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Current research in the Geological Sciences in Canada May 1981-April 1982

Compiled by
THOMAS E. BOLTON

Projets de recherche en cours d'exécution au Canada-Sciences géologiques mai 1981-avril 1982

Préparé par
THOMAS E. BOLTON

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INTRODUCTION

The present publication recording research in progress in Canada from May 1981 to April 1982 is the result of a survey conducted between December, 1981 and March, 1981.

The research projects listed in this compilation are being undertaken mainly within federal and provincial departments, and universities. Data on industrial research was not received. A relatively complete overview of scientific research activities within Canada in the geological and allied sciences, however, is provided for the survey period.

Using the data supplied for this compilation by the respondees, some indication as to the lines of research receiving the greatest and least attention can be formulated. At least 295 research projects have not been previously reported. The greatest increase during the 1981-82 period was in the fields of Mineral/Energy Geoscience (65), Paleontology (28) and Geochemistry (26). Research projects undertaken as graduate thesis in the universities are so specified wherever possible.

Additional details on research in the earth and related sciences underway in Canada during 1981 can be obtained through the annual reports prepared by individual university departments, research councils, and museums. Comprehensive reports on geophysical research and development, including volcanology and oceanography related research, are contained within the Canadian Geophysical Bulletin published by the Earth Physics Branch of the Department of Energy, Mines and Resources. Summaries of progress and short research reports related to hydrology/water-related environmental research and glaciology are provided annually by the Water Resources Branch of the Department of Environment Canada and the Associate Committee on Hydrology, National Research Council. Quaternary research in Québec is reviewed annually in the "Bulletin d'information de l'Association québecoise pour l'étude de Quaternaire".

Again this year a listing is included of the 1981 awards provided for geological research within the Research Agreements programs of the Departments of Energy, Mines and Resources, and Environment Canada. The Natural Sciences and Engineering Research Council Canada also provided a computer print-out of the operating grants actually awarded in 1981. The 1981 Ontario Research Grants and Polar Continental Shelf Project field support to non-governmental activities are also listed.

Use of the compilation

The projects are grouped under main headings that cover the majority of disciplines within the geological and allied sciences. These groupings are unchanged from last years compilation (Geological Survey of Canada, Paper 81-5, 1981).

A complete list of organizations contributing to the present survey is included. Acknowledgment is made in particular to those who assembled and forwarded the data on research projects underway in the organizations under their direction. As a convenience, an alphabetically arranged index lists each investigator and the reference number(s) of his project(s).

INTRODUCTION

La présente publication, qui fait état de la recherche réalisée au Canada de mai 1981 à avril 1982, est le fruit d'une enquête effectuée entre décembre 1981 et mars 1981.

Les projets de recherche enuméres sont exécutés surtout par des ministères fédéraux et provinciaux, et par des universités. Les données sur la recherche industrielle n'ont pas été reçues. Un aperçu assez complet de l'activité de recherche scientifique au Canada pour la periode visée dans le domaine de la géologie et des sciences connexes est cependant fourni.

À partir des renseignements donnés par les participants à l'enquête, il est possible de voir quels genres de recherche retiennent le plus et le moins l'attention. Au moins 295 projets nous ont été signalés pour la première fois. Les domaines où la recherche s'est le plus accrue durant l'année 1981-1982 sont les sciences de la Terre-Énergie/Minéraux (65), la paléontologie (28), et la géochime (26). Les projets de recherche de 2e cycle, dans les universités, sont également précisés, dans la mesure du possible.

On peut se procurer de plus amples détails sur la recherche réalisée en 1981 au Canada dans le domaine des sciences de la Terre et des sciences connexes en consultant les rapports annuels mis au point par les différents départements l'universités, conseils de recherche et musées. Le volume du Canadian Geophysical Bulletin, publié par la Direction de la physique du Globe du ministère de l'Énergie, des Mines et des Ressources, comprend des rapports complets sur les travaux de recherche et les dernières réalisations en géophysique, y compris la recherche connexe en volcanologie et en océanographie. Des résumés des progrès réalisés et de brefs rapports ayant trait à la glaciologie et à la recherche environnementale liée à l'hydrologie sont publiés annueullement par la Direction des ressources en eau d'Environnement Canada et par le Comité associé de l'hydrologie, du Conseil national de recherches du Canada. La recherche sur le Quaternaire au Québec est signalée anneullement dans le "Bulletin d'information de l'Association québecoise pour l'étude du Quaternaire".

Nous incluons à nouveau cette année une liste des prix décernés en 1981 pour la recherche géologique dans le cadre des programmes d'accords de recherches des ministères de l'Énergie, des Mines et des Ressources, et de l'Environnement. Le Consiel de recherches en sciences naturelles et en génie du Canada a également fourni un imprimé d'ordinateur détaillant les subventions aux travaux réellement accordées en 1981. On a signalé également dans ce rapport les subventions de recherche de la Commission Géologique de l'Ontario (Ontario Research Grants) et l'aide de l'Étude du plateau continental polaire en faveur d'activités non gouvernementales pour 1981.

Présentation

Les projets sont groupés sous des titres généraux s'appliquant à la majorite des disciplines que comprennent la géologie et les sciences connexes. Ces catégories sont les mêmes que l'année dernière (Étude 81-5, Commission géologique du Canada, 1981).

Une liste complète des organismes qui ont contribué à l'enquête a été dressée. Nous tenons à remercier particulièrement les personnes qui ont recueilli et envoyé les données concernant les projets de recherche en cours dans les organismes dont elles sont responsables. Pour vous faciliter la consultation, un répertoire alphabétique donne les noms de tous les enquêteurs et le(s) numero(s) de reférence de son(ses) projets(s).

ALBERTA/ALBERTA

1. GODFREY, J.D. Alberta Research Council (Geol. Surv.):
   Geology of Ryan-Fletcher Lakes district, northeastern Alberta, 1972-82.

   Map compilation complete, publication drafting in progress, in press.

2. GODFREY, J.D., Alberta Research Council (Geol. Surv.):
   Geology of Bocquene-Turtle Lakes district, northeastern Alberta, 1973-82.

   Map compilation completed, report in preparation.

3. GODFREY, J.D., LANGENBERG, C.W., Alberta Research Council (Geol. Surv.):
   Geology of South Fitzgerald, Myers, Daly Lakes district, northeastern Alberta, 1973-83.

   Map compilation completed.

4. GODFREY, J.D., LANGENBERG, C.W., Alberta Research Council (Geol. Surv.):
   Geology of North Fitzgerald-Tulip-Mercredit Lakes district, northeastern Alberta, 1974-83.

   Map compilation and supporting laboratory studies completed.

5. MORAN, S.R., FENTON, M.M., Alberta Research Council (Geol. Surv.):
   Geology of the Calgary urban area and environs, Alberta, 1974-82.

   See:
   Late Quaternary stratigraphy, and history of the Calgary, Alberta area; Geol. Assoc. Can. – Mineral. Assoc. Can., Annual Meeting, Abstracts, vol. 6, p. A-17, 1981.

   Design of geologic map of the Calgary, Alberta, area; ibid, p. A-41, 1981.

   Field mapping has been completed. Open file maps of surface geology at 1:50K (some of area at 1:25K) to be available 1981. Final 1:50K surficial geology maps are being drafted. Lab analyses are complete. Stratigraphic synthesis is progressing rapidly. Bedrock topography and drift thickness in preparation.

6. OLLERENSAW, N.C., Geol. Surv. Can.:
   Geology of the southern Alberta Foothills, Highwood River to Athabasca River, 1970-.

BRITISH COLUMBIA/ COLOMBIE-BRITANNIQUE

7. ALLDRICK, D.J., McMILLAN, W.J., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Br.):
   Willow River Project (NTS 93 H), Barkerville, British Columbia, 1982-83.

   To document the detailed stratigraphy of this historic gold mining "camp" and analyse the mineralogy and stratigraphic setting of past and producing mines in order to provide guidelines for the extension of known reserves and for the exploration for new ore reserves within the map area.

8. ALLDRICK, W.J., McMILLAN, W.J., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Br.):
   Salmon River Project (NTS 104 B), Stewart, British Columbia, 1982-85.

   To document the geology of several ore occurrences with emphasis on their diagnostic characteristics and stratigraphic setting with the aim of providing guidelines for further exploration within this extensive volcanic belt beyond the map area.

   This will involve 1) establishing the regional stratigraphic relationships and detailed stratigraphy of the Jurassic Hazelton Group rocks in the Salmon River area and 2) studying producing mines and mineral prospects in detail.

9. GETSINGER, J.S., GREENWOOD, H.J., ROSS, J.V., MCTAGGART, K.C., ARMSTRONG, R.L., Univ. British Columbia (Geological Sciences):
   Metamorphism and structure of Three Ladies Mountain area, Cariboo Mountains, British Columbia, 1979-83; Ph.D. thesis (Getsinger).

   See:
   Metamorphism and structure of Three Ladies Mountain area, Cariboo Mountains, British Columbia; Geol. Surv. Can., Paper 82-1A, p. 317-320, 1982.

   Objectives have been to sort out the internal stratigraphy and structure of the Snowshoe Formation, as well as to determine the relationship of metamorphism to the polyphase folding and faulting in the area and thus to the regional tectonic history. During the summer of 1981, mapping at a scale of 1:25 000 was continued south from Three Ladies Mountain to Mount Stevenson. The Snowshoe Formation may now be divided into a lower sequence of interlayered micaceous quartzites and schists intruded by quartz-dioritic sills, and an upper sequence containing pelites, impure carbonates and amphibolites, and interlayered micaceous quartzites and quartz-mica schists, all overlain by a thick, clean white marble. Four distinct phases of folding have been recognized. Prograde metamorphism culminated during and after second-phase folding, whereas retrograde metamorphism accompanied third-phase folding and faulting. A late, low-angle postmetamorphic fault superposing younger, low-grade marbles and phyllites (Cariboo Group) on older, high-grade schists and gneisses (Snowshoe Formation) was traced for several kilometers. Structural features demonstrate dip-slip movement of the hanging-wall rocks in a southeast direction. Further studies will include using electron microprobe analyses of metamorphic minerals for geothermometry and geobarometry, and radiometric dating of pre- and postmetamorphic intrusions to bracket the age of metamorphism. One month of fieldwork aimed at solving specific geologic problems within the map area is planned for 1982, and will conclude the field research.

10. ISACHSEN, C.E., ARMSTRONG, R.L., Univ. British Columbia (Geological Sciences):
    Geology and geochronology of the Westcoast Metamorphic Complex, Vancouver Island, British Columbia, 1981-82; M.Sc. thesis (Isachsen).

    Detailed mapping and sampling of the Westcoast Metamorphic Complex in and around Meares Island near Tofino British Columbia, was completed during the 1981 summer field season. The rocks collected, consisting of a heterogeneous assemblage of predominantly amphibolite facies orthogneisses, amphibolites, and migmatites, are presently being prepared for detailed isotopic geochronology, major element analysis, and petrographic study. Interpretation of laboratory results will follow.

11. MacINTYRE, D.G., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Br.):
    Akie River, British Columbia, 1979-83.

    Continued mapping of belt of Devonian shales in the Rocky Mountain fold and thrust belt of northeast British Columbia. Shales are host to stratiform barite-sulphide deposits.

12. McMECHAN, M.E., Geol. Surv. Can.:
    Detailed geological study of selected areas within the Foothills and Rocky Mountain Belts between Peace River and Smoky River with emphasis on structure, British Columbia and Alberta, 1981-.

13. McMILLAN, W.J., PRETO, V.A., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Br.):
    Volcanism and mineral deposits of the late Triassic Nicola Group, south-central British Columbia, 1977-82.

    A preliminary map has been released that shows volcanic stratigraphy and the general geology near Merritt, British Columbia.

    Associated copper-iron and lead-zinc-barite mineral deposits were mapped and related to their stratigraphic position.

    Samples have been taken to attempt to better define geologic ages from microfossils and to attempt to delineate paleomagnetic signatures.

    Chemical analyses have been made of a suite of samples from the western belt of the Nicola Group; they are calc-alkalic and range from basalt to rhyolite. The few intermediate compositions found are mainly from fragmental units; in general, the volcanic rocks tend to be bimodal.

14. MÜLLER, J.E., Geol. Surv. Can.:
    Geology of the Victoria and Cape Flattery map-areas, Vancouver Island, British Columbia, 1973-83.

    See:
    Geology and mineral deposits of Nootka Sound map area Vancouver Island, British Columbia; Geol. Surv. Can., Paper 80-16, 1981.

15. PRETO, V.A., SCHIARIZZA, P., ORCHARD, M.J., ARMSTRONG, R.L., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Br.):
    Geology and mineral deposits of the Barriere Lakes-Adams Plateau area, British Columbia, 1978-82.

    The study of this high mineral potential area has been continued. Mapping at a scale of 1:15840 has been extended south of Simmax Creek and east of Squaam Bay. Dating of the felsic volcanic members of the Eagle Bay Formation by zircons and of parts of the Eagle Bay and Grinnell formations by conodonts has considerably helped in the understanding of the geology of this area.

16. SCHIARIZZA, P., PRETO, V.A., SIMONY, P., ORCHARD, M.J., ARMSTRONG, R.L., Univ. Alberta (Geological Sciences):
    Geology and mineral deposits of the Barriere Lakes-Clearwater area, 1980-82; M.Sc. thesis (Schiarizza).

    Field mapping at 1:15840 scale was completed. Numerous samples of chert from the Fennell Formation were collected for conodont determination. Preliminary data from these collections indicates that oceanic basalts and cherts of the Fennell Formation accumulated at least from Lower Mississippian to Late Permian time. This oceanic assemblage is now in fault contact with a Lower to Upper Mississippian basinal assemblage of turbidites of the Eagle Bay Formation.

17. WOODSWORTH, G.J., Geol. Surv. Can.:
    Eastern margin of the Coast Plutonic Complex, British Columbia, 1980-.

MANITOBA/MANITOBA

18. BAILES, A.H., SYME, E.C., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
    White Lake-Mikanagan Lake project, Manitoba, 1979-82.

    To provide a sound geological base for future exploration for volcanogenic massive sulphide deposits in the White Lake-Mikanagan Lake area. To achieve this, 1:20 000 scale mapping and detailed examination of volcanological features and processes have been undertaken. The original project has been expanded to include the adjacent Flin Flon-Schist Lake area, with completion slated for 1985.

19. CORKERY, M.T., LENTON, P.G., CLARK, G.S., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Lower Churchill River project, Manitoba, 1979-83.

Field mapping was completed in 1980. Data evaluation and geochemical and petrological laboratory studies are in progress. Geochronological studies (Rb/Sr, G.S. Clark, University of Manitoba) are nearing completion.

20. CORKERY, M.T., WEBER, W., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Greenstone project, northern Manitoba (NTS 53 K), 1981-85.

The main focus of the program will be to map, in detail, the two supracrustal belts which extend from Little Stull Lake to Edmund Lake and from Monument Bay through Sharpe Lake. This will be done in conjunction with reconnaissance mapping of the dominantly plutonic areas of the map sheet. The program will extend the mapping of the Greenstone Project east of the Ontario border.

21. GILBERT, H.P., ZWANZIG, H.V., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Melvin Lake project, Manitoba, 1979-82.

The stratigraphy established in the Barrington Lake-Melvin Lake area is comparable to that of the equivalent section in the Lynn Lake area, 50 km to the west. The greenstone belt is flanked to the north by a metasedimentary gneiss terrane, with an intervening conglomerate formation (Zed Lake-Hughes River conglomerate). Minor conglomerate bodies also occur within the metasedimentary gneiss terrane, which is extensively intruded by granitoid rocks. The deposits in the metasedimentary gneiss terrane and the greenstone belt are interpreted as contemporaneous whereas the conglomerates are probably younger. The volcanic section in the Barrington Lake area is similar to that in the greenstone belt further west, but sedimentary rocks are relatively less common at the eastern end of the belt. A major body of iron formation over 450 m wide occurs within the mafic volcanic section at Farley Lake. A lensoid body of conglomerate 5 km long has been mapped just east of Magrath Lake. This unit is lithologically similar to the Zed Lake-Hughes River conglomerate.

22. HERD, R.K., Geol. Surv. Can.:
Geology of the Island Lake map-area (53 E), Manitoba and Ontario, 1974-.

23. MACEK, J.J., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Setting Lake project, Manitoba, 1981-83.

The 1981 summer's field work confirmed that the contact between the Archean (Superior craton) and Proterozoic (Churchill Province) runs through the centre of the Setting Lake sediments, and that ultramafic volcanics similar to Ospawagan Group overlie Archean and seem to underlie Sickle-type metasediments. Archean rocks are retrogressed, felsic and mafic granulites. Further work will focus on tectonics of the area and the relationship between Ospwagan-type and Sickle-type supracrustal rocks.

24. SCOATES, R.F.J., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Fox River belt, Manitoba, 1974-84.

See:
Volcanic rocks of the Fox River Belt, northeastern Manitoba; Manitoba Mineral Res. Div., Geol. Rept. GR81-1, 1982.

The nature of the chemical changes that take place during differentiation and extreme fractional crystallization can be tested. Volcanic rocks (Upper Volcanic formation) of the Fox River Belt are thought to represent a succession of liquids that evolved in a chamber of differentiation represented by the Fox River Sill. A concept has been developed whereby primitive liquids reach the subvolcanic chamber and undergo fractional crystallization. The succession of accumulated crystals in the Fox River Sill represents the solid products of the fractional crystallization. As new primitive liquids reach the chamber, some old, evolved liquid is flushed out and reaches the surface to form lava flows. The volcanic rocks of the Upper Volcanic formation that overlie the Fox River Sill represent the evolved liquid products of the fractional crystallization.

A small number of chemical analyses have been performed on the volcanic rocks, sufficient to indicate in a general way the nature of the chemical changes. Additional whole rock chemistry should be performed, as well as a complete evaluation of the trace element changes that take place during extreme fractional crystallization of primitive liquid. Further, it may be possible to evaluate the chemical character of the primitive liquid and to determine if it had sufficient residence time in the crust to have evolved prior to entering the subvolcanic chamber of differentiation.

25. WEBER, W., GILBERT, H.P., NEALE, K., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Island Lake project, Manitoba, 1981-85.

To establish stratigraphy of volcanic and sedimentary rocks and possible control of gold mineralization by primary (depositional) or secondary (carbonate alteration, shearing) parameters. Results of first field season indicate that the Island Lake Series (Wright, 1929) overlies unconformably Hayes River Group at Savage Islands and quartz diorite at southeast shore of Cochrane Bay. The series is an alluvial fan deposit, possibly partly fluvioglacial. Top of Hayes River Group consist of channel-fill, coarse turbidites (Cochrane Bay) made up of detritus of erosion products of felsic volcanics and associated hypabyssal intrusions.

One type of gold deposit formed at interface mafic-felsic volcanics (plus associated dykes) and turbidites + carbonate IF, altered (carbonate), sheared, mylonitized and faulted.

26. ZWANZIG, H.V., GILBERT, H.P., SYME, E.C., CAMERON, H.D.M., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Lynn Lake – Granville Lake, Manitoba, 1976-82.

Mapping of the Lynn Lake Greenstone Belt, nearby granitoid terranes and sedimentary gneisses (Kisseynew, north flank), has been completed at a scale of 1:50 000 and data compilation of stratigraphy, structure and chemistry is in progress. Early results indicate that the Aphebian greenstones evolved in a tectonic environment similar to modern island arcs and the subsequent intrusions have various origins. Overlapping volcanic piles consist of tholeiite (including normal and high-alumina basalts), and calc-alkaline rocks, commonly with epiclastic aprons. Ni and Cr contents are intermediate between those of Archean volcanics and those of Cenozoic arcs, but closer to the latter. Other trace and major element abundance and REE patterns are consistent with arc volcanics. During the Hudsonian tectonic cycle, which extended from ca. 2.0 to 1.7 G.A. in the Lynn Lake region, there was an evolution of plutonism and structural styles from an island arc to a more cratonic environment.

NEW BRUNSWICK/ NOUVEAU-BRUNSWICK

27. FYFFE, L.R., ST. PETER, C.J., CROUSE, G., IRRINKI, R.R., New Brunswick Dept. Nat. Res. (Geol. Surv. Br.):
Bedrock mapping, west-central New Brunswick, 1976-.

Mineral Deposits of Central New Brunswick: Over the past five years, a comprehensive geological survey has been carried out in west-central New Brunswick. The regional geology has been mapped on 1:15 480 scale maps and compiled onto a 1:250 000 map of the whole area. Geological mapping during the summer of 1981 was carried out on a 1:50 000 scale in western New Brunswick with the following areas covered: Aroostook-Plaster Rock (G-12, H-12, G-13, H-13, G14N); Andover (G-15, H-15E, G-16, H-16E, G14S); Florenceville (G-17, H-17, G-18, H-18, G-19); and Juniper (I-15, H-15E, H-16E).

A number of mineral deposits occur within the mapped area. These include stratiform base metal deposits associated with volcanic rocks, porphyry copper deposits within high-level intrusions of intermediate composition and tungsten-molybdenum-bearing veins related to high-level granite stocks.

As a follow-up to the regional mapping program, it is proposed that a report be prepared on the economic potential of mineral deposits of central New Brunswick to accompany the 1:250 000 map of the area.

Economic Potential of Granitic Rocks in Central New Brunswick: A preliminary classification of Acadian Plutonic rocks in New Brunswick has been made based on the mapping. The granite rocks are associated with porphyry copper and tungsten-molybdenum-bearing veins, and uranium anomalies. Trace element analyses of the granitic rocks can be used as tracers in locating suitable source rocks for the above mineralization. Unfortunately only limited whole rock and trace element data is now available for the granitic rocks in New Brunswick. It is proposed that some 30 plutons in central and northern New Brunswick be sampled for whole rock and trace element analyses.

28. SKINNER, R., Geol. Surv. Can.:
Juniper (east half) map-area, New Brunswick, 1971-82.

NEWFOUNDLAND/LABRADOR TERRE-NEUVE/LABRADOR

29. BLACKWOOD, R.F., Newfoundland Dept. Mines and Energy:
Regional study of the Gander River area, Newfoundland, 1978-82.

See:
Geology of the Gander (2 D/15) and Gander River (2 E/2) area; Newfoundland Dept. Mines and Energy, Rept. 82-4, 1982.

Field work was completed during 1981. Apart from mapping tectono-stratigraphic elements, i.e., Gander Group, Davidsville Group, Botwood Group and GRUB Line, a detailed geochemical sampling (rock) program was carried out on the Middle Ridge Granite, results of which will be released separately. 1:50 000 maps of project area will all have final drafting by Spring, 1982; all are now available on open file or in published reports.

30. COLMAN-SADD, S.P., RUSSELL, H., Newfoundland Dept. Mines and Energy:
Geologic mapping, Bay d'Espoir, Newfoundland, 1974-82.

See:
Geology of the Miguels Lake map area (2 D/12), Newfoundland; Newfoundland Dept. Mines and Energy, Rept. 82-1, p. 30-50, 1982.

Mapping at 1:50 000 scale completed for Gaultois (1 M/12), St. Alban's (1 M/13), Twillick Brook (2 D/4), Burnt Hill (2 D/5), and Miguels Lake (2 D/12).

31. DICKSON, W.L., Newfoundland Dept. Mines and Energy:
Geology and geochemistry of the Ackley Granite, southeastern Newfoundland, 1979-82.

See:
The southern contact of the Ackley Granite, southeast Newfoundland; location and mineralization; Newfoundland Dept. Mines and Energy, Rept. 82-1, p. 99-108, 1982.

The Ackley Granite straddles the boundary of the Gander and Avalon Zones in southeastern Newfoundland and has been dated at 355 Ma. The batholith is the host of small molybdenite occurrences which are concentrated near its southern contact. The batholith has been divided into 7 major units based on mineralogy and texture. The northern 4 units show a wide range in SiO_2 values from 59% to 75%. The southern 3 units are much more restricted and range from 69% SiO_2 to 78% SiO_2. All units are high in K_2O – 4.5% to 5.2%. Recent mapping and grid sampling has shown that most of the molybdenite showings are concentrated in a fine to medium grained marginal facies which crystallized at a high level under about 0.5 to 1 kb pressure. This is indicated by granophyre, miarolitic cavities and tuffisites. The northern units do not show these features and probably crystallized at greater depth. Greisen zones also occur along the contact zone in the southeastern part of the batholith and contain sizeable tin anomalies.

32. HERD, R.K., Geol. Surv. Can.:
Geology of Red Indian Lake, west-half, Newfoundland, 1977-83.

33. HIBBARD, J.P., Newfoundland Dept. Mines and Energy:
Geology of the Baie Verte Peninsula, Newfoundland, 1977-82.

Rocks of the Baie Verte Peninsula represent the Paleozoic continent – ocean interface between eastern North America and Iapetus. The 5 year regional study of this area is now complete; during the past year, the finishing touches have been applied to a comprehensive memoir and map for the area. Publication of this report and map is anticipated for mid to late 1982.

34. HYDE, R.S., Newfoundland Dept. Mines and Energy:
Geology of the Carboniferous Deer Lake Basin, western Newfoundland, 1977-82.

See:
Geology of Carboniferous strata in the Deer Lake (12 H/3) and Rainy Lake (12 A/14) map areas, Newfoundland; Newfoundland Dept. Mines and Energy, Rept. 81-1, 1981.

Presently working on memoir-style final report and 1:100 000 scale geologic map.

35. KEAN, B.F., Newfoundland Dept. Mines and Energy:
Regional mapping in west-central Newfoundland, 1975-82.

36. REUSCH, D.N., WILLIAMS, H., Memorial Univ. (Earth Sciences);
Cobbs Arm volcanic belt and its relationships to nearby groups, Newfoundland, 1981-82; M.Sc. thesis (Reusch).

The Ordovician Cobbs Arm volcanics occur within a steep NE-trending zone up to 1 km wide from Duck Island southward to Virgin Arm, a distance of 20 km. The volcanic rocks are part of an assemblage including mafic lavas, breccias, tuffs, volcanic sandstones, and limestones with an Arenig to Llandeilo fauna. Locally interlayered and associated with the volcanic assemblage is a younger clastic assemblage including Caradocian black graptolitic shale, turbidites, and, near Roger's Cove, Silurian pebbly and bouldery mudstones containing clasts of Ordovician lithologies. This zone of structural and sedimentological complexity is bounded to the southeast by northwest-facing Silurian conglomerates and is followed northwest-ward by similar turbidites and conglomerates. The Ordovician rocks of the Cobbs Arm zone have therefore been contentiously interpreted as 1) part of a structurally repeated section, and 2) an olistostrome horizon with huge volcanic blocks.

Blocks of competent Ordovician lithologies are found along the full length of the volcanic belt. Some of these are demonstrably shear-bounded blocks, not olistoliths. Caradocian shale occurs along the southern margin and within the belt as well as along the northern margin. Cleavage generally dips south less steeply than bedding but in two south and east younging disrupted sections near Roger's Cove and in Tilt Cove it dips more steeply. Repeated lithologic belts within the Cobbs Arm zone can therefore be locally interpreted as fold limbs and/or imbricate slices.

The local occurrence of pebbly mudstones requires slumping, but much of the disruption within the Cobbs Arm zone can be related to reverse faulting (initially low angle thrusting) and folding dominated by northwest-facing limbs.

37. SMYTH, W.R., SCHILLEREFF, H.S., Newfoundland Dept. Mines and Energy:
Geologic mapping, Southern White Bay area, Newfoundland, 1980-83.

See:
The pre-Carboniferous geology of southwestern White Bay; Newfoundland Dept. Mines and Energy, Rept. 82-1, p. 78-98, 1982.

1:50 000 mapping completed of Lower Paleozoic strata on 12 H/15 W and 12 H/10 W.

38. STOUGE, S.S., SMYTH, W.R., Newfoundland Dept. Mines and Energy:
Daniel's Harbour mapping project, 1976-82.

See:
Table Point, western Newfoundland. An example of disfiguration of a famous outcrop; Geoscience Canada, vol. 8, p. 132-136, 1981.

The project has completed mapping in the scale of 1:50 000 in the northern part of Great Northern Peninsula. 1:50 000 scale mapping will continue on the west side of Great Northern Peninsula.

NORTHWEST TERRITORIES/ TERRITOIRES DU NORD-OUEST

39. EADE, K.E., Geol. Surv. Can.:
Geology of the Tulemalu Lake map-area, District of Keewatin, 1975-.

40. HENDERSON, J.B., Geol. Surv. Can.:
Yellowknife and Hearne Lake map-areas, District of Mackenzie, 1970-.

41. HENDERSON, J.B., Geol. Surv. Can.:
Keskarrah Bay map-area, District of Mackenzie, 1976-.

42. HEYWOOD, W.W., Geol. Surv. Can.:
Geology of Amer Lake map-area, District of Keewatin, 1976-82.

43. HOFFMAN, P.F., Geol. Surv. Can.:
East arm of Great Slave Lake, District of Mackenzie, 1976-.

See:
Autopsy of Athapuscow Aulacogen; a failed arm affected by three collisions; Geol. Surv. Can., Paper 81-10, p. 97-102, 1981.

44. MORROW, D.W., Geol. Surv. Can.:
Southwestern Ellesmere – western Devon Islands (Operation Grinnell), District of Franklin, 1967-.

45. TAYLOR, F.C., Geol. Surv. Can.:
Geology of Whitehills Lake, District of Keewatin, 1980-.

46. THORSTEINSSON, R., Geol. Surv. Can.:
Cornwallis and adjacent smaller islands, District of Franklin, 1965-.

ONTARIO/ONTARIO

47. CARTER, M.W., THURSTON, P.C., Ontario Geol. Surv.:
Terrace Bay area, Ontario, 1981-82.

See:
Terrace Bay area, District of Thunder Bay; Ontario Geol. Surv., Misc. Paper 100, p. 34-36, 1981.

The map-area is underlain by Early to Late Precambrian rocks mantled by Pleistocene and Recent deposits. The Precambrian rocks comprise metavolcanics and metasediments, metagabbro intrusions, granitic and syenitic intrusions and diabase dikes.

The metavolcanics belong to the Wawa Subprovince and comprise mafic to felsic flows and tuffs and underlie the southern part of the area. The metasediments belong to the Quetico Subprovince, comprise wacke and minor arenite, and occur in the northern part of the area. The metavolcanics and metasediments have been metamorphosed up to amphibolite rank. The rocks trend generally easterly. The gabbroic and granitic and syenitic rocks are mostly massive. Diabase dikes trend west-northwest, north-northeast and easterly. They are magnetic and may be of Late Precambrian age. Mineralization consists of molydenite, pyrite, pyrrhotite and galena.

48. CHOUDHRY, A.G., Ontario Geol. Surv.:
Geology of the Keefer, Denton and Thorneloe townships area, Ontario, 1981-82.

See:
Keefer, Denton, and Thorneloe townships area; Ontario Geol. Surv., Misc. Paper 100, p. 45-48, 1981.

This project is a continuation of the geological mapping in the Timmins-Porcupine general area. It involves interpretation of stratigraphy, structure, and mineralization in the supracrustal rocks which extend southwest-wards from Timmins-Porcupine. The project will result in a geological map and report for the Keefer, Denton, and Thorneloe townships area.

49. JENSEN, L.S., Ontario Geol. Surv.:
Geology of the Kirkland Lake-Larder Lake areas, northern Ontario, 1978-83.

See:
Kirkland Lake area, stratigraphic mapping, District of Timiskaming; Ontario Geol. Surv., Misc. Paper 100, p. 93-95, 1981.

The volcanic sequence of the Abitibi greenstone belt consists of up to three supergroups, each formed by a single volcanic cycle. The uppermost supergroup 30 000 m thick, is preserved in a large synclinorium. The synclinorium contains komatiitic volcanics that are in turn overlain by tholeiitic and calc-alkalic volcanics. The calc-alkalic volcanics were succeeded by alkalic volcanics, fluvial sediments, and K-rich granitic intrusions.

At the outer rims of the synclinorium are spatially separate lower supergroups of about the same age. These lower supergroups are truncated at their bases by trondhjemitic batholiths. Some trondhjemitic rock was also developed in the calc-alkalic core of the synclinorium. Therefore, each volcanic cycle is thought to have been the primary phase of sialic crustal formation.

50. JOHNS, G.W., Ontario Geol. Surv.:
Geology of the MacQuarrie Township area, Ontario, 1981-83.

See:
MacQuarrie-McGeorge Township area, District of Kenora; Ontario Geol. Surv., Misc. Paper 100, p. 22-25, 1981.

The MacQuarrie Township area located in the Sioux Narrows district of eastern Lake of the Woods is part of the Wabigoon Subprovince of the Superior Province. Detailed mapping has outlined two complex metavolcanic-metasedimentary assemblages. Submarine mafic metavolcanics, consisting of pillowed and massive flows with interbedded pyroclastics are overlain by submarine intermediate to felsic metavolcanics, which consist of thick to moderately bedded debris flow sequences. Quartz rich feldspathic wackes are interdigitated with and overlie the metavolcanic debris flows.

At least three phases of deformation have affected the rocks. East-west folding was induced by the intrusion of the Aulneau and Dryberry Batholiths. Second phase north-south folding was induced by the intrusion of the Viola Lake and Bunion Lake stocks. The regional Pipestone-Cameron Fault is the result of the last phase of deformation. Continued mapping will outline the relationship between the two metavolcanic-metasedimentary assemblages, as well as, defining the relationship between the Savant-Crow Lakes belt with the Lake of the Woods belt.

51. MUIR, T.L., Ontario Geol. Surv.:
Geology of the Bowerman-Belanger Township area, Ontario, 1981-82.

See:
Bowerman-Belanger Township area, District of Kenora (Patricia Portion); Ontario Geol. Surv., Misc. Paper 100, p. 15-18, 1981.

Part of a program, involving other staff at the Ontario Geological Survey, to map and interpret the stratigraphy between the Uchi Belt and the Red Lake Belt and determine if these belts are/were connected. The project will result in a geological map and report for the Bowerman-Belanger Township area.

52. PAUK, L., DRESSLER, B., Ontario Geol. Surv.:
Dalhousie Lake area, eastern Ontario, 1981-82.

See:
Dalhousie Lake area, Frontenac and Lanark counties; Ontario Geol. Surv., Misc. Paper 100, p. 70-72, 1981.

53. RUSSELL, D.J., Ontario Geol. Surv.:
Geology of the Paleozoic outliers on the Precambrian Shield in Ontario, 1981-83.

Detailed field mapping and measurement of sections in the areas of the Lake Timiskaming, Pembroke and the Ottawa Valley was carried out in 1981. Further work on the Paleozoic rock near Sault Ste Marie is planned for 1982, with an aim to derive correlations between these outliers and the main depositional basins to the south and north.

QUÉBEC

54. BABINEAU, J., HUBERT, C., Univ. Montréal (Géologie), Québec Ministère Energie et Ressources:
Cartographie et structure de la région de la Motte-Malartic, Québec, 1981-82; thèse de doctorat (Babineau).

Résoudre des problèmes structuraux et stratigraphiques dans la région de la Motte-Malartic.

55. GAUTHIER, M., CIMON, J., Québec Ministère Énergie et Ressources:
Métallogénie du Plomb Zinc dans la région de Maniwaki, Québec, 1981-82.

Phase terminale d'un projet de quatre ans visant a déterminer le potentiel en plomb zinc de la région visée et a en définir les caractéristiques métallogéniques.

56. HENRY, J., WARREN, B.W., Québec Ministère Énergie et Ressources:
Projet Barytine-St-Fabien, Québec, 1981-82.

Elaborer des hypothèses de mise en place de la minéralisation en barytine et en plomb dans la région de Saint-Fabien (Rimouski). TRAVAUX REALISES: Cartographie détaillée 1:10 000; géochimie de sol: 1 828 échantillons; et gravimétrie: 8 profils.

57. HOCQ, M., FRANCONI, A., Québec Ministère Énergie et Ressources:
Projet de synthèse géologique Joutel-Lebel-sur-Quévillon, Québec, 1980-84.

Voir:
Région de Joutel-Guyenne; Québec Ministère Énergie et Ressources, DPV-851, 1982.

Cartographie des roches volcaniques et sédimentaires du territoire de l'Abitibi situé entre Joutel-Guyenne (à l'W) et Lebel-sur-Quévillon (à l'E); phase intermédiaire. Buts: produire une édition révisée de la carte géologique de ce secteur de l'Abitibi au 1:20 000. L'emphase est mise sur la lithostratigraphie, la tectonique, la volcanologie et les minéralisations.

58. KISH, L., Québec Ministère Énergie et Ressources:
Pétrochimie de la région du lac Costebelle, Côte Nord, Québec, 1981-82.

Voir:
Lithogéochimie et radioactivité de la région du lac Costebelle; Québec Ministère Energie et Ressources, DPV-846, 1981.

Etude du potentiel uranifère des granitoides du lac Costebelle.

59. LEDUC, M.J., CIMON, J., Québec Ministère Énergie et Ressources:
Cartographie de la propriété du lac Fabiola, Québec, 1981-82.

60. SANSCHAGRIN, Y., CIMON, J., Québec Ministère Énergie et Ressources:
Batholite de LaMotte, Québec, 1981-82.

3ième étape d'un projet visant à faire une synthèse des phases tardives et hydrothermales associés aux batholites de Preissac, LaMotte et La Corne.

61. VEILLETTE, J.J., Geol. Surv. Can.:
Géologie du Quaternaire, région de l'Outaouais supérieur, Québec-Ontario, 1977-.

SASKATCHEWAN/SASKATCHEWAN

62. DAVISON, W.L., Geol. Surv. Can.:
Milliken Lake-Goldfields mining area, Saskatchewan, 1975-.

YUKON TERRITORY/TERRITOIRE DU YUKON

63. BLUSSON, S.L., Geol. Surv. Can.:
Operation Stewart, Yukon – District of Mackenzie, 1968-.

64. CAMPBELL, R.B., Geol. Surv. Can.:
Operation Mount St. Elias, Yukon-British Columbia, 1973-.

65. KLASSEN, R.W., Geol. Surv. Can.:
Surficial geology and terrain evaluation, southern Yukon, 1977-.

66. NORRIS, D.K., Geol. Surv. Can.:
Operation Porucpine, Yukon-District of Mackenzie, 1961-.

67. THOMPSON, R.I., Geol. Surv. Can.:
Stratigraphy and structure of Dawson, Larsen Creek and Nash Creek map area, Ogilvie Mountains project, Yukon Territory, 1980-.

See:
Ogilvie Mountains project, Yukon; Part A: a new regional mapping project; Geol. Surv. Can., Paper 82-1A, p. 403-410, 1982.

BRITISH COLUMBIA/ COLOMBIE-BRITANNIQUE

68. GABRIELSE, H., Geol. Surv. Can.:
Operation Finlay, British Columbia, 1970-.

69. GABRIELSE, H., Geol. Surv. Can.:
Operation Dease, British Columbia, 1971-.

70. MONGER, J.W.H., Geol. Surv. Can.:
Geology of the Ashcroft and Hope map-areas, British Columbia, 1980-.

See:
Geology of the Ashcroft map area, southwestern British Columbia; Geol. Surv. Can., Paper 82-1A, p. 293-297, 1982.

71. RAY, G.E., McMILLAN, W.J., British Columbia Dept. Mines, Energy, Petrol. Res.:
Geological and geochemical studies on the Coquihalla Gold Belt with particular reference to the Carolin Gold Deposit, 1981-83.

The Coquihalla Gold Belt of southwestern British Columbia lies close to the tectonic junction between the Coquihalla serpentine belt and Jurassic metasediments of the Ladner Group. This project involves both regional and detailed geological mapping and geochemical investigations along the Belt together with surface and underground studies at Carolin Mine and other gold deposits. The project could outline new areas of exploration potential and provide clues concerning the ore controls at Carolin Mine.

72. REESOR, J.E., Geol. Surv. Can.:
Geology of Nelson map area (E/2), British Columbia, 1979-.

73. RODDICK, J.A., Geol. Surv. Can.:
Coast Mountains project, British Columbia, 1963-.

74. VAN DER HEYDEN, P., ARMSTRONG, R.L., WOODSWORTH, G.J., Univ. British Columbia (Geological Sciences), Geol. Surv. Can.:
Geology of the eastern Coast Plutonic Complex near Kemano, British Columbia, 1979-82; M.Sc. thesis (van der Heyden).

Aim: 1) mapping a cross-section across the eastern boundary of the Coast Plutonic Complex in order to determine tectonic and stratigraphic relations between these two major belts; and 2) geochronometry of Mesozoic tectonism along the eastern boundary of the Coast Plutonic Complex.

Conclusions: The eastern boundary of the Coast Plutonic Complex east of Kemano, British Columbia, is a highly disrupted middle Cretaceous tectonic front along which Permian(?) island arc volcanics and related sediments and carbonates, most likely correlative with the Stikine assemblage of northern British Columbia, were thrust over younger volcanic and sedimentary cover material, in a northeasterly direction. The Permian(?) sequence makes up large parts of the Central Coast Plutonic Complex, which preserves along it's margin evidence of a middle Jurassic orogeny. The Coast Plutonic Complex at this latitude is inferred to have formed entirely within a single tectono-stratigraphic terrain, the Stikine block, in response to middle Jurassic amalgamation of the allochthonous Wrangellia/Alexander terrain along an ill defined suture west and south of the study area.

75. WHEELER, J.O., Geol. Surv. Can.:
Lardeau map-area, British Columbia, 1979-.

76. WOODSWORTH, G.J., Geol. Surv. Can.:
Kemano project, British Columbia, 1977-.

MANITOBA/MANITOBA

77. DAVISON, W.L., Geol. Surv. Can.:
Geology of Southern Indian Lake, Manitoba, 1968-.

78. SCHLEDEWITZ, D.C.P., ZWANZIG, H.V., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Brochet – Big Sand Lake, Manitoba, 1981-84.

To define compositional variations, ages of plutonism and deformation within the Chipewyan Igneous complex. Specific and detailed mapping and geochemistry will be carried out over the apparently zoned Hudsonian hypersthene – monzo-charnockite on the south margin of the Chipewyan Batholith. Definition of the lithologies, deformation metamorphism and probable genesis of the South Indian gneiss complex which lies to the south of the Chipewyan Batholith.

NEWFOUNDLAND/LABRADOR/ TERRE-NEUVE/LABRADOR

79. ERAMOVICS, I., Geol. Surv. Can.:
Archean rocks of the Nain Province in Hopedale (13 N), Snegamook Lake (13 K), and Makkovik (13 O) map-areas, Labrador, 1978-.

80. GOWER, C.F., Newfoundland Dept. Mines and Energy:
1:100 000 reconnaissance geological mapping in the Grenville Province in eastern Labrador, 1979-83.

Reconnaissance mapping in the Grenville Province and marginal Central Mineral Belt has been completed for 20 000 km^2 north of latitude 53°30'N and east of longitude 60°00'W. The oldest rocks are inferred to be tonalitic to granodioritic gneisses and are assumed to be the basements for a supracrustal sequence now represented by sillimanite or kyanite pelitic paragneisses, psammitic paragneisses, quartzite and minor calc-silicate rocks. The older gneisses are thought to be either Archean or Aphebian and the paragneisses Aphebian.

The paragneisses have been intruded by (?Paleohelikian) granodiorite, granite and quartz syenite and subsequently by layered gabbro-syenite sheets (Michael Gabbro) at about 1450 Ma. All these lithologies were severely and heterogeneously deformed during the Grenvillian Orogeny. Later intrusions include mafic dykes emplaced at 1000-950 Ma during the early Phanerozoic.

81. HILL, J.D., Newfoundland Dept. Mines and Energy:
Geology of Flowers River – Notakwanon River area, Labrador, 1977-82.

See:
Geology of Flowers River area, Labrador; Newfoundland Dept. Mines and Energy, Rept. 81-6, 1981.

Project encompasses regional mapping and petrologic study of southern part of Nain igneous complex and adjacent gneisses of Nain and Churchill Structural Provinces. A major component of the project is the delineation and study of a peralkaline granite – volcanic rock suite of Neohelikian age named the Flowers River Igneous Suite. This Suite was emplaced at and near the earth's surface in the southeast corner of the Nain igneous complex at about 1270 Ma.

82. NUNN, G.A.G., Newfoundland Dept. Mines and Energy:
Regional geology east of Michikamau Lake, central Labrador, 1980-82.

See:
Regional geology east of Michikaman Lake, central Labrador; Newfoundland Dept. Mines and Energy, Rept. 82-1, p. 149-167, 1982.

1:100 000 reconnaissance mapping of 13 E/13, 14 and 13 L/3, 4, 5, 6 now completed. Preliminary 1:100 000 map of 13 L sheets in preparation, 13 E-14 sheets produced. Final report in progress covering both areas.

The oldest rocks are predominantly mafic volcanics and clastic sediments. They have been intruded by plutonic rocks, mostly tonalites and granodiorites, and together with them deformed and metamorphosed by the Hudsonian Orogeny. They are overlain by post-Hudsonian red beds and volcanic rocks, now mostly preserved as roof pendants in a later (Paleohelikian) plutonic suite dominated by quartz monzonites. The Michikamau anorthositic intrusion is another major pluton of this later intrusive episode. The early gneissic rocks are justaposed by faulting against Seal Lake Group red beds in the east of the area. A deformation intercedes between the Paleohelikian plutonic rocks and the Seal Lake Group. The whole package lies within the Churchill Province. South of the area the Paleohelikian plutonic suite is unconformably overlain by the Seal Lake Group and the two have been deformed by the Grenvillian Orogeny.

83. RYAN, A.B., Newfoundland Dept. Mines and Energy:
1:100 000 areal mapping of the Aillik Group and surrounding rocks, northwest shore of Kaipokok Bay, Labrador, 1981-82.

See:
Basement-cover relationships and plutonic rocks in the Makkovik Subprovince, north of Postville, coastal Labrador; Newfoundland Dept. Mines and Energy, Rept. 82-1, p. 109-121, 1982.

