC has developed an expertise in designing data gathering forms, methods of indexing and storing urban geology data, and methods of retrieving information from files. Singapore probably will develop a recording system using natural language based upon the record form developed by Bob Bélanger. Retrieval probably will be by grid position from data points on a map, a system developed for the first manually retrievable files used by the Urban Geology Unit in 1970. This type of system has been superseded by computer retrieval and computer generated "finder maps" which print the record numbers directly on the map or on an overlay. However, because the Singapore area is small and has the advantage of large-scale map coverage, a simple dot can be used to show the well location and the record retrieved by its co-ordinate position with respect to a grid system.

Mr. Narayanan toured the EMR computer facilities and saw a demonstration of autocartography on the EAI plotter. Although Singapore is not in a position to acquire the type of sophisticated equipment used in Canada, Mr. Narayanan was optimistic that a good serviceable system could be designed based on the Canadian model.

J. E. Harrison

F. M. Gradstein visited the Greenland Geological Survey (Grønlands Geologiske Underaegelse) from October 15 to 18, 1975, to collect more data related to the Labrador faunas and floras to be used in related projects at EPG (Eastern Petroleum Geology). While in Denmark, he was able to learn more concerning West Greenland stratigraphy (particularly the dark Cretaceous shales) and to arrange for further studies when the first West Greenland offshore wells are drilled. During his stay in Europe, he also visited J. Brouvier and A. Keij of Shell Exploration Research, The Hague, to study flysch faunas and J. Postuma on his Tertiary plankton faunas. Dr. Gradstein also visited Utrecht State University to examine and study the Belgium Type collection.

Eleven staff palynologists attended the 5th annual meeting of GSC palynologists in Ottawa on November 18 and 19, 1975.

About half of the two day meeting was devoted to discussion with staff of EMR computer services and the Computer Science Centre (CSC) regarding computerization of palynology data. The CSC presented a report of a feasibility study on developing a retrieval system for the Kremp Palynology Data File, a data base being produced with the co-operation of the GSC by the University of Arizona and a consortium of U.S. oil companies. As a result of the meeting, plans are proceeding for development of the retrieval system, and for computerization of the Survey's own palynological data.

The Geological Survey has palynologists in Ottawa, Dartmouth, Calgary, and Burlington, with expertise in most aspects of Phanerozoic palynology:

- T. W. Anderson (TS), Quaternary palynology and macrofossils;
- M. S. Barss (AGC), Carboniferous and Permian spores and pollen;
- W. W. Brideaux (ISPG), Mesozoic and Cenozoic spores, pollen and dinoflagellates;
- J. Bujak (AGC), Mesozoic and Cenozoic spores, pollen and dinoflagellates;
- S. Federovich (TS), Quaternary palynology and diatoms;
- P. R. Gunther (ISPG), kerogen maturation studies;
- W. S. Hopkins (ISPG), Cretaceous and Tertiary spores and pollen;
- W. A. M. Jenkins (ISPG), Lower Paleozoic acritarchs and chitinozoans;
- J. V. Matthews (TS), Quaternary palynology and entomology;
- D. C. McGregor (REG), Silurian and Devonian spores;
- R. J. Mott (TS), Quaternary palynology;
- A. R. Sweet (ISPG), Mesozoic and Cenozoic spores and pollen;
- G. L. Williams (AGC), Mesozoic and Cenozoic spores, pollen and dinoflagellates.

Sedley Barss, Jonathan Bujak, and Graham Williams are busy organizing a joint meeting of the American Association of Stratigraphic Palynologists and the "Commission Internationale de Microflore du Paléozoïque" to be held in Halifax on October 12 to 16, 1976. The theme of this meeting will be "continental drift and floral provincialism, and palynology of continental margins". Over 100 European, Australian, South American, and North American palynologists have indicated a willingness to participate. Two workshops on acritarchs and dinoflagellates will precede the technical sessions, which will include seven invited papers and 32 submitted papers.