The survey in 1981 completed mapping on the Labrador Central Mineral Belt initiated in 1974. The final phase of this project investigated the Aphebian lower Aillik Group metasediments and metavolcanics and surrounding gneissic and granitoid rocks in the Hudsonian deformed Makkovik Subprovince. The gneisses are quartzo-feldspathic and amphibolitic derived by Hudsonian metamorphic and structural reworking of Archean migmatite and diabase dikes. The lower Aillik Group metabasic volcanics and psammitic schists are in tectonic contact with the gneisses, the contact zone being a mylonitic slide which shows gradational contacts with the gneisses and supracrustals. The Island Harbour plutonic suite comprising predominantly granodiorite and granite was emplaced in the Makkovik Subprovince during the waning stages of the Hudsonian Orogeny.

84. THOMAS, A., Newfoundland Dept. Mines and Energy:
Geology of the Red Wine Mountains and surrounding area (central labrador), 1978-82.

See:
Geology along the aouthwestern margin of the Central Mineral Belt; Newfoundland Dept. Mines and Energy, Rept. 81-4, 1981.

1:100 000 scale mapping of NTS sheets 13 E/9, 10, 11, 15, 16, 13 F/12, 13 and 13 K/4, 13 L/1, 2 SE is now complete. A memoir encompassing regional geology, wholerock geochemistry, geochronology, and mineral potential of this area is presently in progress. The oldest rocks found within the area comprise granulite to amphibolite grade quartzofeldspathic gneisses of at least Aphebian and possibly Archean age intruded by early Paleohelikian gabbronitic rocks. This geologic terrain is partially intruded by and partially in tectonic contact with early Paleohelikian granitoids which are in turn unconformably overlain by supracrustal sediments and volcanics. A large peralkaline plutonic-volcanic edifice is also present within the area. It is strongly suggested that more detailed studies (i.e. of M.Sc. or Ph.D. nature) be carried out by an interested university or academic institutes with emphasis on metamorphic and igneous petrology as well as geochronology. Now that the regional geological picture has been obtained, these studies would be invaluable in tracking the vagaries of the ever elusive Grenville Front in this region.

85. WARDLE, R.J., Newfoundland Dept. Mines and Energy:
Regional geology around the junction of the Churchill and Grenville provinces, western Labrador, 1980-82.

See:
Early Proterozoic sequences in Labrador; Geol. Surv. Can., Paper 81-10, p. 379-398, 1982.

Geology of the Churchill Falls region; Newfoundland Dept. Mines and Energy, Rept. 82-1, p. 131-148, 1982.

NORTHWEST TERRITORIES/ TERRITOIRES DU NORD-OUEST

86. BOSTOCK, H.H., Geol. Surv. Can.:
Geology of Fort Smith, District of Mackenzie, 1980-.

See:
A granitic diapir of batholithic dimensions at the west margin of the Churchill Province; Geol. Surv. Can., Paper 81-1B, p. 73-82, 1981.

Geology of the Fort Smith map area (east half), District of Mackenzie; Geol. Surv. Can., Paper 82-1A, p. 419, 420, 1982.

87. CAMPBELL, F.H.A., Geol. Surv. Can.:
Geology of the Bathurst Inlet area, District of Mackenzie, 1974-.

See:
Evolution of the Early Proterozoic Kilohigok Basin, Bathurst Inlet-Victoria Island, Northwest Territories; Geol. Surv. Can., Paper 81-10, p. 103-132, 1981.

88. CIESIELSKI, A., Geol. Surv. Can.:
Gneissic basement to the Fury and Hecla Formation and the Autridge Formation on Baffin Island, District of Franklin, 1979.

89. FRASER, J.A., Geol. Surv. Can.:
Operation Hyde, District of Keewatin, 1978-.

90. FRASER, J.A., Geol. Surv. Can.:
Geology of Woodburn Lake map area, District of Keewatin, 1980-.

91. FRISCH, T., Geol. Surv. Can.:
Precambrian geology of southeast Ellesmere, Devon and Coburg islands, District of Franklin, 1976-.

92. FRITH, R.A., Geol. Surv. Can.:
Geology of Indin Lake (86 B) map-area, District of Mackenzie, 1972-.

93. FRITH, R.A., Geol. Surv. Can.:
Geology of Nose Lake and Beechey Lake, District of Mackenzie, 1975-.

94. FRITH, R.A., Geol. Surv. Can.:
Geology of Beechey-Duggan Lakes area, District of Mackenzie, 1980-.

See:
Second preliminary report on the geology of the Beechey Lake – Duggan Lakes map areas, District of Mackenzie; Geol. Surv. Can., Paper 82-1A, p. 203-211, 1982.

95. GORDEY, S.P., Geol. Surv. Can.:
Geology of Nahanni map-area, Yukon and Northwest Territories, 1979-.

See:
Stratigraphy, structure and tectonic evolution of southern Pelly Mountains in the Indigo Lake area, Yukon Territory; Geol. Surv. Can., Bull. 318, 1981.

96. HENDERSON, J.B., Geol. Surv. Can.:
Healey Lake map-area, District of Mackenzie, 1978-.

See:
The Healey Lake map area and the Thelon Front problem, District of Mackenzie; Geol. Surv. Can., Paper 82-1A, p. 191-195, 1982.

97. HEYWOOD, W.W., Geol. Surv. Can.:
Operation northern Melville Peninsula, District of Franklin, 1970-82.

98. HOFFMAN, P.F., Geol. Surv. Can.:
Sloan River map-area (86 K), District of Mackenzie, 1973-.

99. JACKSON, G.D., Geol. Surv. Can.:
Operation Bylot, District of Franklin, 1967-.

See:
Rift-related cyclic sedimentation in the Neohelikian Borden Basin, northern Baffin Island; Geol. Surv. Can., Paper 81-10, p. 269-302, 1981.

100. JACKSON, G.D., Geol. Surv. Can.:
Operation Penny Highlands, District of Franklin, 1969-.

101. LeCHEMINANT, A.N., Geol. Surv. Can.:
MacQuoid Lake (W 1/2) and Thirty Mile Lake (E 1/2) map-areas, District of Keewatin, 1975-.

102. LeCHEMINANT, A.N., Geol. Surv. Can.:
Geology of Thirty Mile Lake 65 P (W 1/2) and Tebesjuak Lake 65 O (W 1/2) map-areas, District of Keewatin, 1978-.

See:
Geology of Tebesjuak Lake map area, District of Keewatin: a progress report; Geol. Surv. Can., Paper 81-1B, p. 113-128, 1981.

103. MORGAN, W.C., Geol. Surv. Can.:
Geology of the Foxe Fold belt (west half), Baffin Island, District of Franklin, 1974-.

104. PUGH, D.C., Geol. Surv. Can.:
Subsurface geology of Great Bear River map-area, District of Mackenzie, 1980-.

105. SCHAU, M., Geol. Surv. Can.:
Geology of the Baker Lake map-area, District of Keewatin, 1980-82.

106. TELLA, S., Geol. Surv. Can.:
Kamilukuak Lake map-area, District of Keewatin, 1979-.

ONTARIO/ONTARIO

107. BRIGHT, E.G., Ontario Geol. Surv.:
Lake Simcoe Sheet (Regional geological compilation series 1:250 000), Ontario.

108. CARD, K.D., Geol. Surv. Can.,
Regional geological synthesis, central Superior Province, Ontario and Québec, 1977-.

See:
Progress report on regional geological synthesis, central Superior Province; Geol. Surv. Can., Paper 82-1A, p. 23-28, 1982.

109. FRAREY, M.J., Geol. Surv. Can.:
Geology of the Lake Pananche and Collins Inlet map-areas, Ontario, 1964-82.

110. GRUNSKY, E.C., Ontario Geol. Surv.:
Batchawana synoptic study, Ontario, 1981-84.

See:
Ontario Geol. Surv., Misc. Paper 100, p. 56-60, 1981.

The Batchawana synoptic study is intended to review existing maps and reports, and to investigate previously unmapped areas of the Batchawana greenstone belt area. Information will be gathered on the chemistry of the volcanic supracrustal succession, economic mineral occurrences, types and styles of sedimentation, the structure of both the supracrustal and felsic plutonic domains from this study, a more complete understanding of the area will follow.

QUÉBEC

111. ALLARD, G., FRANCONI, A., Québec Ministère Énergie et Ressources:
Cartographie du quart NW du canton de Hauy, Québec, 1981-.

Faire avancer le cartographie détaillée de la région de Chibougamau.

112. CHARBONNEAU, J-M., FRANCONI, A., DUBÉ, C.Y., HÉBERT, Y., Québec Ministère Énergie et Ressources:
Synthèse géologique Chapais-Branssat, Québec, 1980-84.

Voir:
Cantons de Dolomieu (1/2 E) et de Daubrée (1/4 SW); Québec Ministère Énergie et Ressources, DP-844, 1982.

Géologie du quart sud-est du feuillet du lac Inconnu et Géologie du quart sud-ouest du feuillet du lac Lamarck; Québec Ministère Énergie et Ressources, DP-853, 1982.

Les trois quarts de la superficie à cartographier ont déjà été mis en carte. Les cartes géologiques préliminaires publiées représentent environ 80% de la surface cartographiée. En cours: synthèse des données et interprétations (publication prévue avant septembre 1982).

113. CIESIELSKI, A., Geol. Surv. Can.:
Metamorphism and structure in northeast Superior Province, Québec, 1980-.

114. de ROMER, H.S., Québec Ministère Énergie et Ressources:
Geologie des Monts Stoke, l'Estrie, Québec, 1980-83.

Voir:
Géologie de la part sud des Monts Stoke; Québec Ministère Énergie et Ressources, DPV-822, 1982.

Structural framework, stratigraphy and mineral potential of the Stoke Mountain area, northeast of Sherbrooke, Québec. A Cambrian allochthone (Ascot Formation), on top of Ordovician clastic formations, is overlain unconformably by Siluro-Devonian calcareous shelf deposits.

115. DUBÉ, C.Y., FRANCONI, A., CHARBONNEAU, J-M., HÉBERT, Y., Québec Ministère Énergie et Ressources:
Synthèse géologique Chapais-Branssat secteur Lamarck et Guettard, Québec, 1980-84.

Voir:
Canton de Lamarck (1/2 W) Abitibi-est; Québec Ministère Énergie et Ressources, DPV-811, 1981.

Région du lac Lamarck-Baie Dussault Abitibi-est; Québec Ministère Énergie et Ressources, DP-848, 1982.

116. DUBOIS, J.M.M., Univ. Sherbrooke (Géographie):
Carte des mers postglaciaires du Canada: section de la Côte Nord du Saint-Laurent et d'Anticosti, Québec, 1980-83.

Etablissement d'une carte au 1:250 000 de la zone de la mer de Goldthwait: dépôts meubles, géomorphologie, paléogéographie, littoral actuel, chronologie. Compilation pratiquement terminée sur la Moyenne Côte Nord et amorcée sur la Haute et Basse Côte Nord.

117. DUBOIS, J.M.M., Univ. Sherbrooke (Géographie):
Carte du Quaternaire du Québec, 1981-84.

Etablir une carte du Quaternaire du Québec au 1:1 000 000 semblable à la carte européenne.

SASKATCHEWAN/SASKATCHEWAN

118. GILBOY, C.F., MACDONALD, R., MACDOUGALL, D., Saskatchewan Geol. Surv.:
Sub-Athabasca Group basement geology, northern Saskatchewan, 1980-83.

119. MACDONALD, R., Saskatchewan Geol. Surv.:
Compilation bedrock geology, Pelican Narrows and Amisk Lake areas (NTS 63 M, N and 63 K, L), Saskatchewan, 1975-81.

See:
Compliation bedrock geology: Pelican Narrows and Amisk Lake areas (63 M, 63 L, part of 63 N and 63 K); Saskatchewan Geol. Surv., Summ. Investig., Misc. Rept. 81-4, 1981.

The project was essentially completed in 1981 with publication of the preliminary map at 1:250 000 scale. In 1982 the map will be prepared for final publication. The map enables focusing on the many outstanding problems in the regional geological understanding of this complex area.

120. SCOTT, B.P., MACDONALD, R., Saskatchewan Geol. Surv.:
The geology of the upper Clearwater River area, Saskatchewan, 1978-81.

The geology of the Phelps Lake southwest area, Saskatchewan, 1981-82.

ENVIRONMENTAL GEOSCIENCE/SCIENCES DE LA TERRE APPLIQUÉES A L'ENVIRONNEMENT

121. ANDERSON, J.C., BIGRAS, S.C., Environment Canada (National Water Res. Instit.):
Hydrologic studies, Mackenzie Delta region, Northwest Territories, 1975-.

Field studies continued in the eastern Mackenzie Delta region in 1981, with assistance from Water Survey of Canada and the Polar Continental Shelf Project. At three basins in the taiga zone south of Inuvik and seven basins in the tundra zone between Inuvik and Tuktoyaktuk, data were collected on one or more of the following variables: culvert ice accumulation thickness; river icing thickness and extent; late winter snowpack water equivalent; field season precipitation; air temperature; discharge.

Data analysis is not yet complete, but it is apparent that the 1981 spring flood was of moderate intensity in much of the region. An unusually large river icing was observed on Stanley Creek between Noell and Jimmy Lakes (near 68°35'N; 133°20'W), and another icing recurred on Hans Creek (near 68°52'N; 133°31'W).

122. BARKER, J.F., KING, S., SUTTON, T., Univ. Waterloo (Earth Sciences):
Aspects of organic and bio-geochemistry in the groundwater environment, 1979-; M.Sc. thesis (King).

See:
Carbon isotope fractionation during microbial methane oxidation; Nature, vol. 293, p. 289-291, 1981.

The occurrence and origin of methane in some groundwater flow systems; Can. J. Earth Sci., vol. 18, p. 1802-1816, 1981.

Continuation of research into the influence of microbial processes on the distribution of carbon and hydrogen isotope in groundwaters is proposed. Field studies are to be augmented by controlled laboratory experiments.

Investigation of the geochemistry of organic matter dissolved in groundwaters is also proposed to continue. Initial studies have focused upon contaminated groundwaters. It is proposed to apply the methodology developed here, with suitable modification, to uncontaminated waters. Characterizing the organic matrix (mainly humic substances) as well as identifying specific trace solutes is planned. The evolution of this organic matter during subsurface transport and the effect on groundwater chemistry will be emphasized.

123. BARKER, J.F., MAYFIELD, C.I., BARBASH, J., Univ. Waterloo (Earth Sciences, Biology):
Transport of hazardous organic solutes and metals in groundwaters at a special waste disposal site, 1981-84; M.Sc. thesis (Barbash).

To define the role of organic complexors in the transport and attenuation of toxic metals. The degree to which the contaminated waters can complex metals will be measured and the large molecular weight humic and fulvic substances will be characterized as to their complexing capacity.

Preliminary assessment of the microbial activity in these groundwaters will be undertaken using microscopic observation and activity measurements. Such information is required to evaluate the significance of microbial transformations in the attenuation of organic solutes and organic-metal complexes.

The results of the organic complexing studies will be used in future lab simulations of heavy metal geochemistry (NHRI) and perhaps in predictive models for toxic metal transport. Selection of specific toxic organics for future detailed study will be made from a requested, NHRI-sponsored survey of contaminated groundwaters. These detailed studies will be undertaken in the second year of this research project.

In the third year, it is hoped to begin assessing possible in situ remedial actions which can minimize the impact of the groundwater contamination. Enhancement of microbial activity and chemical transformation (oxygenation, ozonation, etc.) may be considered for laboratory and field scale testing.

124. BIGRAS, S.C., ANDERSON, J.C., TERROUX, A.C.D., PROWSE, T., Environment Canada (National Water Res. Instit.):
Lake regimes, Mackenzie Delta, Northwest Territories, 1980-85.

This was the second year of a study designed to investigate the water level regimes of a variety of lakes in the Mackenzie Delta, in order to provide baseline information for the assessment of the potential impact of increased flow regulation on the Mackenzie River and Delta.

There are now two Delta lake study sites established in the Mackenzie Delta (a southern site 67°56'N; 134°07'W and mid Delta site 68°43'N; 134°15'W) monitoring water levels. Each study site includes a 16 mm time lapse photography system on a non-connected lake, a connected lake and a lake channel. Along with hydrological data, climatological data (precipitation, water temperature and air temperature) were collected at the mid Mackenzie Delta study site during the 1981 field season. At both Delta lake study sites plans have been made to expand the climatological data base for the 1982 season by including wind direction and wind velocity measurements. And throughout the Mackenzie Delta provisions have been made to do a preliminary water quality analysis of a number of channels, connected and non-connected lakes during the 1982 field season.

With the analysis of the 1981 data, which is now in progress, and with the additional information to be collected during the remainder of the study period it should be possible to assess the reservoir effect the Mackenzie Delta lakes have on the inflow from the Mackenzie River and to determine whether or not the Delta region is a pulse stabilizing system (i.e. depends on flood event) or self sustaining.

125. DYKE, L.D., Geol. Surv. Can.:
Tracked vehicle-terrain relationships, central Keewatin, 1980-.

126. EGGINTON, P.A., Geol. Surv. Can.:
Periglacial processes and slope movement, central District of Keewatin, 1977-.

127. EGGINTON, P.A., Geol. Surv. Can.:
Relationship of flood frequency and heavy metal uptake in growth rings of trees, 1981-.

To develop and evaluate a proxy method of determining flood frequency of rivers.

128. FORTESCUE, J.A.C., THOMSON, I., DICKMAN, M., TERASMAE, J., Ontario Geol. Surv., Brock Univ. (Geological Sciences):
Multidisciplinary follow-up of regional pH patterns in lakes north of Lake Superior, Ontario, 1980-82.

See:
Geochemical evolution of lake systems northeast of Lake Superior: integrated studies in the Wawa area; Ontario Geol. Surv., Misc. Paper 100, p. 168-171, 1981.

129. GLOOSCHENKO, W.A., BOURBONNIERE, R.A., Environment Canada (National Water Res. Instit.):
Impact of peat as an energy source upon northern aquatic ecosystems, 1980-85.

To assess the ecological significance of acidic wetlands in relation to their impact upon the aquatic ecology of adjacent streams and lakes; to determine the impact of peat extraction upon aquatic ecosystems; to study major geochemical cycles in peatlands, emphasizing nutrients, trace metals, and natural organic compounds.

130. JACKSON, L.E., Jr., Geol. Surv. Can.:
Environment assessment of coal resources development, Canadian Cordillera, 1977-.

131. JACKSON, L.E., Jr., Geol. Surv. Can.:
Debris flow hazard assessment methodology, alpine and northern upland areas, 1978-.

132. KAMENKA, L.A., RUTTER, N.W., Univ. Alberta (Geology):
Rates of weathering of spoil piles from open pit mines in the Rocky Mountains of Alberta from field observation and a laboratory experimental system, 1978-82; M.Sc. thesis (Kamenka).

133. LAST, W.M., Univ. Manitoba (Earth Sciences):
Lake sedimentation studies in southern Manitoba, 1982-84.

Southern Manitoba (south of township 45) contains hundreds of lakes in a diverse physical landscape that is characterized by extremely variable surficial geology and bedrock conditions. The province also exhibits marked climatic gradients, variable groundwater and runoff conditions, and differing degrees of human manipulation. In addition, the many lakes themselves show considerable variation in size, morphology, aqueous chemistry, and origin. A few of these many lakes have been studied in detail by geoscientists and limnologists within the past decade; most have not. I propose to systematically sample and analyze the sediments of representative lakes in each of the physiographic, climatic, and soil/bedrock subdivisions in the southern portion of the province. The specific objectives of this research project are to: (1) categorize the lakes of southern Manitoba on the basis of the physical, chemical, mineralogical, and biological attributes of the profundal sediment; (2) gain a basic understanding of the main factors responsible for the variation in sediment components, particularly with regard to possible human impact in the basins; and (3) identify, on a reconnaissance basis, lakes whose sedimentary records indicate significant contamination or modification by cultureal and industrial activity.

134. MAYFIELD, C.I., BARKER, J.F., Univ. Waterloo (Biology Earth Sciences):
Organic and biogeochemistry of potential backfill/buffer materials, 1980-83.

To evaluate the potential for groundwater chemical transformation and radionuclide/metal complexation due to microbiologically-mediated reactions in backfill/buffer materials. Experiments are planned: 1) to define the nutrients likely to be limiting such microbial activity; 2) to determine if microbial activity is likely to bring about anaerobic and low pe conditions in backfill material; and 3) to determine whether organic complexing agents are likely to be released from the organic fraction of the backfill material due to microbial activity.

135. POWER, J.M., PROWSE, T., Environment Canada (National Water Res. Instit.):
Peyto Glacier hydrology, 1965-.

See:
The mass balance of Peyto Glacier, Alberta, Canada, 1965-1978; Arctic and Alpine Res., vol. 13, no. 3, p. 307-318, 1981.

Monitoring of glaciology and meteorology continued under contract to P.G. Johnson, Ottawa University. Three undergraduate students will handle the monitoring program in 1982. Dr. D. Collins, Manchester University will be conducting field studies of geochemistry of the meltwaters to determine their sources and further understand the internal drainage of the glacier.

136. RUKAVINA, N.A., Environment Canada (National Water Res. Instit.):
Nearshore sediment data reports/atlas, 1978-84.

See:
Lake Erie nearshore sediment and acoustic data, Long Point area; NWRI Hydraulics Div. Tech. Note 81-02, 1982.

Lake Ontario nearshore sediment data, Niagara to Jordan; NWRI Hydraulics Div. Tech. Note 81-09, 1982.

Lake Erie nearshore sediment and acoustic data, Port Colborne to Fort Erie; NWRI Hydraulics Div. Tech. Note 81-24, 1982.

To organize and publish field and laboratory data for Great Lakes nearshore sediments as a Data Report Series and Coastal Sediment Atlas. Eight reports were prepared during 1981-1982 and a computer file was developed to expedite data editing and retrieval.

137. SHILTS, W.W., Geol. Surv. Can.:
Sensitivity of surficial sediments to effects of acid precipitation, 1980-.

See:
Subbottom profiling of lakes on the Canadian Shield; Geol. Surv. Can., Paper 82-1A, p. 375-384, 1982.

138. TAYLOR, R.B., Geol. Surv. Can.:
Coastal reconnaissance of the Sverdrup Basin, Northwest Territories, 1978-.

See:
Coastal geology mapping: an example from the Sverdrup Lowland, District of Franklin; Geol. Surv. Can., Paper 81-1B, p. 39-48, 1981.

139. TAYLOR, R.B., Geol. Surv. Can.:
Coastal reconnaissance of Bylot and northeastern Baffin islands, Northwest Territories, 1979-.

140. THOMSON, I., BONI, E.A., Ontario Geol. Surv.:
Regional geochemical mapping in southwestern Ontario, 1981-83.

See:
Ontario Geol. Surv., Misc. Paper 100, p. 165-167, 1981.

141. ZEMAN, A.J., SKAFEL, M.G., Environment Canada (National Water Res. Instit.):
Geotechnical studies of eroding bluffs, Ontario, 1975-83.

Long-term monitoring of pore pressures, groundwater fluctuation, and subsurface displacements at the study site continued throughout the year. Significant results were obtained from the continuous record of pore pressures. The record from two piezometers shows a rapid decrease in pore pressures (equivalent to a drop of several metres of water over a 30-minute time interval) associated with a landslide that occurred in early November 1981. Significant subsurface movements, indicative of progressive slope failure, were not detected.

Slope stability analyses using laboratory geotechnical data and measured slope profiles are underway. A new topographic survey of the study site was carried out in August 1981.

142. ZEMAN, A.J., SKAFEL, M.G., Environment Canada (National Water Res. Instit.):
Laboratory test of soil erodibility, 1981-.

Knowledge of sediment erodibility under controlled hydraulic conditions is important for a better understanding of shoreline and sub-aqueous erosion. A study was therefore initiated to develop a testing method which would permit measurement of sediment erosion with known applied shear strresses. During 1981, we have built a rotating-cylinder apparatus for testing natural and compacted specimens under known hydraulic shear stress. As of March 1982, we have calibrated the apparatus to obtain a correct rpm-torque relationship and we have carried out initial tests with 10-cm diameter specimens of clayey till. It is expected that the study will continue for the next two fiscal years. We are also compiling comprehensive bibliography and annotated abstracts of literature concerned with laboratory and in-situ measurements of erosion in cohesive sediments.

ANALYTICAL METHODS AND ANALYSIS/ MÉTHODES ANALYTIQUES ET ANALYSES

143. ABBEY, S., Geol. Surv. Can.:
Analysis of international reference samples, 1969-.

See:
Mineralogy and petrology of four "standard" samples of iron formation; Geol. Surv. Can., Paper 82-1A, p. 435-437, 1982.

144. ABBEY, S., Geol. Surv. Can.:
Development of methods for the analysis of geological materials, 1969-.

145. LITHERLAND, A.E., RUCKLIDGE, J.C., Univ. Toronto (Geology, Physics):
Analytical techniques – iron microprobe development.

An ion microprobe attachment (for the ISOTRACE Tandetron accelerator) has been designed with due regard to applications in mineralogy and related fields. The program of test experiments on the University of Rochester MP tandem was concluded last summer.

Feasibility studies are being made on aspects of trace element assay and isotope ratio measurements. Possible research topics include: 1) specific isotope ratio measurements in meteorites; 2) microprobe trace element analysis of single crystals; and 3) time element assay of pre-processed rock samples.

146. LUDDEN, J., GARIÉPY, C., GÉLINAS, L., Univ. Montréal (Géologie):
La mobilité des éléments-traces et des terres-rares pendant les processes metamorphiques.

147. RUCKLIDGE, J.C., GORTON, M.P., WILSON, G.C., LIU, X., LITHERLAND, A.E., KILIUS, L.R., Univ. Toronto (Geology):
Ultra sensitive analysis of stable isotopes by accelerator mass spectrometry, 1980-84.

See:
Ultra sensitive SIMS with nuclear accelerator; Microbeam Analysis, San Francisco Press, 1981.

Rare isotope detection with tandem accelerators; Nuclear Instruments and Methods, vol. 191, 1981.

The Tandetron accelerator, scheduled for delivery to ISOTRACE (Isotope and Rare Atom Counting Equipment) in 1981 has suffered delays and is now expected in March 1982. Experiments with stable isotopes of Ir and Pt started in 1980 and continued in 1981 at the University of Rochester, will be continued on the Toronto machine in 1982.

Attempts to measure Pt and Ir directly in sediments from the Cretaceous-Tertiary boundary confirm that anomalies exist for both Ir and Pt at the ppb level. Heterogeneous distribution of these elements between sulphide, silicate & organic phases is suggested by the data and more detailed investigation of the aspect will be scheduled after the commissioning of the Toronto machine.

148. STEGER, H.F., BOWMAN, W.S., SABOURIN, R.G., EMR (CANMET):
Canadian certified reference materials project (CCRMP), 1970-.

See:
OKA-1: A certified niobium reference ore; CANMET Rept. 81-1E, 1981.

PD-1: A certified non-ferrous reference dust; CANMET Rept. 81-7E, 1981.

DH-1a: A certified uranium-thorium reference ore; CANMET Rept. 81-11E, 1981.

Ore and metal standards vital to lab; Geos, vol. 10, no. 3, p. 13, 1981.

The new certification procedure of CCRMP; Geostandards Newsletter, vol. 2, p. 189, 1981.

In this period, the certification programs for MA-2, a gold ore, MP-1a, a base-metal ore, and BL-2a and BL-4a, two uranium ores, were closed. These materials will be made available for sale in early 1982. The certification program for MW-1, an iron ore concentrate, was begun and is scheduled for completion in April, 1982.

149. WAGENBAUER, H.A., DAVENPORT, P.H., Newfoundland Dept. Mines and Energy:
Tin determination in granitoid rocks using an hydride-generation/flameless atomic absorption method, 1981-82.

EXPLORATION, ORGANIC/ APPLIQUÉE, ORGANIQUE

150. BARNES, M.A., BARNES, W.C., Univ. British Columbia (Geological Sciences):
Anoxic and oxic diagenesis of terpenes derived from a common source, 1978-85.

Powell Lake, a deep former fjord on the coast of southwestern British Columbia, is divided into a series of basins by shallow sills. Two basins, one dimictic and one meromictic, are the subjects of this study. The distribution of branched hydrocarbons, perylene, pentacyclic triterpenes and β, β-C_{31} hopane relative to normal saturated hydrocarbons is not affected by depositional environment. Major differences occur, however, in the diterpenes related to abietic acid. Sediments in the meromictic basin contain the entire series of partially to fully aromatized diterpenes; retene comprises 15% of the total hydrocarbons. Sediments from the dimictic basin contain none or only small amounts of the mono-, di- and tri-aromatic diterpenes which are abundant in the meromictic basin. As the two basins studied share the same organic precursors, both higher plant and planktic, differences in diterpene distribution provide a measure of the effects of oxic and anoxic diagenetic environments on the structure and aromaticity of terpene hydrocarbons.

151. BARNES, W.C., BARNES, M.A., Univ. British Columbia (Geological Sciences):
Diagenesis of diterpene acids from resins of **Pinus contorta** stumps embedded in middle Holocene peats under freshwater and brackish reducing conditions, British Columbia, 1982-83.

Recent peats, approximately 4000 years old, are well developed in the eastern part of Lulu Island on the Fraser River delta. These peats contain abundant stumps of the shore pine, **Pinus contorta.** Stumps exposed along the main arm of the Fraser River, and present but not exposed near the river, are embedded in peats which are involved in the active reduction of sulphate brought into the estuary during high tides. Stumps at a distance from the estuary are exposed to freshwater diagenesis only, and lack the abundant sulphide found in the peats nearer the river. Microscopic study of microtome sections of the stumps (Styan, M.Sc. thesis, 1982) has shown that resins in the stumps nearer the river have a much darker colour than those of stumps away from the river. The aim of the present study is to distinguish the effects of the sulphate reduction ecosystem on the diagenesis of resin acids derived from conifers, particularly on the processes of decarboxylation, demethylation and progressive aromatization leading to the formation of alkylated polynuclear aromatic hydrocarbons.

152. BEAUMIER, M., Québec Ministère Énergie et Ressources:
Géochimie des sols de la région de Brouillan, Québec, 1981-82.

Mettre à jour des aires enrichies en métaux ou métalloides.

153. JONASSON, I.R., Geol. Surv. Can.:
Environmental geochemistry, 1974-.

154. MAJID, A.H., VEIZER, J., Univ. Ottawa (Geology):
Diagenesis and depositional history of the Kirkuk Oil Field host rocks, 1977-82; Ph.D. thesis (Majid).

155. POWELL, T.G., Geol. Surv. Can.:
Hydrocarbon geochemistry of Arctic Archipelago and Canadian East Coast offshore, 1976-.

156. SNOWDON, L.R., Geol. Surv. Can.:
Development of extraction, identification and correlation systems for organic compounds from sedimentary rocks and crude oils, 1973-.

157. SNOWDON, L.R., Geol. Surv. Can.:
Hydrocarbon geochemistry of northern Interior Plains and Beaufort Sea, 1976-.

See:
Organic geochemistry of the Upper Cretaceous-Tertiary delta complexes of the Beaufort-Mackenzie sedimentary basins, Northwest Territories; Geol. Surv. Can., Bull. 291, 1981.

158. VEIZER, J., FRITZ, P., JONES, B., Univ. Ottawa (Geology):
Geologic buffering of the global carbon cycle, 1981-84.

159. WARREN, H.V., Univ. British Columbia (Geological Sciences):
Biogeochemical prospecting of gold, biogeochemical prospecting for silver, 1975-.

See:
The development of biogeochemistry as a practical prospecting tool for gold; Western Miner, vol. 55, no. 2, p. 27-32, 1982.

The significance of a discovery of gold crystals in overburden; Assoc. Exploration Geochem., Precious metals in the Northern Cordillera, p. 45-51, 1982.

Using our Perkin Elmer "603" spectrophotometer we can now analyze gold and silver in plants, pollen, dust, and soils down to 1 ppb.

EXPLORATION, NON-ORGANIC/ APPLIQUÉE, NON-ORGANIQUE

160. AL-AASM, I.S., VEIZER, J., Univ. Ottawa (Geology):
Chemical stabilization of low-mg calcite, 1980-84; Ph.D. thesis (Al-Aasm).

161. BÉDARD, J., BROOKS, C., LUDDEN, J., Univ. Montréal (Géologie):
Évolution géochimique des collines montérégiennes.

162. BOYLE, D.R., Geol. Surv. Can.:
Regional geochemistry, Newfoundland and Labrador, 1976-.

163. BRAND, U., TERASMAE, J., Brock Univ. (Geological Scineces):
Source rock geochemistry of Pleistocene tills of southern Ontario, 1982-85.

Geochemical, stable isotope and petrographic study of Paleozoic sedimentary rocks in southern Ontario with regard to similar studies of glacial deposits derived from these rocks, and the application of results in Pleistocene stratigraphic correlation, glacial history and potential other uses (economic and environmental geology, and exploration geochemistry).

164. BROOKS, C., CHARBONNEAU, R., Univ. Montréal (Géologie):
Géochronologie et géochimie des roches granulitiques, ceinture Pikwitonei, Manitoba.

165. BROOKS, C., GAUTHIER, G., Univ. Montréal (Géologie):
Géochimie et géochronologie des roches métavolcaniques de la ceinture Michipicoten, Ontario.

166. CHAMPAGNE, M., BOURQUE, P.A., HÉROUX, Y., Univ. Laval, INRS-Géoressources:
Distributions et relation entre la matière organique et les éléments traces (Ni, Cu, Zn, Ag, Ba, Pb) dans les Basses-Terres du Saint-Laurent (Québec), 1980-82; thèse de maîtrise (Champagne).

Établir les premières coupes de référence dans la distribution des éléments traces (Ni, Cu, Zn, Ag, Ba, Pb) et des matières organiques dans les Basses-Terres du Saint-Laurent.

167. CHOINIERE, J., Québec Ministère Énergie et Ressources:
Géochimie des sédiments de ruisseau de la péninsule gaspésienne – Région de Gaspé, Québec, 1981.

Voir:
Atlas géochimique de la partie orientale de la Baie des Chaleurs; Québec Ministère Énergie et Ressources, DPV-854, 1981.

Il sagit de la suite d'un programme d'exploration de la Gaspésie par l'échantillonnage systématique des sédiments de ruisseau.

168. DARLING, R., École Polytechnique (Génie Mineral):
Further studies – The trace element geochemistry – of the altered wallrocks around the Louvem Copper deposit, Val d'Or, Quebec, 1980-82.

169. DUNN, C.E., Saskatchewan Geol. Surv.:
Lake-sediment geochemistry, northern Saskatchewan, 1975-82.

Compilation of atlas of lake sediment geochemistry (marginal to the Athabasca Sandstone).

170. DUNN, C.E., Saskatchewan Geol. Surv.:
Uranium biogeochemistry, northern Saskatchewan, 1979-82.

See:
The biogeochemical expression of deeply buried uranium mineralization in Saskatchewan, Canada; J. Geochem. Explor., vol. 15, p. 437-452, 1981.

To determine relationship between mineralization and metal concentrations in various plants.

171. FEDIKOW, M., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Bedrock geochemistry and base-precious metal mineralization in Manitoba, 1981-.

Bedrock geochemical signatures of porphyry-style gold mineralization; regional bedrock geochemical surveys – base metals and precious metals – southeastern Manitoba.

172. FLETCHER, W.K., SINCLAIR, A.J., MATYSEK, P., Univ. British Columbia (Geological Sciences):
Computer-oriented evaluation of multi-element stream sediment data, 1979-82; M.Sc. thesis (Matysek).

See:
A preliminary evaluation of categorical field observations for regional stream sediment samples; British Columbia Ministry Energy, Mines, Petrol. Res., Paper 1981-1, p. 148-150, 1981.

Rapid anomaly recognition and ranking for multi-element regional stream sediment surveys; British Columbia Ministry Energy, Mines, Petrol. Res., Paper 1982-1, p. 176-186, 1982.

Multivariate methods have been applied to the interpretation of multi-element data obtained from regional stream sediment surveys in southern British Columbia. Particular emphasis has been placed on 1) Ducan's multiple range test as a method of evaluating the relative importance of various categorical variables in affecting metal abundances, and 2) multiple regression and probability graph partitioning as techniques that are fundamental to rapid recognition of anomalous samples.

173. FOSCOLOS, A.E., Geol. Surv. Can.:
Clay and clay minerals investigation, 1968-.

174. GODWIN, C.I., GORZYNSKI, G., HORSKY, S., Univ. British Columbia (Geological Sciences):
Geology and lithogeochemistry of the Cirque shale-hosted Ba-Pb-Zn-Ag deposit, north-eastern British Columbia, 1981-83; M.Sc. thesis (Gorzynski).

Geological mapping with detailed geology along cross-section mapped on a GEOLOG data base is complete. Analysis of 275 samples for 30 elements has also been completed. In addition, Eu, Sm, Yb analyses have been done by a newly developed chromatographic filtration technique coupled with flameless AAS. It has been noted that, in baritic ore, XRF analysis leads to spurious results for Zr (Sr-interference), Nb and Y (Pb-interference) and Ti (Ba-interference). Results presented as a thesis and papers can be expected in 1982.

175. HORNBROOK, E.H.W., Geol. Surv. Can.:
National geochemical reconnaissance, 1975-.

176. JONASSON, I.R., Geol. Surv. Can.:
Trace elements in sulphides, 1974-.

177. JURAS, S., GODWIN, C.I., Univ. British Columbia (Geological Sciences):
Geology and lithogeochemistry of the Western Mines – Buttle Lake Kuroko type Camp, central Vancouver Island, British Columbia, 1982-86; Ph.D. thesis (Juras)

Basic mapping and lithogeomistry/petrology of Buttle Lake Camp will form the basis for detailed studies.

178. LALONDE, J-P., PELLETIER, M., Québec Ministère Énergie et Ressources:
Géochimie des eaux souterraines des Basses-Terres du St-Laurent et des Appalaches, Québec, 1979-82.

Nous avons à date prélevé 10 000 échantillons d'eau souterraine sur un territoire d'environ 19 000 km^2. Les données de cet inventaire seront publiées par tranche de 4 à 5 mille échantillons. Les deux premières tranches sont prévues pour d'ici un an.

179. LEVINSON, A.A., Univ. Calgary (Geology and Geophysics):
Exploration and environmental geochemistry, 1974-.

See:
Exploration for uranium ore deposits (Chapter 14); in, Uranium Series Disequilibrium: Application to Environmental Problems in the Earth Sciences, Oxford University Press, 1982.

180. LUDDEN, J., BABINEAU, J., PARENT, G., GENTLEMAN, S., GÉLINAS, L., HUBERT, C., Univ. Montréal (Géologie):
La géochimie des roches volcaniques de l'Abitibi, Québec.

181. McCOLL, M., GODWIN, C.I., Univ. British Columbia (Geological Sciences):
Geology and lithogeochemistry of the Britannia Shear Zone, southwestern British Columbia, 1982-84; M.Sc. thesis (McColl).

A primary objective of this research is to define the geological framework necessary to guide a lithogeochemical study of the Britannia shear zone and to aid in the definition of drill targets.

182. McCONNELL, J.W., DAVENPORT, P.H., Newfoundland Dept. Mines and Energy:
Regional and follow-up geochemistry in Labrador, 1978-82.

See:
Stream sediment, stream water & soil geochemistry associated with four base metal anomalies in Labrador; Newfoundland Dept. Mines and Energy, Lab. O.F. Rept. 563, 1981.

Geochemical follow-up studies in Labrador; Newfoundland Dept. Mines and Energy, Rept. 82-1, p. 172-174, 1982.

183. MacINTYRE, D.G., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Br.):
Midway project, British Columbia, 1981-84.

Stratiform massive sulphide and barite occurs in a belt of Late Devonian basinal facies clastic rocks east of the Cassiar Batholith in northern British Columbia. The most significant occurrence is the Midway, which is comprised of three massive pyrite zones with variable Zn, Pb and Ag grades in a south dipping section of argillites and siltstones of the Lower Sylvester Group. Three regional exhalite horizons are also recognized each occurring in shales and argillites at the base of coarsening upward sedimentary cycles. The lateral and vertical lithogeochemical variation of exhalites and host rocks will be examined near the Midway and elsewhere in the basin.

184. MAURICE, Y.T., Geol. Surv. Can.:
Regional geochemistry, northern Canadian Shield, 1976-.

185. MELLINGER, M., Saskatchewan Res. Council (Geology Div.):
Exploration lithogeochemistry, 1980-.

See:
Lithogeochemistry: Basic concepts and its application to exploration – Seminar notes; Sask. Res. Council, Publ. No. G-740-1-D-82, 1982.

Effective data analysis of (litho) geochemical data: An introduction – Seminar notes; Sask. Res. Council, Publ. No. G-740-2-D-82, 1982.

Establish an effective methodology for lithogeochemical exploration. Emphasis on: consistency and pertinence of sampling and analytical data, "exhaustivity" and integration of complementary and lithogeochemical information, flexibility and relevancy of data analysis. Technical aspect: flexible use of different computer configurations (main frame computer and local graphics computer system), flexible data analysis software configuration.

186. NADEAU, S., LUDDEN, J., FRANCIS, D.M., HYNES, A.J., Univ. Montréal (Géologie):
L'évolution géochimique des roches volcaniques et plutoniques de la ceinture métavolcanique de Cap South, Québec.

187. O'REILLY, G.A., CHATTERJEE, A.K., MUECKE, G.K., Dalhousie Univ. (Geology), Nova Scotia Dept. Mines and Energy:
1) Geology and geochemistry of the East Dalhousie uranium prospect, Annapolis County, Nova Scotia, 1981-83; M.Sc. thesis (O'Reilly). 2) Geology and geochemistry of the Westfield and Long Lake W-Mo-Sn prospects, 1979-82.

188. PASITSCHNIAK, A., WEBBER, G.R., MacLEAN, W.H., McGill Univ. (Geological Sciences):
The sulfur content and sulfur isotopic composition of Archean basaltic rocks at Matagami, Quebec and their relationship to massive sulfides, 1979-82; M.Sc. thesis (Pasitschniak).

This project is concerned with the distribution of sulfur near the Garon Lake Mine, Matagami, Quebec. Previous investigations (by P.J. MacGeehan and W.H. MacLean) have shown that alteration processes have strongly affected both siliceous and mafic igneous rocks in the vicinity of ore deposits at Matagami. These alterations have been ascribed to rock-water interactions during the development of shallow sub-seafloor geothermal systems. MacGeehan and MacLean have developed a geothermal model for the formation of the sulfide deposits and have determined the behaviour of a number of chemical elements in this process. The present work has involved determination of the behaviour of sulfur in this system.

189. PIGEON, Y., BROOKS, C., LUDDEN, J., Univ. Montréal (Québec):
Association shoshonite dans l'archéen.

190. PRABHU, M.K., WEBBER, G.R., McGill Univ. (Geological Sciences):
Geology, geochemistry and genesis of Montauban lead-zinc deposits, Québec, 1976-81; Ph.D. thesis (Prabhu).

See:
Sr, Y, Zr, NB, Ti, and REE in Grenville amphibolites at Montauban-les-Mines, Quebec; Can. J. Earth Sci., vol. 19, no. 4, p. 633-644, 1982.

Lithogeochemical investigations were carried out in and around the Montauban polymetallic deposits of the Grenville Province, Quebec. A number of chemical criteria used to distinguish sedimentary and igneous protoliths for the ore host rocks were tested and found to be weak in their discriminating capabilities. Critically evaluated chemical criteria show that the protoliths for quartzo-feldspathic gneisses, quartz-rich rocks, and host rocks were mainly siliceous sediments and intercalated carbonate lenses. Hornblende genisses of the Montauban area are orthogneisses. They and other ortho-amphibolite rocks in the study area have a tholeiitic affinity. Incompatible element chemistry sugests that they were formed in an island-arc (including back-arc) environment.

Alteration associated with the Montauban Pb-Zn deposits is weak and has a narrow lateral extension with erratic chemical halos close to the ore-bearing zones. A CaO-rich zone extends up to 140 m laterally to the east from the calc-silicate ore zone, and an anomalous MgO zone extends on both sides of the cordierite-anthophyllite ore zone into the quartzofeldspathic gneisses. The cordierite-anthophyllite gneiss host rock is more anomalous in Zn, Pb, Cu and Au than the calc-silicate host rock. Erratic high concentrations of Zn and Au occur within the quartzofeldspathic gneisses close to both ore-bearing zones. Copper and Au occur at slightly greater depths than Zn and Pb within the deposits.

The Montauban Pb-Zn deposits were formed in a mainly sedimentary environment, probably by exhalative processes, and were metamorphosed to the almandine-amphibolite facies with the enclosing sediments.

191. ROBERT, F., DARLING, R., GÉLINAS, L., École Polytechnique (Génie Mineral):
The geochemistry of altered wallrocks surrounding the Manitou-Barvue volcanogenic ore deposits, Val d'Or, Quebec, 1978-82; M.Sc. A. thesis (Robert).

The thesis is completed and a paper is being prepared for publication.

192. ROY, C., DARLING, R., LUDDEN, J., École Polytechnique (Génie Mineral):
Geochemistry of host rocks at Kiena Gold Mines, Val d'Or, Québec, 1980-82; M.Sc. A. (Roy).

193. SCOTT, S.D., Univ. Toronto (Geology):
Mineralogy and geochemistry of hydrothermal vent deposits from the East Pacific Rise, 1982-.

See:
Small chimneys from Japanese Kuroko deposits; Geoscience Canada, vol. 8, no. 3, p. 103-104, 1981.

Scott is a member of research teams from Scripps Institution of Oceanography and Woods Hole Oceanographic Institution studying hydrothermal mineralization at spreading centres along the East Pacific Rising using the submersible Alvin. His responsibilities within the research teams include detailed mineralogy and mineral chemistry of the vent deposits, major and minor element variation in and around vent deposits, and a comparison of such deposits with the geological setting and mineralogy of ore analogues on land.

194. THOMSON, I., WADGE, D.R., LOURIM, J.T., Ontario Geol. Surv.:
Reconnaissance basal tills surveys and related geochemical research in Kirkland Lake, area, District of Timiskaming, Ontario, 1979-83.

Ontario Geol. Surv., Misc. Paper 100, p. 175-178, 1981.

Mineralogical field techniques for till prospecting in the Kirkland Lake area; ibid., p. 172-174, 1981.

195. WEBBER, G.R., GRICE, R.H., McGill Univ. (Geological Sciences):
Hydrogeochemical patterns at Montauban mining area, Quebec, 1980-82.

To investigate the applicability of hydrogeochemical sampling methods for mineral deposits in the environment represented by the Zn-Pb-Au deposits at Montauban, Quebec. Our samples consist of stream and shallow spring waters, stream sediments and water from one flowing drill hole. We are investigating solubility effects and decay of anomalies produced by old mine tailings.

GENERAL/GÉNÉRALITÉS

196. BALLANTYNE, S.B., Geol. Surv. Can.:
Regional geochemistry – southern Cordillera, 1979-.

197. BARAGAR, W.R.A., Geol. Surv. Can.:
Stratigraphy and geochemistry of the volcanic rocks of the Circum-Ungava Belt, District of Keewatin, 1978-.

See:
The Circum-Ungava Belt of eastern Hudson Bay: the geology of the Ottawa Islands and the Cape Smith region; Geol. Surv. Can., Paper 82-1A, p. 11-15, 1982.

198. BERTRAND, R., HUMBERT, L., CHAGNON, A., HÉROUX, Y., ACHAB, A., GLOBENSKY, Y., INRS-Géoressources, Québec Ministère Énergie et Ressources:
Recristallisation des calcaires micritiques en fonction de la maturation thermique dans les Basses-Terres du Saint-Laurent du Québec, 1975-81.

Publication soumise depuis octobre 1981. Le projet sera relayé par des études du même type en Gaspésie et sur l'île d'Anticosti.

199. BOILY, M., LUDDEN, J., BROOKS, C., Univ. Montréal (Géologie):
Études géochimiques et isotopiques des assemblages volcano-plutoniques associés aux processus de subduction lithosphérique, 1981-; thèse de doctorat (Boily).

200. BOYLE, R.W., Geol. Surv. Can.:
Geochemistry of metallogenesis and primary halos, 1973-.

201. BROOKS, C., Univ. Montréal (Géologie):
Le développement du Bouclier canadien et son rapport avec les autres régions précambriennes.

202. BROOKS, C., Univ. Montreal (Géologie):
Pétrogénèse des tholéites mésozoiques de l'hémisphère sud.

203. BROOKS, C., GARIÉPY, C., MACHADO, N., LUDDEN, J., Univ. Montréal (Géologie):
Systématique des systèmes Rb/Sr et Sm/Nd dans les tholeiites continentales: implications pour l'evolution chimique du manteau sub-continental.

204. CAMERON, E.M., Geol. Surv. Can.:
Geochemical provinces, Newfoundland-Quebec-Ontario, 1980-.

205. DAVENPORT, P.H., BUTLER, A.J., Newfoundland Dept. Mines and Energy:
Geochemical atlas of Newfoundland, 1981-83.

The project will summarize the distributions of the elements Cu, Zn, Co, Ni, Ag, Mo, U, F, Mn and Fe in lake sediment for the entire island of Newfoundland. The data have been obtained from a number of geochemical lake sediment surveys carried out between 1973 and 1981, and these data have been released on maps at scales of 1:100 000 and 1:250 000. The atlas will be published at 1:1 000 000 and will provide an overview of the geochemistry of Newfoundland with applications in the areas of mineral exploration, forestry, freshwater fisheries, environmental studies, agriculture and health.

206. DUNN, J.T., SCARFE, C.M., Univ. Alberta (Geology):
Investigation of the role of oxygen in silicate melts, 1980-82; Ph.D. thesis (Dunn).

207. DYCK, W., Geol. Surv. Can.:
Material balance of uranium series in a natural environment, 1978-.

208. ELLWOOD, D.J., Geol. Surv. Can.:
Geochemical information system, 1975-.

209. GALE, G.H., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Alteration and mineral deposit studies, Manitoba.

Investigate relationship between base metal deposits and volcanic stratigraphy; establish parameters of alteration surrounding selected deposit types; compile mineral deposit data and test metallogenic hypotheses.

210. GARIÉPY, C., LAMARCHE, F., LUDDEN, J., BROOKS, C., Univ. Montréal (Géologie):
Géochimie des complexes "granitiques" archéens.

211. GAUTHIER, G., BROOKS, C., Univ. Montréal (Géologie):
Implantation au Québec, de la méthode uranium-plomb de datation en utilisant le mineral zircon.

212. GÉLINAS, L., LUDDEN, J., Univ. Montréal (Géologie):
Étude géochimique de l'altération hydrothermale des roches volcaniques mafiques de l'archéen.

213 GOODFELLOW, W.D., Geol. Surv. Can.:
Regional geochemistry, Yukon Territory, 1977-.

214. GOODFELLOW, W.D., Geol. Surv. Can.:
Geochemistry of mineral occurrences and their host rocks in the Northern Cordillera, 1979-.

See:
Application of a spot-test for field identification of phosphatic sedimentary rocks in Yukon; Geol. Surv. Can., Paper 82-1A, p. 425, 426, 1982.

215. GOYER, M., LANGLAIS, L., Québec Ministère Énergie et Ressources:
Géochimie, lithogéochimie et cartographie de l'environnement de la faille du Grand Pabos, Québec, 1981-84.

Le projet propose d'étudier le potentiel minéral d'indices: Cu-Ni, Pb-Zn, Ag, Au, et autres – de définir leur génèse et d'identifier des cibles d'exploration minière. Le projet doit se poursuivre sur 3 ans et le rapport-synthèse est prévu pour 1984.

216. HASSAN, H.H., HALE, W.E., Univ. New Brunswick (Geology):
Uranium and thorium in rocks of south-western New Brunswick, 1979-82; Ph.D. thesis (Hassan).

Approximately 500 outcrops in an area of roughly 5000 km^2, in and near the St. George granite, have been tested radiometrically (Scintrex GAD-6 spectrometer) for uranium and thorium. The results of over 700 determinations suggest a general increase in the average contents of uranium and thorium from Precambrian to Carboniferous in the rocks of southwestern New Brunswick. There also appears to be a time-related increase in uranium and thorium relative to global abundances for these elements in specific rock types. Rhyolites common to the Precambrian, Devonian and Carboniferous in this area exhibit a substantial increase in uranium and thorium in that same order. Within the Devonian granitic rocks a variation in uranium and thorium contents probably corresponds with the differentiation history of these rocks.

217. LEDUC, M.J., CIMON, J., Québec Ministère Énergie et Ressources:
Echantillonnage géochimiques des sols de la propriété d'Adelphus (Senneterre), Québec, 1981-82.

Rééchantillonnage de zones anormales en Mo.

218. LUDDEN, J., Univ. Montréal (Géologie):
L'évolution géochimique des îles Mascarene de L'ocean indien.

219. LUDDEN, J., BROOKS, C., MACHADO, N., BRYAN, W.B., DICK, H.B.J., THOMPSON, G., Univ. Montréal (Géologie), Woods Hole Oceanographic Instit.:
La géochimie des roches provenant de zones de fractures océaniques.

220. MACHADO, N., BROOKS, C., Univ. Montréal (Géologie):
Évolution géochimique du manteau terrestre dans le bouclier Canadien.

221. MACHADO, N., BROOKS, C., Univ. Montréal (Géologie):
Pétrogénèse des basaltes de plateau mésozoiques du Brésil.

222. MOSSMAN, D.J., MacINTOSH, D., Univ. Saskatchewan (Geological Sciences):
Origin and distribution of salt solution collapse structures in ore zone(s) of the Devonian Prairie Evaporite, Saskatchewan, 1981-.

To identify and accurately describe the different kinds of "salt horses" by geological methods; conduct geochemical sampling of specific horizons along excavations leading into the "salt horses"; and learn to predict the location of "salt horses" and solution collapse structures by geological, geochemical and geophysical methods.

223. PRIDE, C., Univ. Ottawa (Geology):
Geochemistry and petrogenesis of the Otto Syenite Stock, Kirkland Lake, Ontario, 1979-82.

The Otto Stock is a late-Archean – early Proterozoic body typical of many alkaline intrusions of the Superior Province in general mode of emplacement and composition. Detailed fieldwork, petrography and geochemistry are being carried out on the intrusion in order to better understand the origin of these rocks and their low-pressure fractionation history.

224. PRIDE, C., Univ. Ottawa (Geology):
Geochemical evolution of the Glamorgan Migmatite Complex, Ontario, 1979-82.

Using detailed fieldwork, petrology and geochemistry the study is an attempt to assess the role of anatexis in the development of the Glamorgan Migmatite Complex. The results to date indicate that: 1) the granitic (sensu stricto) rocks are not locally derived; 2) the Grenville Gray Gneisses that form the major part of the complex are at least 2-stage in origin; and 3) the amphibolite units in the gray gneisses are not broken-up dykes but are probably residual in nature.

225. THORPE, R.I., Geol. Surv. Can.:
Lead isotopic studies on genesis of ore deposits, 1978-.

See:
Evidence from lead isotopes regarding the genesis of ore deposits in the Chibougamau region, Québec; Can. J. Earth Sci., vol. 18, no. 4, p. 708-723, 1981.

226. VANDER VOET, A., RIDDLE, C., Ontario Geol. Surv.:
Application of inductively-coupled argon-plasma optical emission spectrometry to the determination of rare earth elements in geological materials, 1981-82.

A method is being developed for the rapid determination of rare earth elements in geological materials. The aim of the project is to refine current methodology so that up to 20 samples can be run per day. The quality of data is to be sufficient that useable chondrite plots may be prepared for each sample.

227. VEIZER, J., Univ. Ottawa (Geology):
Evolution of the terrestrial exogenic cycle, 1980-83.

228. WADLEIGH, M.A., VEIZER, J., Univ. Ottawa (Geology):
Marine geochemical cycle of strontium, 1979-82; M.Sc. thesis (Wadleigh).

GEOCHRONOLOGY/GÉOCHRONOLOGIE

229. ARMSTRONG, R.L., Univ. British Columbia (Geological Sciences):
Cordilleran geochron file, 1980-.

All existing geochron data for the Cordilleran region is being organized in a catalog. Dates are recalculated using new decay constants, if needed, and plotted on 250 000 and 2 000 000 scale maps. Time-slice and thematic maps and compilations are being prepared using the completed data base.

230. ARMSTRONG, R.L., PARRISH, R.R., BROWN, R.L., READ, P.B., SIMONY, P., Univ. British Columbia (Geological Sciences), Geotex, Univ. Calgary (Geology and Geophysics):
Omineca Belt geochronometry, 1975-.

See:
Cordilleran metamorphic core complexes - from Arizona to southern Canada; Ann. Rev. Earth and Planetary Sci., vol. 10, 1982.

Geology of the Nemo Lakes belt, northern Valhalla Range, southeastern British Columbia; Can. J. Earth Sci., vol. 18, p. 944-958, 1981.

Dating of orthogneiss, paragneiss, metasediments, and granitic plutons from the Omineca Belt is in progress. Monashee core and mantling gneisses and Hauser gneiss (near Spokane, Washington) are pre-Purcell, possibly Archean. Trail-Castlegar-Valhalla gneisses are largely Mesozoic. Quesnel Gneiss is Devonian or Late Proterozoic or both.

231. ARMSTRONG, R.L., PARRISH, R.R., WOODSWORTH, G.J., HEAH, T., Univ. British Columbia (Geological Sciences), Geol. Surv. Can.:
Coast Plutonic Belt geochronometry, 1975-.

Age and isotopic composition of Coast Plutonic Complex rocks are being investigated in several traverses across the region. Current work in progress includes: work on Sky Pilot area (Gambier Group), and Alice Arm traverses (Sr and Pb dating).

232. ARMSTRONG, R.L., SOUTHER, J.G., BEVIER, M.L., Univ. British Columbia (Geological Sciences), Geol. Surv. Can., Univ. California at Santa Barbara:
Cordilleran Cenozoic volcanic rocks: K-Ar dating and Sr isotope studies, 1975-.

See:
Petrology and geochemistry of the Kamloops Group volcanics, British Columbia; Can. J. Earth Sci., vol. 18, p. 1478-1491, 1981.

Regional stratigraphy and structural setting of the Kamloops Group, south-central British Columbia; ibid., p. 1464-1477, 1981.

The Rainbow Range, British Columbia: A Miocene peralkaline shield volcano; J. Volcanology and Geothermal Res., vol. 11, p. 225-251, 1981.

K-Ar dating of young volcanic centers is now concentrated in the Wells Gray area. Work on Edziza and the Garibaldi belt is essentially complete, in writing stages at present.

233. BAADSGAARD, H., Univ. Alberta (Geology):
Rb-Sr and K-Ca isotope systematics of the Devonian Potash beds of Saskatchewan, 1978-.

Post depositional alteration of original evaporitic minerals is varied and prominant. This complicates both dating and the investigation of the mechanism of formation of the sylvite. Though the deposits are Devonian, a Laramide age is appearing as a time of special significance. Why this should be so is not at all clear at the present stage of isotope research.

234. BAADSGAARD, H., BRIDGWATER, D., NUTMAN, A.P., McGREGOR, V., Univ. Alberta (Geology), Geol. Surv. Greenland:
Geochronology and isotope geology of the Early Archean crust of the North Atlantic Craton, western Greenland, 1971-.

See:
The U-Th-Pb systematics of zircons from the type Nûk gneisses Godthåbsford, West Greenland; Geochim. et Cosmochim. Acta, vol. 45, p. 1099-1109, 1981.

U-Pb isotope systematics on minerals from the gneiss complex at Isua, West Greenland. Rapport Grønland Geoligishe Undersøgelse 1982.

Two new stratigraphic units have been discovered: 1) a set of early basic dykes and 2) a late, post-Ameralike, set of giant pegmatite intrusions. The Rb-Sr and U-Pb geochronology of these is underway. Also being completed is a comparative U-Pb zircon study on the Isua supra-crustals versus the Akilia Association. A M.Sc. thesis on the Ameralik dykes.

235. BELL, K., BLENKINSOP, J., COLE, T.J.S., MENAGH, D.P., Carleton Univ. (Geology, Physics):
Saskatchewan shield geochronology project, 1978-.

See:
Saskatchewan Geol. Surv., Summ. Investig., Rept. 81-4, p. 25, 1981.

Several additional isochrons, determined by the Rb-Sr whole rock method, fit into the geochronometric framework established previously. Magmatic events at 1870 and 1740 Ma are well established; others at 1670 Ma and 1580 Ma are suggested. Thermal events at 1740 Ma and possibly 1530 Ma are also indicated. Isotopic data from the Wolverine Point Formation, Athabasca basin, can be interpreted to suggest an age of deposition of the lower part of the Athabasca succession of about 1450 Ma.

236. CORMIE, A.B., NELSON, D.E., HUNTLEY, D.J., Simon Fraser Univ. (Archaeology, Physics):
Tephra identification by X-ray fluorescence and alpha counting, 1981; M.Sc. thesis (Cormie).

See:
X-ray fluorescence analysis as a rapid method of identifying tephras discovered in archaeological sites; NATO Advanced "Tephra studies as a tool in Quaternary research", Lavgartn, Iceland, June 18-29, 1980, Proc.

237. DOIG, R., McGill Univ. (Geological Sciences):
Geochronological studies, Cape Smith Fold Belt, Québec, 1980-83.

To determine the age relationships between the Proterozoic Cape-Smith Fold Belt and the complexly deformed and metamorphosed gneissic terrain to the North. All Rb-Sr geochronological work for the proposed basement gneisses between the Cape Smith Belt and Hudson Strait hasd been completed. The various suites yield Archean ages (2580 to 2950 Ma) and low initial ratios of 0.701 to 0.703. Undeformed aplites and pegmatites have also been dated (1635 Ma) giving us a younger limit to tectonic events in the region. The Archean gneisses contain ubiquitous typically synclinal keels of clearly sedimentary rocks. Near the contact with the Cape-Smith Belt, these rocks are clearly equivalent to the basal units of the belt. Large areas of similar metasediments occur west of Sugluk, far from the Cape-Smith volcanic rocks, and separated from them by the Archean gneisses. Most of the 1981 field work consisted of mapping and sampling coastal sections west of Sugluk. The section includes potentially datable (metamorphic and model ages) high-grade pelites and arkoses. Metamorphic studies of the pelites and rare calc-silicate beds will enable us to better interpret the Rb-Sr isotopic data.

238. FORD, D.C., SCHWARCZ, H.P., BAKALOWICZ, M.J., McMaster Univ. (Geology, Geography):
Age determinations and paleoenvironmental analysis of calcite spelothems, 1967

See:
Late Pleistocene chronology and paleoclimate of Vancouver Island; Can. J. Earth Sci., vol. 18, no. 11, p. 1643-1652, 1981.

This ongoing collaboration encompasses many systematic and regional studies. During the report period Ford emphasised: 1) initiation of investigations into the organic content of dated speleothems from the S. Nahanni, N.W.T.; 2) general cave evolution from $^{230}Th/^{234}U$ dating of specimens from the Mendip Hills, U.K.; 3) rates of simple vadose cve entrenchment in Co. Clare, Eire; 4) rate of evolution of an ideal watertable cave, Okinawa, Japan; and 5) antiquity of Ursus spelaeus and paleotemperature profiles, Postojna, Yugoslavia.

239. FRAREY, M.J., Geol. Surv. Can.:
Correlation and geochronological studies in the Canadian Shield, 1975-82.

See:
A provisional standard for correlating the Precambrian rocks of the Canadian Shield: Discussion; Geol. Surv. Can., Paper 81-1C, p. 83-88, 1981.

240. GABITES, J.E., ARMSTRONG, R.L., Univ. British Columbia (Geological Sciences):
Geology and geochronology of an area near Hope, British Columbia, 1981-; M.Sc. thesis (Gabites).

Field season completed; part of mapping of the area around Cogburn Creek, east side Harrison Lake has been done, material collected for geochronological and petrographic studies.

241. HUNTLEY, D.J., Simon Fraser Univ. (Physics):
Alpha-counting as a means of determining Th-230 and Pa-231 contents of ocean sediments.

The method is to be applied to ocean core samples provided by other researchers.

242. HUNTLEY, D.J., Simon Fraser Univ. (Physics):
Thermoluminescence dating of some Loyalty Islands potsherds, 1981-83.

The first ojective was to provide some dates for two archaeological sites on the Loyalty Islands. For one site the sherds were found to be undatable due to insufficient TL, spurous TL and anomalous fading. At the other site two sherds gave dates of 100 +/- 20 and 190 +/-30 years. Petrographic studies by W.R. Dickinson had previously shown these sherds to have been imported from New Caledonia. There is an interesting correlation between the TL results and the petrographic ones, and these are consistent with an extensive study of the TL of potsherds found in the S.W. Pacific Islands by J.R. Prescott (Adelaide). We plan to study some more Loyalty Islands sherds to complete this work.

243. HUNTLEY, D.J., BERGER, G.W., Simon Fraser Univ. (Physics):
Thermoluminescence dating of ocean sediments, 1976-.

A core (GS-7102-9) from the DeSoto Canyon of the Caribbean has been studied for the purpose of comparing TL dates with C-14 dates. This core was selected for its good chronological control – there are 13 C-14 dates extending from 5-27 ka. The TL results obtained so far are promising, although a restricted light spectrum was found necessary, as has been the case with river silts. Progress has been made in understanding how to analyse data which displays second order kinetic behaviour, as found in some core-top samples. Further work has been done on samples from the stage 5/6 oxygen isotope boundary.

244. HUNTLEY, D.J., BERGER, G.W., MULHERN, P.J., Simon Fraser Univ. (Physics):
A technique for the magnetic separation of silt-sized sediments, 1981.

See:
A technique for the magnetic separation of silt-sized sediments; J. Sedimentary Petrol., p. 672-674, 1981.

245. HUNTLEY, D.J., BERGER, G.W., WINTLE, A.G., DIVIGALPITIYA, W.M.R., Simon Fraser Univ. (Physics):
Thermoluminescence dating of terrestrial sediments, 1979-; M.Sc. thesis (Divigalpitiya).

To develop techniques for dating deposition of sediments found in archaeological and geological deposits. We have developed techniques for obtaining close to zero age for modern deposits in archaeological sites and for presently suspended river silts, and are now using these techniques to obtain TL ages for comparison with C-14 ages on older material. Some promising results have been obtained.

246. LAMOTHE, M., DREIMANIS, A., RAUKAS, A., HUTT, G., Univ. Western Ontario (Geology):
Thermoluminescence dating, 1977-82.

247. TUREK, A., VAN SCHMUS, W.R., SMITH, P.E., Univ. Windsor (Geology):
Geochronology of the Wawa area, Ontario, 1978-81; M.Sc. thesis (Smith).

See:
Precise U-Pb zircon ages from the Gamitagama greenstone belt, southern Superior Province; Can. J. Earth Sci., vol. 19, no. 4, p. 859-867, 1982.

The above project is still active with additional zircon ages being determined to establish the chronostratigraphy for the greenstone belt and to establish the relation of the greenstone belt to the granitic terrain that embays the belt.

248. TURNER, J.T., FRITZ, P., KARROW, P.F., Univ. Waterloo (Earth Sciences):
Carbon isotopes in marl lakes and their effect on radiocarbon dating, southern Ontario, 1979-82.

Manuscript in preparation.

249. WORDEN, J.M., BAADSGAARD, H., CUMMING, G.L., Univ. Alberta (Geology), Exxon Minerals:
Geochronology and mineralization of the Midwest uranium deposit, northern Saskatchewan, 1979-82.

Midwest project completed and two detailed papers are in preparation. Continuing work on the sandstone-hosted uranium deposits of northern Saskatchewan – depends upon a project with J. Hoeve of the Research Council of Saskatchewan, Saskatoon.

250. GRUNSKY, E.C., Ontario Geol. Surv.:
Abitibi alteration study, northern Ontario, 1979-82.

See:
Ontario Geol. Surv., Misc. Rept. 100, p. 96-99, 1981.

Altered volcanic rocks from the Ben Nevis Township area of Ontario are being studied using computer-based methods. Chemical and petrographical signatures and profiles from over 850 samples analyzed for 39 elements are being examined in order to investigate any relationships between the known base and precious metal dèposits in the area. Some elements such as CO_2, Li, and Zn exhibit well defined anomalies (uncorrected for rock type) in areas that are visually (mineralogically) altered. Other elements indicate anomalies only if the data is corrected for rock type and a residual chemical value is plotted. Choosing suitable rock type classifications in areas of alteration poses problems. Other methods are currently being investigated to overcome this problem.

251. MacGILLIVRAY, J.R., HAMILTON, W.N., Alberta Research Council (Geol. Surv.):
Information geology, 1974-.

To identify and index Alberta geoscience data for input to a computerized online bibliographic data base for Alberta (GEODIAL) and for inclusion in a national index file (GEOSCAN), and to use these tools (GEODIAL/GEOSCAN) and others to provide timely responses to requests from Government planning and regulating agencies, the mineral industry, institutions and the public for up-to-date resource information. GEODIAL now includes all published and unpublished geoscience reports of Alberta Research Council (to end of 1981), the complete works of Canadian Society of Petroleum Geologists (to end of 1978), and published and unpublished reports of the Geological Survey of Canada that pertain to Alberta (to end of 1980). These and journal literature are the current target of indexing, to be completed in 1982/83.

252. MISSAN, H.S., DEAN, P.L., Newfoundland Dept. Mines and Energy:
Mineral occurrence data system, 1977-83.

See:
Newfoundland Dept. Mines and Energy, Rept. 82-1, p. 223, 1982.

The Mineral Occurrence Data System (MODS) is an extensive continuing study of the Newfoundland Department of Mines and Energy, which is concerned with the development and applications of a computer based filing system for mineral deposit information. At the present time, information on approximately 1500 mineral occurrences has been documented and computerized. Mineral occurrence maps have been produced for three NTS sheets. It is hoped to have the coverage of the province completed by mid-1983. At that time, the file will be consolidated and edited for distribution to the public.

GEOMATHEMATICS/MATHEMATIQUE DE LA TERRE

253. AGTERBERG, F.P., Geol. Surv. Can.:
Probability models for estimating mineral potential, 1969-.

254. AGTERBERG, F.P., Geol. Surv. Can.:
Mineral and energy resource evaluation; probabilistic methods, 1976-.

255. BERTRAND, R., KÜBLER, B., DESJARDINS, M., INRS-Géoressources:
Zonéographie des gaz adsorbés de l'offshore de l'est du Canada: application à la maturation thermique des séquences, 1977-82.

Voir:
Application de l'analyse factorielle des correspondances aux gaz adsorbés de l'off-shore du Labrador; Journal canadien des sciences de la Terre, vol. 18, no. 3, p. 509-517, 1981.

Étude comparative de la zonéographie des stades de maturation de la matière organique par l'utilisation de deux types de gaz adsorbés; Notes et Mémoires de la Compagnie française des Pétroles, 1982.

Synthèse en voie de rédaction, à partir d'une application de la méthodologie des deux dernières publications à une vingtaine de puits de l'est du Canada.

256. FABBRI, A.G., Geol. Surv. Can.:
Quantification of geological variables and geomathematical estimation of mineral potential, 1972-.

See:
GIAPP: image analysis program and applications, 1977-81; Geol. Surv. Can., Paper 82-1A, p. 421-424, 1982.

257. SINCLAIR, A.J., GIROUX, G.H., Univ. British Columbia (Geological Sciences):
Geostatistical evaluation of Ag-rich deposits, British Columbia and Yukon, 1980-82; M.A. Sc. thesis (Giroux).

Sam Goosly deposit of Equity Silver Mines is a bulk silver deposit for which both exploration (diamond drill) and production (blasthole) assay data have been used to develop a geostatistical case history for a deposit of extreme local grade variations. Keno No. 18 vein has provided abundant multi-element assay data to demonstrate the application of geostatistics to Hg-rich veins. Both of these examples clearly demonstrate the close association between geological control and semi-variogram models.

258. WATERS, P.M., WILLIAMS, G.D., Univ. Alberta (Geology):
Detailed semivariograms from the Estevan coal zone of the Ravenscrag Formation in the Boundary Dam Mine, southern Saskatchewan, 1978-82; M.Sc. thesis (Waters).

Coal seam thicknesses, surveyed just after the seam was mined, have been collected at short spacing for one year. These have been used to calculate several variograms. Preliminary results show a small nugget effect, probably due to measurement round-off by the surveyors. The variograms also have a sill with a range at about 500 m. The variograms are being examined for any dependence on geographic location or detailed stratigraphy. The conclusions hopefully will be tested with data from two additional years of mining.

259. ZODROW, E.L., College of Cape Breton (Geology):
Coal estimation, 1979-82.

Residuals obtained from trend-surface analysis of coal thickness, measured after production, are analyzed and examined to evaluate deviations from normal assumptions in prediction methods. It is concluded that the model applies; hence, trend-surface equations are admissible for integration to calculate (estimate) coal volume in a specified area. The equations are also used to simulate coal thickness in different parts of the Sydney Basin.

260. ZODROW, E.L., BANERJEE, S.K., College of Cape Breton (Geology):
Comparative probabilities: confidence intervals, 1980-83.

Since mineral components in an igneous rock have a spatial dispersion, it is thought best to use interval estimation of mineral occurrences rather than point estimators. Accordingly, intervals "mean ± standard deviations" for the mineral biotite are investigated by three models: Pearson's Type III (incomplete gamma intergral), Type VII (incomplete beta intergral), and Edgeworth's series and calculated probabilities of the intervals are compared with the normal ones. Log_{10} biotite is used for Type VII and the Edgworth series. It is suggested, assuming that models fit the data well, to select that model for statistical inferences which produces the largest probability for the interval.

261. DAVID, P.P., Univ. Montréal (Géologie):
Étude du milieu éolien contemporain, région de dunes du Lac Athabasca.

262. DAVID, P.P., Univ. Montréal (Géologie):
Observations sur l'activité eolienne contemporaine dans les Great Sand Hills, Saskatchewan, 1961-.

263. DAVID, P.P., Univ. Montréal (Géologie):
Chronologie absolue de l'activité éolienne sur les Prairies canadiennes.

264. DUBOIS, J.M.M., Univ. Sherbrooke (Géographie):
Bibliographie sur les caractéristiques physiques des Cantons de l'Est, Québec, 1971-.

Voir:
Bibliographie sur les caractéristiques physiques des Cantons de l'Est: supplément no. 5; Dépt. de géographie, Univ. Sherbrooke, Bull. rech. no. 59-60, 1981.

Six rapports totalisant plus de 6000 références ont été publiés à date pour couvrir tout le domaine physique des Cantons de l'Est. Les références sont regroupées par thèmes. L'acquisition de données est continuelle. Un septième rapport est prévu en 1983.

265. DUBOIS, J.M.M., DIONNE, J.C., Univ. Sherbrooke (Geographie), Univ. Laval (Géologie):
Télédétection et cartographie des fronts glaciaires sur la Côte Nord du Saint-Laurent entre le lac Saint-Jean et le Labrador, 1978-82.

See:
The Quebec North Shore Frontal Moraine System: a major feature of Lake Wisconsin deglaciation; Geol. Soc. Amer., Northeastern Section, Abstracts with programs, vol. 13, no. 3, p. 130, 1981.

Premier essai de corrélation des systèmes morainiques et des positions frontales de la glace au Québec-Labrador à partir d'évidences géomorphologiques obtenues par photo-interprétation et des levés préliminaires de terrain.

266. ELSON, J.A., McGill Univ. (Geological Sciences):
Physical weathering of quartzite and metagabbro in a defoliated area, Sudbury, Ontario, 1970-83.

The amounts of weathering product produced from five plots each on metagabbro and quartzite are being monitored at 1 to 2-year intervals for a decade or more to determine means and variability of total production, and frequency of release of large clasts. Similar weathering products have been produced by freeze-thaw processes in the laboratory.

267. ELSON, J.A., McGill Univ. (Geological Sciences):
Contributions of glacial abrasion and quarrying to the genesis of till, Ontario, 1980-84.

The quantity of debris released by glacial quarrying, plucking, and abrasion is estimated from freshly exposed glaciated bedrock surfaces and residual material, and compared with the grain-size distribution of the local till. The relative importance of these processes as opposed to comminution during basal transport should become apparent and contribute to our understanding of the genesis of till.

268. FORBES, D.L., Geol. Surv. Can.:
Morphology, sedimentology, and dynamics of Newfoundland coast, 1981-.

To describe and interpret the geomorphology, sedimentary materials, and stability of the Newfoundland coast, with attention to problems of coastal resource management and oil-spill contingency planning; to investigate the sedimentary facies and physical processes characteristic of selected coastal types and, in particular, of gravel barrier and associated lagoon systems, for which little information is available.

269. FORD, D.C., McMaster Univ. (Geography):
Karst of Canada, 1973-82.

A compilation from primary research and secondary sources, of the occurrence, scale and type of modern karst landform assemblages in Canada, discussed by geological province. Selected examples of karstic aquifers and of paleokarst surfaces, and the role of karst in the placement of stratabound sulphide deposits are discussed. The disruptive effects of repeated glaciations and the restrictive effects of permafrost are given special consideration.

270. GANGLOFF, P., SAVOIE, L., MATHIEU, C., LAPIERRE, C., SOMMA, J., TETRAULT, L., Univ. Montréal (Géographie):
Les séquences morphogénétiques holocènes du Québec – morphosculpture des socle de l'Ungava, 1978-83; thèse de doctorat (Savoie), thèse de maîtrise (Mathieu, Lapierre, Somma, Tetrault).

Voir:
Analyses pollenipue d'une palse au site archiologique de Vieux-Port-Burwell (Killinup); Géographie physique et Quaternaire, vol. 34, no. 3, p. 301-320, 1980.

Objectif: établir les causes et le rythme d'evolution des formes holocènes de la peninsule de l'Ungava-Labrador.

271. GHAZBAN, F.E., FORD, D.C., McMaster Univ. (Geography):
Groundwater flow and chemistry, springs of the Salt River escarpment, Wood Buffalo National Park, Northwest Territories, 1982-83; M.Sc. thesis (Ghazban).

A first attempt to determine short term variations of solute concentrations and equilibria in selected sulphate and chloride springs, and to trace local rates of shallow groundwater flow to them.

272. MILLER, T.E., FORD, D.C., McMaster Univ. (Geography):
Geomorphology and hydrology of the Caves Branch, Maya Mountains, Belize, 1977-82; Ph.D. thesis (Miller).

An integrated study of a small but characteristic tropical karst basin comprising allogenic streams feeding to a newly closed polje that is flanked by mature cockpit karst and drained by large, multi-phase caves. Morphometric analysis showed that the cockpit pattern developed from a previous fluvial pattern, with minor effect of lineaments. Quantitative hydrological and solute concentration studies established the boundaries of the karstic catchment and the storativity of the aquifer. Mixing models explained the positive correlation of solute concentration with discharge during the wet season. U/Th dating of speleothem determined the stability of a major regional aggradational phase in the caves. Integration of results permitted a model for the development of the aquifer, cockpit country and polje to be proposed.

273. TRENHAILE, A.S., MERCAN, D., PARASCHEK, D., Univ. Windsor (Geography):
The work of frost in coastal rock environments, 1978-; M.A. theses (Mercan, Paraschek).

See:
Shore platform morphology and the tidal duration factor; Instit. British Geogr. Trans. new ser. 6, p. 82-102, 1981.

The study is concerned with rock coastlines in Québec (Gaspé), Newfoundland, and the Bay of Fundy, as well as several sites on Lakes Erie and Huron. The micro-erosion metre is to be used to determine small rates of erosion. The effect of frost in coastal environments is being studied experimentally in the laboratory, and in the field. The degree of saturation of coastal rocks is an important factor in determining the efficacy of physical and chemical weathering processes. This is also being studied in the laboratory and in the field.

274. WORTHINGTON, S.E., FORD, D.C., McMaster Univ. (Geography):
Speleogenesis of the Canadian Hole-Friar's Hole System, West Virginia, 1982-83; M.Sc. thesis (Worthington).

A field test by morphological mapping, determination of genetic sequences and back calculation of initiating hydraulic gradients, of models of limestone cavern genesis in the general case. The Canadian Hole-Friar's Hole System (70 km mapped) has developed to strike with down-dip shifts in successive phases, in Mississipian limestone aggregating 200 m in thickness. Stratal dip is 5°, at the boundary between proposed high-dip and low-dip models.

ELECTRICAL/MÉTHODES ÉLECTRIQUES

275. BARLOW, R.B., Ontario Geol. Surv.:
Night Hawk geophysical test range, Ontario, 1981-83.

See:
Night Hawk geophysical test range results using two electromagnetic systems; Ontario Geol. Surv., Misc. Paper 100, p. 152-159, 1981.

276. BARLOW, R.B., Ontario Geol. Surv.:
Commercial aeromagnetic gradiometer system, 1981-84.

During the summer 1981 season, section staff together with aeronautical engineering staff from Aerospace Engineering and Research Consultants Limited (AERCOL) carried out tests on two aircraft structurally modified to carry two vertically displaced high resolution magnetometer sensing heads. A Piper PA-31 Navajo aircraft owned by Kenting Earth Sciences Limited and a Britain-Norman Trislander aircraft owned by Questor Surveys Limited were fitted with a retractable lower boom and a ridged boom assembly, respectively. Airborne tests were carried out by measuring two components of the vibration using three accelerometers mounted in the stingers and near the centre of gravity of both aircraft. The complete vibrational spectrums of all accelerometers in both aircraft were calculated and compared. Results obtained under simulated airborne survey conditions will be used to decide which design provides a more optimal housing for the sensing heads.

277. COUTURE, D., BAZINET, R., ST-AMANT, M., École Polytechnique (Génie Mineral):
Interprétation des diagraphies TBF, 1982-83; thèse de maîtrise (Couture).

Devélopper des outils d'interpretation pour les diagraphies TBF à partir de modèles numeriques simples. Vérifier ces résultats sur modèle reduit.

278. DUCKWORTH, K., BAYS, A., Univ. Calgary (Geology and Geophysics):
Electromagnetic scale modelling applied to the Turam prospecting system, 1978-82; M.Sc. thesis (Bays).

The development of a scale model system to permit the simulation of the behaviour of the Turam EM system when used in the search for targets which are located in conductive environments.

279. DYCK, A.V., Geol. Surv. Can.:
Borehole geophysics (electrical and magnetic techniques), 1974-.

280. GREENHOUSE, J.P., SLAINE, D., Univ. Waterloo (Earth Sciences):
Geophysical studies of landfill and industrial disposal sites in southwestern Ontario: Case histories, 1981-82; M.Sc. thesis (Slaine).

Documenting the usefulness of electromagnetic resistivity methods in locating contaminant migration about disposal sites. These sites are all in southwestern Ontario and have been chosen so as to cover a variety of geological and physical environments; attempting also to improve our ability to predict under which circumstances it is likely to be worthwhile to employ geophysical surveys in hydrogeological site investigations.

281. HALL, D.H., SHAFAI, L., TARNAWECKY, M., WOODFORD, D., VOHRA, D., Univ. Manitoba (Earth Sciences, Electrical Engr.), Manitoba Hydro:
Crustal studies using power lines as a dipole, controlled, electromagnetic source, 1979-82; Ph.D. thesis (Vohra).

282. SINHA, A.K., Geol. Surv. Can.:
Evalution of two deep sounding E.M. systems, 1981-.

To evaluate and demonstrate the effectiveness of two deep sounding electromagnetic (E.M.) systems, Maxi-Probe and Geonics EM-37, for geological mapping (e.g. permafrost) and mineral exploration (e.g. base metals and uranium) purposes; to compare these two systems with other inductive sounding/mapping systems; and to develop techniques for the interpretation of field data from these two systems and to establish new techniques for electrical exploration at large depths.

EXPLORATION/PROSPECTION

283. CHARBONNEAU, B.W., Geol. Surv. Can.:
Evaluation of uranium reconnaissance data, 1976-.

See:
Equilibrium between U and eU(^{214}Bi) on surface rocks of Canada; Geol. Surv. Can., Paper 81-1C, p. 45-50, 1981.

284. GRASTY, R.L., Geol. Surv. Can.:
Gamma-ray spectrometry (technique development), 1972-.

See:
Utilizing multi-channel airborne gamma-ray spectra; Can. J. Earth Sci., vol. 18, no. 12, p. 1793-1801, 1981.

285. LAWTON, D.C., BERTRAM, M.B., Univ. Calgary (Geology and Geophysics):
High resolution reflection seismic investigations of shallow coal seams in western Canada, 1981-82.

286. MACNAB, R.F., Geol. Surv. Can.:
East coast offshore surveys, 1973-.

See:
Geomagnetic field models: some brief preliminary comparisons; Geol. Surv. Can., Paper 82-1A, p. 221-223, 1982.

287. SCHWARZ, E.J., LAVERDURE, L., École Polytechnique (Génie Mineral):
Magnetic properties of sulphide ore deposits and their significance in magnetic prospecting, 1980-82; M.Sc. thesis (Laverdure).

288. SOLIMAN, A.A., BURKE, K.B.S., Univ. New Brunswick (Geology):
Interpretation of Mini-Sosie seismic reflection data for Carboniferous rocks in New Brunswick, 1980-82; M.Sc. thesis (Soliman).

Mini-Sosie seismic reflection record sections obtained along a reconnaissance line between Moncton and Newcastle in New Brunswick are being interpreted, to provide a better understanding of the Carboniferous geology and the underlying basement rocks.

GEOMAGNETISM-PALEOMAGNETISM/ GÉOMAGNÉTISME-PALÉOMAGNÉTISME

289. AJAKAIYE, D.I., HALL, D.H., MILLAR, T., Univ. Manitoba (Earth Sciences):
Aeromagnetic interpretation in Nigeria, 1979-84.

290. BOWER, M.E., Geol. Surv. Can.:
Ocean aeromagnetics, 1965-

291. CHRISTIE, K.W., Geol. Surv. Can.:
Paleomagnetism and rock magnetism instrumentation and technological development, 1970-

292. CHRISTIE, K.W., Geol. Surv. Can.:
Paleomagnetism of the Hopedale diabase dike, 1972-.

293. CURRIE, R.G., Geol. Surv. Can.:
Marine magnetic surveys, Pacific margin, 1980-.

294. FAHRIG, W.F., Geol. Surv. Can.:
Paleomagnetism of the dykes of west Greenland, 1972-.

295. FAHRIG, W.F., Geol. Surv. Can.:
Paleomagnetism of Proterozoic to Devonian strata across Boothia Arch, 1974-.

296. GODFREY, J.D., SPRENKE, K., LANGENBERG, C.W., Alberta Research Council (Geol. Surv.):
Geophysical aspects of the Shield in Alberta, 1960-82.

Physical parameters measured include: specific gravity of hand specimens, and magnetic susceptibility of rock cores, powders and outcrops – to improve quality of interpretation of aeromagnetic surveys in Shield terrains and to describe the tectonic history and 3-dimensional geometry of major structural elements (plutons, fault zones) in the Shield of Alberta.

297. HALL, D.H., KAHN, S., Univ. Manitoba (Earth Sciences):
Paleomagnetism of subprovinces in the Canadian Shield, Vermilion Bay to Red Lake, Ontario, 1979-82; M.Sc. thesis (Kahn).

298. HALL, D.H., MILLAR, T., Univ. Manitoba (Earth Sciences):
Interpretation of aeromagnetic anomalies, Lynn Lake area, Manitoba, 1978-82.

299. HALL, D.H., MILLAR, T., NOBLE, I., Univ. Manitoba (Earth Sciences):
Interpretation of Magsat data in the Churchill and Superior provinces, 1979-83; M.Sc. thesis (Noble).

300. HODYCH, J.P., Memorial Univ. (Earth Sciences):
Paleomagnetism of Cambro-Ordovician Rocks from Avalon Zone of Newfoundland and history of Iapetus Ocean, 1979-85.

301. KNAPPERS, W.A., Geol. Surv. Can.:
Aeromagnetic survey: Labrador and Labrador Continental Margin, 1981-.

To provide adequate aeromagnetic coverage of the above areas as an aid to geological mapping and as a stimulation to mineral exploration in frontier areas. The survey entails 82 800 line kms of survey profiles and covers an area of 66 000 square kms, approximately.

302. LERBEKMO, J.F., Univ. Alberta (Geology):
Magnetostratigraphy of the late Cretaceous and Paleocene of Alberta, 1973-.

Magnetostratigraphy of the Maestrichtian has been completed in the Red Deer Valley and correlated with sea floor magnetic anomalies 29 through 33.

303. McGLYNN, J.C., Geol. Surv. Can.:
Paleomagnetic study of Proterozoic red beds of the western Canadian Shield, 1968-.

304. OLSON, D.G., Geol. Surv. Can.:
High resolution aeromagnetics (experimetnal surveys), 1968-.

305. SAWATZKY, P., Geol. Surv. Can.:
High resolution aeromagnetics (instrumentation development), 1977-

306. SCHWARZ, E.J., Geol. Surv. Can.:
Paleomagnetism of the Circum-Ungava belt, 1973-.

307. SCHWARZ, E.J., Geol. Surv. Can.:
Vertical movements of the Precambrian Shield, Ontario-Québec, 1980-.

See:
Uplift estimated from remanent magnetization: Munro area of Superior Province since 2150 Ma ago; Can. J. Erth Sci., vol. 18, no. 7, p. 1164-1173, 1981.

308. SEGUIN, M.K., GAHE, E., KHALFI, S.M., LORTIE, J., OUELLET, R., Univ. Laval (Géologie):
Paléomagnetisme des roches précambriennes et Cambriennes de Terre-neuve, 1979-83.

See:
Paleomagnetism of Siluro-Devonian and Cambrian granitic rocks from Avalon Zone; Can. J. Earth Sci., vol. 18, no. 7, p. 1187-1210, 1981.

Reconnaissance paleomagnetic investigation in the Spider Lake-Woburn area; J. Geomag. Geoelectr., vol. 33, p. 205-224, 1981.

Paleomagnetic study of Cambrian Potsdam Group sandstones, St. Lawrence Lowlands, Quebec; Earth Planet. Sci. Lett., vol. 55, p. 433-449, 1981.

Les travaux paléomagnetiques en cours sont concentres sur le Précambrien de l'Avalon Terre-Neuvien dans les régions de Colliers Bay, Cape St. Francis, Harbour Main, Bauline et St. John's de meme que les roches Cambriennes de la région de Brigus.

309. STRANGWAY, D.W., Univ. Toronto (Earth Planetary Science):
Magnetic properties of extraterrestrial materials.

See:
The magnetic properties of the Abee meteorite: Evidence for a strong magnetic field in the early solar system; Proc. Lunar Planet. Sci. Conf. 12th, 1981.

1) Paleomagnetism: All extraterrestrial materials are in one way or another, magnetized. We know some of them were magnetized when they were formed long time ago (3-4.5 b.y. ago). Our aim is to find out the strength and origin of the magnetic fields in which these samples were magnetized.

2) Thermal history: Many extraterrestrial materials are breccias. Using paleomagnetic conglomerate test, we can clarify thermal histories of extraterrestrial materials.

3) Accretion process: Magnetic anisotropy and porosity of meteorites are good measures of the mechanical properties of meteorites. Our aim is to elucidate the accretion processes of meteorites.

310. STUPAVSKY, M., SYMONS, D.T.A., Windsor (Geology):
Paleomagnetism of the Grenville Front and members of the Cobalt Group in the Southern Province, 1980-82.