During 1974-75 the Canada Society for Civil Engineers (CSCE) instituted a Hydrotechnical Research Committee with the aims: (1) to keep abreast of current research in Canada and throughout the world; (2) to identify research needs, particularly in areas of significance to Canada; (3) to assist in the promulgation of research findings and to promote contact amongst researchers by organizing and encouraging the organization of specialty seminars; and (4) to encourage the implementation of hydrotechnical research and to represent the needs of such research to government and other supporting agencies.

The fields of activity to which the Committee is addressing itself are those which relate basically to classical hydrodynamics. Examples of those activities relevant to the earth sciences are studies of: open channel flow, river and coastal processes and morphology, groundwater flow, hydraulic models, and sedimentation. Although the Committee is operating under the auspices of the CSCE, interdisciplinary research involving interface with such fields as geology, hydrology, meteorology, and oceanography is to be strenuously promoted.

The objective of this note is to request identification of hydrotechnical research needs as seen by earth scientists. All comments would be appreciated and should be forwarded to:

Dr. Terry J. Day
Member Hydrotechnical Research Committee
Terrain Sciences Division
Geological Survey of Canada
601 Booth Street
Ottawa, Ontario
K1A 0E8

K. G. (Stone) Shih attended a COGEODATA Computer Workshop at the Atlas Computer Laboratory in Chilton, England on November 21-22, 1975. The 25 participants discussed FILEMATCH, a machine-dependent data system meant to convey data from one data base management system to another without a loss of structure information. Stone also participated in a COGEODATA Symposium on November 24-26 in Paris. The symposium dealt with computer-oriented methods of capture, management, and display of geological data, especially for energy and mineral resources.

Geoff Playford, palynologist on sabbatical leave from the University of Queensland, Australia, is in Ottawa for 10 months studying Devonian marine palynofossils (acritarchs) from the Moose River Basin of northern Ontario. He is working with Colin McGregor, who has recently completed a project on the nonmarine palynofossils of the same region. Geoff is no stranger to Ottawa; in 1962 he worked as an N. R. C. Postdoctorate Fellow with Peter Hacquebard and Sedley Barss in the Survey's Coal Research Laboratory. Geoff, his wife Mary, who is also a palynologist, and their two boys arrived in Ottawa in mid-January.

The annual symposium of the Cordilleran Section of the Geological Association of Canada (GAC) was held in Vancouver on February 6 and 7, 1976. The topic was "Geomorphology of the Canadian Cordillera and its Bearing on Mineral Deposits." The total attendance was in excess of 550 persons, and 38 invited papers were delivered; 28 papers dealt primarily with geomorphology in all its ramifications, and 10 dealt with mineral deposits. This was the first symposium sponsored by the Cordilleran Section of the GAC that was not concerned primarily with bedrock geology, and it was a successful attempt to co-ordinate the work of earth scientists from the following disciplines: geomorphology, Quaternary stratigraphy and chronology, glacial geology, physical geography, soils engineering, pedology, structural geology, and mineral exploration geology. Members of the Terrain Sciences Division played a major role in the symposium. J. E. Armstrong helped to choose speakers and extended invitations to 28 speakers. He also edited all abstracts, chaired the first session, introduced the luncheon speaker R. F. Legget, delivered a paper, and summarized the first day. In addition he reviewed the symposium for Geoscience Canada. J. J. Clague, R. J. Fulton, O. L. Hughes, and W. W. Shilts all contributed excellent papers to the symposium. J. Luternauer chaired one of the sessions.

Several other members of the Geological Survey made major contributions to the symposium, namely, J. Monger, D. Tiffin, and G. Eisbacher of the Cordilleran and Pacific Margin Subdivision of REG and R. W. Boyle of RGG. J. Monger, as secretary of the Cordilleran Section of the GAC, was responsible for all financing and behind the scene organization of the meeting and did an outstanding job. P. Tiffin, G. Eisbacher, and R. W. Boyle presented papers.

In addition to the 8 speakers from GSC, the other speakers may be grouped as follows: 12 from 6 Canadian and American universities, 4 from B. C. Government departments, 4 from USGS, 5 from geotechnical consulting firms, and 1 from Environment Canada.