See:
Isolation of early Paleohelikian remanence in Grenville anorthosites of the French River area, Ontario; Can. J. Earth Sci., vol. 19, no. 4, p. 819-828, 1982.

Extent of Grenvillian remanence components in rocks of the Southern Province; ibid., p. 698-708, 1982.

The studied anorthosites are from the Ontario geniss belt of the Grenville Province. This belt is unique in the Grenville Province in that the various rocks give ~960 Ma K-Ar and ~1750 Ma Rb-Sr and U-Pb zircon radiometric ages. This 19 site paleomagnetic study is completed. The significant results are: (a) The complex remanence consisting of 3, A, B, and C magnetization components may be interpreted in a manner consistent with radiometric dating studies. The low blocking temperature component gives a paleomagnetic age of ~975 Ma and is interpreted as Grenvillian orogenic remagnetization acquired at the same time the K-Ar system was reset. The high blocking temperature (~670°C) B and C components give paleomagnetic ages of ~1725 Ma and ~1800 Ma respectively and are interpreted as Hudsonian orogenic remagnetizations acquired when the Rb-Sr and U-Pb zircon dates were reset ~1700 ± 100 Ma. (b) The Hudsonian age of the B and C components provides strong evidence that the Grenville Province was juxtaposed against the Southern-Superior Province at this time.

311. SYMONS, D.T.A., Univ. Windsor (Geology):
Paleomagnetism of the western Canadian Cordillera, 1979-82.

To look at the geotectonic evolution of the Cordillera in terms of allochthonous versus autochthonous terrains. The main units involved are the Westcoast diorites, Hazelton volcanics, Cache Creek volcanics, and Nicola volcanics.

312. SYMONS, D.T.A., STUPAVSKY, M., QUICK, A.W., OSMANI, I., Windsor (Geology):
Component magnetization of Algoman-type Archean Banded Iron Formations, 1979-82; M.A.Sc. thesis (Quick), M.Sc. thesis (Osmani).

See:
Magnetic and paleomagnetic characteristics of the Archean iron formation and host rocks at the Adams Mine, Ontario; Ontario Geol. Surv., M.P. 98, p. 293-307, 1981.

Previous studies have dealt with the magnetic properties of the rock units at the Sherman Mine, Temagami, and Moose Mountain Mine, Capreol. The study of the Adams Mine has been published based on M.A.Sc. thesis results of A.W. Quick. The study of the Griffiths Mine, Red Lake, is being written. In order to reasonably interpret the magnetic anomaly over the deposits, it is necessary to calculate into the interpretational model the anisotropy of magnetic susceptibility, the demagnetizing factor, and the natural remanence. Primary Archean, secondary Kenoran orogeny, and other remanence components are preserved.

313. TESKEY, D., Geol. Surv. Can.:
Development and application of magnetic interpretation methods, 1978-.

See:
An interactive program for estimating the parameters of magnetic anomaly sources; Geol. Surv. Can., Paper 82-1A, p. 51-53, 1982.

GEOTHERMAL/GÉOTHERMIQUE

314. PALMER, J.H.L., SVEC, O.J., National Research Council of Canada (DRB):
Ground heat storage, 1978-.

See:
In-ground energy storage – field test facility; Underground Space, vol. 6, p. 109-113, 1981.

The research project consists of the testing of four full-scale in-ground storage systems, model testing of a laboratory prototype and developing of a numerical model. The full-scale storage units are designed to cover the range from an insulated buried conventional water tank to a novel in-ground heat storage scheme. In this new approach a nest of deep lined holes provides heat exchange between the working fluid (water) and the storage medium (undisturbed natural ground). These full-scale systems are controlled and monitored by a PDP 1134 B computer with most of the software already developed. A laboratory and a field prototype of a single heat exchanger for the novel storage scheme have been successfully constructed and tested. The field system is operational and various tests are in progress.

Additional studies have been undertaken in conjunction with the International Energy Agency on the subject of vertical earth heat exchangers for use with heat pumps.

GRAVITY/GRAVITÉ

315. GUPTA, V.K., GRANT, F.S., BOUD, A., Ontario Geol. Surv.:
Gravity survey – North Bay-Sudbury-Gogama-Cobalt, Ontario, 1977-83.

See:
A gravity study in north-central Ontario; Ontario Geol. Surv., Misc. Paper 100, p. 160-164, 1981.

316. MILLER, H.G., Memorial Univ. (Physics):
Geophysical studies of the Avalon Zone, Newfoundland, 1980-85.

The gravity data collection on the land portion of the northern portion of the Avalon Peninsula was completed in 1980 and 1981. A cruise is being prepared for May 1982 to collect underwater gravity data in Conception Bay and out to 52°W. This will be supplemented with land based gravity data collection on the southern Avalon during 1982 enabling a gravity map of the area to be completed by late 1982. Interpretation will continue in 1983 with onshore/offshore seismic data collection planned for 1984.

317. MILLER, H.G., PITTMAN, D.A., Memorial Univ. (Earth Sciences):
Geophysical investigations of Avalon geology-onshore and offshore, 1980-84; B.Sc. thesis (Pittman).

In 1980 gravity data were collected on the Avalon Peninsula at 2.5 km station spacing. This data collection covered all the St. John's Peninsula and the Bay de Verde Peninsula as far north as Spaniards Bay. In 1981 the gravity data collection for the Bay de Verde peninsula was completed.

Magnetic data for the whole of the Avalon were digitized from GSC maps in 1980 using 0.8 km digitizing interval. These data were reduced to 1:250 000 scale maps. Pittman utilized the 1980 data set for his B.Sc. thesis entitled "A gravity and magnetic study of the St. John's Peninsula, Newfoundland".

For 1982 a cruise utilizing the CGS Dawson for underwater gravity work in Conception Bay and east of the Avalon Peninsula is scheduled for May 16-30. After the completion of this work a map of the northern Avalon will be compiled and interpreted.

SEISMOLOGY AND PHYSICS OF INTERIOR/ SISMOLOGIE ET PHYSIQUE DE L'INTÉRIEUR DE LA TERRE

318. DeLANDRO, W., MOON, W.M., UMEGO, M., Univ. Manitoba (Earth Sciences):
Seismic structure of Precambrian Superior-Churchill boundary zone, 1979-84; M.Sc. thesis (DeLandro), Ph.D. thesis (Umego).

319. HALL, D.H., MOON, W., MILLAR, T., MAXWELL, B., Univ. Manitoba (Earth Sciences):
Seismic survey, Red Lake, Ontario, 1980-82; M.Sc. thesis (Maxwell).

320. HAWORTH, R.T., Geol. Surv. Can.:
A geophysical investigation of the submarine extension of geological zonation of Newfoundland, 1979-.

321. HUNTER, J.A., Geol. Surv. Can.:
Permafrost seismic, 1973-.

See:
Drained lake experiment for investigation of growth of permafrost at Illisarvik, Northwest Territories – initial geophysical results; Geol. Surv. Can., Paper 81-1C, p. 67-76, 1981.

322. JARVIS, G.T., Univ. Toronto (Geology):
The tectonic role of the lithosphere, 1980-82.

See:
Effects of lithospheric rigidity on ocean floor bathymetry and heat flow; Geophysical Res. Letters, vol. 8, p. 857-860, 1981.

Mantle convection as a boundary layer phenomenon; Geophysical J. Royal Astronomical Soc., p. 39, 1982.

323. KEEN, C.E., Geol. Surv. Can.:
Seismic studies of continental margins and ocean basins of the North Atlantic, 1980-.

See:
Crustal structure, seismic stratigraphy, and rift processes of the continental margin off eastern Canada: ocean bottom seismic refraction results off Nova Scotia; Can. J. Earth Sci., vol. 18, no. 10, p. 1523-1538, 1981.

324. KREBES, E.S., Univ. Calgary (Geology and Geophysics):
Seismic wave propagation in a linear viscoelastic medium 1977-.

See:
Comparison of synthetic seismograms for anelastic media by asymptotic ray theory and the Thomson-Haskell method; Bull. Seism. Soc. Am., vol. 71, p. 1463-1468, 1981.

Theoretical investigations are being carried out on the various aspects of seismic wave propagation in a layered linear viscoelastic medium. Such a medium exhibits absorption and dispersion of seismic energy. Also, the direction of maximum attenuation is not, in general, the same as the direction of wave propagation, which necessitates the use of generally inhomogeneous plane waves. Currently, the dispersive nature of these types of waves is being investigated. Reflection and transmission coefficients have been computed and shown to differ significantly from the ideal elastic case for certain ranges of the incidence angle and the attenuation angle (the angle between the directions of maximum attenuation and propagation). In collaboration with F. Hron of the University of Alberta, ray-synthetic seismograms have been computed for SH waves for both the teleseismic case and the surface point source case, which illustrate the expected absorption/dispersion effects plus the peculiarities of wave propagation in a linear viscoelastic medium. Recently, ray-synthetic seismograms for teleseismic P-SV waves have been computed and found to agree well with those computed by a modified Thomson-Haskell method due to Silva for anelastic media. The ray approach has the distinct advantage of being able to identify all arrivals on the synthetic traces.

325. OVERTON, A., Geol. Surv. Can.:
Seismic-Precambrian Shield, 1970-.

OTHER/AUTRE

326. KATSUBE, T.J., Geol. Surv. Can.:
Pore structure in crystalline rocks, 1981-.
To develop methods to determine pore structure and radionuclide isolation capacity of various types of crystalline rocks; to apply these methods on rock samples from Pinawa, Chalk River, Atikokan and other Radwaste test sites.

See:
Hydraulic permeability differences between granites from the Lac du Bonnet (Manitoba) and Eye-Dashwa (Ontario) plutons, related to textural effects; Geol. Surv. Can., Paper 82-1A, p. 393-401, 1982.

327. KEEN, C.E., Geol. Surv. Can.:
Rift processes and the development of passive continental margins, 1980-.

328. KILLEEN, P.G., Geol. Surv. Can.:
Borehole geophysics (nuclear techniques), 1974-.

329. MOON, W.M., Univ. Manitoba (Earth Sciences):
Long period ocsillation of Earth, 1976-.

330. MOON, W.M., Univ. Manitoba (Earth Sciences):
New method of computing potential fields, 1980-84.

See:
A new method of computing geopotential field; Geophysical J. (RaS), vol. 67, p. 746-762, 1981.

331. ROCHESTER, M.G., MERRIAM, J.B., Memorial Univ. (Earth Sciences):
Theoretical global geophysics and planetary physics.

See:
Compressibility, core dynamics and the subseismic wave equation; Physics of the Earth and Planetary Interiors, vol. 24, p. 308-319, 1981.

An investigation of dispersive effects on tidal gravity measurements at Alice Springs; Physics of the Earth and Planetary Interiors, vol. 27, p. 187-193, 1981.

332. RODRIGUES, E., FLIGG, K., Ontario Ministry Environment (Water Resources Br.):
The application of geophysics in contaminant hydrogeology and groundwater supplies, 1965-.

See:
Case histories in the application of geophysical well logging in groundwater investigations; Ontario Ministry of the Environment, Water Resources Br., Paper 12, 1981.

To develop effective and economical surface geophysical techniques for mapping and monitoring contaminant plumes from landfills and other sources and locating contaminant containers, etc. A number of selected landfills have been studied to determine the limits of contamination to which geophysical techniques will be useful. In addition, geophysical techniques are being applied to assist in waste disposal site selection.

333. SLAINE, D., RODRIGUES, E., Ontario Ministry Environment (Water Resources Br.), Univ. Waterloo (Earth Sciences):
Role of geophysical methods in mapping and monitoring contaminant migration from landfills in southern Ontario, 1981-82; M.Sc. thesis (Slaine).

To obtain base data with which to properly evaluate the role of surface and borehole geophysics in monitoring and mapping contaminant movements around landfills in southern Ontario; to develop and evaluate new modelling and field methods for this purpose.

ENGINEERING GEOLOGY/GÉOLOGIE DE L'INGÉNIEUR

334. CHAGNON, J.Y., COCKBURN, D., BOIVIN, D., Univ. Laval (Géologie):
Cartographie géotechnique de la région urbaine de Québec, 1978-82; thèse de maîtrise (Cockburn).

335. DORÉ, G., Univ. Laval (Géologie):
Microzonation seismique de la région de la ville de Québec, 1981-85; thèse de maîtrise.

Etablissement d'une méthodologie de cartographie du comportement des sols lors de séismes – Application à la région urbaine de Québec, située dans une zone 3.

336. EGGINTON, P.A., Geol. Surv. Can.:
Hydraulic, morphologic and morphometric studies of selected rivers along the Mackenzie Highway, 1975-.

337. GADD, N.R., Geol. Surv. Can.:
Geological variability of marine deposits, Ottawa-St. Lawrence Lowland, 1974-.

GEOTECHNIQUE/GÉOTECHNIQUE

338. GRICE, R.H., KIM, C.S., BROWN, G.R., HESSE, R.F., McGill Univ. (Geological Sciences):
Susceptibility of mudrocks to weathering, 1980-83; Ph.D. thesis (Kim).

See:
Relationship of texture, composition, and adsorption properties to the weathering of mudrocks; Geol. Surv. Can., Paper 82-1A, p. 359-367, 1982.

Preliminary observations and analyses have been made for a small, representative suite of Ordovician mudrocks from the Montréal area. Nitrogen adsorption isotherms suggested that most of the rocks examined are microporous.

339. HEGINBOTTOM, J.A., Geol. Surv. Can.:
Slope processes and cryogenic movements, Arctic Islands, 1977-.

340. HUDEC, P.P., Univ. Windsor (Geology):
Beneficiation of concrete aggregate by surface active agents, 1980-83.

Various compounds, both organic and inorganic including amonia-based and large cationic, polar molecules, were used for treatment. The effect of the treatment was determined by measuring the amount of water adsorbed on internal rock surfaces. The results indicate that the large, polar molecules are most effective in reducing water adsorption. Work is continuing to determine long-term effects of treatment, and changes in the durability of the aggregate.

341. HUDEC, P.P., Univ. Windsor (Geology):
Integrity of clay liners in brine pond environment, 1980-83.

Properties of some 20 different clay samples were determined. These included Atterberg limits, compaction, grain size, and permeability. Permeability to brine was also determined on the same sample following determination to water. Samples were then treated with brine, and the changes in the above properties were determined. The results show that permeability of fresh water clay increases dramatically when brine is used as a permeating fluid. Atterberg limits show a change toward the more 'granular' soil properties.

342. HUDEC, P.P., Univ. Windsor (Geology):
New aggregate durability tests – implementation, 1982-84.

New aggregate tests developed in the previous research will be implemented through extensive testing both at the University laboratories and at the Ministry of Transportation and Communication (Ontario) laboratories. The results will be statistically evaluated. Second phase of the project consists of developing computer programs to run the testing laboratories at the MTC.

343. HUDEC, P.P., Univ. Windsor (Geology):
Reevaluation of petrographic number, 1982-84.

Petrographic number is used by the Ontario Ministry of Transportation and Communication as a major evaluation of aggregate quality. The method consists of assigning a quality number to a rock type. The quality numbers are 1, 3, 6, and 10 for good, fair, poor, and deleterious material respectively.

The purpose is to determine if the quality numbers do indeed accurately reflect the durability properties of the aggregate. Specific rock types have been subjected to a variety of durability tests and the results are statistically evaluated and related to the current quality number. The results show that some rock types have been misclassified; they also show that a rigid four-number system of quality is not warranted.

344. MARANDA, R., COCKBURN, D., Québec Ministère Énergie et Ressources:
Région Shawinigan-Grand-Mère, Québec. 1980-82.

Travaux de terrain termines. Reste rédaction du rapport et finalisation des cartes.

345. MARANDA, R., DECROIX, D., DION, D.J., Québec Ministère Énergie et Ressources:
Carte géotechnique Ville de Montréal, Québec, 1980-84.

Terminer la collecte de données produire des cartes a partir des données informatisées.

346. PACK, R.T., KUCERA, R.E., MATHEWS, W.H., LAUKULICH, L.M., BOVIS, M., Univ. British Columbia (Geological Sciences):
Slope stability of Wee Sandy and Nema Creek Basins, near Siocan Lake, British Columbia, 1981-82; M.A.Sc. thesis (Pack).

To 1) examine the distribution and properties of the fundamental factors which contribute to the stability of slopes in the study area; 2) examine landslide initiated by engineering activities in natural environments similar to those of the study area; and 3) predict the probable impacts of road building and logging on the stability of slopes in the study area and produce a landslide hazard map.

347. RINGROSE, S., ROED, M., GARTNER, J.F., HAYNES, J., Geo-analysis Ltd., Ottawa, Ontario Geol. Surv., Gartner Lee Associated Ltd., Markham:
Evaluation (SOEGTS) Phase II and III, 1981-82.

348. RUSSELL, D.J., TELFORD, P.G., Ontario Geol. Surv.:
Processes of sinkhole formation, Windsor Brinefield, Ontario, 1980-81.

A comprehensive engineering geological study has been made of the 1954 solution mining – related sinkhole at Windsor, Ontario, by a thorough literature search and program of sampling and testing. Following previous workers, it is concluded that the Sylvania Sandstone is an important factor in the process of sinkhole formation. The intergranular contacts of this Middle Devonian sandstone cause it to have relatively low strength and the characteristic of forming large volume of loose sand upon compressive failure.

Previous models of sinkhole formation at Windsor and Gross Ile, Michigan either do not take into account the large bulking factor in stoped rock masses or do not explain the locations of the sinkhole satisfactorily. The efficient mass transfer afforded by "granular stoping" of failed Sylvania Sandstone accounts in part for the first of these deficiences. Detailed analysis of operating records enables a sensible explanation of the location of the collapse. The current production practices during the life of the Windsor brinefield cause formation of extensive lateral and vertical interconnections throughout the salt beds. At the point of most extensive vertical communication, upward migration of the void was caused by solution of the topmost, supposedly unused, salt bed. A combination of conventional dry stoping and granular stoping of sandstone grains then allowed propagation of the void to the surface.

349. RUSSELL, D.J., WHITE, O.L., Ontario Geol. Surv:
Residual stress release features in the bedrock of southern Ontario, 1973-.

A continuing monitoring of reports of stress release phenomena (natural pop-ups, quarry floor buckles). Field parties of the O.G.S. and personal contacts in consulting engineering companies have alerted us to almost 20 new features in the last year. There appears to be a weak concentration of the long axes of these features in a roughly NW-SE direction.

350. TANGUAY, M.G., BOUCHARD, D., École Polytechnique (Génie Mineral):
Caractérisation des agrégats de carrières près de Montréal, Québec, 1981-83; thèse de maîtrise (Bouchard).

351. VANDINE, D.F., DYKE, L.D., GEORGE, H., Queen's Univ. (Geological Engineering):
Engineering geology and slope stability of the glacial deposits in the Elk River Valley, southeastern British Columbia, 1981-83; Ph.D. thesis (George).

The current study is being concentrated on regional slope stability within the Elk River Valley of southeastern British Columbia. Phases of investigation which have been completed or are in progress are set out below.

Activity	Status
(i) collection and assessment of existing data	largely completed, ongoing
(ii) preliminary engineering terrain analysis (using 1:40 000 air photos) with field checking and sampling at selected sites	completed

Preliminary observations indicate that significant regional stability problems exist within the Elk River Valley proper and also within the Michel and lower Wigwam tributary valleys. Some cases of instability are likely to impact adverse on existing and planned developments within the study area which is experiencing a phenomenally rapid industrial growth rate.

Instability occurs mainly within the unconsolidated material and is largely associated with glaciolacustrine silts and clays, and with morainal deposits which are silt and clay rich. Undercutting by the Elk River and ground water were found to be frequent contributing factors to the slope instability in this area.

Some of the remaining major investigative phases planned to be completed by March 1982 include: 1) index property testing of glaciolacustrine and morainal material; and 2) a detailed engineering terrain analysis using 1:15 840 air photos.

PERMAFROST/PERGÉLISOL

352. BAKER, T.H.W., National Research Council of Canada (DRB):
Physical and mechanical properties of frozen ground, 1971-85.

See:
Confined and unconfined compression tests on frozen sands, Proc. 4th Can. Permafrost Conf., Calgary, March 1981.

Compliant platens have been manufactured and sent to several consulting firms for field and laboratory testing. Time-domain reflectometry has been used to provide quality control on preparing artificially frozen sand specimens. A non-contacting transducer was purchased to be used in the volume change apparatus. This modification has not been completed. Varved samples of permafrost from Thompson, Manitoba (collected March, 1978) have been tested in unconfined compression at various orientations to the varves. Results were compared to specimens without varves. All of this clayey silt material had a remarkably uniform total water content.

Time-domain reflectometry (TDR) was used to monitor movement of the freezing front at a sandy loam field site in conjunction with a field program operated by Agriculture Canada. Results were correlated with ground temperature measurements. Laboratory freezing tests were continued using Rideau clay as a typical fine-grained soil. Thermocouples were used to measure temperature profiles. Preliminary results using X-ray techniques showed excellent correlation with the TDR measurements.

353. ECKARDT, H., Centre d'ingénierie nordique de l'École Polytechnique (CINEP):
Etude des méthodes dilatométriques pour la mesure des propriétés rhéologiques des sols gelés sur place, 1980-81.

See:
Borehole creep and relaxation tests in ice-rich permafrost; Proc. 4th Canad. Permafrost Conf. Calgary, 1981.

Une série d'essais pressiométriques de fluage et dilatométriques de relaxation a été effectuée en chambre froide, afin d'étudier la performance de ces essais dans des conditions contrôlées. Pour ce but on a construit une cuve cylindrique de 90 cm de diamètre, et 50 cm de haut, permettant la formation des cylindres épais de sol gelé et l'application d'une pression de confinement extérieure à ces cylindres lors des essais dans le trou central. Ces essais ont permis non seulement de mesurer les propriétés du sol gelé dans des conditions connues, mais également d'observer tous les phénomènes associés avec de tels essais dans un trou de forage, et en particulier la formation des fissures radiales lors de l'essai. Cette étude a permis de clarifier plusieurs problèmes rencontrés dans l'exécution de ces essais sur place.

354. GOODRICH, L.E., JOHNSTON, G.H., PENNER, E., National Research Council of Canada (DRB):
Ground thermal regime, 1970-.

See:
Evaluation of least squares time stepping procedures for transient field problems; Proc. Internat. Conf. Numerical Methods for Coupled Problems, Univ. College, Swansea, U.K., Sept. 7-11, 1981.

Field work has been completed for a study of thermal effects of road embankment on permafrost, Mackenzie Highway, Mile 419.5. Field measurements of soil thermal conductivity have been completed at Ottawa, Thompson Manitoba, and Mile 419.5, Mackenzie Highway, and a report will be prepared. A paper dealing with the influence of snow covers on the ground thermal regime has been accepted for publication. Work is under way on a numerical model which will eventually be extended to model frost heaving.

355. JOHNSTON, G.H., National Research Council of Canada (DRB):
Field observations of performance of foundations of buildings, bridges, roads, airfields, utilities, etc., 1950-.

See:
Design and performance of the Inuvik, N.W.T. airstrip; Proc. 4th Can. Permafrost Conf., Calgary, March 1981.

Observations on performance of bridge and building foundations and data collection for evaluating parameters for design and construction of embankments, buried utilities and foundations of structures constructed in permafrost areas were continued.

356. JOHNSTON, G.H., GOODRICH, L.E., National Research Council of Canada (DRB):
Insulated embankments on permafrost, 1972-83.

Observations continuing at infrequent intervals on performance of insulated and uninsulated test sections installed on the Mackenzie Highway south of Inuvik, N.W.T., and on Dempster Highway in northern Y.T., to evaluate the thermal behaviour and determine the parameters required for design.

Observations at test sections on Mackenzie Highway south of Wrigley, N.W.T., terminated in February 1981; report in preparation.

357. LADANYI, B., BOURBONNAIS, J., ARTEAU, J., Centre d'ingénierie nordique de l'École Polytechnique (CINEP):
Etude du comportement mécanique des sols gelés jusqu'à des températures très basses, 1978-83; thèses de doctorat (Bourbonnais, Arteau).

See:
Mechanical behaviour of frozen soils; Mechanics of Structured Media, Elsevier, Amsterdam, pt. B, p. 205-245, 1981.

Shear-induced stresses in the pore ice in frozen particulate materials; Proc. Symp. Free Boundary Problems, Montecatini, Springer Verlag, 1981.

Trois études en chambre froide, initiées il y a trois ans, sont présentement en train d'exécution. Dans la première, on étudie les lois de consolidation oedométrique des sables gelés, saturés de glace. Cette étude, théorique et expérimentale vise à améliorer la prédiction du tassement des fondations en pergélisol. Dans la deuxième étude, on développe un concept théorique permettant d'exprimer les propriétés des sols gelés en termes de contraintes effectives, ce qui jusqu'à présent n'était pas possible à cause de la difficulté de mesurer directement les contraintes dans la glace interstitielle.

Le but de la troisième étude expérimentale est de mesurer les propriétés mécaniques des sols gelés à des très basses températures, allant jusqu'à -165°C, en relation avec le stockage souterrain du gaz naturel liquéfié (LNG). On étudie surtout les méthodes de refroidissement permettant de minimiser la fissuration thermique des échantillons.

358. LADANYI, B., GARAND, P., Centre d'ingénierie nordique de l'École Polytechnique (CINEP):
Effets du gel sur les moraines glaciaires, Québec, 1979-81; thèse de maîtrise (Garand).

See:
Frost susceptibility testing of compacted glacial till; Proc. 3rd Internat. Ground Freezing Symp., Hanover, New Hampshire, 1982.

Une étude de ségrégation de glace dans une moraine glaciaire, provenant de la région de Baie James, vient d'être terminée. Cette étude a fourni des renseignements permettant d'améliorer la prédiction du soulèvement dû au gel dans les moraines compactées, lorsqu'elles sont utilisées pour construire des digues et des barrages dans le Nord. On a étudié surtout l'effet de l'énergie de compactage sur le soulèvement et la possibilité d'extrapolation des résultats expérimentaux à plus long terme.

359. PARAMESWARAN, V.R., National Research Council of Canada (DRB):
1) Physical and mechanical properties of frozen soils, 2) model studies of foundations in frozen ground, 1975-.

See:
Triaxial testing of frozen sand; J. Glaciology, vol. 27, no. 95, p. 147-156, 1981.

Displacement of piles under dynamic loads in frozen sand; Proc., 4th Can. Permafrost Conf., Calgary, March 1981.

Adfreeze strength of model piles in ice; Can. Geotechnical J., vol. 18, no. 1, p. 8-16, 1981.

Adfreeze strength of various kinds of piles in frozen soils was determined at various temperatures under static and dynamic loading conditions. A superimposed alternating load enhances the rate of displacement of piles in frozen soils. Compressive strength of various kinds of frozen soils at various temperatures and moisture content is being measured under confined and unconfined conditions.

The aim of the projects is to combine the results from these measurements and develop a criterion for design of foundations in frozen ground.

ROCK MECHANICS/ MÉCANIQUE DES ROCHES

360. CRUDEN, D.M., Univ. Alberta (Geology):
Stability of natural slopes in rock, 1971-.

Detailed mapping of selected sites at which large downslope movements in rock are occurring, or have occurred, has continued. Laboratory work has provided a theoretical basis for these studies.

361. CRUDEN, D.M., Univ. Alberta (Geology):
Reconnaissance of karst in the Salt River area, northeastern Alberta, 1979-82.

Closed depressions visible on air photographs of the Salt River area will be examined to determine whether they formed by collapse or subsidence. The properties of the bedrock surrounding these structures which are believed to be significant in their formation will be determined.

362. DUSSEAULT, M.B., SCAFE, D.W., Alberta Research Council (Geol. Surv.), Univ. Alberta (Mineral Engineering):
A geotechnical and clay mineralogical investigation of the roof and floor rocks of Alberta Prairie coals, 1979-82.

Samples of cores from seven holes drilled through the Ardley coal zone were taken from material stored at ERCB. Atterberg limits, swell capacity, slaking tendency, grain size, bulk density, porosity, clay mineralogy, and minu-clay porosity for argillaceous sandstones are the tests performed on these dried samples in order to establish the characteristics of each lithology. Once a characteristic suite of lithologies is identified we will attempt to obtain specimens, with their natural moisture content, of similar lithologies for testing in a high pressure triaxal cell in order to determine permeability, stress-strain characteristics and strength. Shear box tests will determine the effect of displacement rate on strength parameters and delineate the range of strengths. Specimens will be prepared for scanning electron microscope and optical thin section analysis of intergranular relationships and their influence on behaviour. All index tests noted above will be repeated on these specimens to permit a generalization to the regional case and to establish a predictive capacity based on index testing. Samples of the Horseshoe Canyon Formation were collected, at the drill site, from six cores drilled by industry and one core taken by the ARC coal program in the Drumheller area. These samples were wrapped immediately in layers of plastic wrap, dipped in melted wax to preserve their natural moisture, then stored in the "moist room" at the University of Alberta. Similar tests to those outlined above will be performed on these samples. Slaking and swelling tests on the Ardley samples show that all samples are extremely water susceptible and this will have profound significance on mine planning and operation. Interpretation of the results of other completed laboratory tests is incomplete.

363. DYKE, L.D., Geol. Surv. Can.:
Geotechnical study of rock heave, central Arctic Canada, 1977-.

364. EISBACHER, G.H., Geol. Surv. Can.:
Study of large landslides in the Western Cordillera, 1976-.

365. EVANS, S., CRUDEN, D.M., Univ. Alberta (Geology):
Landslides in the Kamloops Group in south-central British Columbia, 1977-82; Ph.D. thesis (Evans).

To rationalize the regional distribution of landslides in the volcanic rocks of the Kamloops Group in south-central British Columbia; to determine the failure mode and mechanics of selected landslides in the Kamloops Group; to isolate the factors contributing to slope failure in the Kamloops Group; and to formulate a landslide slope development model for the Kamloops volcanics in south-central British Columbia for use as an indictor of potential natural hazards.

366. HEDLEY, D.G.F., HERGET, G., GELLER, L.B., EMR (CANMET):
Underground mine stability, 1980-83.

To evaluate several measuring systems to determine whether they are capable of providing adequate warning of impending roof falls in the Elliot Lake uranium mines.

367. HERGET, G., HEDLEY, D.G.F., GYENGE, M., YU, Y.S., EMR (CANMET):
Design guidelines for deep hard rock mines, 1981-86.

To investigate and publish rock mechanics guidelines on new mining techniques with potential significant improvement with regard to safety and economy over conventional techniques for mining hard rock orebodies at a depth below 1000 m.

368. LAROCQUE, G.E., ANNOR, A.B., EMR (CANMET):
Underground nuclear waste repository, 1977-85.

See:
High temperature and pressure triaxial compression tests on rock samples from Pinawa and Creighton Mine; AECL TR-158, 1981.

Hydrogeological aspects of shaft grouting; ERP/MRL 81-31 (TR), 1981.

Long term performance of grouts; ERP/MRL 81-45 (TR), 1981.

High temperature and pressure triaxial studies have been completed on two igneous lithologies relevant to waste disposal and planned field experiments. Permeability studies have been initiated on Lac du Bonnet granite under temperature and pressure conditions simulating disposal vault conditions. Studies on the hydrogeological aspects of shaft grouting and the long term performance of grouts have been completed. The property characterization of research area litholgies continues.

369. PALMER, J.H.L., National Research Council of Canada (DRB):
Field performance of tunnels under conditions of high in situ stress, 1976-.

Long-term monitoring of the pressure acting on a tunnel is continuing.

370. TSUI, P.C.W., CRUDEN, D.M., Univ. Alberta (Geology):
The Keg River Escarpment, Alberta-Northwest Territories, 1981-82; M.Sc. thesis (Tsui).

The contact between the Keg River and Chinchaga formations has been mapped in Wood Buffalo National Park. It has been deformed by normal faulting and by gypsum diapirs.

SOIL MECHANICS/MÉCANIQUE DES SOLS

371. BLOUIN, R., RISSMANN, P., LEBUIS, J., Québec Ministère Énergie et Ressources:
Carte des zones exposées aux risques de mouvement de terrain dans la région de Shawville, Fort Coulonge, Québec, 1981-82.

Zones exposées aux mouvements de terrain. Travaux de terrain terminés, il ne reste que la rédaction de rapport et le traçage de carte.

372. DION, D.J., CARON, P., MARANDA, R., Québec Ministère Énergie et Ressources:
Levé géotechnique de la région de Beauharnois-Candiac, Québec, 1981-82.

373. DION, D.J., CARON, P., MARANDA, R., Québec Ministère Énergie et Ressources:
Levé géotechnique de la région de La-Prairie-St. Jean, Québec, 1982.

374. HUGHES, O.L., Geol. Surv. Can.:
Surficial geology and land classification, Mackenzie Valley Transportation Corridor, 1971-.

375. LAFLEUR, J., MARCOTTE, M., GIROUX, F., École Polytechnique (Géotechnique):
Perméabilité de la couche superficielle altérée et fissurée des argiles des Basses Terres du Saint-Laurent, 1979-83; thèse de maîtrise (Giroux).

Voir:
Shear strength of the weathered Champlain clay measured in large diameter triaxial test; Revue Canadienne de Géotechnique, vol. 19, no. 3, 1982.

Indicence et prévention des glissements de terrain reliés à l'hydrogéologie de surface; Eau du Québec, vol. 14, no. 4, p. 314-320, 1981.

L'importance géotechnique de la croute superficielle des argiles Champlain a souvent été minimisée à cause des difficultés d'investigation. Ce projet vise à quantifier l'influence des fissures sur les comportements méchaniques et hydrauliques.

376. LAW, K.T., BOZOZUK, M., EDEN, W.J., National Research Council of Canada (DRB):
Geothechnical properties – Eastern marine clay, 1951-.

See
Consolidation of sensitive clays; Proc. Xth Internat. Conf. on Soil Mechanics and Foundation Engineering, vol. 1, p. 219-223, Stockholm 1981.

Effect of stress path geometry on soil brittleness; Geotechnique, vol. 31, p. 278-287, 1981.

Field studies of landslides in clay. Settlement of buildings and fills on clay. Skin friction on piles in clay. Laboratory and in situ studies on stress-deformation characteristics of clays.

377. PENNER, E., National Research Council of Canada (DRB):
Frost action in soils, 1953-.

See:
Location of segregated ice in frost susceptible soils; Eng. Geol., vol. 18, p. 231-244, 1981.

Comparisons of modes of freezing are being currently investigated.

378. RISSMANN, P., ALLARD, J.D., LEBUIS, J., Québec Ministère Énergie et Ressources:
Carte des zones exposées aux mouvements de terrain dans la région de Batiscan-Champlain, Québec, 1981-82.

Etablir les zones suceptibles d'etre impliqées dans un mouvement de terrain. Travaux de terrain sont terminés, il ne reste que la redaction du rapport et quelques analyses de laboratories.

SNOW AND ICE/NEIGE ET GLACE

379. FREDERKING, R.M.W., SINHA, N.K., National Research Council of Canada (DRB):
Ice mechanics, 1960-.

See:
Growth of first-year sea ice, Eclipse Sound, Baffin Island, Canada; Can. Geotechnical J., vol. 18, no. 1, p. 17-23, 1981.

Laboratory tests on ice sheet adhesion on piles of different materials; Lab. Structural Engineering Rept. 14, Technical Res. Centre of Finland, Espoo, April 1981.

Rate senstivity of compressive strength of columnar-grained ice; Experimental Mechanics, vol. 19, no. 6, p. 209-218, 1981.

To investigate the structural, rheological and mechanical properties of river, lake and sea ice; to observe ice forces on structures and the load bearing capacity of ice covers.

380. SCHAERER, P.A., McCLUNG, D.M., National Research Council of Canada (DRB):
Avalanche Engineering, 1966-.

To determine the characteristics of snow avalanches in motion, the amount of snow moved by avalanches, the feasibility of measures for avalanche protection and to develop techniques of evaluating avalanche hazard; to determine characteristics of snow and terrain parameters necessary for estimation of creep pressures on structures in deep snow covers.

GLACIOLOGY/GLACIOLOGIE

381. KOERNER, R.M., FISHER, D.A., ALT, B., BOURGEOIS, J., PARNANDI, M., Polar Continental Shelf Project (EMR):
Paleoclimate of Arctic Islands.

See:
Some aspects of climatic change in the High Arctic during the Holocene as deduced from ice cores; Quaternary Climatic Change Symp., May, 1979, Geo-abstracts, p. 249-271, 1981.

Studying climatic change from High Arctic ice cores; Syllogeus, no. 33, p. 195-218, 1981.

The use of down-borehole video systems in High Arctic ice caps; J. Glaciology, vol. 2, p. 34-38, 1981.

Paleoclimate of Arctic Islands from study of surface-to-bedrock ice cores, measurement of mass balance of 4 ice caps, relating glacier parameters to synoptic meteorology: 1) pollen analysis from 1973 Devon Island core completed. Publication in preparation; 2) paper on $\delta^{18}O$ and microparticles in northern Ellesmere cores in second draft stage; 3) increasing acid levels in High Arctic snow in press with Nature. Work continues to trace time of origin of increase; 4) mass balance on 4 ice caps measured by a) Melville Island for period 1974-80, b) Meighen Island for period 1978-80, c) Northern Ellesmere, Agassiz for 1979-80 (2 glaciers), and d) North-west Devon Island ice cap for 1979-80; 5) interpretation of mass balance and ice core results from a meteorological standpoint in terms of climatic change; 6) ice rheology – ice texture and fabric and its relationship to ice dynamics in Holocene and ice age ice; and 7) studies undertaken elsewhere on core samples – ^{10}Be, Iridium and CO_2 concentration. Studies in progress to produce several millenia time series.

382. WADDINGTON, E., Univ. British Columbia (Geophysics and Astronomy):
Computer modelling of glacier flow and temperature, Agassiz Ice Cap, Ellesmere Island, 1981-82.

Computer modelling of flowlines and temperature fields on Agassiz ice cap in area where 2 ice cores have been obtained. Ice core data and measured temperatures, accumulations, strains, etc. are used as input to the model.

383. BLOWS, D., GILLHAM, R.W., Univ. Waterloo (Earth Sciences):
Effect of the capillary fringe on stream flow and solute migration in uranium mill tailings impoundments, 1981-82; M.Sc. thesis (Blows)

To show that in areas with shallow water tables, the zone of tension saturation above the water table can result in rapid and highly disproportionate water-table responses. To further show that this response can dramatically affect the amount of groundwater discharged to streams and thus the quality of streamflow. May be of particular relevance to the long-term management of tailings impoundments.

384. CHERRY, J.A., FRITZ, P., MAYFIELD, C.I., BARKER, J.F., ACTON, J., SUTTON, T., Univ. Waterloo (Earth Sciences, Biology).
The transport and alteration of toxic organic agents in leachates migrating from sanitary landfill sites, 1979-81; M.Sc. theses (Acton, Sutton).

Organic contaminants in groundwaters at three sites – North Bay, Ontario, Woolwich near Waterloo, Ontario and C.F.B. Borden were studied. Water table aquifers in sandy materials are contaminated by leachate from the landfills. The hydrogeology and inorganic geochemistry of these groundwaters have been studied with an extensive network of multilevel prizometers. Sampling and analytical methodologies have been established although this research is continuing.

Preliminary assessment of the organic geochemistry of afflicted groundwaters reveals considerable differences at these sites. Little organic matter and very little trace organic contaminants have entered the groundwaters at the Borden site. At Woolwich considerable organic matter has penetrated the thick unsaturated zone and extensive hydrocarbon and organic solvent contamination is suggested. At North Bay considerable organic matter has entered the groundwater flow system with significant amounts of low-molecular-weight organics. Some contaminants do not persist down gradients. Microvial degradation may account for some attenuation of organic matter and toxicity.

385. CHERRY, J.A., GILLHAM, R.W., BARKER, J.F., Univ. Waterloo (Earth Sciences):
Evaluating groundwater contamination risks resulting from hazardous waste disposal, 1981-84.

In a cooperative investigation of the transport of hazardous organic solutes in groundwater, members of the Hydrogeology Group at the University of Waterloo are supplimenting the research effort undertaken by Stanford University. Areas of contributions are as follows: 1) delineation of plumes of contaminated groundwater in aquifers at landfill sites where municipal and hazardous wastes have been deposited and the description of the hydrogeological factors that control the evolution of the plumes and determination of the hydrogeochemical and microbiological environments within which the various processes affecting organic and inorganic solute transport operate; 2) application of controlled injection field tests to determine the transport behavior of various organic solutes in a manner suitable for appraisal of the suitability of various mathematical models for organic solute transport; and 3) appraisal of the suitability and use of devices for in situ single-borehole measurements of retardation factors for hazardous organic solutes. Devices of this type have been developed at Waterloo for inorganic contaminants but have not been evaluated for organic contaminats.

386. CHIN, V., TURNER, M., MILLER, J.A., SIBUL, U., Ontario Ministry Environment (Water Resources Br.):
Water resources inventory studies in drainage basins, Ontario, 1964-.

See:
Water resources of the Holland-Black River Basin; Ontario Ministry of the Environment, Water Resources Br., Rept. 15, 1982.

The reports deal with the occurrence, distribution, quantity, quality and the use of surface and groundwaters in selected drainage basins in Ontario. General hydrologic conditions in the basins are discussed rather than specific situations on a local scale. Special attention is paid to problems related to water quality, groundwater supplies and environmentally sensitive issues in each basin. Work is currently proceeding on the draft report for the combined Humber and Don river drainage basins, and preliminary studies for the Credit River drainage basin have been started.

387. DESAULNIERS, D.E., CHERRY, J.A., FRITZ, P., GILLHAM, R.W., Univ. Waterloo (Earth Sciences):
Isotope hydrology and hydrogeochemistry, 1980-83.

See:
Origin, age and movement of pore waters in argillaceous Quaternary deposits at four sites in southwestern Ontario; J. Hydrol, vol. 50, p. 231-251, 1981.

The remainder of this project will be directed toward an evaluation of the hypothesis that thick clayey Quaternary deposits in south-central Canada are likely to exhibit diffusion dominated solute transport characteristics. To this end clayey Quaternary deposits of different properties will be studied in southwestern Ontario, in northern Ontario, in the St. Lawrence Lowlands of Quebec and in northern Wisconsin. This study will also determine the diffusion coefficients of these sediments.

388. FARVOLDEN, R.N., WOELLER, R., ADEGOKE, J., OPHORI, D., Univ. Waterloo (Earth Sciences):
Groundwater resources research: 1) Greenbrook Well Field, Kitchener, Ontario, 2) Observation well response, 3) Forewell River connected aquife, 1979-82; M.Sc. theses (Woeller, Adegoke, Ophori).

See:
Origin of dissolved solids in groundwater of Mayne Island, British Columbia; Water Res. Res., 1981.

The Greenbrook Well Field is located in Lakeside and Greenbrook Parks in Kitchener and produces about two million imperial gallons of water per day or about 15% of the water supply for the Kitchener-Waterloo municipal systems. Considerable testing and developing have been done over the years and the field now comprises six production wells and some 54 observation wells, of which 19 have been installed in conjunction with research projects of the University of Waterloo. In addition records are available for a number of other test holes (R.A. 9, 10, 11/76; A.B. series 160, 161, 162, etc.) drilled by University of Waterloo but now abandoned.

The original aims were: 1) to investigate the extent of known aquifers beyond the limits of the present well field; 2) to install observation wells for analysis of the well field response to pumping at various rates; 3) to determine the groundwater quality in the drift and bedrock aquifers in the vicinity of the Greenbrook Well Field; and 4) to check on the extent of subsurface migration of pollutants from the Ottawa Street landfill.

389. FORD, D.C., BAKALOWICZ, M.J., McMaster Univ. (Geography):
Aspects of the evolution of Wind and Jewel Caves, South Dakota, and of secondary precipitates within them, 1981-82.

Wind and Jewel caves are the foremost examples of three-dimensional maze caves in carbonates. It is hypothesised that they were created by hydrothermal waters expelled from the Black Hills granitic intrusion. Preliminary isotopic profiling of subaqueous wall calcites in Jewel Cave suggests depositional temperatures of 100-200°C. Modern meteoric groundwaters and the discharge of regional thermal springs are being studied chemically and isotopically for comparison. U/Th studies of calcite rafts formed at the watertable in Wind Cave suggest Holocene fluctuations of >60 m in table elevation, although this have not varied more than 0.6 m during 20 years of observation.

390. GARVEN, G., FREEZE, R.A., Univ. British Columbia (Geological Sciences):
The role of groundwater flow in the genesis of stratabound Pb-Zn deposits: A quantitative analysis, 1979-82; Ph.D. thesis (Garven).

391. GRAHAM, B.W., JACKSON, R.E., BELANGER, D., BARBASH, J., Univ. Waterloo (Earth Sciences), Environment Canada (National Water Res. Instit.):
Gloucester project: Hydrogeochemistry of toxic contaminants at the Gloucester special waste disposal site, 1980-85; M.Sc. theses (Belanger, Barbash).

The migration of toxic metals and organics in groundwater away from the EPS Special-Waste Compound at the Gloucester (Ottawa) landfill is being investigated by NHRI, EPS and University scientists. The objectives of the study are to develop: 1) sensitive field sampling and laboratory analysis (GC/MS, GC/AAS, HPLC/Zeeman AAS) procedures to characterize dissolved and adsorbed contaminants; 2) predictive equations to evaluate contaminant migration from toxic-waste disposal facilities; and 3) remedial measures to contain or decontaminate polluted groundwaters.

Since the receipt of Toxfunds in September 1981 a major program of field work has been completed such that contaminant migration from the site is now being mapped and predicted, contaminant attenuation studied and remedial measures developed. It is now clear that a variety of toxic organic chemicals (e.g. benzene, toluene, chlorobenzene, chlorophenol, lindane and halomethanes) are migrating away from the site towards several industrial wells approximately 600 metres distant. These wells will be contaminated within 50 years.

During 1982 research efforts will concentrate on: 1) completing the hydrogeological analysis of the site including predictions of contaminant migration towards the nearby water-supply wells; 2) developing methods for the sampling and analysis of contaminated groundwaters and aquifer materials, in particular for volatile organics, total organic halogen, dioxins and furans, and organometallics; 3) undertaking preliminary experiments to determine the partitioning of toxic organics and metals between aquifer sediments and groundwater in order to evaluate the retardation of contaminants relative to the velocity of the transporting groundwater; and 4) testing, by field and laboratory experiments, potential remedial technologies.

392. GROSS, H., Environment Canada (National Water Res. Instit.):
Time domain reflectrometry.

The initial phase of the project is now completed, that of demonstrating the use of transmission lines as a practical tool for obtaining soil moisture profiles in soil, up to a depth of one metre. Present work is focused on building an instrument that can produce moisture profiles in the field, if not in situ at the time of measurement, instead of reruning the records to the office for digitizing and data reduction. Probe and instrument designs will be available for technology transfer to industry.

393. HUGHES, G.M., GOODWIN, M., McCLENAGHAN, W.A., Ontario Ministry Environment (Water Resources Br.):
Groundwater quality investigations; Special site assessments; Legislation for water-well management, 1965-.

Assessment of proposed operating and abandoned waste disposal sites is carried out on a continuing basis. Legislation is written and enforced in the area of water-well drilling and construction. Guidelines and legislation are prepared and assessed that deal with contaminant hydrogeology. Problems associated with groundwater contamination from various sources are addressed and advice provided on the abatement of these problems. An inventory of groundwater heat pump installations, dealers and manufacturers in the Province is being maintained to assist the Ministry in developing guidelines for groundwater heat pump applications.

394. HUGHES, G.M., PAWLOWSKI, I.P., Ontario Ministry Environment (Water Resoruces Br.):
Field measurement of infiltration through landfill covers, Ontario, 1982.

Involves the design and evaluation of an infiltration collection system to carry out special tests and experiments measuring infiltration through various landfill covers.

395. MAATHUIS, H., Saskatchewan Res. Council (Geology Div.):
Observation wells in Saskatchewan, Canada: Groundwater-level trends versus climatic changes, 1981-.

Since 1964, 50 groundwater level observation wells have been constructed in known geohydrological environments to measure groundwater-level fluctuations and to relate these fluctuations to variations in recharge caused by climatic changes. Wells are equipped with continuous recorders and period of records range from 2-17 years. The primary aim of this study is to investigate the qualitative relationship between observed groundwater-level trends and changes in precipitation as measured at meteorological stations throughout Saskatchewan. Reconstruction of historical hydrographs and subsequent analyses will yield valuable information on droughts and on the magnitude of fluctuations which might occur in different types of aquifers.

396. SCHREINER, B.T., Saskatchewan Res. Council (Geology Div.):
Hatfield Valley aquifer system in the Melville area (62 K, L), Saskatchewan, 1981-82.

To delineate and characterize the Hatfield aquifer system in the Melville area (62 K, L) in Saskatchewan. Sixty test holes were drilled, six piezometers were installed as part of a field program. The field information has been combined with previously available information from oil and water well exploration to generate a series of maps and cross-sections showing the stratigraphic relationships of the valley aquifer to bedrock and other aquifers. A hydrochemistry component of the study is based on sampling of waters from piezometers and farm wells.

397. SIBUL, U., LYE, J., REYNOLDS, L., SCAFE, M., Ontario Ministry Environment (Water Resources Br.):
The inventory and study of acid groundwaters in Ontario (APIOS), 1980-.

The study consists of three main components: the inventory of low pH groundwaters, with emphasis on domestic groundwater supplies, the role of groundwater quality in affecting the acidification of streams and lakes in the Muskoka-Haliburton area, and the in-depth investigation of the process of acidification of groundwaters. To date, an inventory of field pHs has been completed in the Muskoka/Haliburton and Sudbury areas and field surveys of groundwater quality and discharges in the calibrated watersheds in the APIOS in the Muskoka area have been carried out. Monitoring of groundwater pH values near Bracebridge has been initiated and will continue for a number of years.

398. SIBUL, U., MARTIN, K., Ontario Ministry Environment (Water Resources Br.):
A feasibility study for augmenting Avon River flow by groundwater, Ontario, 1981.

The study deals with determining the availability of adequate supplies of good quality groundwater downstream from Stratford for augmenting flows in the Avon River during extreme low flow conditions. The additional water is needed to assist in the assimilation of water from the Stratford STP and consequently improve river water quality.

399. SKLASH, M.G., ATTANAYAKE, P., Univ. Windsor (Geology):
A field investigation of the role of topography in groundwater ridging during storm events, 1982-83; M.Sc. thesis (Attanayake).

400. SKLASH, M.G., GALINSKI, G., Univ. Windsor (Geology):
Heavy metals in the shallow groundwater of Essex County, Ontario, 1980-83; M.Sc. thesis (Galinski).

401. SKLASH, M.G., JIWANI, R., Univ. Windsor (Geology):
The hydrogeology of Walpole Island, Ontario, 1982-83; M.Sc. thesis (Jiwani).

402. SKLASH, M.G., OBRADOVIC, M., Univ. Windsor (Geology):
The role of groundwater in storm runoff, Apex Creek, Northwest Territories, 1982-83; M.A.Sc. thesis (Obradovic).

403. SMART, C.C., FORD, D.C., McMaster Univ. (Geography):
The Castleguard Mountain – Columbia Icefield karst aquifer, Banff National Park, Alberta, 1979-83; Ph.D. thesis (Smart).

See:
Quantitative dye tracing in a glacierised alpine karst; Geol. Soc. Am., Abstracts with Program, 1981.

Field studies of an aquifer in the Cathedral, Stephen, Eldon and Pika carbonate formations which drains to a system of major springs in the Cathedral in the Castleguard Valley are completed. Field measurements included low and high altitude meteorological recording, input and out hydrographs, and series of repeated dye traces through the aquifer at various discharge stages, recorded with a field flurometer. Analysis of the hydrographs, dye recovery and output is proceeding. In 1981 dye injected into a moulin at the head of the Saskatchwan Glacier was recovered at the springs, supporting the supposition that the greater part of the Columbia Icefield drains through its base into the aquifer. The aquifer itself appears to be of a disordered, primitive kind.

404. SUDICKY, E.A., GILLHAM, R.W., FRIND, E.O., Univ. Waterloo (Earth Sciences):
Laborator evaluation of mathematical models for predicting solute transport through fractured porous media, 1980-82; Ph.D. thesis (Sudicky).

A laboratory model consisting of a coarse sand layer between two silt layers was constructed to approximate a fracture in a porous medium. Chloride tracer was passed through the sand layer and the concentration history in the effluent was measured. Effluent concentrations were compared with those predicted by an analytical solution of the solute transport equations. The results showed that diffusion of the tracer from the sand into the silt had a major influence on the concentration distribution in the sand. Agreement between the measured and computed results was exceptionally good, providing a high degree of confidence in the ability of the analytical solution to predict transport through a fractured porous medium.

405. VALLERY, D., SIBUL, U., Ontario Ministry Environment (Water Resources Br.):
Groundwater level fluctuations in major hydrogeologic environments in Ontario, 1980-83.

See:
Flowing wells in Ontario; Ontario Ministry of the Environment, Water Resources Br., 1981.

The computer analysis of a large data base pertaining to water-level fluctuations in observation wells is being carried out to study the relationships between groundwater levels and the various hydrogeological and climatic conditions common to Ontario.

406. van EVERDINGEN, R.O., BANNER, J.A., Environment Canada (National Water Res. Instit.):
Northern groundwater and engineering problems related to groundwater flow, Mackenzie Valley and Yukon, 1974-.

See:
Management of groundwater discharge for the solution of icing problems in the Yukon; Proc. 4th Canadian Permafrost Conf., Calgary, 1981.

Reports are in preparation on frost blisters in North Fork Pass, Yukon, and on dendrogeomorphology of an icing area along the Alaska Highway. Work is in progress to develop 1) liquid-pressure sensors for use in seasonally freezing/thawing environments, and 2) a recording interface for AC resistance signals from multisensor freezing detectors.

407. van EVERDINGEN, R.O., BANNER, J.A., Environment Canada (National Water Res. Instit.):
Thermal springs in Rocky Mountain National Parks, 1980-.

Reports are in preparation on 1) Cave development in the travertine deposits of the Cave-and-Basin Hot Springs in Banff National Park and 2) sulfur and oxygen isotope analyses to distinguish sources of dissolved sulfates in springs in Banff and Kootenay National Parks.

408. WANG, K.T., OSTRY, R.C., Ontario Ministry Environment (Water Resources Br.):
Groundwater probability mapping, 1966-.

See:
Groundwater probability; County of Simcoe (southern portion); Ontario Ministry of the Environment, Water Resources Br., 1981.

Probable groundwater yields for the counties of Ontario are mapped, based on information from existing water-well records. Maps for the north and south portions of Simcoe County have been completed; maps are completed for Grey County; maps for the Regional Municipality of Durham are in draft form; work is proceeding on the County of Huron and the County of Bruce.

409. WANG, K.T., OSTRY, R.C., Ontario Ministry Environment (Water Resources Br.):
Hydrogeologic environments and the susceptibility of groundwater to contamination, 1980-.

See:
Susceptibility of groundwater to contamination St. Thomas sheet (west half); Ontario Ministry of the Environment, Water Resources Br., 1981.

The mapping delineates the degree of susceptibility of groundwater to pollution from surface or near-surface contamination sources. The St. Thomas topographic sheet (1:50 000 scale) (west half) has been published; the Windsor/Essex Sheet (1:50 000 scale) has been completed. Work is proceeding on the Goderich and Seaforth sheets.

410. WEYER, K.U., Environment Canada (National Water Res. Instit.):
Investigation of groundwater flow in the Pine Point area, 1978-82.

An investigation of groundwater flow and hydrochemistry in relation to the Pine Point orebodies and their dewatering.

411. YAKUTCHIK, T.J., McKENNA, F.P., PAWLOWSKI, I.R., Ontario Ministry Environment (Water Resources Br.):
Development of groundwater supplies for municipal water works systems, 1957-.

The program involves carrying out groundwater surveys for municipalities on request, making recommendations for the development of supplies based on estimated groundwater availability, supervising test drilling and pumping tests as necessary, and supervising the construction of final supply wells.

MARINE GEOSCIENCE/OCÉANOGRAPHIE

412. BARRETT, T.J., SCOTT, S.D., ANDERSON, G.M., SPOONER, E.T.C., FRIEDRICHSEN, H., TAYLOR, P.T., Univ. Toronto (Geology), Tübingen Univ., Oxford Univ.:
Stratigraphy and geochemistry of Fe-rich marine deposits (on Canadian Shield, in Europe, and in the East Pacific Ocean), 1981-84.

See:
Elemental and stable isotopic composition of some metalliferous and pelagic sediments from the Galapagos mounds area, DSDP LEG 70; Int. Repts. Deep sea drilling Project, vol. 70, 1982.

Pb- and Sr-isotopic composition of some metalliferous and pelagic sediments from the Galapagos mounds area, DSDP LEG 70; ibid.

1) solubilities of Fe-silicate minerals from banded Fe-formations (with G.M. Anderson); 2) geochemical studies of hydrothermal metalliferous sediments and sulfides from Suaymas spreading axis, Gulf of California (with S.D. Scott); 3) Sr-isotopic composition of basalts from DSDP Hole 504B, Costa Rica Rift (LEGS 69 & 70) (with P.D. Taylor); 4) stable isotopic composition of rocks from the Ballantrae ophiolite complex, Scotland (with H. Friedrichsen); and probably, in August, following sampling in June 5) geochemical studies of deep drilling cores from the Troodos aphiolite complex, Cyprus (with H. Friedrichsen and E.T.C. Spooner).

413. BLASCO, S.M., Geol. Surv. Can.:
Surficial geology of Lomonosov Ridge, Arctic Ocean, 1978-.

414. BUCKLEY, D.E., Geol. Surv. Can.:
Environmental geology of the deep ocean, 1979-.

415. HESSE, R.F., HARRISON, W.E., GIESKES, J.M., DAVIDSON, D., McGill Univ. (Geological Sciences):
Diagenesis in active continental margins, Middle America Trench and Slope off Guatemala, 1979-82.

See:
Gas-hydrates (clathrates) causing pore-water freshening and oxygen isotopic fractionation in deep-water sedimentary sections of the continental margins; Earth Planet. Sci. Lett., vol. 55, p. 453-462, 1981.

Diagenetic effects of gas-hydrates (methane-clathrates); Geol. Assoc. Can., Mineral. Assoc. Can., Abstracts, vol. 6, p. A-25, 1981.

Interstitial water chemistry of DSDP holes on Guatemala transect (leg 67) related to occurrence of gas-hydrates (methane-clathrates); Am. Assoc. Petrol. Geol., vol. 65, no. 5, p. 937-938, 1981.

Overall aim of project is to study the diagenesis in an active margin environment, the influence of gas-hydrates on diagenesis, and to determine isotopic fractionation factors for O, H in system gashydrate-water.

416. HESSE, R.F., VELDHUYZEN, H., McGill Univ. (Geological Sciences):
Labrador Sea sediments, 1973-82; M.Sc. thesis (Veldhuyzen).

417. JACKSON, H.R., Geol. Surv. Can.:
Surficial geology and crustal structure of the Alpha Ridge, Arctic Ocean, 1981-.

418. JOSENHANS, H.W., Geol. Surv. Can.:
Surficial geology, geomorphology and glaciology of the Labrador Shelf, 1981-.

To gain an understanding of the post glacial sedimentary processes, hydrodynamic regime and iceberg dynamics across the Labrador Shelf; to define the style of glaciation across the shelf; to relate these findings to world wide glacial events; to determine the paleoceanography of the Labrador Sea; to map the surficial geology of the region between Hamilton and Saglek Banks.

419. LEWIS, C.F.M., Geol. Surv. Can.:
ice scouring of Continental Shelves, 1979-.

420. LOGAN, A., Univ. New Brunswick, Saint John (Geology):
Community structure and zonation of sublittoral hard substrate benthos, Bay of Fundy, 1979-82.

421. LOGAN, A., Univ. New Brunswick, Saint John (Geology):
Coelobite communities from tunnels in Grand Cayman reefs, Cayman Islands, B.W.I., 1978-82.

422. MacLEAN, B., Geol. Surv. Can.:
Eastern Baffin Island shelf bedrock and surficial geology mapping program, 1976-.

See:
Investigations of Baffin Island shelf from surface ship and research submersible in 1981; Geol. Surv. Can., Paper 82-1A, p. 445-447, 1982.

423. ORTIZ, T., STEARN, C.W., McGill Univ. (Geological Sciences):
Environment and origin of deep depressions seaward of the Bellairs Reef, Barbados, W.I., 1981-83; M.Sc. thesis (Ortiz).

424. PIPER, D.J.W., Geol. Surv. Can.:
Quaternary geologic processes on Continental slopes, 1981-.

To determine why different areas of continental slopes off Eastern Canada have such different surface morphology and surficial geology; to relate this variability to contemporary and Pleistocene processes and paleo-environmental configurations; and to thus develop predictions on subsurface surficial sediment distribution and slope stability and the flux of sediment from the continental shelf to the deep sea.

425. SCHAFER, C.T., Geol. Surv. Can.:
The Newfoundland continental slope at 49°N to 50°N: nature and magnitude of contemporary marine geologic processes, 1978-.

See:
Significance of some geotechnical properties of continental slope and rise sediments off northeast Newfoundland; Can. J. Earth Sci., vol. 19, no. 1, p. 153-161, 1982.

426. UMPLEBY, D.C., Geol. Surv. Can.:
Regional subsurface geology, continental shelf and slope, Offshore Labrador, Baffin Island and related areas, 1976-.

COAL GEOLOGY/
GÉOLOGIE DU CHARBON

427. CAMERON, A.R., Geol. Surv. Can.:
Petrographic examination of coking coals from the Kootenay Formation, Alberta and British Columbia, 1961-.

428. CAMERON, A.R., Geol. Surv. Can.:
Petrographic analysis of Saskatchewan lignites, 1972-.

429. CAMERON, A.R., Geol. Surv. Can.:
Relationship of reflectance to chemical rank parameters of western Canadian coals, 1979-.

430. CAMERON, A.R., Geol. Surv. Can.:
Regional coal rank variations in the Kootenay Formation and their relationship to the structural history of the southern Canadian Rocky Mountains, British Columbia-Alberta, 1981-.

431. CHURCH, B.N., BRASNETT, D., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Br.):
Geology and gravity survey of the Tulameen coal basin, Tulameen, British Columbia, 1981-.

The Tulameen basin is a faulted sub-circular structure of possible calderic origin. A gravity survey of 235 stations gives a profile of the Tertiary rocks delineating the basal felsic volcanics and overlying coal measures. Rhyolite ash bands in the upper part of the coal measures may be the result of a resurgent volcanic vent responsible for the relatively high (bituminous) rank of coal. Further refinement of gravity and petrographic data is required.

432. FUZESY, L.M., Saskatchewan Geol. Surv.:
Geology of the potash ore of the Middle Devonian Prairie Formation, Saskatchewan, 1981-82.

This study concentrates largely on geological problems which affect or have the potential of affecting the economics of potash mining and safety of the mines in Saskatchewan. Principal objectives of this work include the following: 1) extensive geological studies of the Prairie Evaporite and the underlying and overlying strata in the commercial potash areas of the Province of Saskatchewan; 2) stratigraphic correlation of the main potash-bearing members of Prairie Formation; 3) study of the origin of the potash minerals (sylvite, carnallite) and halite and their diagenesis; 4) investigation of the nature and origin of salt horses; and 5) study of the structurally disturbed, fractured zones within the Prairie Evaporite.

433. GRIEVE, D.A., SUTHERLAND BROWN, A., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Br.):
Geology and petrographic resource evaluation of the south half of the Elk Valley coalfield, southeastern British Columbia, 1980-82.

See:
Mount Banner area, Elk Valley coalfield; British Columbia Ministry Energy, Mines, Petrol. Res., Paper 82-1, p. 46-72, 1982.

Detailed mapping (1:10 000) of the portion of the Elk Valley coalfield between Line Creek Mine and Fording Mine is underway. Studies involve mapping and correlating of coal seams and interbedded units, grab sampling and channel sampling of seams, and measuring of stratigraphic sections through the coal-bearing Mist Mountain Formation of the Jurassic-Cretaceous Kootenay Group. Follow-up petrographic rank determinations help delineate structural geology, and, along with maceral analyses of channel samples, allow prediction of coal quality characteristics.

The present study is a continuation of work carried out under the supervision of D.E. Pearson in the Crowsnest coalfield (Fernie Basin). Extension of the project into the north half of the Elk Valley coalfield and the Flathead coalfield is anticipated in the near future.

434. GULIOV, P., Saskatchewan Geol. Surv.:
Buffalo Narrows fuel peat production and utilization demonstration project, 1982-83.

The project is directed toward the demonstration of existing technology of fuel peat bog development, extruded sod production and the utilization of fuel peat for domestic heating.

435. HACQUEBARD, P.A., Geol. Surv. Can.:
Rank and petrographic studies of coal and organic matter dispersed in sediments, 1968-.

436. HACQUEBARD, P.A., Geol. Surv. Can.:
Microscopic study of pyrite in main seams of Sydney Coalfield, Nova Scotia, 1975-.

437. HUGHES, J.D., Geol. Surv. Can.:
Resource evaluation and geology of Canada's coal deposits, 1981-.

438. JERZYKIEWICZ, T., Geol. Surv. Can.:
Study of coal-bearing Upper Cretaceous and Paleocene formations, central Alberta Foothills, 1981-.

439. KALKREUTH, W.D., Geol. Surv. Can.:
Optical properties of coals and dispersed organic materials, 1975-.

440. KALKREUTH, W.D., Geol. Surv. Can.:
An investigation of the semi-inert constituents of western Canadian coals, 1979-.

441. KALKREUTH, W., Geol. Surv. Can.:
Evaluation of liquefaction potential of low rank coals and peats, 1981-.

442. KALKREUTH, W., Geol. Surv. Can.:
Regional coalification studies in the Minnes, Bullhead and Fort St. John groups, northeastern British Columbia, 1981-.

443. KAMENKA, L.A., Geol. Surv. Can.:
Evaluation of coal deposits of western Canada, 1976-.

444. MARCHIONI, D.L., Geol. Surv. Can.:
Compositional characteristics of coals from Hat Creek, British Columbia, 1977-.

445. MARCHIONI, D.L., Geol. Surv. Can.:
Mineral matter and trace element content of Canadian coals, Alberta, 1978-.

446. MATHEWS, W.H., BUSTIN, R.M., Univ. British Columbia (Geological Sciences):
In-situ gasification of coal, a natural example; Categorization of British Columbia coals, 1978-.

447. NANDI, B.N., MacPHEE, J.A., EMR (CANMET):
Behaviour of different coal macerals during coal liquefaction, 1978-82.

See:
Conversion of non-coking coals to coking coals by thermal hydrogenation; Fuel, vol. 60, p. 347, 1981.

448. NANDI, B.N., MacPHEE, J.A., CIAVAGLIA, L.A., EMR (CANMET):
Oxidation studies and alkaned distribution of eastern and western Canadian coals, 1977-83.

See:
^{13}C.n.m.r. as a probe for the characterization of the low temperature oxidation of coal; Fuel, vol. 60, p. 169, 1981.

449. NURKOWSKI, J.R., Alberta Research Council (Geol. Surv.):
Coal chemistry and coal quality variations of Alberta plains coals, 1980-82.

450. NURKOWSKI, J.R., Alberta Research Council (Geol. Surv.):
Geology and coal resources of the Scollard Formation, central Alberta, 1981-84.

451. RAHMANI, R.A., Alberta Research Council (Geol. Surv.):
Stratigraphy, sedimentology and coal resources of the Edmonton Group (Cretaceous-Tertiary) of the Alberta Plains, 1979-83.

See:
Facies relationship and paleoenvironments of Late Cretaceous tide-dominated delta, Drumheller, Alberta; Geol. Assoc. Can. Field Guide, p. 159-176, 1981.

452. RICKETTS, B.D., Geol. Surv. Can.:
Studies of coal basins of western and northern Canada, 1977-.

See:
Laharic breccias from the Crowsnest Formation, southern Alberta; Geol. Surv. Can., Paper 82-1A, p. 83-87, 1982.

453. WILLIAMS, G.D., MURPHY, M.C., Univ. Alberta (Geology):
Coal resources of the Interior Plains, 1973-81.

See:
Deep coal resources of the Interior Plains, estimated from petroleum borehole data; Geol. Surv. Can., Paper 81-13, 1981.

454. ZODROW, E.L., College of Cape Breton (Geology):
Trace elements in Cape Breton coals, Nova Scotia, 1977-85.

Major coal seams of Sydney Coalfield are examined for trace-elemental contents. Results of the analysis will be statistically evaluated (factor analysis; regression methods) to build a prediction model for use in environmental aspects. The model will also be of help to study paleoecology and environmental conditions in developing Upper Carboniferous coalswamps.

INDUSTRIAL MINERALS/SUBSTANCES
MINÉRALES INDUSTRIELLES

455. BANNATYNE, B.B., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Rare-element pegmatites of Manitoba, 1972-83.

Following completion of field work in 1974, the project was shelved until 1981, as the "principal researcher" was committed to completion of other, DREE-funded projects. Work on the project was resumed in 1981; preparation of a final report that will include descriptive summaries of some 120 pegmatites (principal rare elements are: Li, Be, Mo, Cs, Ta, and Sn) is nearing completion.

456. CHRISTIE, R.L., Geol. Surv. Can.:
Geology of bedded phosphate deposits in Canada, 1976-.

457. DEAN, P.L., MEYER, J.R., Newfoundland Dept. Mines and Energy:
Metallogenic study of the Caradocian cherts and shales of central Newfoundland, 1981-83.

See:
Newfoundland Dept. Mines and Energy, Rept. 82-1, p. 175-187, 1982.

To assess the potential for sedimentary clastic-hosted mineral deposits in Newfoundland. This is the first year of a 3 year project. The research approach is essentially one of stratigraphic geochemistry.

Well-exposed stratigraphic sections of cherts and shales are mapped in detail and sampled for analysis for major and trace elements.

Hopefully the stratigraphic geochemistry will help define specific horizons or sub-basins with metal enrichment. Detailed follow-up by government and industry will provide a focus for exploration for clastic-hosted mineral deposits. The program will continue in 1982 in eastern and western Newfoundland.

458. EDWARDS, W.A.D., FOX, J.C., RICHARDSON, R.J.H., SHAM, P., Alberta Research Council (Geol. Surv.):
Sand and gravel resources of the Vegreville area, Alberta, 1981-82.

Nine 1:50 000 NTS sheets near Vegreville, Alberta were surveyed in 1981.

459. EDWARDS, W.A.D., SHAM, P., Alberta Research Council (Geol. Surv.):
Aggregate resources of the Mayerthorpe area, Alberta, 1982-83.

Five 1:50 000 NTS sheets near Mayerthorpe, Alberta will be surveyed in 1982.

460. FOX, J.C., Alberta Research Council (Geol. Surv.):
Aggregate potential derivative map of the Gleichen area, Alberta, 1982.

This map is one of a series of reconnaissance-level aggregate potential maps (scale 1:250 000) derived primarily from existing surficial geology information.

461. FOX, J.C., Alberta Research Council (Geol. Surv.):
Aggregate resources of the Hinton area, Alberta, 1982-83.

Four 1:50 000 NTS sheets near Hinton, Alberta will be surveyed in 1982.

462. HAMILTON, W.N., Alberta Research Council (Geol. Surv.):
Mineral resources studies, Alberta, 1979-.

To conduct "short term" mineral resource surveys and reviews and to maintain current inventory of mineral deposits in Alberta. Subprojects dealt with in 1981 include a review of major resource developments and their impact on Alberta's mineral industry and completion of salt and gypsum report for publication.

463. HAMILTON, W.N., BAINEY, S.J., Alberta Research Council (Geol. Surv.):
Economic minerals map of Alberta, 1974-83.

464. JONES, N.K., Alberta Research Council (Geol. Surv.):
Aggregate potential derivative map of the Wabamun Lake area, Alberta, 1981-82.

This map is one of a series of reconnaissance-level aggregate potential maps (scale 1:250 000) derived primarily from existing surficial geology information. It is intended to provide aggregate resource data for general land-use planning, land management or aggregate exploration until such time as more detailed maps or report are available for the area.

465. KIRBY, F.T., RICKETTS, R.J., RICKETTS, M.J., VANDERVEER, D.G., Newfoundland Dept. Mines and Energy:
Inventory of aggregate resources, Newfoundland and Labrador, 1978-82.

See:
Newfoundland Dept. Mines and Energy, Rept. 82-1, p. 224-227, 1982.

The inventory of Aggregate Resources sampling program which began in 1978 has covered a 6 km wide study area parallel to all major transportation routes and included major development areas (i.e. hydro electric developments) throughout Newfoundland and Labrador. During the program approximately 10 000 samples have been collected and analyzed for particle size, lithology etc. Presently all data is being incorporated into a computer package based on S.I.R. (Scientific Information Retrieval) computer programming system that will allow the rapid search and retrieval of the data on file.

The major work over the past year has been the completion of the different map series being produced. The map series to be released are as follows: 1) 1:250 000 scale aggregate resources series – 30 coloured maps showing zones of aggregate potential (within our study area), sample sites by sample type and sample numbers; 2) 1:250 000 scale summary geology series – 30 maps summarizing the geology with emphasis on the geochemical properties of the rock, together with the petrographic range for each rock type; 3) 1:50 000 scale surficial geology series – 180 maps showing the surficial geology within the study area; and 4) 1:50 000 scale aggregate resources – 180 maps showing aggregate resource potential, sample locations by type, sample numbers and the location of pits and quarries.

466. KIRBY, F.T., RICKETTS, R.J., VANDERVEER, D.G., Newfoundland Dept. Mines and Energy:
Detailed aggregate assessments, Newfoundland and Labrador, 1981-.

The Detailed Aggregate Assessment Program is designed to locate, sample and designate areas of aggregate potential in areas which lack such reserves or in areas where these resources are being rapidly depleted. The work will involve detailed air photo interpretation, field checking, sampling and laboratory analysis. Mapping will normally be at a scale of 1:12 500, but where sampling densities dictate, large scale maps will be used. Extensive use of a backhoe is anticipated, to help determine the stratigraphic characteristics, the quality and the estimated depth of each deposit. The program will also attempt to monitor existing and potential land use conflicts which may affect future extraction of aggregate resources around the island.

467. MACDONALD, D.E., MORTON, R.D., Alberta Research Council (Geol. Surv.), Univ. Alberta (Geology):
Phosphate evaluation study, 1978-82; M.Sc. thesis (Macdonald).

To evaluate the resource potential of phosphate rock in Alberta, primarily as an industrial mineral commodity and secondarily as a possible source of uranium. A full summers field work was completed in 1981 with several sections of the Exshaw (Mississippian), Rocky Mountain (Permo-Penn.), Sulfur Mountain (Triassic) and Fernie (Jurassic) formations (groups), being measured and sampled for phosphate. All of the fieldwork has now been completed for the project.

468. RICHARDSON, R.J.H., Alberta Research Council (Geol. Surv.):
Aggregate resources of the Drayton Valley area, Alberta, 1982-83.

Five 1:50 000 NTS sheets near Drayton Valley, Alberta will be surveyed in 1982.

469. RICHARDSON, R.J.H., EDWARDS, W.A.D., Alberta Research Council (Geol. Surv.):
Aggregate potential derivative map of the Tawatinaw area, Alberta, 1982.

This map is one of a series of reconnaissance-level aggregate potential maps (scale 1:250 000) derived primarily from existing surficial geology information.

470. RICHARDSON, R.J.H., EDWARDS, W.A.D., FOX, J.C., SHAM, P., Alberta Research Council (Geol. Surv.):
Sand and gravel resources of the Medicine Hat area, Alberta, 1981-82.

Six 1:50 000 NTS sheets near Medicine Hat, Alberta were surveyed in 1981.

471. SCOTT, W.D., Ontario Geol. Surv.:
Aggregate resources inventory program for southern Ontario, 1978-87.

472. SCOTT, W.D., Ontario Geol. Surv.:
Aggregate resources inventory near urban centres in Northern Ontario, 1980-82.

473. SEAMAN, A.A., BARNETT, D.E., New Brunswick Dept. Nat. Res. (Mineral Develop. Br.):
Granular aggregate resources of the McAdam (21 G/11) and Forest City (21 G/12) map-areas, New Brunswick, 1981-82.

Field mapping and sampling of surficial deposits was carried out in the McAdam and Forest City areas of New Brunswick. This project, sponsored by the Federal Department of Regional Economic Expansion (D.R.E.E.), was undertaken so as to provide basic information pertaining to the location, extent, quantity, and quality of granular aggregate deposits within the area.

474. SHAM, P., Alberta Research Council (Geol. Surv.):
Aggregate potential derivative map of the Red Deer area, Alberta, 1982.

This map is one of a series of reconnaissance-level aggregate potential maps (scale 1:250 000) derived primarily from existing surficial geology information.

475. SHETSEN, I., Alberta Research Council (Geol. Surv.):
Sand and gravel resources of the Calgary area, Alberta, 1978-81.

The project has been completed, Open File Report 1981-8 is now available.

476. SIMPSON, M.A., SCHRIENER, B.T., Saskatchewan Res. Council (Geology Div.):
Aggregate inventory, Saskatchewan, 1981-.

To 1) produce maps (1:250 000) which will combine surficial geology with aggregate deposit information to indicate areas with high potential for sand and gravel resources in the plains region of Saskatchewan, and 2) set up a computer file listing amount, location, quality, etc. of existing sand and gravel deposits.

477. SWINDEN, H.S., Newfoundland Dept. Mines and Energy:
Regional economic geology study of the Hermitage Flexure, Newfoundland, 1979-82.

See:
Geology and economic potential of south-central Newfoundland; Newfoundland Dept. Mines and Energy, Rept. 81-5, 1982.

The final year of this 3 year project to assess the metallogeny of the Hermitage Flexure region, southern Newfoundland, has concentrated on mapping in the Great Burnt Lake area. Volcano-sedimentary sequences which host massive pyrrhotite-copper deposits were previously termed the "Great Burnt Lake Volcanic belt" and now are correlated with the Baie d'Espoir Group and other equivalent, Lower-Middle Ordovician island arc sequences. Mafic and ultramafic rocks of the Pipestone Pond Complex have been recognized as ophiolitic and correlated with the Coy Pond Complex to the east. Potential chromite and massive sulfide bearing environments have been recognized. Correlation with regional stratigraphy is hampered by several major, east-directed thrust faults, which juxtaposes four distinct geologic terrains within a relatively small area.

478. TELFORD, P.G., JOHNSON, M.D., VERMA, H.M., RUSSELL, D., Ontario Geol. Surv.:
Dolostone resource assessment project, 1978-82.

479. THIBAULT, J.J., BARNETT, D.E., New Brunswick Dept. Nat. Res. (Mineral Develop. Br.):
Granular aggregate resources of the Rollingdam (21 G/6) and of the St. Stephen (21 G/3) map-areas, New Brunswick, 1981-82.

Cartographie et échantillonage des dépôts meubles dans la région de St. Stephen, comté de Charlotte, sud-ouest du Nouveau-Brunswick. Ce projet est subventionné par le Ministère de l'expansion économique régionale et procure des données de base sur la location et l'importance des dépôts meubles ainsi qu'une évaluation de la qualité et de la quantité du matériel disponible.

480. TOMLIN, S.L., WATSON, D.M., Newfoundland Dept. Mines and Energy:
Potential of the Mount Peyton Batholith as a source of granite as dimension and memorial stone, Newfoundland, 1981.

See:
Memorial and dimension stone; Newfoundland Dept. Mines and Energy, Rept. 82-1, p. 219-222, 1982.

481. TROYER, D.R., GULIOV, P., Saskatchewan Geol. Surv.:
Inventory and utilization of the Peatland areas of north-central Saskatchewan, 1981-82.

Work over the past couple of years has resulted in an inventory of the peatlands for the west and central regions of the north-central section of Saskatchewan. Field and laboratory data have been compiled from a large number of peat bogs in these two regions. The present study will complete the inventory of the eastern region as well as an air photo interpretation (followed by ground truthing) of peat bogs in the central region for possible fuel peat utilization.

482. VOS, M.A., Ontario Geol. Surv.:
Industrial minerals of the alkalic (carbonatite) complexes, 1980-83.

See:
Industrial minerals of the Cargill Complex; Ontario Geol. Surv., Misc. Paper 100, p. 224-229, 1981.

Cargill Complex – some analytical work completed and published; Callander Bay Complex – no analyses completed.

483. WATSON, D.M., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Silica resources of Manitoba, 1981-83.

This project will outline the silica deposits of Manitoba and their economic potential. Although the main focus is on the Winnipeg Formation (Ordovician) sandstones, other sandstones, pegmatites and Pleistocene deposits will also be covered.

MINERAL DEPOSITION EXPLORATION/ EVALUATION/RECHERCHE ET ÉVALUATION DES GÎTES MINÉRAUX

484. AGGARWAL, P.K., NESBITT, B.E., MORTON, R.D., Univ. Alberta (Geology):
Geology and geochemistry of the Chu-Chua massive sulfide deposit, British Columbia, 1981-82; M.Sc. thesis (Aggarwal).

The deposit consists of two major lensoid bodies of sulfides enclosed in tholeiitic basalts of Upper Paleozoic? age. The footwall is made up of hydrothermally precipitated silica and a massive talc and talc + magnetite lens. On the basis of major element whole rock analyses and lead isotopic compositions of sulfide lead, it is inferred that the metals were derived from the basalts by convecting sea water and deposited on the sea floor under conditions of relatively high pH and temperature.

485. BELL, R.T., Geol. Surv. Can.:
Geology of uranium resources of Canada, 1975-.

See:
Notes on uranium investigations in the Canadian Cordillera, 1981; Geol. Surv. Can., Paper 82-1A, p. 438-440, 1982.

486. BROWN, A.C., École Polytechnique (Génie Mineral):
Metallogenic studies of stratiform non-ferrous metal deposits, 1970-.

See:
Stratiform copper deposits and pene-exhalative environments; Geol. Soc. Am., Abstracts with Programs, vol. 13, no. 7, p. 418, 1981.

Determine genesis of stratiform ores, especially sediment-hosted base-metal mineralization, and define guide-lines for exploration for such deposits.

487. BROWN, A.C., École Polytechnique (Génie Mineral):
Significance of small iron-formations as metallogenic guides to base-metal deposits in the Grenville Supergroup, Mont-Laurier Basin, Quebec, 1980-83.

Determine relationships between iron-formations and stratiform zinc mineralization in the Grenville Supergroup.

488. BRUN, J.B., Québec Ministère Énergie et Ressources:
Exploration minérale du Québec sud (argent, cuivre, or, plomb, zinc), 1981-84.

1. Analyse de toutes les données concernant la gîtologie des éléments suivants: argent, cuivre, or, plomb, zinc. 2. Synthèse de ces données afin de les uniformiser en les reportant sur cartes au 1/50 000 puis au 1/100 000 établissement de liens génétiques entre stratigraphie-structurographie-gîtologie.

489. BURTON, D., McALLISTER, A.L., Univ. New Brunswick (Geology):
Cam-Bancroft uranium deposit, Bancroft, Ontario, 1979-82; M.Sc. thesis (Burton).

To provide a detailed description of the Cam-Bancroft deposit, including the nature and distribution of uranium minerals, and their relation to enclosing pegmatites and gneisses.

490. CHARTRAND, F., BROWN, A.C., École Polytechnique (Génie Mineral):
Origin of stratiform copper mineralization in the Redstone "Copperbelt", Northwest Territories, 1979-85; Ph.D. thesis (Chartrand).

See:
Diagenetic stratiform copper deposits, Redstone area, N.W.T., Canada; Geol. Soc. Am., Abstracts with Programs, vol. 13, no. 7, p. 426, 1981.

Determine the environment of stratiform copper mineralization at Redstone, and the timing of mineralization relative to syn-diagenesis of the host sediments.

491. CHERRY, M.E., ANDREWS, A.J., COLVINE, A.C., Ontario Geol. Surv.:
Archean lode gold mineralization in Ontario, 1981-83.

To evaluate current exploration for and current research into Archean lode gold deposits in greenstone belts in Ontario with the purpose of promoting exploration for these deposits.

492. CHEVE, S., BROWN, A.C., TRZCIENSKI, W., École Polytechnique (Génie Mineral):
Metallogeny of volcanogenic Cu-Zn mineralization in the Megantic region, Eastern Townships, Quebec, 1974-82; Ph.D. thesis (Cheve).

Determine regional and local environments of copper-zinc deposits of volcanogenic origin in the volcano-sedimentary series of the Lake Megantic region, Quebec.

493. CLARK, T., CIMON, J., Québec Ministère Énergie et Ressources:
Etude de la gîtologie de la Fosse du Labrador, Québec, 1981-.

Un nouveau programme pour augmenter nos connaissances de la gîtologie de la Fosse du Labrador et pour coordonner des études ponctuelles sur certaines gîtes.

494. COOKE, B.J., GODWIN, C.I., Univ. British Columbia (Geological Sciences):
Geology of tungsten skarns in the Cassiar area, north-central British Columbia, 1980-82; M.Sc. thesis (Cooke).

See:
Geology of the McDame tungsten skarn prospect (104 P/5); British Columbia Ministry Energy, Mines, Petrol. Res., Paper 82-1, p. 259-269, 1982.

The McDame tungsten skarn prospect has been mapped in detail. In addition to the analysis of skarn mineralogy, Rb-Sr isotopic analyses, S-isotope analyses and limited fluid-inclusion studies are being conducted.

495. DiLABIO, R.N.W., Geol. Surv. Can.:
Drift prospecting methods and models, 1978-.

See:
Recognition of frost-heaved outcrops, Athabasca Basin, Saskatchewan; Geol. Surv. Can., Paper 82-1A, p. 432, 1982.

Wood in Quaternary sediments near Timmins, Ontario; ibid., p. 433, 434, 1982.

496. DUKE, J.M., Geol. Surv. Can.:
Chromium resources in Canada, 1980-.

497. DUNSMORE, H.E., Geol. Surv. Can.:
Geology of uranium resources of Canada, 1976-.

498. EASTWOOD, G.E.P., McMILLAN, W.J., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Br.):
Re-study of the Sicker Group in the type area in relation to contained massive sulphide deposits, British Columbia, 1978-82.

See:
Geology of the Whitehouse Creek area (part of 92 B/13 f, g); British Columbia Ministry Energy, Mines, Petrol. Res., Paper 1982-1, p. 78-83, 1982.

The Sicker Group is host to the sulphide orebodies of Westmin Resources near Buttle Lake and to the Lenora-Tyee ore on Big Sicker Mountain north of Duncan. The Westmin ore deposition was controlled both structurally and stratigraphically. The Lenora-Tyee ore occurs in the most intensely sheared part of a schist zone, and intermittent exploration over many years has concentrated on shear zones, with little success. It seemed that here also the ore deposition might be controlled stratigraphically as well as structurally. In 1978 it was found that the Sicker rocks were less sheared eastward from the Island Highway, and the Mt. Richards area was mapped in 1979-80 and a homoclinal stratigraphic sequence identified. The uppermost unit passes under cover to the north of Mt. Richards. In 1981 it was traced across the north slope of Big Sicker Mountain, where the sequence is apparently repeated by an old fault, as mafic volcanic

rocks on the north resemble those low in the Mt. Richards sequence. The fault zone is crossed by an undisturbed dyke that is believed to be pre-Middle Triassic in age. The zone contains abundant disseminated pyrite but no other sulphides. Evidently economic metals were not available at the time of this mineralization, which may have been during or shortly after faulting. Possibly this and other old fault zones were rendered impermeable by recrystallization, and only those reopened by later movements could serve as channelways for ore solutions. Evidence of stratigraphic control has not been obtained.

499. EKSTRAND, O.R., Geol. Surv. Can.:
Geology of Canadian nickel and platinum group deposits, 1963-.

500. FORD, D.C., McMaster Univ. (Geography):
Karstic features of the Main Ore body at Nanisivik, Baffin Island, Arctic Canada, 1981-82.

The Main Ore body at Nanisivik is a stratabound massive sulphide deposit with a near-horizontal ceiling and extending 3 km to strike through steeply dipping Helikian dolomites. Studies of the sulphide-wallrock contacts in the mine strongly suggest that the ore cavity is of the paragenetic cave type and syngenetic, being excavated by ore fluids dissolving upwards to a piezometric surface. Morphometric and paleomagnetic studies are in progress. The mine is in a permafrozen state: ground ice has been sampled for isotopic analysis.

501. FOURNIER, D., ROGER, G., CLARK, T., CIMON, J., Québec Ministère Énergie et Ressources, Univ. Paris 6:
Gîtes de Cu-Zn et Cu-Ni dans la Fosse du Labrador, Québec, 1980-83.

Voir:
Gîtes de Cu-Zn et Cu-Ni dans la partie nord de la Fosse du Labrador; Québec Ministère Énergie et Ressources, DPV-835, 1981.

502. GANDHI, S.S., Geol. Surv. Can.:
Geology of uranium resources of Canada, British Columbia – District of Mackenzie, 1977-.

503. GAUTHIER, M., BROWN, A.C., École Polytechnique (Génie Mineral):
Metallogeny of stratiform zinc mineralization in the Grenville Supergroup of the Maniwaki-Gracefield district, Quebec, 1978-82; Ph.D. thesis (Gauthier).

Determine lithostratigraphic controls of stratiform zinc mineralization in the Grenville Supergroup.

504. GODWIN, C.I., SINCLAIR, A.J., ANDREW, A., Univ. British Columbia (Geological Sciences):
Lead isotopes and metallogeny in the Canadian Cordillera, 1977-; M.Sc. thesis (Andrew).

Major sub-projects have dealt with 1) the bearing of lead isotope data on metallogeny in and near the MacKenzie Mountain, Yukon, 2) development of an upper crustal growth curve for Omineca and MacKenzie Belts of the Canadian Cordillera, 3) implications of lead isotope data on origin of gold deposits in the Canadian Cordillera, 4) origin of silver deposits in the Canadian Cordillera, and 5) exploration significance of lead isotope data in the Canadian Cordillera.

505. GROSS, G.A., Geol. Surv. Can.:
Geology and evaluation of iron and manganse resources, 1957-.

506. HARPER, C.T., SIBBALD, T.I.I., DE VOTO, R.H., ROMBERGER, S., HOLDEN, G., LANGMUIR, D., Saskatchewan Geol. Surv., Colorado School of Mines (Geology):
The geology and uranium deposits of the Carswell impact structure with special emphasis on the N-zone area, northern Saskatchewan, Canada, 1980-82; Ph.D. thesis (Harper).

See:
Uranium metallogenic studies: Cluff Lake area; Saskatchewan Geol. Surv., Summ. Investig., Misc. Rept. 81-4, p. 57-61, 1981.

507. HØY, T., British Columbia Ministry Energy, Mines, Petrol. Res. (Geological Br.):
Sedimentation, mineral deposits, and tectonics of Purcell Supergroup, southeastern British Columbia, 1977-83.

See:
Lead-zinc and copper-zinc deposits in southeastern British Columbia; Field Guide to Geology and Mineral deposits, Calgary '81 GAC annual meeting, 1981.

The project focusses on the Proterozoic Purcell Supergroup in southeastern British Columbia and contained stratiform Pb-Zn deposits and vein gold-silver deposits. The stratigraphy of the Purcell Supergroup and its relationship to Proterozoic tectonics is an important aspect of the project. Areal mapping at a scale of 1:50 000 is continuing in Purcell Supergroup rocks in sheet 82 G west-half (Fernie west-half).

508. HØY, T., British Columbia Ministry Energy, Mines, Petrol. Resources (Geological Br.):
Geology of stratabound Pb-Zn deposits, Frenchman Cap gneiss dome, Shuswap Complex, southeastern British Columbia, 1978-83.