J. E. Armstrong

H. H. J. Geldsetzer joined a field-oriented project on the Continental Permian of Western Europe organized and financed by the NATO Advanced Study Institute during late September and early October. A two-day seminar at the University of Mainz was followed by an excursion into the Saar-Nahe region of southwestern Germany, an area where the Permian is characterized by a complex interfingering of various continental facies and volcanics.

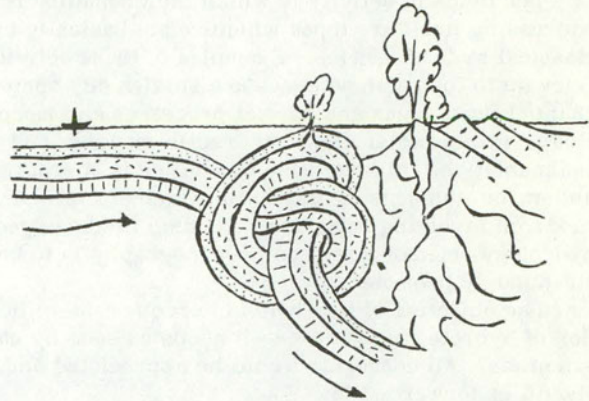
The style of the excursion changed considerably during the second part when three Permian basins along the southwestern flank of the Massif Central in France were visited, the Brive, Rodez and St.-Affrique basins. Many of the Permian exposures were — by Canadian standards — rather inadequate but this deficiency was

more than adequately compensated for by two to four-hour lunch "breaks" with gastronomical delights, by visits of medieval villages and cathedrals and by a discussion in a medieval castle. The relatively small number of participants (about 40 geologists from 15 countries) assured that there were no delays in the program and that group discussions remained on an intelligible level.

Following the official excursion german geologists from the Provincial Survey of Hessen and the Federal Survey of Germany offered to show Geldsetzer some Kupferschiefer occurrences in Hessen and the Harz Mountain of Germany. Both the marginal and the basinal facies of the copper-bearing sediment were investigated.

Ample rock samples were collected and guidebooks on the visited areas are available.

As we go to press we hear that Charlotte E. Keen of the Atlantic Geoscience Centre has been awarded the Atlantic Provinces Inter-University Committee on the Sciences (APICS) Young Scientist Award for 1975. The award is to recognize a major contribution by scientists under 35 year of age in the Atlantic Provinces, in any discipline. Congratulations Charlotte.



"The complexity of active margins may not as yet be fully appreciated by earth scientists..." Joides Journal, August 1975, p. 20.

suite de la page 2

défini qui se trouve entre la Commission géologique du Canada et la Direction des levés et de la cartographie et où la Coopérative de crédit avait autrefois ses bureaux. Cette nouvelle salle, dont nous pourrons disposer dans peu de temps, a été nommé en l'honneur d'Alice Wilson, Canadienne distinguée et première femme géologue de la Commission. Cette salle de réunion, agréable, climatisée et bien conçue, sera dotée d'un nouvel équipement visuel, d'un petit salon pour les pauses-café, de sièges confortables et pourra être transformée à volonté pour des réunions de comités des conférences, des expositions ou des réunions mondaines. Cette salle sera l'endroit idéal pour la plupart des réunions du club Logan. Entretemps, à force de persévérance, la salle Camsell sera également réaménagée (à la grâce de Dieu), et devrait finalement donner une ambiance nettement meilleure pour les réunions plus importantes.

Material for the next issue of Geogram should be sent to your Division Office or to Mary LaHam.

Les articles pour la prochaine parution de Geogram devront être dirigés au secretariat de votre Division ou à Mary LaHam.

*Editor/
Rédacteur P. Harker*

*Editorial Advisors/
Conseillers à la rédaction*

*M. J. Copeland
P. J. Griffin
Mary LaHam*

J'espère que ces observations à bâtons rompus auront su intéresser quelques-uns d'entre vous. Maintenant que nous sommes parvenus au bout du tunnel et que les bourgeons commencent à éclore, il me reste à souhaiter à ceux d'entrevous qui ont la chance de retourner sur le terrain, une bonne et heureuse campagne.