The principal aim is to better understand the stratigraphic and structural setting of large stratabound lead-zinc deposits in high grade paragneiss rocks along the margin of Frenchman Cap gneiss dome in the Shuswap Complex of southeastern British Columbia. An unusual lead-zinc-magnetite deposit, Cottonbelt, is being studied in detail. Host rocks for the Cottonbelt deposit have been mapped in detail and correlated throughout the entire margin of Frenchman Cap dome. Included in the paragneiss succession that hosts Cottonbelt is a laterally extensive thin carbonatite layer that has been interpreted to be of pyroclastic origin. It, and the Cottonbelt deposit, are being studied by normal petrographic means, standard whole-rock and mineral chemical analyses, XRD, and with a scanning electron miroscope.

509. IMREH, L.I., HÉBERT, R.H., WILSON, C., LAURIN, J., Québec Ministère Energie et Ressources:
Gîtologie prévisionnelle, volcanologie et lithostratigraphie de l'Abitibi-est méridional, Québec, 1972-.

Les travaux constituent la continuation régionalisée du projet amorcé en 1972. Dès 1978 l'accent fut mis sur le volcanisme mafique à felsique. L'étude des deux complexes régionaux de type volcanisme central entre 1978 et 1980 fut poursuivie: celui de Val d'Or et celui d'Harricana (secteur Amos-sud). Les paramètres évolutifs et paléogéographiques définis du volcanisme sont les principaux métallotectes régionaux de la répartition des minéralisations Cu-Zn, Au associées. Les travaux 1981-82 ont régionalisé et affiné les données obtenues.

510. INASI, J., THURSTON, P.C., Ontario Geol. Surv.:
Hanover-O'Sullivan Lake area, Ontario, 1981-82.

See:
O'Sullivan Lake area, District of Thunder Bay; Ontario Geol. Surv., Misc. Paper 100, p. 30-33, 1981.

Renewed attention has been drawn to the O'Sullivan Lake area since the Consolidated Louanna gold mine has come near the production stage. The project area was mapped to update the regional database; several bedrock samples were taken for whole rock, assay and mineralogical analysis.

Two cycles of volcanicity are recognised in the central greenstone pile. These are termed Cycle I (earlier) and Cycle II (later). Each is characterized by mafic pillowed volcanic rocks at its base overlain by felsic tuffs and rhyolitic flows. Cycle I felsic volcanic rocks are further typified by thin layers of sideritic chemical sediment.

Gold mineralization appears to be specifically related to discontinuous, felsic, discordant and concordant intrusions into Cycle I felsic volcanic rocks. Pockets of copper-rich mineralization are also tentatively suggested to be related to the intrusion of felsic dykes into Cycle I mafic volcanic rocks. Gold holds the most promise for other finds of economic mineralization. In addition within the northern granitoid areas, the presence of spodumene in one pegmatite and the occurrence of mineralogical zoning in another also hold promise for more extensive occurrences of lithium and niobium-tantalum.

511. JOHNSTON, W.G.Q., Saskatchewan Geol. Surv.:
Gold metallogenic studies, Waddy Lake and region, Saskatchewan, 1981-82.

See:
Gold metallogenic studies: Waddy Lake and region; Saskatchewan Geol. Surv., Summ. Investig., Misc. Rept. 81-4, p. 92-96, 1981.

An area surrounding the Waddy Lake gold prospect was mapped at a scale of 1:15 840 and the prospect itself examined. Several other gold occurrences in the La Ronge Belt to the north of the Churchill River and south of Reindeer Lake also were investigated. Gold mineralization is confined to La Ronge Group rocks, predominantly greenstones, invaded by diorite-granodiorite, diopiric plutons. Spatially many gold occurrences appear related to certain granodiorite-diorite intrusives or more specifically to their gold enriched contacts with the volcanics. No criteria, other than geochemical, have yet been established to differentiate these gold enriched intrusives.

512. KHEANG, L., GÉLINAS, L., BROWN, A.C., École Polytechnique (Génie Mineral):
Fluid inclusion studies of volcanogenic copper-zinc deposits, Millenbach mine, Rouyn-Noranda, Quebec, 1978-82; Ph.D. thesis (Kheang).

Determine nature of fluids associated with copper-zinc mineralization in a volcanogenic massive sulfide deposit.

513. KIRKHAM, R.V., Geol. Surv. Can.:
Geology of copper and molybdenum deposits in Canada, 1970-.

See:
Copper deposits and occurrences in Yukon Territory; Geol. Surv. Can., Paper 81-12, 1981.

514. KLASSEN, R.A., Geol. Surv. Can.:
Uranium drift prospecting techniques; Lower Kazan River area, District of Keewatin, 1975-.

515. LEDUC, M.J., CIMON, J., Québec Ministère Énergie et Ressources:
Cartographie et prospection pour le molybdène dans la région des lacs Frotet et Troilus, Québec, 1982-83.

516. LYDON, J.W., Geol. Surv. Can.:
Geology of lead and zinc resources of Canada, 1977-.

517. MacDONALD, D.W.A., McALLISTER, A.L., Univ. New Brunswick (Geology):
Breccia sulphide ore at Heath Steele Mines, New Brunswick, 1981-83; M.Sc. thesis (MacDonald).

Appreciable sulphide breccia ore occurs at Heath Steele Mines Ltd. Bathurst-Newcastle area, New Brunswick. The project aims at determing the extent and distribution of the breccia, its mode of formation and its relation to the overall ore forming process.

518. MacLEAN, W.H., BONAVIA, F.F., BERNARD, P., BEAUDRY, C., Univ. McGill (Geological Sciences):
Abitibi project: Origin and mode of emplacement of Noranda-type massive sulfides at Matagami, Quebec, 1975-84; M.Sc. theses (Beaudry, Bernard, Bonavia).

Ore deposits in the Matagami district are of the copper-zinc massive sulfide type, and occur on the top of rhyolitic flows in a bimodal suite of tholeiitic basalt and rhyolite of Archean age. The ores are both proximal and distal, with the latter being most common. Sulfides have been precipitated as amorphous and crystalline material near the crests of the rhyolite flows and have moved down flanks of the flows in well-defined channels to form deltaic deposits and uniform fillings of small basins. Sedimentary features such as rounded detrital grains, channel, scouring, cross-bedding, ripple marks and channel levees are well preserved. Geochemical data on underlying basaltic rocks indicate they were leached of ore-forming constituents that formed the massive sulfide deposits. The leaching and transporting media was seawater-derived brine that penetrated the basalt and was prevented from venting on the seafloor by the impervious cap of rhyolite. Perforations in this impervious cap allowed brine to escape to the seafloor where it deposited sulfides and chert. Present data indicate many other elements were exhaled but not precipitated at the exhalative vent.

519. MARMONT, S., COLVINE, A.C., Ontario Geol. Surv.:
Archean porphyry Cu-Mo-Au deposits, Ontario, 1980-82.

See:
The geology and mineralization of the Terrace Bay Batholith, Mink Lake Stock and Cairo Stock; Ontario Geol. Surv., Misc. Paper 100, p. 230-241, 1981.

Early Precambrian porphyry deposits; ibid., p. 242-247, 1981.

520. MILLER, J.A., BACHINSKI, D.J., Univ. New Brunswick (Geology):
Sulfide deposits in Carboniferous sedimentary basins, New Brunswick and Nova Scotia: hydrodynamic models, 1981-82; M.Sc. thesis (Miller).

Ore-forming hydrothermal fluid models will be developed in terms of hydrodynamic constraints on subsurface flow in porous media and chemical constraints based on rock-water interaction. The nature of mineral deposits in the Carboniferous basins of New Brunswick and elsewhere will be compared with properties predicted on the basis of the models.

521. MOSSMAN, D.J., HARRON, G.A., Univ. Saskatchewan (Geological Sciences):
Origin and distribution of gold in Huronian metasediments, District of Sudbury and environs, Canada – links with early life processes and oxyatmoversion?, 1981-82.

Gold deposits have been mined intermittently for about 25 years in the District of Sudbury. Selected of these deposits in the Mississagi, Espanola, Serpent and Gowganda Formations are examined in light of available geological and geochemical data. Many occurrences are spatially related to Nipissing-type basic intrusions. Others exhibit distinctly stratabound features and are accompanied by fine grained pyrite and other heavy minerals, including uranium, in dominantly quartzitic metasediments. A few occurrences among the latter category are accompanied by accumulations of carbon, an association reminiscent of the South African Witwatersrand goldfields. Field observations together with the results of experimental work are supportive of the concept that gold is mobile under a wide range of natural conditions in the surficial environment. In light of available evidence, the geochemical constraints on possible mechanisms of solution, transportation, and precipitation of gold are examined with particular reference to the oxyatmoversion.

522. NANDI, B.N., MacPHEE, J.A., CIAVAGLIA, L.A., EMR (CANMET):
Upgrading the combustion and carbonization propensities of oxidized inert rich canadian bituminous coals using CO, H_2, 1980-82.

See:
Upgrading inert-rich oxidized coal from Western Canada with reducing gases to unorive combustion performance; Chemical Conf., Halifax, 1981.

Restoration of combustion and carbonization propensity for efficient utilization of inert-rich oxidized coal from Western Canada; Proc., Internat. Conf. Coal Sci., Dusseldorf, 1981.

523. NELSON, G.E., BACHINSKI, D.J., Univ. New Brunswick (Geology):
Volcanic stratigrphy and mineralization in the Austin Brook-Brunswick no. 6 area, New Brunswick, 1979-82; M.Sc. thesis (Nelson).

Felsic metapyroclastic rocks underlying the Brunswick Mining and Smelting no. 6 deposit and Austin Brook display alteration patterns similar to those at Brunswick no. 12: chessboard albite is conspicuous in peripheral areas of feeder systems. Original plagioclase is altering to K-feldspar (rims and cracks) in a zone outside this zone of albitization. These features are interpreted to result from alkali exchange prior to regional metamorphism and deformation and are important as an exploration tool in the Bathurst district.

524. NESBITT, B.E., Univ. Alberta (Geology):
Metamorphism of the Thompson nickel deposits, Manitoba, 1980-83.

This study is designed to evaluate the nature and extent of interactions between the ore and wall rocks during metamorphism and the effects of metamorphism on grade and location of the ore. Metamorphism of the Thompson nickel deposits ranges in grade from amphibolite to granulite facies and has led to extensive sulfide-silicate reactions affecting the mineralogy and chemistry of the silicates in the ore and wall rocks. This metamorphism has also led to movement of the ore and possibly to the development of nickel rich zones within the ore.

525. NESBITT, B.E., LONGSTAFFE, F.J., MUEHLENBACHS, K., Univ. Alberta (Geology):
$^{18}O/^{16}O$ geochemistry of the Sullivan ore deposit, British Columbia, 1981-83.

To determine the origin of the water involved in the formation of the deposit and to evaluate the usefulness of stable isotopes in exploration for Sullivan-type deposits.

526. PANTELEYEV, A., DIAKOW, L.J., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Br.):
Geology and mineral deposits of McDame map-area, NTS 104 P/4, 5, Cassiar district, British Columbia, 1978-82.

See:
Cassiar gold deposits, McDame map-area (NTS 104 P/4, 5); British Columbia Ministry Energy Mines, Petrol. Res., Paper 1982-1, p. 156-161, 1982.

Late Cretceous intrusions and their Paleozoic host rocks in a 500 km^2 area were mapped at 1:15 840. The mapping provides a setting for prophyry MO, skarn W, Mo, Sn and vein Ag, Pb, Zn, Sn deposits.

Detailed mapping of 150 km^2 at 1:10 000 was done in the Cassiar gold belt to describe greenstone-hosted auriferous quartz veins.

113 silt samples and 78 soil samples were analyzed to demonstrate geochemical dispersion patterns around known deposits.

527. PANTELEYEV, A., SCHROETER, T.G., DIAKOW, L.J., British Coloumbia Ministry Energy, Mines, Petrol. Res. (Geol. Br.):
Jurassic epithermal gold-silver deposits in "Toodoggone" volcanics, northern British Columbia, 1981-83.

See:
Toodoggone River (94 E); British Columbia Ministry Energy, Mines, Petrol. Res. Paper 82-1, p. 122-134, 1982.

Toodoggone volcanics south of Finlay River (94 E/2); ibid., p. 135-141, 1982.

Toodoggone volcanics form a distinctive belt 85 by 15 to 25 km in size of distinctive, subaerial volcanic rocks. The volcanic belt is host to a number of Jurassic epithermal gold-silver deposits that comprise a newly recogizined "camp".

The regional geology will be described and individual deposits will be studied in detail.

Investigation of characteristic hydrothermal alteration zones and silicified mineralized zones will involve detailed X-ray, petrologic, lithogeochemical and fluid inclusion studies. Comparison, will be made with similar Tertiary deposits in the southwest U.S.A. and models useful for exploration will be presented.

528. PARSLOW, G.R., GASKARTH, W.J., Saskatchewan Geol. Surv., Univ. Regina (Geology), Univ. Aston in Birmingham (U.K.):
Flin Flon base metals project, Saskatchewan, 1978-.

See:
Chemistry and origin of carbonate-rich rocks in the area of Amisk Lake (East), Saskatchewan; C.I.M. Bull., vol. 74, no. 836, p. 81-86, 1981.

Flin Flon base metals project, Annabel Lake area; Saskatchewan Geol. Surv., Misc. Rept. 81-4, p. 101-104, 1981.

The present study is a geochemical investigation of the Amisk Group volcanic rocks of the Annabel Lake area. These occur in two east-northeast trending belts separated by a granodiorite body (Annabel Lake Pluton). The area was mapped at 1:50 000 scale and 1 080 bedrock samples collected chiefly from the volcanic belts for geochemical analysis.

529. PEARSON, J.G., Saskatchewan Geol. Surv.:
Gold metallogenic studies: Flin Flon area, Saskatchewan, 1979-82.

See:
Gold metallogenic studies: Phantom Lake-Schist Lake area; Saskatchewan Geol. Surv. Summ. Investig., Misc. Rept. 81-4, p. 97-100, 1981.

In this, the third year of the project to investigate the gold metallogeny of the Flin Flon area, the Phantom Lake-Schist Lake area was investigated. An area of 11 km^2 encompassing several gold deposits, including the Phantom Lake Mine and Macmillan Mine, was mapped at a scale of 1:5000. Individual deposits were examined and sampled. Gold is present in gold quartz veins in volcanic rocks and pyritic shear zones in granitic rocks.

530. ROBERT, C.R., NADEAU, A., AUBERTIN, R.A., WARREN, B.W., Québec Ministère Énergie et Ressources:
Cibles favini-assad: sous-projet Troilus, Québec, 1981-82.

Délimiter et evaluer sommairement des cibles d'exploration.

531. ROBERT, F., BROWN, A.C., École Polytechnique (Génie Mineral):
Metallogeny of gold in the Sigma Mine, Val d'Or, Quebec, 1980-83; Ph.D. thesis (Robert).

See:
Structural control of gold mineralization at the Sigma Mine, Val d'Or, Quebec; CIMM Bull. no. 839, vol. 75, p. 109 (Abstract), 1982.

Determine the structural environment and timing of gold mineralization at the Sigma Mine.

532. ROSCOE, S.M., Geol. Surv. Can.:
Metallogeny of the northwestern part of the Canadian Shield, 1977-.

533. ROUSELL, D.H., Laurentian Univ. (Geology):
Mineralization in the Whitewater Group, Sudbury Basin, Ontario, 1980-82.

See:
Mineralization in the Whitewater Group, Sudbury Basin; Ontario Geol. Surv., Misc. Paper 98, p. 233-242, 1981.

534. RUZICKA, V., Geol. Surv. Can.:
Geology of uranium and thorium resources of Canada, 1975-.

See:
Notes on mineralogy of various types of uranium deposits and genetic implications; Geol. Surv. Can., Paper 82-1A, p. 341-349, 1982.

535. SAGE, R.P., TROWELL, N.F., Ontario Geol. Surv.:
Josephine area, Ontario, 1981-.

See:
Josephine area, District of Algoma; Ontario Geol. Surv., Misc. Paper 100, p. 37-40, 1981.

Preliminary interpretation of the relationship between economic mineralization and volcanic stratigraphy in the Wawa area; ibid., p. 41-44, 1981.

536. ST. LOUIS, R.M., MORTON, R.D., NESBITT, B.E., Univ. Alberta (Geology):
The distribution and geochemistry of the Platinum group elements in the Tulameen Complex, British Columbia, 1980-82; M.Sc. thesis (St. Louis).

Approximately 300 rock samples were taken during the summer of 1981. These samples represent all of the major lithologies within the complex. Thin sections, polished sections, and polished mounts have been prepared for a number of these samples. In addition, facilities for radiochemical neutron activation analysis have been established. Analyses should be under way by February 1982.

537. SANGSTER, D.F., Geol. Surv. Can.:
Geology of lead and zinc deposits in Canada, 1965-.

538. SAUER, R.T., HODDER, R.W., Univ. Western Ontario (Geology):
Origin and significance of footwall to massive sulfide, Mineral, Virginia, 1980-82; M.Sc. thesis (Sauer).

In the Cambrian age rocks of the Central Virginia Piedmont, there are two parallel alignments of pyritic base metal massive sulfide occurrences known as the Mineral District. The western subtrend contains three historically productive mines known as the Sulphur, Boyd-Smith and Arminius occurrences. The massive sulfide ores of these mines occur on the same stratigraphic horizon. In each case rocks forming the immediate footwall to massive sulfide are from top to bottom: 1) accessory mineral quartz mica schist containing a distinctive assemblage of ferroalumino-silicate minerals such as staurolite and chloritoid, alumino-silicate minerals such as kyanite and minor sillimanite as well as abundant biotite, garnet and magnetite; 2) biotite sericite schist with no accessory minerals; 3) felsic quartzite.

Whole rock and mineral chemistry shows a progressive Fe Mg enrichment and alkali depletions in the accessory mineral quartz mica schist. Approximately equal proportions of Fe Mg and alkalis are in the biotite sericite schist. Very low concentration of Fe Mg and with an overall increase in total alkali content are in the felsic quartzite. These bulk chemical trends are interpreted as the result of exhalative alteration of a felsic volcanic or volcanoclastic protolith which produced a bulk composition conducive to the formation of ferroalumino-silicate, aluminosilicate and other minerals during subsequent greenschist to amphibolite grade metamorphism. Recognition of staurolite, chloritoid, kyanite, garnet and magnetite bearing schists as being the products of hydrothermal alteration rather than pelitic sediments is a potentially useful tool in location of massive sulfide deposits in metamorphic terrains.

539. SCHROETER, T.G., PANTELEYEV, A., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Br.):
Epithermal mineralization in the Toodoggone silver-gold 'camp', northern British Columbia, 1974-.

Precious-metal deposits in British Columbia, 1978-.

See:
Toodoggone River (94 E); British Columbia Ministry Energy, Mines, Petrol. Res., Paper 1982-1, p. 122-133, 1982.

Selected precious metals deposits in northern British Columbia; Western Miner, p. 22-39, June, 1981.

Includes detailed field mapping of mineralized epithermal silver-gold belt in 94 E at a scale of 1:25 000; X-ray study of altered areas, including large zones of alunite ± clays ± silica (sealing cap); fluid inclusion study to commence; major and trace element geochemistry of volcanic rocks, alteration and deposits; petrography of rock suites including alteration; mineralogy of sulphides-mainly electrum-argentite; and structural controls.

A study of (epithermal) precious-metal bearing deposits in British Columbia, with model derivation and a comparison with Colorado, Nevada, Mexico deposits.

540. SCOTT, S.D., URABE, T., BRYNDZIA, L.T., FARR, J.E., KALOGEROPOULOS, S., TROOP, D.G., Univ. Toronto (Geology):
Geology and geochemistry of Kuroko-type massive sulfide deposits from Japan and Canada, 1978-82; M.Sc. theses (Farr, Troop), Ph.D. thesis (Kalogeropoulos).

A large international group of Americans, Japanese and Canadians is investigating in depth the geology and geochemistry of the type locality of Kuroko-type massive sulfide ores in Japan and comparing these to selected deposits in Canada. Specific projects are as follows: 1) Bryndzia, Farr and Scott: footwall alteration and stockwork mineralization of the Uwamuki no. 2 and 4 deposits, Japan; 2) Farr: veins associated with the Corbet and Millenbach deposits, Noranda; 3) Kalogeropoulos: chemical sediments associated with Kuroko (Tetsusekiei) and Noranda (main contact tuff) deposits; 4) Urabe and Scott: comparison of selected Canadian massive sulfides (Corbet, South Bay, Seneca) with type Kuroko deposits; and 5) Troop: Geology of the Flat Landing Brook deposit, Bathurst, New Brunswick.

541. SIBBALD, T.I.I., Saskatchewan Geol. Surv.:
Uranium metallogenic studies: Collins Bay B Zone, Saskatchewan, 1981-82.

See:
Uranium metallogenic studies: Collins Bay B Zone, 1. Geology; Saskatchewan Geol. Surv., Summ. Investig., Misc. Rept. 81-4, p. 69-72, 1981.

The Collins Bay B Zone of Gulf Minerals (Canada) Ltd. and Gulf Canada ltd. is located on the eastern side of the Athabasca Basin in the Collins Bay area of Wollaston Lake. The ore zone is estimated to contain 12 million Kg.U grading 0.38 percent. A 600 m long cross-section, of the northern end of the zone, comprising 20 vertical and 3 inclined drill holes was examined. The host rocks, mineralizations and associated alterations observed in this cross-section are documented.

542. SINCLAIR, A.J., CAMPBELL, S.W., Univ. British Columbia (Geological Sciences):
Metallogeny in Kluane area, Yukon, 1973-83.

Sulphur isotope data for mineral deposits in the Kluane Ranges, Yukon indicate certain restrictions on genesis of several classes of mineral deposits. Magmatic Cu-Ni deposits appear to have derived much of their contained sulphur from wallrock. Sulphur in Au deposits in Permian volcanic rocks appear to have been derived locally. Sulphur in Cu deposits in Triassic volcanic rocks has been introduced from one or more sources.

543. SINCLAIR, W.D., Geol. Surv. Can.:
Geology of copper and molybdenum resources of Canada, 1977-.

544. SPRINGER, J.S., CHERRY, M.E., ANDREWS, A.J., Ontario Geol. Surv.:
FGeatures of gold concentration in Precambrian settings, 1981-83.

Review, synthesis and evaluation of the localization of gold in Precambrian rocks.

545. THOMAS, D.J., Saskatchewan Geol. Surv.:
Uranium metallogenic studies: Donaldson Lake area, Saskatchewan, 1981-.

See:
Uranium metallogenic studies: Donaldson Lake area; Saskatchewan Geol. Surv., Summ. Investig., Misc. Rept. 81-4, p. 62-65, 1981.

A detailed geological mapping and geochemical bedrock sampling program was initiated in the Donaldson Lake area some 16 km northeast of Uranium City and covering aobut 90 km^2. The area comprises Martin Group, unconformably overlying crystalline basement; the Foot Bay gneiss, the Donaldson Lake gneiss and the Fay Mine Complex. Several uranium deposits are present in the area, the most important being the Ace-Fay-Verna deposits of Eldorado Nuclear Limited.

546. THORPE, R.I., Geol. Surv. Can.:
Geology of silver and gold deposits in Canada, 1968-.

547. TORTOSA, D., Univ. Saskatchewan (Geological Sciences):
Geology of the Cenex mine, Saskatchewan, 1978-82; M.Sc. thesis (Tortosa).

548. TREMBLAY, L.P., Geol. Surv. Can.:
Geology of uranium resources of Canada, 1975-.

549. WATKINSON, D.H., GIBSON, H., McEWEN, J., BUCK, M., ATKINSON, M., Carleton Univ. (Geology):
Relationship of silicification, and later alteration to Cu-Zn deposits, Noranda, Québec, 1976-85; B.Sc. theses (Buck, Atkinson), M.Sc. thesis (McEwen), Ph.D. thesis (Gibson).

Silicification of mafic rocks in the Noranda camp is a synvolcanic process that has sealed active geothermal systems, thus confining flow to brecciated zones where metalliferous brines exhale onto the seafloor. In the Amulet group of mines, metal deposits formed shortly after Amulet rhyolite (actually silicified andesitic rocks) emplacement and early in the onset of Amulet andesite volcanicity. Study continues on the Amulet rhyolite in general, as well as the Bedford, F-shaft and Mines Gallen deposits.

550. WATKINSON, D.H., MAINWARING, P., Carleton Univ. (Geology):
Chromite in Ontario, 1978-82.

Geological mapping of chromite occurrences in Ontario (Puddy Lake – Chrome Lake, Shebandowan-Loch Erne, Crystal Lake) and electron microprobe analyses of chromite, enclosing minerals and inclusions in chromite were completed. Sodium rich solid and fluid inclusions in chromite indicate that fluids, and not only magma, were involved in the concentration of chromite in gabbros, peridotites and dunites.

551. WHITTAKER, P., WATKINSON, D.H., Carleton Univ. (Geology):
Chromite in ophiolitic rocks of British Columbia, 1980-83; Ph.D. thesis (Whittaker).

Geological mapping of chromite showings in British Columbia was carried out. Study is concentrating on the Murray Ridge area, Trembleur Intrusions, British Columbia. Petrography and mineral chemistry plus study of solid and fluid inclusions are underway to understand the concentration of chromite in these rocks.

PETROLEUM EXPLORATION/EVALUATION/ RECHERCHE ET ÉVALUATION DES GÎTES PÉTROLE

552. BARKER, J.F., MACQUEEN, R., FRITZ, P., Univ. Waterloo (Earth Sciences):
The source, correlation, and thermal maturation history of hydrocarbon deposits in southern Ontario, 1978-84.

To define the source of hydrocarbon deposits in southern Ontario, to correlate deposits of similar origin and to evaluate the thermal maturation history of the Paleozoic strata and their hydrocarbon deposits. This study will provide additional information on these deposits and also will refine our understanding of the burial and thermal history of the Paleozoic sequence of southern Ontario.

553. CANT, D.J., MOSSOP, G.D., Alberta Research Council (Geol. Surv.):
Petroleum geology, northwestern Alberta, 1980-82.

554. COSTERTON, W., WARDLAW, N.C., SHAW, J., Univ. Calgary (Geology and Geophysics):
Strategy of control microbial problems in waterflood oil recovery operations, 1981-84; M.Sc. thesis (Shaw).

We have shown that all potential waterflood injection waters used in the secondary recovery of oil produce anaerobic biofilms on available surfaces and recommend careful selection and organic depletion of injection water.

We have developed the artificial glass bead core as an inert clean reservoir model and we have described the process of microbial plugging in this model. Our studies indicate that even distilled water supports the growth of a significant number of adherent bacteria and we note that routine porosity tests may be complicated by this factor.

We have developed systems and techniques that allow us to model both the pipe and rock components of injection systems, and we wish to complete our program and to expand it to cover the effects of acid fracturing on adherent bacterial populations, and the spatial extent of bacterial growth and plugging in relation to well bores in oilfields.

555. DAVIES, E.H., Geol. Surv. Can.:
Vitrinite reflectance of dispersed organic matter, 1981-.

Vitrinite reflectance studies of dispersed organic matter in wells from offshore eastern Canada to provide maturation data which will facilitate source rock evaluation, burial history, petroleum migration and reserves, and paleoheat flow studies and provide new insight into the thermal history of passive continental margins.

556. FOSCOLOS, A.E., Geol. Surv. Can.:
Diagenesis of organic matter and clay minerals in sediments in relation to petroleum generation, 1975-.

557. FOSCOLOS, A.E., Geol. Surv. Can.:
Fluid rock interaction in sandstones, 1980-.

558. GRANT, A.C., Geol. Surv. Can.:
Geological interpretation of geophysical data as on acid to basin synthesis and hydrocarbon inventory, 1974-.

559. HÉROUX, Y., ACHAB, A., BERTRAND, R., CHAGNON, A., INRS-Géoressources:
Relations entre l'évolution thermique des kérogènes et la géologie structurale des Appalaches du Québec, 1981-85.

Voir:
Carbone organique: indicateur potentiel de paléoenvironnements; deux exemples; Journal canadien des sciences de la Terre, vol. 18, no. 12, p. 1838-1849, 1981.

Ce projet de recherche, d'une durée de trois ans a pour but: a) de préciser les relations entre l'évolution thermique et structurale de l'extrémité est de la péninsule de Gaspé; b) établir une zonéographie thermique de la péninsule gaspésienne; c) valoriser l'exploitation des kérogènes comme outil sédimentologique, de géologie structurale et d'exploration des hydrocarbures.

560. KALKREUTH, W.D., Geol. Surv. Can.:
The relationship between kerogen (type and rank) and chemical extract data, for the purpose of source rock evaluation, 1977-.

561. LAST, W.M., Univ. Manitoba (Earth Sciences):
Geochemistry and sedimentology of oil shales in Manitoba, 1982-84.

The hydrocarbon source potential of organic-rich, fine-grained sediments has been studied and discussed by many researchers over the past decade. As an oil and gas resource base, the world-wide reserves in shales far exceed the proven reserves of conventional hydrocarbons. Although there are numerous "oil-shale" accumulations in Canada, one of the more significant and interesting occurrences is that of the Upper Cretaceous shale in west-central Manitoba. I propose to examine, on a reconnaissance basis, the mineralogy, sedimentology, organic type, organic maturity, and organic richness of this deposit. The results of this new research will not only advance our knowledge of Manitoba stratigraphy and sedimentology, but will also have direct application to future assessment and exploitation of this resource. In addition, the results will provide the necessary data base for further, more detailed examination of the organic-rich interval of oil and/or gas. The specific objectives of this research are to: (1) gain a basic understanding and definition of the type, richness, and maturity of the organic matter contained in the shales; (2) determine the depositional and diagenetic processes responsible for the accumulation; and (3) generate a preliminary assessment of the fossil energy resource potential.

562. LEFEBVRE, Y., BOURQUE, P.A., HÉROUX, Y., Univ. Laval, INRS-Géoressources:
Apport des matières organiques comme indicateur de paléoenvironnement et diagenèse du Silurien basal des Appalaches gaspésiennes (Québec), 1980-82; thèse de maîtrise (Lefebvre).

A partir de travaux de stratigraphie et sédimentologie détaillés, établir si la distribution des matières organiques dispersées reflète la paléogéographie de la région.

563. NANDI, B.N., CIAVAGLIA, L.A., EMR (CANMET):
Binders processed from Athabasca bitumen for non-coking coals, 1977-81.

564. NANDI, B.N., CIAVAGLIA, L.A., MacPHEE, J.A., EMR (CANMET):
Petrographic characterization of oil sands coke and fly ash from Suncor and Syncrude, Alberta, 1977-82.

See:
Microscopic structure and its relation to the combustion of delayed and fluid coke from Athabasca bitumen; Royal Microscopical Soc., Abstract, vol. 16, no. 5, 1981.

565. NANDI, B.N., MacPHEE, J.A., CIAVAGLIA, L.A., EMR (CANMET):
Upgrading of marginal coking coals using Japanese pitch binders, 1981-83.

See:
Mesophuse development in solid fuels in relation to aromaticity; 28th Can. Spectroscopy Symp. Ottawa, 1981.

Several Japanese pitch binders have been blended with a marginal coking western Canadian coal and carbonized both at lab and pilot plant levels. Microscopic evaluation of these cokes is presently being undertaken.

566. PETRYK, A.A., Québec Ministère Énergie et Ressources:
Geology and hydrocarbons exploration, Anticosti Basin: Basin analysis, 1975-.

See:
Stratigraphy, sedimentology and paleogeography of the Upper Ordovician-Lower Silurian of Anticosti Island, Québec; Subcommission on Silurian Stratigraphy, Ordovician-Silurian Boundary Working Group. Field Meeting, Anticosti-Gaspé, 1981, vol. II, p. 11-39, 1981.

Late Ordovician glaciation: effects of eustatic changes in sea-level on the Anticosti Platform succession, Québec; ibid., p. 81-85, 1981.

Aulacerid ecostratigraphy and its bearing on the Ordovician-Silurian Boundary on Anticosti Island, Québec; ibid., p. 101-105, 1981.

Graptolites from the Upper Ordovician-Lower Silurian of Anticosti Island and the postion of the Ordovician-Silurian Boundary; ibid., p. 159-164, 1981.

Anticosti Island Québec, Field-Guidebook, Part I; Subcommission on Silurian Stratigraphy, Ordovician-Silurian Boundary Working Group. Field Meeting, Anticosti-Gaspé, 1981, vol. I: Guidebook, p. 1-24, 1981.

Géologie de la partie ouest de l'île d'Anticosti; Québec Ministère Énergie et Ressources, DPV-815, 1981.

Lithostratigraphie, paléogéographie et potential en hydrocarbures de l'île d'Anticosti; Québec Ministère Énergie et Ressources, DPV-817, 1981.

Carte géologique de l'île d'Anticosti (1:100 000), Québec; Québec Ministère Énergie et Ressources, DPV-823, 1981.

Fiches descriptives et clichés des microfaciès de l'île d'Anticosti; Québec Ministère Énergie et Ressources, DP-818, 1981.

Progress was made with the publication of a 1:100 000 geologic map and of basic geologic and stratigraphic information, preliminary syntheses, paleogeographic models, and hydrocarbon potential (geochemical) studies of the Anticosti Platform succession. The documentation of this research continues and, in future, will include reports on the reservoir potential, structure and tectonics, and detailed stratigraphy of the island. Sampling for a preliminary magnetostratigraphy study of the Anticosti Island succession was carried out during summer 1981.

567. WARDLAW, N.C., Univ. Calgary (Geology and Geophysics):
Pore systems in sedimentary rocks and their influence on multiphase fluid movements, 1973-82.

The efficiency with which oil and gas can be displaced from a reservoir is dependent on the nature of the fluids and the geometric and topologic aspects of the pore systems. Recovery efficiency (oil dispaced as a % of oil in place) varies widely from 10% to 80%. A major objective of the project has been to understand how the geometry of pore systems influence recovery efficiency.

Recovery efficiency is usually estimated by means of multiphase (water-oil or water-gas) relative permeability tests which are performed on core samples. These tests are difficult and expensive and are rarely made under reservoir conditions of temperature, pressure, displacement rate, and wettability.

There is a need for simpler techniques of estimating recovery efficiency in order to be able to process a larger number of samples which could more adequately represent the heterogeneous reservoir. There is also a need to identify those aspects of pore systems which are critically important in their effect on recovery efficiency. The major objective of the project has been to identify and evaluate these properties. Without some understanding of this, it is difficult to assess how representative the few samples chosen for relative permeability tests are of the reservoir as a whole.

GENERAL/GÉNÉRALITÉS

568. CARTER, T.P., COLVINE, A.C., SPRINGER, J.S., Ontario Geol. Surv.:
Metallic mineral deposits in the Grenville Province, southeastern Ontario: geology, classification, metallogeny, 1979-83.

Documentation of the geological setting of metallic mineralization in rocks of the Grenville Province in southeastern Ontario in order to establish metallogenetic classification; to aid, stimulate exploration by establishing geological, metallogenic guidelines.

569. COLVINE, A.C., WOOD, J., Ontario Geol. Surv.:
Huronian metallogenetic development, 1978-84.

Interpretation of metallogenetic development of the Huronian through integrated geological, tectonic and mineral deposits studies. Definition of gold provenance areas and paleodrainage patterns in an attempt to locate areas of paleoplacer gold depositior and concentration.

570. DAWSON, K.M., Geol. Surv. Can.:
Metallogeny of the northern Canadian Cordillera, 1974-.

571. FRANKLIN, J.M., Geol. Surv. Can.:
Metallogeny of the southwestern part of the Canadian Shield, 1975-.

572. GROSS, G.A., Geol. Surv. Can.:
Geology of mineral resources in the ocean, 1976-.

573. KILIAS, S., ARMBRUST, G.A., Univ. Ottawa (Geology):
Genesis of gold deposits in the Renabie area, Sudbury District, Ontario, 1981-83; M.Sc. thesis (Kilias).

This project will examine the hydrothermal mineral assemblages and element dispersion patterns near gold-quartz veins in an Archean trondjhemitic batholith. Fluid inclusion studies will also be done to determine the temperature of formation and composition of the ore-forming fluid.

Genetic model(s) will be developed, and compared with those proposed for gold vein deposits in Archean volcanic belts. The object will be to see if any genetically significant differences, other than tectonic setting, exist between gold deposits in volcanic complexes and those in batholiths.

574. MILLER, A.R., Geol. Surv. Can.:
Metallogeny of the Baker Lake-Thelon region, Northwest Territories, 1981-.

To determine the relationship of uranium and other mineralization to intrusive and extrusive igneous activity, metamorphism and sedimentary processes in the Archean basement and overlying Aphebian and Helikian rocks in the Baker Lake-Thelon region.

575. RUITENBERG, A.A., FYFFE, L.R., New Brunswick Dept. Nat. Res. (Geol. Surv. Br.):
Mineral deposits related to granitoid rocks in New Brunswick, 1976-82.

Several distinct types of mineral deposits associated with different families of granitoid rocks in the New Brunswick Appalachians are compared. Porphyry copper deposits are associated with late stage differentiates of Middle Devonian I-type igenous complexes. Contact metasomatic deposits were formed where those plutons intrude carbonate rocks and they gave rise to vein deposits in fracture zones near wrench faults. The I-type granitoids were emplaced mainly in areas of thin continental crust (overlying Iapetus oceanic crust) and locally along prominent wrench faults in areas of thick continental crust.

In constrast, tin-tungsten-molybdenum-bearing greisen veins and skarns, and antimony-bearing quartz veins are associated with predominantly S-type granitic complexes ranging in age from Middle Devonian to early Carboniferous. The mineral deposits occur within or along the contacts of highly fractionated (specialized) late phases of these intrusive complexes, which are characterized by high K_2O/Na_2O, Rb/Sr, Rb/Ba and low Fe, Mg, Zr and Ti contents. These specialized granites occur in a large wrench fault zone that cuts across thick continental crust in southwestern and central New Brunswick.

576. SCHRIJVER, K., CHAMPAGNE, M., INR-Géoressources:
Métallogénie de la plate-forme du Saint-Laurent, Québec, 1982-84.

Indices de plomb, zinc, uranium et cuivre dans les Basses-Terres du Saint-Laurent: prometteurs ou non? Méthodes d'approche: géochimique, sédimentologique, paléogéographique.

577. SINCLAIR, A.J., GOLDSMITH, L.B., Univ. British Columbia (Geological Sciences):
Average grades and location data from vein camps, British Columbia and Yukon, 1978-82.

This project involves several approaches to the study of quantitative information from vein camps in southern British Columbia, including 1) spatial density as a means of defining camp limits, 2) distinguishing different subpopulations within a camp, 3) use of multivariate techniques in exploration modelling in vein camps, and 4) use of average grade data in defining district zoning of metals.

578. SMITH, P.K., Nova Scotia Dept. Mines and Energy:
Meguma Group (Gold) studies, Nova Scotia, 1980-85.

See:
Meguma Group studies; 5th Ann. Open House and Review of Act; Information Ser. 4, Nova Scotia Dept. Mines Energy, p. 23, 1981.

Geology of the Sherbrooke area, Guysborough County, Nova Scotia; Nova Scotia Dept. Mines Energy, Report 81-1, p. 77-94, 1981.

The project will encompass all geological aspects including structure, stratigraphy, sedimentology, metamorphism, plutonism, economic geology and geochemistry. Work will be extended into the Devonian-Carboniferous strata north of the Meguma Block.

The study will be centered around the Cochran Hill gold deposit conducting detailed geology to determine the genetic setting of the deposit. Characteristically gold in Nova Scotia is known to occur as free- gold in quartz veins from greenschist facies metamorphic rocks. Cochran Hill, which occurs in the almandine-amphibolite metamorphic facies near associated plutonic rocks offers an excellent opportunity to explore ideas of different genetic models for mineralization.

Final published maps for the project area will be published at a scale of 1:50 000 with more detailed maps produced as insets on the main maps or within the published reports.

579. SOUTHER, J.G., Geol. Surv. Can.:
Geothermal energy resources in Canada, 1973-.

580. SPRINGER, J.S., CARTER, T.P., Ontario Geol. Surv.:
Geologic setting of Grenville mineral deposits, Ontario, 1981-83.

To establish a comprehensive understanding of the geological setting of mineral deposits in the Grenville sub-province.

581. SUTHERLAND BROWN, A., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Br.):
Metallogeny of Canadian Cordillera, 1972-83.

582. THEYER, P., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Precious metals in the Bird River Sill, Manitoba, 1982-83.

To determine the existence and concentration of Platinum Group Elements and Gold and examine their relationship to the petrology of a mafic-ultramafic layered intrusion – the Bird River Sill.

583. WARREN, H.V., TOWERS, G.H.N., British Columbia (Geological Sciences, Botany):

Potential of the Pinchi Fault as a source of new mercury mines, British Columbia, 1981-83.

584. WATKINSON, D.H., TALKINGTON, R., Carleton Univ. (Geology):
Precious metal deposits in layered complexes of the Canadian Shield, 1980-82.

The emplacement and mobilization of platinum-group elements plus gold in large layered complexes of the Canadian Shield are being examined. The complexes at Lac des Iles, Coldwell, Big Trout Lake, Bird River Sill and some ophiolitic complexes are under investigation.

585. WILLIAMS-JONES, A.E., McGill Univ. (Geological Sciences);
Metallogenic studies, Québec and New Brunswick, 1978-.

See:
The Sullipek Cu-Mo skarn, Gaspe, Quebec: Geochemistry and petrology of a porphyry-associated ore deposit; Geol. Assoc. Can. – Mineral. Assoc. Can., Abstracts, vol. 6, p. 59, 1981.

The cupriferous Patapedia aureole, Gaspe, Quebec – a product of hydrothermal metamorphism; ibid., p. 61, 1981.

586. YOLE, R.W., IRVING, E., NORTH, F.K., GUNTER, A., Carleton Univ. (Geology):
Paleogeographic and age relationships of sediment related resource deposits, 1979-82.

The first stage of this project (initiated by F.K. North) involved compilation of data on over 100 oil basins. Data for phosphorites (over 200 deposits) and oil-shales (over 200 deposits) on a worldwide basis have now been compiled. The data are computer processable, and keyed to the RESMAP program, modified for use on Carleton computers, so that paleogeographic maps showing resource distributions for selected intervals of geologic time can be constructed. Some of the resource data has already been plotted on a new set of 20MA interval maps provided through E. Irving (phosphorites, oil shales) and a manuscript report on phosphorite time-space distributions prepared.

MINERALOGY/CRYSTALLOGRAPHY/MINERALOGIE/CRISTALLOGRAPHIE

587. BACHINSKI, S.W., SIMPSON, E.L., Univ. New Brunswick (Geology):
Chemistry of phlogopites in the Shaw's Cove minette: a comparison with the micas of other lamprophyres, ultrapotassic rocks, kimberlites and mantle xenoliths, 1979-82.

Minette micas, usually sharply zoned, are titaniferous phlogopites (mg = 0.67-0.89, TiO_2 = 1-11 wt.%) with significant concentrations of Cr, Ni, Ba, and F and are thus wholly distinct from micas of common igneous rocks. Micas chemically indistinguishable from those of minettes may be found in other lamprophyres, (ultra) potassic rocks, kimberlites, and mantle xenoliths from a variety of rock types. The chemical identity of minette mica phenocryst cores and phenocrysts of diverse mantle-derived rocks implies crystallization under similar conditions. By analogy with the chemistry of phologopites produced experimentally in potassic systems at high pressures and with studies of equilibration conditions of natural phlogopites, phenocrystic phlogopites in minettes may form at temperatures and pressures as high as ~1250°C and ~40 kb and under relatively high f_{O_2}.

588. BAYLISS, P., Univ. Calgary (Geology and Geophysics):
Crystal chemistry study of the pyrite group, 1963-.

589. CABRI, L.J., EMR (CANMET):
Mineralogical characterization of inorganic constituents of Canadian coals, 1977-86.

A mineralogical study was made of a coal deposit in British Columbia, containing variable amounts of Ge and Ga. The Ge appears to be organically bound.

590. CABRI, L.J., LAFLAMME, J.H.G., EMR (CANMET):
Mineralogy of the platinum group elements, 1971-83.

See:
Platinum-group elements: Mineralogy, geology, recovery; C.I.M. Sp. vol. 23, 1981.

Nature and distribution of platinum-group element deposits; Episodes, vol. 1981, no. 2, 31-35, 1981.

Mineralogical study of complex Pt-Fe nuggets from Ethiopia; Bull. Mineralogique, vol. 104, p. 508-525, 1981.

The major output (CIM Sp. Vol. 23) includes chapters on inorganic chemistry, phase relations, geochemistry, sample preparation, analytical methods, types of deposits and recovery of platinum-group elements from ores, as well as tables and descriptions of platinum-group minerals.

Work will continue on the study of the mineralogy of PGE in processing plants in the Sudbury area. This will require the development of techniques for in situ analyses at very low levels using a proton microprobe at the Max Planck Institut für Kernphysik (Heidelberg).

591. CHAGNON, A., INRS-Géoressources:
L'évolution des minéraux d'argile lors de la diagenèse d'enfouissement, 1982-85.

Ce projet vise à la définition d'indicateurs minéralogiques et d'en évaluer les limites d'application.

592. CHEN, T.T., EMR (CANMET):
Mineralogy of mercury in Canadian sulphide ores, 1979-86.

To study the occurrence, distribution and mineralogy of mercury in Canadian sulphide ores, and in Canadian non-ferrous metal extraction circuits.

593. DONNAY, G., McGill Univ. (Geological Sciences):
Relation of physical and chemical properties to crystal structure, 1973-85.

See:
Crystal data of branched-chain derivatives of D-psicose; J. Appl. Cryst., vol. 14, p. 473-475, 1981.

Symmetry and twinning in diamond; Kristallografiya, vol. 26, p. 1282-1287, 1981.

594. FERGUSON, R.B., Univ. Manitoba (Earth Sciences):
The ideal end-member K-feldspars sanidine, orthoclase and maximum-microcline, and the series sanidine ↔ orthoclase and orthoclase maximum-microcline, 1981-82.

595. HAWTHORNE, F.C., Univ. Manitoba (Earth Sciences):
The crystal chemistry of the amphiboles, 1968-.

An extensive review of amphibole crystal chemistry has been submitted for publication. Crystal chemistry of some sodic-calcic amphiboles is being investigated by crystal structure refinement, Mössbauer spectroscopy, polarized electronic absorption spectroscopy and high resolution transmission electron microscopy, with the cooperation of several other workers.

596. HAWTHORNE, F.C., Univ. Manitoba (Earth Sciences):
The structural chemistry of hydroxy-hydrated minerals, 1976-.

General survey of the topologic characteristics of hydroxy-hydrated mineral structures, with a view to characterizing important polyhedral complexes common to many structures. Work on unknown structures is continuing: the structure of tancoite is in its final stages and further studies of these minerals are planned.

597. HAWTHORNE, F.C., CERNY, P., Univ. Manitoba (Earth Sciences):
Studies of pegmatite minerals, 1977-.

Examination of structural controls on the chemistry and physical properties of accessory minerals in granitic pegmatites and pegmatitic granites. Current studies concentrate on garnets, complex Ta/Nb/Sn/Ti oxides, beryl and titanite.

598. HAWTHORNE, F.C., FERGUSON, R.B., Univ. Manitoba (Earth Sciences):
Crystal chemistry of the aluminofluoride minerals, 1975-.

A continuing investigation of the structures of the aluminofluoride minerals. The structures of pachnolite and bøggildite have been solved, and papers have been submitted for publication, and work on the structure of jahrlite is currently underway. When all of the aluminofluoride structures are known, a modified structural hierarchy for this group will be developed.

599. JAMBOR, J.L., EMR (CANMET):
Mineralogical studies of the Zn-Pb-Cu ores of the Bathurst area of New Brunswick, 1977-85.

See:
Mineralogy of the Caribou massive sulphide deposit, Bathurst area, New Brunswick; CANMET Div. Rept. MRP/MSL 81-56 (R), 1981.

Examination of examples of altered massive sulphides from the Caribou deposit, Bathurst area, New Brunswick; CANMET Div. Rept. MRP/MSL 81-94 (TR), 1981.

Mineralogical study of pyritite intersected in 1981 drilling of the Caribou Zn-Pb-Cu-Ag deposit, New Brunswick; CANMET Div. Rept. MRP/MSL 81-106(IR), 1981.

Examination of 'Madoc-type' sulphosalt specimens from the National Mineral Collection; CANMET Div. Rept. MRP/MSL 81-143(IR), 1981.

600. JAMBOR, J.L., EMR (CANMET):
Mineralogy of intermediate members of plumbojarosite-beaverite series, 1981-82.

Mineralogy of the jarosite group is important in some aspects of extractive metallurgy where the "jarosite process" is used to precipitate iron from sulphate and chlorite solutions. The nature and conditions governing substitution of certain elements in the series are critical to understanding and controlling the process.

601. McGREGOR, C.R., FERGUSON, R.B., Univ. Manitoba (Earth Sciences):
Rapid X-ray powder and single-crystal characterization of granitic pegmatitic orthoclases/microclines from Lac du Bonnet, Manitoba and Dryden, Ontario, 1980-82; M.Sc. thesis (McGregor).

602. MANDARINO, J.A., Royal Ontario Mus. (Mineralogy and Geology):
The minerals of Mont St. Hilaire, Québec, 1976-82.

The ultimate goal of this project is the production of a book on the minerals of Mont St. Hilaire. The book will contain complete mineralogical data, descriptions and colour (as well as black and white) photographs for the approximately 150 species found at Mont St. Hilaire. The photographs are by the noted Canadian micro-mineral photographer, Violet Anderson.

603. MANDARINO, J.A., Royal Ontario Mus. (Mineralogy and Geology):
Assessment of the compatibility of mineralogical data, 1981-85.

See:
The Gladstone-Dale relationship: Part IV. The compatibility concept and its application; Can. Mineral., vol. 19, pt. 3, p. 441-450, 1981.

Comments on the calculation of the density of minerals; Can. Mineral., vol. 19, pt. 4, p. 531-534, 1981.

Now that the compatibility concept has been tested, it is being applied to data for minerals in various chemical classes. Results for tellurites, tellurates, selenites and selenates are to be reported at the I.M.A. meetings in Bulgaria in September 1982. The iodates, nitrates and organic salts will be discussed at the GAC-MAC meetings in Winnipeg in May, 1982. Data have been gathered for the borates and arsenates; the data for sulfates are now being selected from the literautre. Where the compatibility of a species is found to be low, that species will be restudied to account for the discrepancies. For example, among the borates, the data for seven species fall into the poor category. Five of these species are in the ROM collections and will be restudied.

604. MANDARINO, J.A., RICHARDSON, J.M., Royal Ontario Mus. (Mineralogy and Geology)
Some phosphate minerals from the East Kemptville, Nova Scotia tin deposit, 1981-82.

The project will result in the description of various phosphates (including triplite and childrenite) from the tin deposit near East Kemptville, Nova Scotia.

605. MARTIGNOLE, J., ARPIN, M., Univ. Montréal (Géologie):
L'altération des anorthosites: le rôle des micro-inclusions des feldspaths.

606. MARTIGNOLE, J., WILHELM, S., Univ. Montreal (Géologie):
Les inclusions dans les plagioclases des anorthosites.

607. MOROGAN, V., MARTIN, R.F., McGill Univ. (Geological Sciences):
Fenitization and ultimate rheomorphism of crustal and cognate xenoliths, Oldoinyo Lengai, Tanzania, 1980-82; M.Sc. thesis (Morogan).

Oldoinyo Lengai is the only active carbonatite volcano in the world. Blocks of basement rocks and cognate xenoliths of gabbroic affinity have been mildly to strongly fentized; melting reactions are incipiently developed locally. This investigation will perhaps contribute an explanation of the SiO_2-depleted lavas associated with the carbonatite liquid, as well as a unique description of the mineralogical adjustments that result from immersion of xenoliths in a hot carbonatitic melt phase.

608. MOSSMAN, D.J., DELABIO, R., MacINTOSH, D., Univ. Saskatchewan (Geological Sciences):
Mineralogy of clay marker seams in some Saskatchewan mines, 1978-82.

1) Confirms the identity of sepiolite in the clay seams of the Prairie Evaporite.

2) The mineralogy of clay seams present in the ore zones(s) at the following mines has been investigated: Cominco (Vanscoy); Central Potash (Colonsay); Potash Corporation of Saskatchewan (Allan) and (Lanigan). A total of 48 samples has been examined. In each case, following concentration of clay minerals by centrifuging, x-ray diffractograms were obtained for: untreated, glycolated and heat treated material (300°C, 450°C, 580°C, 650°C, 725°C). Additional runs were made on several samples under conditions of controlled humidity.

In addition to halite, sylvite and traces of carnallite, numerous water-insoluble constituents are present. Dolomite and anhydrite are the main ones. Quartz, fibrous hematite, hydrocarbon, and sporadic non-diagnostic polynomorphs occur in minor amounts.

The main clay minerals are chlorite (14Å), illite and Mg-septechlorite (7Å). Of the two chlorites the septechlorite is the more thermally stable. The presence of sepiolite, vermiculite, smectite and traces of mixed layer (chlorite-montmorillonite) clay is strongly suspected in some samples. The septechlorite, sepiolite and (possibly) vermiculite very likely originated as direct products of evaportion, under hypersaline conditions, or are the result of diagenesis. Absence of these minerals in a sample selected from (Second) red beds on the rim of the evaporite basin distant from potash deposits is evidence supportive of this concept. Illite and 14Å chlorite are of regional (detrital) origin.

609. PETRUK, W., EMR (CANMET):
Mineralogy applied to processing of Zn-Pb-Cu ores from northwestern New Brunswick, 1975-86.

See:
Liberation of sphalerite during grinding in the mill of Brunswick Mining and Smelting Corporation; Proc. 13th Annual Meeting, Canadian Mineral Processors, p. 77-95, 1981.

The behaviour of galena, chalcopyrite and tetrahedrite during flotation of a fine-grained base metal ore in the concentrator of Brunswick Mining and Smelting; Process Mineralogy: Extractive Metallurgy, Mineral Exploration, Energy Resources, Metall. Soc. AIME, p. 201-212, 1981.

610. PLANT, A.G., Geol. Surv. Can.:
Electron beam microanalysis, 1962-.

611. RACHLIN, A., MANDARINO, J.A., Royal Ontario Mus. (Mineralogy and Geology), Univ. Toronto (Geology):
Detailed mineralogical data of selected borates from southern New Brunswick, 1981-82.

This study will present complete data for at least three of the borates (hilgardite, hydroboracite, volkovskite) which occur in the potash deposits of southern New Brunswick.

612. RIMSAITE, J.Y.H., Geol. Surv. Can.:
Mineralogy of uranium deposits in granitic rocks in the Grenville structural province, Ontario and Québec, 1977-.

See:
Isotope, scanning electron microscope, and energy dispersive spectrometer studies of heterogeneous zircons from radioactive granites in the Grenville Structural Province, Quebec and Ontario; Geol. Surv. Can., Paper 81-1B, p. 25-35, 1981.

Alteration products of accessory allanite in radioactive granites from the Canadian Shield: Discussion; Geol. Surv. Can., Paper 81-1C, p. 89-92, 1981.

Mode of occurrence of secondary radionuclide-bearing minerals in natural argillized rocks: a preliminary report related to a barrier clay in nuclear waste disposal; Geol. Surv. Can., Paper 82-1A, p. 247-259, 1982.

613. SCHANDL, E.S., MARTIN, R.F., McGill Univ. (Geological Sciences):
The feldspar mineralogy of the Sudbury Complex, Ontario, 1980-82; M.Sc. thesis (Schandl).

A detailed study of the feldspar mineralogy of the Onaping Formation, the micropegmatite and the norite of the Sudbury Complex. Since feldspars are reliable indicators of the evolution and chemical environment of the host rock, they may be used as tools, depicting the igenous and metamorphic history of the lopolith. The unique setting of the lopolith, its unusual geometry and the presence of the controversial Onaping Formation gave rise to a number of hypotheses concerning the geological evolution of the Sudbury basin.

614. SCOTT, S.D., HUTCHISON, M.N., KISSIN, S.A., BRACKMANN, A., GOBLE, R., Univ. Toronto (Geology):
Experimental studies in sulfide systems; M.Sc. thesis (Brackmann).

See:
Sphalerite geobarometry in the Cu-Fe-Zn-S system; Econ. Geol., vol. 76, p. 143-153, 1981.

A variety of sulfide equilibria are being evaluated experimentally as potential mineralogical thermometers and barometers over a wide range of geologically significant temperatures and pressures: 1) pressure dependence of FeS content of alabandite (MnS) in equilibrium with troilite as a potential "cosmobarometer"; 2) P-T dependence of FeS in sphalerite in equilibrium with troilite as a means of estimating the pressure of formation of meterorites ("sphalerite cosmobarometer"); and 3) crystallography and stability of pyrrhotite polymorphs. In addition, the kinetics of self-diffusion and associated blocking temperatures is being measured for sulfides using a radiotracer technique.

615. SPRY, P.G., BRYNDZIA, L.T., SCOTT, S.D., Univ. Toronto (Geology):
Stability and compositional variation of chlorite and gahnite in sulfidation reactions, 1980-83; Ph.D. theses (Bryndzia, Spry).

Experiments are being conducted over a range of temperatures and pressures to determine the stability and compositional variation of chlorite (daphnite-clinochlore solid solution; Bryndzia) and gahnite (gahnite-hercynite solid solution; Spry) as a function of sulfur and oxygen fugacities. Parallel studies involve analysis by electron microprobe of chlorite and gahnites from a variety of geological environments world-wide. Spry has found that compositions of zinc-rich spinels are indicative of their environment of formation and may constitute an exploration guide for sulfide ore deposits by recognizing ore-associated spinels from those of other associations.

616. TURNOCK, A.C., RAUDSEPP, M., Univ. Manitoba (Earth Sciences):
Amphiboles: synthesis and crystal-chemistry, 1978-83; Ph.D. thesis (Raudsepp).

Twenty-five end-member composition amphiboles have been synthesized, and their cell-parameters measured by X-ray diffraction. This data is now in the process of being put into computer, and programming designed for analysis of crystallographic parameters vs. chemical composition.

617. VON BITTER, P.H., GAIT, R., Royal Ontario Mus. (Invert. Palaeontology, Mineralogy and Geology):
Calcite pseudomorphs from the Pleistocene of western Newfoundland – possible palaeoenvironmental indicators, 1976-82.

See:
Quaternary interglacial and associated deposits in southwest Newfoundland; Can. J. Earth Sci., vol. 19, no. 3, p. 410-423, 1982.

618. WICKS, F.J., OTTAWAY, T., Royal Ontario Mus. (Mineralogy and Geology):
Mineralogy and geochemistry of Colombian emerald deposits, 1981-85.

To carry out a mineralogical and geochemical study of the Colombian emerald deposits, which will lead to an understanding of the paragenesis of the deposits. The knowledge gained will have application in the mineralogy and gemmology of emeralds, in the exploration and mining methods used, and ultimately in the jewellery industry. A successful collecting trip was made to the Chivor and Muzo mines and preliminary work has begun on the samples collected.

619. WICKS, F.J., OZORAY, J., Royal Ontario Mus. (Mineralogy and Geology):
X-ray powder diffraction standards of serpentine minerals, 1981-83.

A list of the published X-ray powder diffraction patterns of the serpentine minerals and chrysotile asbestos have been compiled. A series of X-ray powder diffractions of the main varieties of the serpentine minerals in the ROM collections including the asbestos varieties, have been produced under identical conditions with a focusing Guinier deWolff camera. A series of representative reference powder diffraction standards have been selected and the data are being prepared for publication.

620. WICKS, F.J., PLANT, A.G., Royal Ontario Mus. (Mineralogy and Geology), Geol. Surv. Can.:
Electron microprobe studies of serpentine minerals, 1978-82.

A number of serpentine minerals from a variety of geological environments have been identified by microbeam X-ray diffraction and chemically analyzed by electron microprobe. The large number of analyses of the serpentine microprobe standards made during this study has presented the opportunity to evaluate the accuracy and precision of energy dispersive analyses of serpentine during normal day to day operation of the electron microprobe.

621. ZODROW, E.L., College of Cape Breton (Geology):
Secondary, hydrated sulfates in Sydney Coalfield, Nova Scotia, 1974-.

On contact with the atmosphere, autochthonous pyrite (in coal) oxidizes forming hydrated sulfates. Over 20 such minerals have been identified and samples of such are deposited with the Nova Scotia Museum; Smithsonian Institution; Musée de Minéralogie (Paris); and the National Museum, Mineral Sciences Division. Samples are also studied by Moessbauer spectroscopy. Aluminocopiapite is formed paragenetically: pyrite → melanterite → fibroferrite → aluminocopiapite, and the mineral can only be found in old workings of coal mines (Sydney Coalfield). Copiapite samples of paragenetic origin have a tendency to show fewer chemical deficiencies and less unit cell reduction (possibly because of reduced Fe-Mg substitution in the X position of the lattice?) than those of non-paragenetic origin.

INVERTEBRATE/INVERTÉBRÉS

622. BAMBER, E.W., Geol. Surv. Can.:
Carboniferous and Permian biostratigraphy and coral faunas, western and northern Canada, 1971-.

623. BOLTON, T.E., Geol. Surv. Can.:
Ordovician-Silurian biostratigraphy, Southampton Island, District of Keewatin, 1970-.

624. BOURQUE, P.A., MAMET, B., ROUX, A., Univ. Laval (Géologie), Univ. Montréal (Géologie):
Algues Siluriennes de la Baie-des-Chaleurs, Québec et Nouveau-Brunswick.

625. BROOKES, I.A., McANDREWS, J.H., von BITTER, P.H., York Univ. (Geography), Royal Ontario Mus. (Botany, Invert. Palaeontology):
Quaternary interglacial and associated deposits in southwest Newfoundland, 1978-82.

See:
Quaternary interglacial and associated deposits in southwestern Newfoundland; Can. J. Earth Sci., vol. 19, no. 3, p. 410-423, 1982.

626. CAMERON, B.E.B., Geol. Surv. Can.:
Tertiary foraminiferal succession of western Cordilleran and Pacific Margin, 1969-.

627. COLLINS, D.H., BRIGGS, D.E.G., CONWAY MORRIS, S., Royal Ontario Mus. (Invert. Palaeontology):
Determination of Middle Cambrian soft-bodied fossil localities of the Burgess Shale type along the Cathedral Escarpment, British Columbia, 1981-86.

PALEONTOLOGY/PALÉONTOLOGIE

Seven new soft-bodied fossil localities of the Burgess Shale type were found on five mountains: Mt. Field, Mt. Stephen, Mt. Odaray, Park Mountain and Curtiss Peak. Two localities had good quality fossils similar to those found in Raymond's quarry at the main Burgess Shale site. The three southernmost localities had a few poor quality soft-bodied fossils. Two localities had good quality fossils of a new fauna characterized by the rare arthropods **Alalcomenaeus** and **Branchiocaris.**

Exploratory excavation at the main Burgess Shale site revealed soft-bodied fossil bearing horizons above Walcott's quarry and possibly below it, as well.

No equivalent to the Phyllopod bed was found, although more Phyllopod bed fossils were found in the Mt. Stephen trilobite beds.

Based on these discoveries, a field programme of excavation of the new localities and of further reconnaissance is planned.

628. COPELAND, M.J., Geol. Surv. Can.
Paleozoic ostracodes of Canada, 1972-.

See:
Latest Ordovician and Silurian ostracode faunas from Anticosti Island, Québec; IUGS Subcommission on Silurian Stratigraphy, Ordovician-Silurian Boundary Working Group. Field Meeting, Anticosti-Gaspé, Québec, 1981, vol. II, p. 185-195, 1981.

629. DIXON, O.A., Univ. Ottawa (Geology):
Ordovician and Silurian heliolitid corals of Anticosti Island, Québec, and Canadian Arctic Islands, 1968-.

630. ELIAS, R.J., Univ. Manitoba (Earth Sciences):
Upper Ordovician solitary rugose corals of North America, 1979-.

See:
Latest Ordovician solitary rugose corals of eastern North America; Bull. Am. Paleontol., vol. 81, no. 314, 1982.

Work in progress: 1) Solitary rugose corals of the Stony Mountain Formation (Upper Ordovician), southern Manitoba; 2) Late Ordovician solitary rugose corals of the eastern Klamath Mountains, northern California; 3) Late Ordovician solitary rugose corals of the Montoya Group, southern New Mexico and westernmost Texas; 4) latest Ordovician solitary rugose corals of the Keel Formation, Oklahoma; and 5) Late Ordovician solitary rugose corals of west-central Alaska.

631. ELLERSIECK, I., MAMET, B., MANSFIELD, C., Tailleur, I., USGS, Univ. Montréal (Géologie):
Stratigraphie des Delong Mountains, Alaska.

632. GAUTHIER-COULLOUDON, L., MAMET, B., Univ. Montreal (Géologie):
Paléoécologie des algues Ordoviciennes et Siluriénnes de l'île d'Anticosti, Québec; thèse de maîtrise (Gauthier).

Voir:
Algues et sédimentation carbonatée dans l'Ordovicien et le Silurien de l'île d'Anticosti, IUGS Subcommission on Silurian Stratigraphy, Ordovician-Silurian Boundary Working Group. Field Meeting, Anticosti-Gaspé, Québec, vol. II, p. 87-90, 1981.

633. GRADSTEIN, F.M., Geol. Surv. Can.:
Biostratigraphic history of the Mesozoic-Cenozoic sediments of the Grand Banks, northwest Newfoundland and Labrador shelves (based on Foraminifera and Ostracoda), 1974-.

See:
Tertiary subsurface correlations using pyritized diatoms, offshore Eastern Canada; Geol. Surv. Can., Paper 81-1B, p. 17-23, 1981.

634. GRADSTEIN, F.M., Geol. Surv. Can.:
Taxonomy, biostratigraphy, paleoecology and paleobiogeography of Mesozoic-Cenozoic agglutinated Foraminifera, 1979-.

635. HALL, R.L., STRONACH, N.J., Univ. Calgary (Geology and Geophysics):
Biostratigraphy and lithostratigraphy of the Fernie Formation, Alberta and British Columbia, 1978-83; Ph.D. thesis (Stronach).

During the 1981 field season ammonite faunas were collected from several widely spaced sections in the Fernie to prove the presence of a considerable thickness of shales representing the Late Bajocian and probably most of the Bathonian stages. This part of the Jurassic section has previously been thought to be absent throughout the Fernie. Collections of trace fossils, and investigation of depositional environments within the so-called Rock Creek member along an east-west transect near Jasper seem to confirm an easterly source for Middle Jurassic sediments although further analysis of paleogeography is needed and the precise age of this litho-stratigraphic unit needs investigation. New collections of ammonites from the Toarcian parts of the Fernie section were made this year and it appears there may be several zones present.

636. HOFMANN, H.J., Univ. Montréal (Géologie):
Paléontologie et biostratigraphie du précambrien et du paléozoique inférieur: paléontologie du précambrien, Monts Mackenzie; stromatolites aphebiens, Ontario; trace fossiles des basses-terres du Saint-Laurent.

637. HOOPER, K., Carleton Univ. (Geology):
Cenozoic microfauna/flora of DSDP in Oceania, 1981-84.

638. JELETZKY, J.A., Geol. Surv. Can.:
Cretaceous and Upper Jurassic paleontology and biostratigraphy, western and Arctic Canada, 1980-.

See:
Pachygrycia, a new Sonneratia-like ammonite from the Lower Cretaceous (earliest Albian?) of northern Canada; Geol. Surv. Can., Paper 80-20, 1981.

639. KOBLUK, D.R., Univ. Toronto (Geology, Erindale Campus):
Cavity-dwelling organisms in Paleozoic reefs, 1978-.

See:
Cavity-dwelling biota in Middle Ordovician (Chazy) bryozoan mounds from Quebec; Can. J. Earth Sci., vol. 18, p. 42-54, 1981.

Earliest reef cavity-dwelling organisms, Poleta Formation, Nevada; ibid., p. 669-679, 1981.

Lower Cambrian cavity-dwelling endolithic sponges; ibid., p. 972-980, 1981.

Coelobiontic (cavity-dwelling) organisms are known from modern tropical reefs, but have not been studied in detail. What little is known of them indicates that they are ubiquitous and are an intergral part of the whole reef ecosystem. The very important role that coelobionts play in construction and destruction in living reefs illustrates their potential importance to our understanding of the history of ancient reefs, the evolutionary history of many major groups of marine organisms, and the need for further study of ancient coelobionts.

The main objectives of this project are: 1) to document the paleontology and paleoecology of lower and middle Paleozoic reef coelobionts, 2) to trace the origins of the reef coelobiontic community, and 3) to study organism adaptation and community structure in cavities in the lower and middle Paleozoic.

The overall significance of this work lies in the contributions it will make to our understanding of the history of development of the reef coelobiontic community and the reef community as a whole, the composition and structure of the earliest cavity communities, and the role of early reef coelobionts in the erosion and modification of cavity systems. Other significant results should include an increased awareness of the complex interrelationship between surface-dwelling and cavity-dwelling biotas in ancient and modern reefs.

640. LÉSPERANCE, P.J., Univ. Montréal (Géologie):
Biostratigraphie, évolution, paléoécologie et paléontologie, systématique (Ordovicien Supérieur-Devonien Moyen).

See:
Phacopid trilobites of the Anticostian Series of Anticosti Island and of the Matapédia Group in Gaspé (Québec); IUGS Subcommission on Silurian Stratigraphy, Ordovician-Silurian Boundary Working Group. Field Meeting, Anticosti-Gaspé, Québec, vol. II, p. 197-210, 1981.

Correlation of the White Head and related strata of the Percé region; ibid., p. 223-230, 1981.

Hirnantian fauna in and around Percé, Québec; ibid., p. 231-246, 1981.

Brachiopods from the White Head Formation (Late Ordovician-Early Silurian) of the Percé region, Québec, Canada; ibid., p. 247-256, 1981.

The biostratigraphy of the Nicolet River Formation in Quebec and intra – North American correlation in Middle and Upper Ordovician strata; Can. J. Earth Sci., vol. 19, no. 3, p. 571-587, 1982.

641. LUDVIGSEN, R., WADDINGTON, J., Royal Ontario Mus. (Invert. Palaeontology):
Fossils of Ontario: Brachiopods, 1981-83.

642. McGUGAN, A., University of Calgary (Geology and Geophysics):
1) Cretaceous micropaleontology (Foraminifera). 2) Late Paleozoic biostratigraphy. 3) Ecology, Recent Foraminifera.

See:
Permian and Pennsylvanian stratigraphy, disconformities, facies changes, and structure, Kananaskis and Spray Lakes areas, southern Canadian Rockies; Bull. Can. Petrol. Geol., vol. 29, p. 96-109, 1981.

Late Cretaceous (Campanian) foraminiferal faunas, Charter et al. Saturna No. 1, Gulf Islands, British Columbia; ibid., p. 110-117, 1981.

Living Foraminifera, West Coast BC/Vancouver Island: contribution to local, regional and global knowledge of Recent foraminiferal populations, control of populations by sea-water chemistry, depth and substrate. Effect on populations by domestic and industrial outfall from land and shipping; recognition of interference to the environment from land sources and effect on the food pyramid (tropic structure) in which the Foraminifera and other microfossils such as ostracods are close to the base. Quantitative and seasonal study of live bottom populations measures varying productivity and provides a base for calculation of sedimentation rates.

643. McNEIL, D.H., Geol. Surv. Can.:
Mesozoic and Cenozoic Foraminifera of the Arctic western mainland of Canada, 1978-.

See:
Geology and biostratigraphy of the Dome Gulf et al. Ukalerk C-50 well, Beaufort Sea; Geol. Surv. Can., Paper 80-32, 1982.

644. MATTHEWS, J.V., Jr., Geol. Surv. Can.:
Late Cenozoic fossil insects and Late Cenozoic paleoecology, 1973-.

645. NARBONNE, G.M., HOFMANN, H.J., Univ. Montréal (Géologie):
Trace fossiles de l'ordovicien et du silurien de l'île d'Anticosti, Québec, 1981-.

646. NOBLE, J.P.A., Univ. New Brunswick (Geology):
Analysis of sedimentary basins in the Appalachian-Caledonian Orogen, 1979-86.

During the summer of 1981 more stratigraphic sections in New Brunswick and Gaspé were measured and sampled. The preliminary, taxonomy of the tabulate corals of the Silurian of New Brunswick and Gaspé has been completed and 13 species established, described and illustrated. Work is continuing on their paleoecology and biostratigraphy. An honours thesis (G. Young) on this topic was supervised to completion. Large collections of stromatoporoids were made from the West Point Reef Complex in Gaspé (C. Pope, M.Sc. student) and work is progressing on their taxonomy and paleoecology. Preliminary collections were made of corals and stromatoporoids from the Silurian of Wales and Gotland for eventual comparison with the Appalachian region.

647. NOBLE, J.P.A., LOGAN, A., Univ. New Brunswick (Geology):
Ecology of Recent brachiopods, 1974-82.

See:
Size-frequency distributions and taphonomy of brachiopods: a recent model; Palaeogeog., Palaeoclimat., Palaeoecol., vol. 36, no. 1/2, p. 87-106, 1984.

Comparitive studies of life and associated death assemblages of the North Atlantic brachiopod **Terebratulina septentrionalis** shed considerable light on the processes of fossilization of brachiopod populations. Comparison of size frequency distributions, growth curves, morphologic variation and other parameters in the natural environment and in experimentally controlled sea-water tanks allow the assessment of factors of population dynamics in producing fossil populations, and the separation of these factors from taphonomic factors. Patterns of recruitment appear more important than patterns of mortality and both appear more important than taphonomic factors in controlling the age-structure and other aspects of the fossil population.

648. NORRIS, A.W., Geol. Surv. Can.:
Brachiopods of the lower Upper Devonian Waterways Formation of northeastern Alberta, 1977-.

649. NOWLAN, G.S., Geol. Surv. Can.:
Paleozoic conodonts of eastern Canada, 1977-.

See:
Late Ordovician conodonts from the Vauréal Formation, Anticosti Island, Québec; Geol. Surv. Can., Bull. 329, 1981.

Some Ordovician conodont faunules from the Miramichi anticlinoruim, New Brunswick; Geol. Surv. Can., Bull. 345, 1981.

Late Ordovician-Early Silurian conodont biostratigraphy of the Gaspé Peninsula – a preliminary report; IUGS Subcommission on Silurian Stratigraphy, Ordovician-Silurian Boundary Working Group. Field Meeting; Anticosti-Gaspé, Québec, 1981, vol. II, p. 257-292, 1981.

650. ORCHARD, M.J., Geol. Surv. Can.:
Conodont biostratigraphy and biogeography in the Canadian Cordillera, 1981-.

651. PARKINS, W.G., DIXON, O.A., Univ. Ottawa (Geology):
Late Silurian rugose corals of Somerset and Cornwallis Islands, Arctic Canada, 1977-82; Ph.D. thesis (Parkins).

652. PICKERILL, R.K., Univ. New Brunswick (Geology):
Paleontology, ichnology, sedimentology and stratigraphy of selected Lower Paleozoic sequences in eastern Canada, 1976-.

See:
Observations on the Ichnology of the Meguma Group (?Cambro-Ordovician) of Nova Scotia; Maritime Sediments and Atlantic Geology, vol. 17, no. 3, p. 130-138, 1981.

Detailed sedimentological and ichnological studies of selected sequences in eastern Canada-northern Maine are still underway. In particular the extremely diverse flyschoid traces in the Aroostook-Matapedia belt of northern New Brunswick and Gaspé and the neritic Cambro-Ordovician traces of Bell Island, eastern Newfoundland are being studied in detail, particularly taxonomically.

Paleontologically, studies of Cambrian medusoids of the St. John Group of southern New Brunswick (with M. Wade) and Llandovery communities of Arisaig (with J.M. Hurst) are still continuing, as is detailed analysis of the Trenton Group between Québec City and Montréal (with T.L. Harland).

653. PINARD, S., MAMET, B., Univ. Montréal (Géologie):
Foraminifères et algues du Carbonifère inférieur de l'Alaska méridional; thèse de maîtrise (Pinard).

654. POPE, C.S., NOBLE, J.P.A., Univ. New Brunswick (Geology):
The taxonomy and paleoecology of the stromatoporoid fauna of the West Point Formation (Silurian), Gaspe Peninsula, Quebec, 1979-82; M.Sc. thesis (Pope).

The stromatoporoid fauna of the Upper Silurian West Point Formation around Port Daniel, Quebec, has been extensively collected. Taxonomic work and paleoecological analysis is progressing well.

655. RIVA, J.F., Univ. Laval (Géologie):
Ordovician and Early Silurian graptolites, 1968-.

Glytograptus? **persculptus** (Salter), its tectonic deformation and its stratigraphic significance for the Carys Mills Formation of northeastern Maine, U.S.A.; Geol. J., vol. 16, p. 219-235, 1981.

Graptolites from the Matapedia and Honorat groups of Gaspe; IUGS Subcommission for Silurian Stratigraphy, Ordovician-Silurian Boundary Working Group. Field meeting, Anticosti-Gaspé, Québec 1981, vol. II, p. 293-298, 1981.

Graptolites from the Upper Ordovician and Lower Silurian of Anticosti Island and the position of the Ordovician-Silurian boundary; ibid., p. 159-164, 1981.

The true entity and stratigraphic position of **Didymograptus bifidus** (Hall), to be completed by the end of 1982.

The true **Climacograptus normalis** Lapworth from the **G.? persculptus** zone of Britain; about completed.

656. RUDKIN, D.M., Royal Ontario Mus. (Invert. Palaeontology):
Ordovician trilobites of Ontario, 1979-83.

Previous work, concentrating on trilobite faunas of the Verulam (Middle Ordovician) and Georgian Bay (Upper Ordovician) formations, has been expanded to include all trilobite bearing units of the Simcoe and Nottawasaga Groups in southern Ontario. At present the project involves collection of new material for comparison with published faunal lists. Taxonomic revision and description of new or unreported taxa will form the next phase.

657. SHALABY, H., MAMET, B., Univ. Montréal (Géologie):
Microfacies algaires de la plate-forme du Saint-Laurent (Ordovicien moyen); thèse de doctorat (Shalaby).

658. STEARN, C.W., McGill Univ. (Geological Sciences):
Stromatoporoids from the Blue Fiord and Stuart Bay Formations (Early Devonian), Ellesmere and Bathurst Islands, Arctic Canada, 1978-84.

659. STORCK, P., von BITTER, P.H., Royal Ontario Mus. (New World Archaeology, Invert. Palaeontology):
Micropalaeontology and source bed analysis of cherts used by Palaeo-Indians of Ontario, 1978-82.

See:
The search changes direction: Ice age man in Ontario; Royal Ontario Museum, Rotunda, vol. 14, no. 3, p. 28-36, 1981.

660. TOZER, E.T., Geol. Surv. Can.:
Canadian Triassic Ammonoidea and Bivalvia, 1967-.

See:
Late Triassic (Upper Norian) and earliest Jurassic (Hettangian) rocks and ammonoid faunas, Halfway River and Pine Pass map areas, British Columbia; Geol. Surv. Can., Ppaer 82-1A, p. 385-391, 1982.

661. UYENO, T.T., Geol. Surv. Can.:
Conodont biostratigraphy of Siluro-Devonian rocks of the Arctic Islands, 1968-.

662. von BITTER, P.H., Royal Ontario Mus. (Invert. Palaeontology):
Palaeoecology and biostratigraphy of Lower Carboniferous (Windsor Group) conodonts, Atlantic Provinces, Canada, 1971-.

See:
Conodont biostratigraphy of the Codroy Group (Lower Carboniferous), southwestern Newfoundland, Canada; Can. J. Earth Sci., vol. 19, no. 1, p. 193-221, 1982.

663. von BITTER, P.H., AUSTIN, R.L., WEST, I., Royal Ontario Mus. (Invert. Palaeontology), Univ. Southampton (Geology):
Microfaunal correlation using conodonts between the Dinantian of Atlantic Canada, England and Ireland, 1981-83.

664. von BITTER, P.H., MERRILL, G.K., Royal Ontario Mus., (Invert. Palaeontology), College of Charleston (Geology):
Conodont distributions in the Pennsylvanian of North America – their taxonomic and palaeoecologic implications, 1968-.

665. von BITTER, P.H., PLINT-GEBERL, H.A., Royal Ontario Mus. (Invert. Palaeontology):
Conodont biostratigraphy of the Codroy Group (Lower Carboniferous), southwestern Newfoundland, Canada, 1973-82.

Four stratigraphically successive conodont assemblage zones have been recognized in the Lower Carboniferous Codroy Group of southwestern Newfoundland. The **Diplognathodus** Zone is confined to the basal Ship Cove Limestone, and to a highly fossiliferous correlative at Aguathuna. The overlying **Taphrognathus** Zone occurs in carbonates in the stratigraphic interval above the sequence of massive sulphates and thick clastics. The **Taphrognathus** Zone, as well as the successive **Cavusgnathus** Zone, has been recognized on Fischells Brook, as well as in the complex section south of Codroy. The highest conodont zone, the **Gnathodus** Zone, has been recognized in the Crabbes-Jeffreys Limestone of the St. George's Bay area, and from south of Codroy.

The discovery of conodonts of the **Diplognathodus** Zone in marine strata that are stratigraphic and lithologic correlatives of the Macumber and the Gays River Formations of Nova Scotia now makes it possible to microfaunally characterize the A Subzone, a macrofaunal subzone established in the Windsor Group of Nova Scotia.

The **Taphrognathus** and **Cavusgnathus** Zones of the Codroy Group of Newfoundland correlate with the lower and the upper B Subzone of the Lower Windsor Group of Nova Scotia, respectively. The **Gnathodus** Zone correlates with the C, D, and E Subzones of the Upper Windsor Group of Nova Scotia.

666. WAGNER, F.J.E., Geol. Surv. Can.:
Regional distribution of marine Mollusca (Gastropods and Pelecypoda) in eastern Canada, 1980-.

See:
Foraminifera and Mollusca in surface sediments of the southeastern Labrador Shelf and Lake Melville, Canada; Geol. Soc. Am. Bull., vol. 92, no. 3, p. 225-238, 1982.

667. WALL, J.H., Geol. Surv. Can.:
Triassic Foraminifera of the Sverdurp Basin, District of Franklin, 1979-.

668. WIGHTON, D.C., WILSON, M.V.H., Univ. Alberta (Zoology):
Fossil insects from the Paleogene of western Canada, 1975-.

See:
Paleocene orthopteroids from south-central Alberta, Canada; Can. J. Earth Sci., vol. 18, p. 1824-1837, 1981.

VERTEBRATE/VERTÉBRÉS

669. CARROLL, R.L., McGill Univ. (Redpath Mus.):
Origin and early radiation of lizards, 1978-82.

See:
A bipedal lizardlike reptile from the Karroo; J. Paleont., vol. 56, no. 1, p. 1-10, 1982.

A short limbed lizard from the **Lystrosaurus** zone (Lower Triassic) of South Africa; ibid., p. 183-190, 1982.

Currently, all early lizards are being studied in order to establish what key features differentiate them from eosuchians, and what other features differentiate the advanced squamates groups from the eolacertilians. This work will be presented in December 1982 at a symposium on the evolution and classification of lizards, being arranged by the Association of Systematic Zoology.

670. CARROLL, R.L., McGill Univ. (Redpath Mus.):
Evolution of primitive reptiles, 1980-82.

See:
Evolution of primitive reptiles; Ann. Rev. Ecol. Syst., vol. 13, 1982.

Review of the skeletal anatomy of all groups of primitive reptiles (captorhinomorphs and their immediate descendants). Analysis of the basis adaptation of ancestral amniotes, and the early members of each derived group. Cladistic analysis of these groups was attempted in an effort to establish a hierarcy based on nested synapomorphies. This methodology did not prove successful because of the small number of synapomorphies, and the non-congruence of apomorphies. It was concluded that most of the principles of Hennigian or cladistic systematics were not appropriate to the classification of groups undergoing divergent adaptation.

671. CARROLL, R.L., CURRIE, P.J., McGill Univ. (Redpath Mus.), Drumheller Pal. Mus.:
Primary radiation of diapsid reptiles, 1978-84.

Work recently published, or nearing completion, establishes the skeletal anatomy of a large number of primitive diapsid reptiles. These specimens should contribute substantially to determining the origin and relationships of the advanced diapsid groups, represented in the modern fauna by crocodiles, lizards, snakes and sphenodontids. This material provides a basis for evaluating the efficacy of certain aspects of Cladistic systematics, especially the concept of the stem group, recently elaborated by Hennig (English translation, 1981). Work includes character analysis of early members of all major diapsid groups, determination of polarity of character states and establishment of criteria for recognizing members of stem groups.

672. CARROLL, R.L., GASKILL, P., McGill Univ. (Redpath Mus.):
Origins of notosaurs and plesiosaurs and the probable modes of their aquatic locomotion, 1976-85.

See:
Plesiosaur ancestors from the Upper Permian of Madagascar; Phil. Trans. Roy. Soc. B., vol. 293, p. 315-383, 1981.

Currently, illustrations of several complete skeletons of a previously undescribed nothosaur in the collection of the Paleontological Institute, University of Zurich are being prepared. This material will provide a basis for a three dimensional reconstruction of a nothosaur skeleton which can serve as a pattern for restoration of the appendicular musculature and analysis of locomotor patterns. On this basis, it may be possible to determine the course of evolution between aquatic eosuchians and early nothosaurs. It is hoped that it will also serve as a model for evaluating the origin of the swimming pattern in early plesiosaurs and provide some clues to the origin of that group.

673. CARROLL, R.L., WILD, R., McGill Univ. (Redpath Mus.), State Mus., Stuttgart:
Description of the earliest known pleurosaur (Sphenodontida), 1981-83.

Illustration, reconstruction and description of two nearly complete skeletons is now underway. These should establish the taxonomic affinities of the previously described Upper Jurassic pleurosaurs with other members of the Sphenodontida. This material may also contribute to our understanding of the origin of the order Sphenodontida, and the question of the possible relationships with either squamates or rhynchosaurs.

674. CURRIE, P.J., CARROLL, R.L., Drumheller Pal. Mus. McGill Univ. (Redpath Mus.):
The pattern of growth in the eosuchian reptile **Thadeosaurus**, 1980-82.

Description of fully grown individuals of **Thadeosaurus** has been published separately (Carroll, R.L., Plesiosaur ancestors from the Upper Permian of Madagascar; Phil. Trans. Roy. Soc. B, vol. 293, p. 315-383, 1981). The current study is based on a series of specimens showing a nearly four fold increase in linear dimensions, from animals judged to be less than a year old to fully ossified adults. Description and mathematical analysis has been completed, and provides a basis for comparison of both juveniles and adults of other early reptiles. Considerably broader evolutionary potential can be seen if all ontogenetic stages are available for study.

675. DINELEY, D.L., LOEFFLER, E.J., BERNACZEK, G.M., Univ. Bristol (Geology):
Studies on the Silurian/Devonian fossil fishes of the Delorme and associated formations of the District of Mackenzie, N.W.T., Canada, 1971-.

A revision of the genus **Sigurdia** with a redescription of the Delorme thelodonts, with special attention to denticle variation in articulated specimens.

676. DINELEY, D.L., LOEFFLER, E.J., ELLIOTT, D.K., Univ. Bristol. (Geology):
Studies on the Silurian and Devonian fossil fishes (Ostracoderms) of Somerset Island, Prince of Wales Island and Boothia Peninsula, Arctic Canada, 1973-.

Revision of the Traquairaspididae (Agnath, Heterostraci) based on material from the Canadian Arctic Islands, Northwest Territories (Mainland) and Britain. Description of Late Silurian Agnathans from Boothia Peninsula.

677. EDMUND, A.G., Royal Ontario Mus. (Vert. Palaeontol.):
Tertiary and Quaternary radiation of the giant armadillos (Pampatheriidae: Mammalia) in South America, 1964-85.

See:
The fossil giant armadillos of North America (Pampatheriinae, Xenarthra = Edentata); in The Evolution and Ecology of Sloths, Anteaters and Armadillos (Mammalia, Xenarthra = Edentata), Smithsonian Instit. Press, 1982.

NSERC funds permitted a three month trip during September to November 1981 to all major paleontological collections in South America. All described and type specimens were examined and recorded. A large volume of undescribed material revealed the presence of several new taxa which will radically alter the currently accepted phylogenies. Several existing taxa, erected without reference to established type specimens will be synonymized, and new species described. Very few specimens were found with osteoderms (scutes) associated with dentition or postcranial elements, so that most descriptions will be based on scute ornamentation. Recognition of hitherto unrecognized or unpublished material will change our knowledge of temporal and geographic distribution. Analysis of this mass of data will result in a phylogenetic revision of the family Pampatheriidae.

678. EDMUND, A.G., Royal Ontario Mus. (Vert. Palaeontol.):
Osteology, taxonomy and distribution of the giant ground sloths of the genus **Eremotherium** (Xenarthra, Mammalia), 1964-85.

Preparation and conservation of the specimens from Daytona Beach continues, with emphasis on the restoration of all available skull and front foot material. Examination of **Eremotherium** specimens in Brazil and Venezuela suggests that they may belong to the same taxon as the common species from the Pleistocene of Georgia, Florida, Texas and Central America – i.e. **E. mirabile.** A short preliminary description of this material is planned for the near future, although a detailed monograph must await completion of the pampathere study.

679. EDMUND, A.G., Royal Ontario Mus. (Vert. Palaeontol.):
Osteology and functional morphology of the Pleistocene giannt armadillo **Holmesina septentrionalis** (Pampatheriidae, Xenarthra, Mammalia), 1965-83.

Following the field work in South America, work has resumed on the monograph on **Holmesina.** This is particularly important, since it is now realized that the North American, late Pleistocene, species is represented by the best preserved material so far collected. The only comparable collection is that from the caverns of Lago Santa, Brazil, now in Copenhagen, Denmark. The latter material will be described as part of the revision of the family now under way.

680. EDMUND, A.G., Royal Ontario Mus. (Vert. Palaeontol.):
Evolution of a single phyletic line of giant armadillos (Pampatheriidae, Mammalia) in Florida during the Pleistocene, 1975-82.

Work continues on the manuscript and illustrations for the paper showing the evolution of the late Pleistocene form, **Holmesina septentrionalis** from a Blancan (Hemphillian, Pliocene) form described by Robertson (1976) as **Kraglievichia floridanus.** This determination was based on improperly identified material. A survey of South American collections showed conclusively that **Kraglievichia** is confined to the general area of northeastern Argentina, and that it bears no relationship to the material from Colombia which may in fact be ancestral to **Holmesina.** This new information does not alter the unusually clear picture of the evolution of **Holmesina** during the entire extent of the Pleistocene, and a well-documented manuscript is expected to be submitted for publication in 1982.

681. EDMUND, A.G., Royal Ontario Mus. (Vert. Palaeontol.):
New species of giant amadillos (Pampatheriidae, Edentata) from the Late Pleistocene of Texas and Mexico, 1977-84.

As a result of the examination of large series of pampathere specimens in South America, it became obvious that the current nomenclature of the pampatheres was on a shaky footing. The giant armadillo scutes from the state of Peubla, Mexico, belong to a lineage which can be traced to the Miocene of Argentina, characterized by almost complete lack of ornamentation. Because of the importance of this new taxon from Mexico, it will be described and identified with relation to the appropriate South American lineage. The name **Plaina** originally assigned to the Mexican specimens may or may not be valid.

682. EDMUND, A.G., Univ. Toronto (Geology):
Study of deposits containing Pleistocene vertebrates in Charlotte and Sarasota Counties, Florida, 1978-.

Assemblages of fossil vertebrates of terrestrial origin, usually interbedded with layers of often fossiliferous marine sediments, have been uncovered during construction work in numerous localities. Analysis of the mammal faunas indicates ages from Blancan (Hemphillian, late Pliocene) to Subrecent. In recent years, and with the assistance of several field associates, systematic collecting and identification of the terrestrial and intercalated marine faunas has produced a composite stratigraphic section. Lateral variations are rapid, reflecting changes in sea level during the Pleistocene, and the deposition of land mammals in ancient channels and possibly flood plains, estuaries, etc. Continued field work, including detailed mapping, screening for microvertebrates, and identification of specimens from numerous localities should provide a history of changing faunas and environments over a period of three million years.

683. GODFREY, S.J., CARROLL, R.L., McGill Univ. (Biology):
The postcranial skeletal anatomy of **Greererpeton burkemorani,** a temnospondyl amphibian, Lower Carboniferous, 1981-85; Ph.D. thesis (Godfrey).

The postcranial skeletal anatomy of **Greererpeton burkemorani** is to be described on the basis of several superb specimens on loan from the Cleveland Museum of Natural History. This Mississippian temnospondyl labyrinthodont is one of the oldest known North American amphibians, and thus is of immense importance to the history and pattern of vertebrate evolution.

684. HARINGTON, C.R., FITZGERALD, G.R., National Museum of Natural Sciences (Paleobiology Div.):
Quaternary vertebrates of Canada; Quaternary vertebrates of Yukon Territory (1966); Quaternary vertebrates of the Champlain Sea; Climatic change in Canada during the Quaternary, 1965-.

See:
Pleistocene saiga antelopes in North America and their paleoenvironmental implications; Quaternary paleoclimate, Geol. Abstracts Ltd., Norwich, England, p. 193-225, 1981.

Pleistocene fishes (**Coregonus, Osmerus, Microgadus, Gasterosteus**) from Green Creek, Ontario, Canada; Can. J. Earth Sci., vol. 18, no. 8, p. 1356-1364, 1981.

Upper Pleistocene stratigraphy, paleoecology, and archaeology of the Northern Yukon Interior, eastern Beringia 1. Bonnet Plume Basin; Arctic, vol. 34, no. 4, p. 329-365, 1981.

685. HOLMES, R.B., CARROLL, R.L., McGill Univ. (Biology, Redpath Mus.):
Proterogyrinus, scheelei and the early evolution of tetrapods, 1975-82; Ph.D. thesis (Holmes).

Proterogyrinus, from the Mississippian of West Virginia, is one of the earliest and most primitive member of an extinct amphibian order, the Anthracosauria. Several well preserved skeletons provide sufficient information to do a complete restoration of the shalestone. Although the order has been proposed as being ancestral to reptiles, the anatomy of **Proterogyrinus** indicates that anthracosaurs are not ancestral (or even particularly closely related) to reptiles. Many of the shared characters thought to indicate relationship are probably either convergent or primitive, and are therefore not reliable indicators of affinity. Although the anthracosaurs have been thought of as aquatic organisms, the structure of the pectoral limb of **Proterogyrinus** indicates that it would not have functional efficiently in the water. A study of vertebral structure shows that the mechanics of the spine of Paleozoic tetrapods is much more complex than had previously been thought.

686. McDONALD, H.G., EDMUND, A.G., Univ. Toronto (Geology), Royal Ontario Mus. (Vert. Palaeontol.):
A description of **Scelidodon** from the Pleistocene tar seeps of Ecuador and Peru, and review of the selidotheres (Mylodontidae, Mammalia), 1978-84; Ph.D. thesis (McDonald).

Collections made by A.G. Edmund of the Royal Ontario Museum in tar seeps in Ecuador and Peru in 1958 and 1961 included a large number of skeletal elements of the ground sloth, **Scelidodon.** Numerous species of **Scelidodon** have been described from northwestern South America and the genus is in need of revision. Many species have been based on inadequate material or minor differences with little consideration of the range of variability. The large samples from Peru and Ecuador will permit the determination of morphometric parameters which can be used to distinguish the various species along with anatomical differences. The late Pleistocene **Scelidodon** from Peru and Ecuador will be compared with the middle Pleistocene **Scelidodon** from Tarija, Bolivia, for the purpose of establishing evolutionary trends. Comparison with **Scelidotherium** from Argentina will also be made in order to determine the relationship of the two genera. The study is partially funded by a University of Toronto Doctoral Fellowship. Fall 1981 was spent at the Field Museum in Chicago on a Thomas Dee Research Fellowship. During this time the large collection of scelidotheres from Tarija, Bolivia was studied. A few days in February 1982 were spent at the Museum of Comparative Zoology at Harvard University examining some **Scelidotherium leptocephalum** from Argentina.

687. SARJEANT, W.A.S., MOSSMAN, D.J., Univ. Saskatchewan (Geological Sciences):
Vertebrate footprints; classification, palaeoecology, 1972-.

See:
In the footsteps of the dinosaurs. By their tracks you shall know them; Explorer's J., vol. 59, no. 4, p. 164-171, 1981.

A restudy of holotype specimens of Carboniferous footprints from the Canadian Maritimes is in progress, with a view to their redescription and reillustration.

688. SARJEANT, W.A.S., MOSSMAN, D.J., Univ. Saskatchewan (Geological Sciences);
Footprints in the sands of time, 1982.

Review of the status of footprints of early air breathing vertebrates in the fossil record with respect to what is known about the physiology and behaviour of these creatures.

689. SEYMOUR, K.L., EDMUND, A.G., Univ. Toronto (Geology), Royal Ontario Mus. (Vert. Palaeontol.):
The felinae (non-machairadont cats) from the Pleistocene tar seeps of Talara, Peru, 1981-83; M.Sc. thesis (Seymour).

A skull and postcranial material, tentatively referred to **Panthera atrox,** are among the remains of a number of felid species excavated from the Talara tar seeps. This represents the first record of this species from South America. Since the skull is smaller than any of a large sample from the Rancho La Brea tar pits in California, the validity of size as a species criterion is now in question. Consequently, a statistical and morphometric analysis of the modern large felid species will be undertaken to discover underlying allometric relationships as well as diagnostic characters for each species, regardless of size. This study will enable a more conclusive systematic study of all the Talara felids, including a re-evalution of some of the plethora of South American felid names.

690. SKWARAWOOLF, T., KUPSCH, W.O., Univ. Sasktachewan (Geological Sciencews):
Paleontology and paleoecology of Miocene deposits from Cypress Hills, Saskatchewan, 1980-83; Ph.D. thesis (SkwaraWoolf).

The study involves the continued systematic classification of the faunal elements and the morphological description of texa. Biogeographical analysis is being simultaneously incorporated, along with paleoecological interpretations. Biostratigraphical analysis awaits the completion of the more descriptive work.

691. STORER, J.E., Saskatchewan Museum Nat. Hist.:
Oligocene mammals of the Cypress Hills Formation (Chadronian) of Saskatchewan, 1978-.

See:
The hornless protoceratid **Pseudoprotoceras** (Tylopoda: Artiodactyla) in the early Oligocene of Saskatchewan and Wyoming; J. Vert. Paleontol., vol. 1, no. 1, p. 101-110, 1981.

Study of other mammalian groups is continuing. Work on other Oligocene local faunas from the Cypress Hills Formation will centre on the biostratigraphy of the deposits.

692. STORER, J.E., Saskatchewan Museum Nat. Hist.:
Eocene mammals of the Cypress Hills Formation (Uintan), Swift Current region, Saskatchewan, 1980-83.

Continuing work concerns identification, description, and biostratigraphic correlation of Eocene local faunas.

693. STORER, J.E., MADDEN, C.T., Saskatchewan Museum Nat. Hist., U. Colorado Museum:
Proboscidea of the Wood Mountain Formation (Barstovian) of southern Saskatchewan, 1981-82.

Collection of a well-preserved palaeomastodontid specimen in 1981 necessitates review of all proboscidean specimens from the Wood Mountain Formation. Work will concentrate on identification and description of the fossils.

694. WELLSTEAD, C.F., Univ. Nebraska (Geology), McGill Univ. (Redpath Mus.):
Taxonomic re-assignment of the Miocene lizard **Peltosaurus minimus** from Nebraska, 1976-82.

A lizard frontal bone from the Miocene Valentine Formation of Nebraska incorrectly assigned to the anguid species **Peltosaurus minimus** is re-assigned to the genus **Eumeces.** Because no species diagnostic characters have been identified in the frontal bone of **Eumeces,** the new combination, **Eumeces minimus** is not diagnosable and is a nomen dubium.

695. WELLSTEAD, C.F., Univ. Nebraska (Geology), McGill Univ. (Redpath Mus.):
Lizards from the Lower Valentine Formation (Miocene) of north-central Nebraska, 1976-82.

696. WELLSTEAD, C.F., McGill Univ. (Biology, Redpath Mus.):
Taxonomic revision of the extinct amphibian families Lysorophidae and Molgophidae, 1977-82.

See:
A Lower Carboniferous aistopod amphibean from Scotland; Palaeontology, vol. 25, pt. 1, p. 193-208, 1982.

697. WILSON, M.V.H., Univ. Alberta (Zoology):
Eocene fossil fishes of western North America, 1975-.

See:
A new species of the fish **Amia** from the Middle Eocene of British Columbia; Palaeontology, vol. 25, pt. 2, p. 413-424, 1982.

Eocene freshwater fishes from the Coalmont Formation, Colorado; J. Paleontol., vol. 55, no. 3, p. 671-674, 1981.

698. WILSON, M.V.H., Univ. Alberta (Zoology):
Eocene lake environments: depth and distance from shore variation in fish, insect, and plant assemblages, 1975-.

699. WILSON, M.V.H., Univ. Alberta (Zoology):
Paleocene freshwater fishes of western Canada, 1978-.

PALEOBOTANY/PALYNOLOGY/ PALÉOBOTANIQUE ET ANALYSE POLLINIQUE

700. ABELL, P., NISBET, E.G., MARTIN, A., Univ. Rhode Island (Chemistry), Univ. Saskatchewan (Geological Sciences), Univ. Zimbabwe:
Stable isotope study of Archaean stromatolites, 1980-83.

See:
In the beginning; Nature 289, nos. 11-12, 1981.

Stable isotope study of Archaean stromatolites from Cheshire and Manjeri formations, Belingwe belt, Zimbabwe, and from Mushandike area, Zimbabwe. Parallel study of sedimentology and petrography of stromatolites and associated strata.

701. ACHAB, A., INRS-Géoressources:
Chitinozoaires de l'Ordovicien inférieur et moyen du Québec, 1979-.

Les principaux assemblages de chitinozoaires de la Formation de Lévis ont été reconnus. La succession des différents assemblages est mise en relation avec la zonation établie à l'aide des graptolites.

702. ACHAB, A., INRS-Géoressources:
Biostratigraphie par les chitinozoaires de l'Ordovicien supérieur, Silurien inférieur de l'île Anticosti, 1980-82.

Voir:
Biostratigraphie par les chitinozoaires de l'Ordovicien supérieur, Silurien inférieur de l'île Anticosti (résultats préliminaires); IUGS Subcommission on Silurian Stratigraphy, Ordovician-Silurian Boundary Working Group. Field Meeting, Anticosti-Gaspé, Québec 1981, vol. II, p. 143-157, 1981.

Contribution de l'étude des chitinozoaires à la définition de la limite entre l'Ordovicien et le Silurien à Anticosti. Reconnaissance des principales associations caractéristiques des formations siluriennes. Comparision avec les données fournies par d'autres groupes de fossiles.

703. BARSS, M.S., Geol. Surv. Can.:
Palynological zonation of the Carboniferous and Permian rocks of Atlantic Provinces, Gulf of St. Lawrence and northern Canada, 1968-.

704. BASINGER, J.F., Univ. Saskatchewan (Geological Sciences):
Fossil plants from the Eocene basins of British Columbia, 1974-.

See:
The vegetative body of **Metasequoia milleri** from the Middle Eocene of southern British Columbia; Can. J. Bot., vol. 59, p. 2379-2410, 1981.

Small, Eocene sedimentary basins are scattered throughout the Interior of British Columbia. These rocks are exceptionally rich in fossil plants. Of particular interest has been the Princeton chert locality, south of Princeton, British Columbia, which has been the source of exquisitely preserved petrified plants. The locality represents an ancient marsh; the fossils occur within silicified peats or soils of the marsh. **Pinus, Metasequoia,** a sabaloid palm, several species of ferns, **Paleorosa** (the earliest known rosaceous flowers), **Eorhiza** (a semi-aquatic dicot), and remains of numerous unidentified flowering plants have been described or reported during the course of this and two earlier studies. Continuing work involves interpretation of undescribed plant remains. The many compression fossil localities reveal a great diversity of plants and plant communities. Continuing studies of these fossils from central British Columbia will contribute to our understanding, which is presently limited, of the Eocene floras of the Canadian interior.

705. BASINGER, J.F., CHRISTOPHEL, D.C., Univ. Saskatchewan (Geological Sciences):
Fossil flowers and leaves of the Ebenaceae from the Eocene of Australia, 1980-82.

Over 100 fossil flowers have been recovered from Upper Eocene sediments exposed at the Anglesea coal mine of Victoria, Australia. The flowers are less than 1 cm in length and are unisexual, male and tetramerous. Petals are fused for 1/3 of their length to form a somewhat tubular corolla. Stamens number 16 and are arranged in pairs. The combination of features in the fossil flowers is unique to the Ebenaceae, the persimmon and ebony family. Leaves at the same fossil locality share distinctive cuticular features with the sepals of the flowers; both were doubtless borne by plants of the same species. Cuticular features of the fossils compares favorably with living Ebenaceae. Cretaeous and Tertiary plant remains have commonly been referred to the Ebenaceae. However, in most cases features available are entirely inadequate for such identification. The Anglesea fossils can be assigned to the Ebenaceae with confidence and are the earliest known remains of the family in Australia.

706. BASINGER, J.F., DILCHER, D.L., Univ. Saskatchewan (Geological Sciences):
Cenomanian bisexual flowers from the Dakota Formation of Kansas and Nebraska, 1979-82.

Cenomanian age deposits of Nebraska and Kansas have yielded the earliest known bisexual flowers. These fossil flowers are about 3 cm in diameter and have clearly differentiated petals and sepals, stamens with terete filaments and large, tetralocular anthers, and a syncarpous gynoecium composed of five carpels. The flowers are entirely pentamerous. Similar flowers are found among the Saxifragales. However, features found in the fossil flowers indicate that relationships could conceivably lay with any of a number of extant orders of plants representing three major sub-classes of flowering plants. The Cenomanian flowers reveal that many features formerly held to be advanced are in reality very ancient. The antiquity of this type of flower indicates that many current concepts of angiosperm evolution and of the "primitive" floral plan need serious reevaluation.

707. BUJAK, J.R., Geol. Surv. Can.:
Biostratigraphy and paleoecology (palynology) of Mesozoic and Cenozoic of the Atlantic Shelf, 1976-

708. BUJAK, J.R., Geol. Surv. Can.:
D.S.D.P. dinoflagellates, 1981-.

Establish a dinoflagellate zonation scheme for the Upper Cretaceous-Cenozoic of the Atlantic. Describe new taxonomy where relevant. Correlate and date this scheme relative to the standard plankton microfossil zonations and Circum-Atlantic onshore stratotypes. Determine stratigraphic-regional distribution of taxa and paleo-environmental/altitude significance of these distributions relative to the history of the Atlantic and related areas.

709. DAVIES, E.H., Geol. Surv. Can.:
Mesozoic-Cenozoic palynostratigraphy, Atlantic Offshore, 1981-.

Utilization and development of the palynological zonation for the Mesozoic-Cenozoic of offshore eastern Canada, and comparison with other North Atlantic regions and the Arctic. Undertake detailed studies of dinoflagellate and miospore taxonomy and phylogenetic relationships. Initiate ecologic studies of modern dinoflagellates and continue palaeocologic studies of fossil forms.

710. DAVIES, E.H., Geol. Surv. Can.:
Origin and evolution of dinoflagellates, 1981-.

711. DONALDSON, J.A., HORODYSKI, R.J., KERANS, C., ZHANG, X.Y., Carleton Univ. (Geology), Tulane Univ., Chengdu Res. Instit.:
Stromatolites and microfossils of the Dismal Lakes Group, Northwest Territories, 1977-84.

See:
Interbasinal correlation of a Middle Proterozoic stromatolite biostrome, Coppermine and Bathurst Inlet areas, northwestern Canadian Shield; in: Development and Interactions of Precambrian Lithosphere, Biosphere and Atmosphere; International Geological Correlation Program, Inst. Geol. Univ. Nac. Aut. Mexico, p. 12, 1982.

Microfossil assemblages in cherts from laterally equivalent stratigraphic units of the Dismal Lakes Group have been compared with previously identified assemblages. A paper presenting evidence for origin of the fossiliferous cherts in intertidal environments (at least some of which were hypersaline) has been submitted for publication.

712. EDLUND, S.A., Geol. Surv. Can.:
Vegetation distribution and relationships to surficial materials, Arctic Canada, 1976-.

713. ELEY, B.E., VON BITTER, P.H., Royal Ontario Museum (Invert. Palaeontology):
The stratigraphic, petrographic and palynologic characteristics of chert as utilized by southern Ontario's early inhabitants, 1980-83.

Petrographic, palynologic and stratigraphic methods can be used to "fingerprint" or characterize chert, the lithic raw material commonly used by the prehistoric peoples of southern Ontario. This characterization permits the identification of chert types from both archaeological and geological sites and permits valuable archaeological inferences to be made.

714. FASOLA, A., NORRIS, G., Univ. Toronto (Geology):
Palynological study of five Lower Cretaceous sections on Ellesmere and Axel Heiberg islands, Arctic Canada, 1981-82.

Abundant terrestrial and marine palynological assemblages from five stratigraphic sections from the Ellesmere and Axel Heiberg islands have been palynologically analyzed. Two of the sections – Roll Lake and Chapman Glacier – are more complete and have been studied in detail; they contain microplankton assemblages in the lower, middle and upper parts which suggest Hauterivian, Barremian and Aptian episodes of marine transgressions in the area.

715. FENSOME, R.A., NORRIS, G., Univ. Toronto (Geology):
Taxonomy and biostratigraphy of Cretaceous (Aptian-Cenomanian) dinoflagellates, Scotian Shelf, Offshore Eastern Canada, 1981-83.

Dinoflagellate assemblages from Cretaceous (Aptian to Albian) deposits in the Mississauga, Triumph, and Wyandot wells of the Scotian Shelf, offshore eastern Canada are being examined. The principal aims of this study are to refine both the biostratigraphic zonation based on dinoflagellate flroas for Aptian-Albian strata of the Scotian Shelf and the taxonomy of certain groups of fossils dinoflagellates (e.g. the Pseudoceratiaceae).

716. HOPKINS, W.S., Jr., Geol. Surv. Can.:
Mesozoic and Tertiary continental microflora from Northwest Territories, Yukon Territory, British Columbia, Alberta, 1979-.

717. KRAMER, C.L., NORRIS, G., Univ. Toronto (Geology):
Palynology of the Upper Cretaceous-Paleogene Eureka Sound Formation, Axel Heiberg and Ellesmere Islands, Arctic Canada, 1980-83; M.Sc. thesis (Kramer).

A 3200 metre section of the uppermost Cretaceous-lower Paleogene Eureka Sound Formation near Strand Fiord, Axel Heiberg Island, N.W.T., was sampled and is being investigated for plant microfossils to establish a detailed palynostratigraphic zonation. Upper Cretaceous Paleocene, and Eocene floras have been identified. The identifications of the taxa present are now being refined. When identification has been made, the Strand Fiord section will be compared and correlated with assemblages and zonations from the Tertiary of the Beaufort-Mackenzie Basin and similar age assemblages elsewhere. The paleoecologic and paleoclimatic implications of the assemblages will also be investigated.

718. LICHTI-FEDEROVICH, S., Geol. Surv. Can.:
Diatom analysis and paleoecological studies of Quaternary sediments, 1972-.

719. McGREGOR, D.C., Geol. Surv. Can.:
Silurian and Devonian spores of Canada, 1975-.

720. MOTT, R.J., Geol. Surv. Can.:
Quaternary palnology, 1969-.

See:
Palynological study of slough sediments from central Saskatchewan; Geol. Surv. Can., Paper 81-1B, p. 133-136, 1981.

721. OGDEN, J.G., MUDIE, P.J., Dalhousie Univ. (Biology):
Late Quaternary vegetation and climate of the Parrsboro region, Nova Scotia, 1979-82.

Preliminary pollen profiles for Leak Lake, Nova Scotia are compared with those for Folly Bog, Nova Scotia. The Lake data show that a preliminary Dalhousie C-14 date of ca. 9500 y BP for a depth of 5 m was far too young an estimate but the pollen data are entirely compatible with a radiocarbon date of 12900 ± 160 y BP which was subsequently obtained from the GSC. The pollen assemblage for this organic-rich basal sediment overlying red sandy-silty drift unquestionably establishes the presence of subarctic woodland at this site by ca 13000 y BP and confirms the rapid development of spruce parkland in the Southern Cobequid region by ca 10000 y BP. The abundance of freshwater dinoflagellate cyst taxa and colonial algae at the base of the core verify that it was above the marine limit at the time of its formation. Lithostratigraphy of available cores is shown. Pollen samples have been prepared and counted from several sections and cores DR-3 and L-5 are in process. In general, these highly convincing sources of evidence for a forested, ice-free "refugium" in Nova Scotia make it highly desirable to carry out further studies in this region to confirm the hypothetical Late Wisconsinan ice limits proposed by Grant (1977) for ice-free areas south of the Cobequid divide.

722. SARJEANT, W.A.S., Univ. Saskatchewan (Geological Sciences):
Bibliography of the history of geology and its subdivisions, 1972-85.

See:
The background to a bibliography: Or, Twenty years' travels among the bookstacks; Univ. Saskatchewan: Notable works and collections, 1981.

Leonard Johnston Wills (1884-1879) Honorary member of the East Midland Geological Society; Mercian Geologist, vol. 8, no. 2, p. 143-146, 1981.

Harold Sarjeant 1906-1980, Honorary member of the Peak District Mines Historical Society; Bull. Peak District Mines Hist. Soc., vol. 8, no. 1, p. 60-63, 1981.

Production of a supplement to my earlier 5-volume 'Geologists and the History of Geology. An International Bibliography, from the Origins to 1978', covering publications on the history of geology in the five years 1979-1983, plus works omitted from, and corrections to that work. Continuing research on Joseph Barclay Pentland, his works on geology and his correspondence, in association with J.E. Kennedy (Physics, University of Saskatchewan) and J.B. Delair (Oxford, England).

723. SARJEANT, W.A.S., WALL, D., WILSON, J.B., Univ. Saskatchewan (Geological Sciences):
Dinoflagellates and acritarchs in the Mesozoic; stratigraphical application in western and Arctic Canada and use in intercontinental correlation, 1972-.

See:
Restudy of some larger dinoflagellate cysts and an acritarch from the Upper Cretaceous of Belgium and Germany; Ann. Soc. Geol. Belg., vol. 104, p. 1-39, 1981.

A restudy of some dinoflagellate cyst holotypes in the University of Kiel collections Pt. II The Eocene holotypes of Barbara Klumpp (1953) with a revision of the genus **Cordosphaeridium** Eisenack 1963; Meyniana, vol. 33, p. 97-132, 1981.

Research includes: 1) continuation of the study of organic-walled microplankton assemblages from the Upper Mesozoic of western Canada and a beginning of the study of calcareous dinoflagellate cysts; 2) renewed investigations of the ecological and palaeoecological significance of dinoflagellate cysts, through study of specimens from modern sediments of the Santa Barbara Basin and Gulf of California, U.S.A.; 3) restudy of type material from European laboratories to enable full redescription in modern terms of species first described more than 25 years ago (this work is already well in hand, but a third visit to Europe is considered necessary before it can be completed); 4) reconsideration of the morphological terminology applied to, and the classification of, dinoflagellate cysts and acritarchs; 5) investigation of the probable affintiy of Palaeozoic acritarchs, applying criteria used in post-Permian sediments for the identification of dinoflagellate cysts and (if possible) developing new approaches; 6) completion of earlier studies of Jurassic-Lower Cretaceous dinoflagellate cyst assemblages from the United Kingdom, France, Algeria and Iran; and 7) commencement of studies of Upper Mesozoic dinoflagellate cyst assemblages from Mexico.

724. SINGH, C., Alberta Research Council (Geol. Surv.):
Cenomanian microfloras of the Peace River district, Alberta, 1969-82.

The systematic descriptions of 200 species of Microspores, Megaspores pollen and microplankton as well as tables showing their distribution in the strata of Cenomanian age in northwest Alberta have been completed. These species have been illustrated in 62 photographic plates. A manuscript for publication as an Alberta Research Council Bulletin is in final stages of preparation.

725. SINGH, C., Alberta Research Council (Geol. Surv.):
Late Cretaceous – Tertiary microfloras, west-central Alberta, 1970-84.

726. SINGH, C., Alberta Research Council (Geol. Surv.):
Palynological study of the coal-bearing Late Cretaceous strata in the Red Deer River Valley, Alberta, 1973-84.

727. SWEET, A.R., Geol. Surv. Can.:
Palynological studies of Mesozoic and Tertiary coal measures in western and northern Canada, 1971-.

728. SWEET, A.R., Geol. Surv. Can.:
Taxonomy and biostratigraphic distribution of Mesozoic and Paleogene megaspores, 1977-.

729. UTTING, J., Geol. Surv. Can.:
Palynology of Carboniferous, Permian and Triassic rocks of northern and western Canada, 1981-.

730. WILLIAMS, G.L., Geol. Surv. Can.:
Classification of dinocysts, 1973-.

731. ZHANZ YUN, HOFMANN, H.J., Univ. Pékin, Univ. Montréal (Géologie):
Caractérisation quantitative de stromatolites.

EXPERIMENTAL/EXPÉRIMENTAL

732. DINGWELL, D.B., SCARFE, C.M., Univ. Alberta (Geology):
Effects of F + Cl on the petrogenesis of granite, 1980-84; Ph.D. thesis (Dingwell)

733. FUJII, T., SCARFE, C.M., Univ. Alberta (Geology):
Effects of pressure on the mobility of ions in silicate melts, 1980-82.

See:
Ca-Sr chemical diffusion in melt of albite at high temperature and pressure; AGU 1981 Spring meeting (Abstract), EOS 62, no. 17, 1981.

734. FUJII, T., SCARFE, C.M., Univ. Alberta (Geology):
Partial melting of mantle peridotites and genesis of basaltic magma, 1981-82.

See:
Partial melting of spinel lherzolite and its bearing on the origin of MORBs; Geol. Soc. Am., Abstracts with programs, 1981, vol. 13, no. 7, p. 456, 1981.

735. HARRIS, D.M., SCARFE, C.M., Univ. Alberta (Geology):
The concentrations of H_2O and other volatiles in igneous rocks and their bearing on physical mechanisms of differentiation, crystallization, and eruption, 1981-83.

See:
Vesiculation and eruption of a subduction zone basalt (abstract); Trans. Am. Geophys. Union, vol. 62, p. 1084, 1981.

736. MacLELLAN, E.H, TREMBATH, L.T., Univ. New Brunswick (Geology):
Crystallization of granite minimum melts, 1977-82; M.Sc. thesis (MacLellan).

Incubation times, growth rates and compositional changes of the crystallizing phases are being determined by a combination of X-ray diffraction and optical methods. We are concentrating on the first stage of crystallization and are making textural comparisons with reaction products from highly undercooled conditions.

737. McPHAIL, D.C., GREENWOOD, H.J., Univ. British Columbia (Geological Sciences):
Stability and phase equilibria of edenite, 1980-82; M.Sc. thesis (McPhail).

Synthesis of edenite progressing. Phase equilibria and stability of edenite and related phases is being derived thermodynamically from estimated and known thermochemical data.

738. SCARFE, C.M., FUJII, T., Univ. Alberta (Geology):
Properties and structure of silicate melts.

739. TREMBATH, L.T., CHERRY, M.E., Univ. New Brunswick (Geology):
Disordering of alkali feldspars: The effect of H_2O on the disordering process, 1979-83.

To unravel the disordering/ordering processes(es) in alkali feldspars by systematically varying pertinent controls of the processes(es).

IGNEOUS/ROCHES IGNÉES

740. BACHINSKI, S.W., BACHINSKI, D.J., Univ. New Brunswick (Geology):
Lamprophyres associated with the Lake George antimony deposit, New Brunswick, 1980-84.

Minette-like lamprophyres are associated with ore-bearing veins and granitic intrusions in southwestern New Brunswick. Drill core intersections and underground and surface exposures of these lamprophyres afford an unparallelled opportunity to document the mineralogical and geochemical characteristics of an individual swarm of geologically old but relatively fresh 'calc-alkaline' lamprophyres. The data base for bulk-rock and mineral major- and trace-element chemistry of such rocks is scanty indeed and their petrogenetic relationship (if any) to continental rifting, granitic plutonism, alkaline magmatism, and the formation of hydrothermal ore deposits is unclear. This study should bring some light to these obscure matters.

741. BACHINSKI, S.W., ROGERS, N.W., HENDERSON, P., PARRY, S.J., Univ. New Brunswick (Geology), Imperial College (Geology and Reactor Centre), British Mus. (Mineralogy):
Trace elements in minettes from the Navajo volcanic field, Arizona: a comparison with kimberlites and other mantle-derived magmas, 1977-82.

Rare-earth and selected trace-element analyses of 15 minettes (mica lamprophryres) from the Navajo volcanic field are presented and compared with similar data from kimberlites and selected basic rocks. Despite a superficial similarity, significant differences exist between the REE abundances of kimberlites and those of minettes and basic rocks. The data suggest that the petrogenesis of minettes is more comparable to that of other basic magmas, minette magma being formed by limited partial melting of garnet lherzolite under volatile-rich conditions. The volatile phase, considered to have been derived from deeper within the mantle, is though to possess a low $CO_2/(CO_2 + H_2O)$ ratio, in contrast to the CO_2-rich vapor phases that control the formation of other basic magmas.

742. BALDWIN, D.A., AYRES, L., Univ. Manitoba (Geology), Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Pyroclastic volcanism in the Rusty Lake Volcanic Belt, Manitoba, 1980-; Ph.D. thesis (Baldwin).

Determination of depositional environment of the Ruttan Mine, Manitoba.

743. BARAGAR, W.R.A., Geol. Surv. Can.:
Stratigraphy and petrology of the Natkusiak Basalts, Victoria Island, District of Franklin, 1975-.

744. BOSTOCK, H.H., Geol. Surv. Can.:
Volcanic rocks of the Appalachian region, 1973-.

See:
Volcanic and plutonic rocks in the Rainy Lake area, Newfoundland; Geol. Surv. Can., Paper 82-1A, p. 17-22, 1982.

745. BREARLEY, M., SCARFE, C.M., Univ. Alberta (Geology):
Petrology and geochemistry of ultramafic xenoliths from alkali basalts in British Columbia, 1981-85; Ph.D. thesis (Brearley).

746. CURRIE, K.L., Geol. Surv. Can.:
Alkaline rocks in Canada, 1968-.

See:
Geology and petrology of the Red Wine alkaline complex, central Labrador; Geol. Surv. Can., Bull. 294, 1981.

747. CURRIE, K.L., Geol. Surv. Can.:
Granite studies in the Appalachians, 1973-.

748. DAVIDSON, A., Geol. Surv. Can.:
Granite studies in the Ennadai-Rankin Inlet region, District of Keewatin, 1966-.

749. DAVIDSON, A., Geol. Surv. Can.:
Granite studies in the Slave Province, District of Mackenzie, 1971-.

750. DRESSLER, B.O., Ontario Geol. Surv.:
The footwall and the sublayer of the Sudbury Irruptive, Ontario, 1979-83.

In 1981 the sublayer and footwall rock between the Sultana Property and the Crean Hill Mine were studied and sampled for petrological and geochemical investigations. Several samples were collected for geochronological studies (Dating will be done by staff of the Royal Ontario Museum, Toronto).

751. EMSLIE, R.F., Geol. Surv. Can.:
Anorthosite study, Newfoundland-Quebec, 1967-.

752. EMSLIE, R.F., Geol. Surv. Can.:
Geology, petrology and economic potential of the anorthosite suite in southern Labrador, 1975-.

753. EMSLIE, R.F., Geol. Surv. Can.:
Petrology, mineralogy, geochemistry and mineral potential of a Helikian non-organic granitic suite in central Labrador and adjacent Quebec, 1979-.

754. FRANCIS, D.M., HYNES, A.J., OLSON, K., LUDDEN, J., McGill Univ. (Geological Sciences):
Evolution and economical potential of the Cape Smith project, northern Québec, 1977-82; M.Sc. thesis (Olson).

See:
Crystal fractionation and partial melting in the petrogenesis of a Proterozoic high-MgO volcanic suite, Ungava, Québec; Contrib. Mineral. Petrol., vol. 78, p. 27-36, 1981.

Komatiite basalts of the Cape Smith fold belt, New Québec, Canada; in: Komatiites, Arndt, N.T. et Nisbet, E.G. (eds.), Allen and Unwin, 1981.

In this, our last field season in Cape Smith, we concentrated on three aspects of the geology; 1) the possible presence of infolded equivalents of the supracrustal rocks in the high grade, hinterland gneisses of the Churchill Province, 2) the stratigraphy of the upper greenschist to amphibolite facies supracrustal rocks at the northern margin of the fold belt, and 3) the nature of the boundary between the Povungnituk and Chukotat volcanics. This latter may record the change from a bi-modal tholeiitic continental environment to an oceanic environment with high-MgO early lavas (Hynes and Francis, 1982; Francis et al., 1981). Detailed mapping by us and regional mapping by Falconbridge indicate that the two volcanic groups are separated by a major east-west fault and may have an allochthonous relationship. Work continuing this winter will focus on the metamorphism across the belt and the details of the melting event(s) and magmatic evolution of the volcanism associated with the development of this Proterozoic rift zone. This work will be essentially complete in late 1982, with the preparation of summary publications.

755. FRANCIS, D.M., HYNES, A.J., ST. SEYMOUR, K., LUDDEN, J., McGill Univ. (Geological Sciences):
Volcanism and tectonics of the James Bay greenstone belts, Quebec, 1981-85.

Our global objective is an understanding of the nature of the Earth in Precambrian time. Our five years of research in the Proterozoic Cape Smith fold belt has shown that it represents a collapsed "ocean" basin exhibiting many features consistent with Phanerozoic plate tectonics. Significant differences are, however, apparent; the early lavas of the basin's formation are komatiitic (> 18 wt% MgO) while calc-alkaline volcanics

and ophiolite peridotites, typical features of Phanerozoic basin closure, are absent. We now want to extend our persepctive back into the Archean by focusing on a greenstone terrain in the Canadian shield.

Our immediate objective is to document the stratigraphy and structure of the three greenstone belts east of James Bay through the detailed mapping of two transects across each belt. This project will culminate in a model for the volcanism and tectonics of these Archean greenstone belts based on the documented stratigraphic, structural, and chemical constraints of the transects. This model will provide important guidelines for the assessment of the mineral potential of the James Bay greenstone province.

756. GÉLINAIS, L., LAJOIE, J., TASSÉ, N., VERPAELST, P., GAUTHIER, N., Univ. Montréal (Géologie):
Origine des roches volcanoclastiques de la ceinture volcanique de l'Abitibi.

757. GÉLINAIS, L., LUDDEN, J., Univ. Montréal (Géologie):
Pétrogénèse des suites volcaniques différenciées de l'archéen de l'Abitibi, Québec.

758. GORDON, T.M., Geol. Surv. Can.:
Petrology and structure of the Daly Bay Complex and environs, District of Keewatin, 1970-.

759. GREENWOOD, H.J., KWONG, J.Y.T., Univ. British Columbia (Geological Sciences):
Afton Copper Mine: mineralogy, geochemistry, and mineral-solution interaction, 1977-81; Ph.D. thesis (Kwong).

A description and interpretation of mineral distributions within and about Afton orebody. High temperature alteration proceeded with low water/rock ratio, with little phyllic or argillic alteration. A thermodynamic reconstruction of the supergene alteration is presented. The dominance of native copper and the lack of copper enrichment in the supergene zone are a result of the mafic wall rocks, the absence of abundant hypogene sulfides, and the presence of magnetite. In the origin and evolution of the Iron Mask Batholith, four main events were: 1) early fractionation at depth, with magnetite separation; 2) transfer of early portions to a subvolcanic environment; 3) local trapping of magmatic fluids, concentrating ore minerals; and 4) supergene alteration in a basic pH regime, stabilizing native copper without significant enrichment.

760. LAJOIE, J., LUDDEN, J., GÉLINAIS, L., Univ. Montréal (Géologie):
Volcanologie des roches archéennes, région de Rouyn-Noranda, Québec.

761. LAMBERT, M.B., Geol. Surv. Can.:
Archean volcanic studies in the Slave-Bear Province, District of Mackenzie, 1973-.

See:
Synvolcanic intrusions in the Cameron River volcanic belt, District of Mackenzie; Geol. Surv. Can., Paper 82-1A, p. 165-167, 1982.

762. LAMBERT, M.B., Geol. Surv. Can.:
Archean felsic volcanic complex near Regan Lake, District of Mackenzie, Northwest Territories, 1974-.

See:
Felsic domes and flank deposits of the Back River volcanic complex, District of Mackenzie; Geol. Surv. Can., Paper 82-1A, p. 159-164, 1982.

763. METCALFE, P., SCARFE, C.M., Univ. Alberta (Geology):
Pre-eruption volatile contents of Recent alkalic magmas and their role in petrogenesis and eruption of alkalic lavas, 1981-84; Ph.D. thesis (Metcalfe).

764. NICHOLLS, J., STOUT, M.Z., Univ. Calgary (Geology and Geophysics):
Petrology of nephelinites, 1979-83.

Rocks are being analyzed by chemical methods and the constituent minerals by electron microprobe. With the data and the methods of chemical thermodynamics, inferences about the conditions of origin can be made. Such conditions include the temperatures and depths in the earth at which the lavas formed and the mechanism of separating the melt from the surrounding solid earth.

765. NICHOLLS, J., STOUT, M.Z., Univ. Calgary (Geology and Geophysics):
Heat effects of assimilation, crystallization and vesiculation in magmas, 1980-82.

Objectives were: 1) to use energy balance to place constraints on hypotheses advocating assimilation and/or crystal fractionation as a mechanism to explain the diversity of igneous rocks; and 2) to examine the heat effects attendant on release of H_2O from magmas.

766. NISBET, E.G., BICKLE, M.J., Univ. Saskatchewan (Geological Sciences), Univ. Cambridge (Earth Sciences), Univ. Zimbabwe:
Study of the Belingwe Greenstone Belt, Zimbabwe, 1974-83.

See:
The evolution of the Rhodesian craton and adjacent Archaean terrain; Precambrian Plate Tectonics, Elsevier, Amsterdam, p. 159-189, 1981.

Komatiite suites in greenstone belts and their modern analogues; Terra Cognita, F.U.G. Spec. issue, A.20, 1981.

Recent work on rocks from the Belingwe Greenstone Belt, Zimbabwe, has concentrated on interpretation of the stratigraphic succession of the belt in the light of extensional models of basin formation. The succession in upper greenstones in the belt fits the model proposed by McKenzie et al. (1980) very well. The lower greenstones are more complex but can also be described in terms of an extensional event. Current research on komatiites from the belt includes an investigation of the implications for the thermal state and structure of the upper mantle in Archaean time.

767. PAKTUNG, A.D., ARMBRUST, G.A., Univ. Ottawa (Geology):
Geochemistry and petrology of the ultramafic rocks of the Thompson Nickel Belt, Manitoba, 1980-83; Ph.D. thesis (Paktung).

To determine the genesis of ultramafic bodies at the Thompson Mine, and their relationship to other mafic and ultramafic rocks in the region. Detailed petrographic studies are being combined with data from microprobe, XRD and NAA analyses to establish constraints on a genetic model for these rocks.

768. POULIOT, G., BERGERON, M., École Polytechnique (Génie Mineral):
Minéralogie et géochimie des principaux gîtes d'ilménite associés aux complexes anorthositiques du Québec, 1978-82; thèse de doctorat (Bergeron).

Définir la filiation de ces gîtes avec les complexes anorthositiques et procurer des critères géochimiques pour une exploration plus rationelle de ces gîtes.

769. RIVE, M., BOIVIN, L., Québec Ministère Énergie et Ressources:
Reconnaissance des différents massifs de granitoides, territoire de Rouyn Noranda, Québec, 1980-.

Il s'agit de différencier les amas granitoides selon leur composition pétrologique et éventuellement de déterminer les faciès favorables à divers types de minéralisation.

770. RUSSELL, K., NICHOLLS, J., Univ. Calgary (Geology and Geophysics):
1) Petrologic variation of historic eruptions of Mauna Loa. 2) Geologic and petrologic history of Diamond Craters, Oregon, 1980-; Ph.D. thesis (Russell).

771. SCHAU, M., Geol. Surv. Can.:
Volcanic rocks of the Prince Albert belt, Districts of Franklin and Keewatin, 1972-.

772. SCHAU, M., Geol. Surv. Can.:
Geology of southeast Baker Lake, District of Keewatin, 1976-.

773. TREMBATH, L.T., Univ. New Brunswick (Geology):
Petrogenetic implications of textural variations in a granite dike, 1979-83.

To use textural and chemical variations across a 30 m wide granitic dike to evaluate the conditions of emplacement, solidification and cooling of the dike.

774. VOS, M.A., SCOTT, J., Ontario Geol. Surv.:
Nepheline syenite and feldspar in Northern Ontario, 1980-82.

Some feldspar dikes in Goldie Township have been sampled. Study of thin sections of Bigwood Township syenites in progress.

METAMORPHIC/ROCHES METAMORPHIQUES

775. DUDLEY, J.S., GHENT, E.D., Univ. Calgary (Geology and Geophysics):
Zeolitic alteration of the Howson facies volcanics (Jurassic), British Columbia, Canada, 1976-82; Ph.D. thesis (Dudley).

This project is a regional, petrologic study of low grade, zeolitic alteration of Jurassic volcanics in north-central British Columbia. The alteration is proposed to be a product of water-rock interaction in a hydrothermal system contemporaneous, and associated with the volcanism.

This study has established: 1) the identity of the secondary minerals; 2) the characteristic chemical compositions of these minerals; 3) the distribution of the authigenic species stratigraphically, areally and with respect to sequence of formation; and 4) a physiochemical model of the alteration process as hydrothermal.

776. FRASER, J.A., Geol. Surv. Can.:
Metamorphism in the Canadian Shield, 1974-.

777. FROESE, E., Geol. Surv. Can.:
A survey of metamorphism in the Canadian Shield, 1978-.

778. FROESE, E., Geol. Surv. Can.:
Metamorphism in the Kisseynew Subprovince, 1980-.

779. GHENT, E.D., STOUT, M.Z., Univ. Calgary (Geology and Geophysics):
Petrologic and geochemical studies of metamorphic rocks and electron microprobe studies of constituent minerals, 1976-.

See:
Geobarometry and geothermometry of plagioclase-biotite-garnet-muscovite assemblages; Contrib. Mineral. Petrol., vol. 76, p. 92-97, 1981.

A study of regional metamorphism in the Mica Creek area and an area near Blue River, British Columbia is in progress. A comparative study of geobarometers and geothermometers in garnet to sillimanite zone pelitic rocks is underway. We are also

developing new geothermometers and geobarometers to apply to metabasic rocks, forming our attention on garnet – hornblende, plagioclase – garnet equilibria, and studying mixed volatile equilibria in these rock. We plan to do fluid inclusion studies as an independent method to estimate fluid compositions attending metamorphism.

780. GODFREY, J.D., LANGENBERG, C.W., NIELSEN, P.A., BAADSGAARD, H., Alberta Research Council (Geol. Surv.):
Metamorphism in the Precambrian Shield of Alberta, 1976-82.

See:
Precambrian metamorphic conditions and coastal evolution northeastern Alberta, Canada; Precambrian Res., vol. 16, p. 171-193, 1981.

781. GORDON, T.M., Geol. Surv. Can.:
Metamorphism of volcanic rocks, Crowduck Bay, Manitoba, 1980-.

See:
Metamorphism in the Crowduck Bay area, Manitoba; Geol. Surv. Can., Paper 82-1A, p. 197-201, 1982.

782. HUBREGTSE, J.J.M.W., MACEK, J.J., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Sapphirin project in Pikwitonei domain, Manitoba, 1980-83.

All literature compiled; all microprobe analyses completed; all chemical analyses completed; and collection of mineralogical data in progress.

783. NISBET, E.G., CHINNER, G.A., Univ. Cambridge (Earth Sciences), Univ. Saskatchewan (Geological Sciences):
Study of Early Archaean komatiites, Ruth Well, Western Australia, 1979-82.

See:
Controls on the eruption of mafic and ultramafic lavas, Ruth Well cu-ni prospect, West Philbara; Econ. Geol., vol. 76, p. 1729-36, 1981.

Double diffusion processes controlling the eruption of komatiitic basalts; Terra Cognita, E.U.G. Spec. Issue G.58, 1981.

Study of the Ruth-Well cu-ni deposit, Pilbara, Western Australia has revealed a complex and interesting igenous and metamorphic history. Komatiites include spinifex textured and fragmental volcaniclastic rocks; basaltic rocks include komatiite basalt and tholeiites, all metamorphosed.

784. NISBET, E.G., HOLLAND, T.J.B., DROOP, G.T.R., HARRIS, N.B.W., Univ. Saskatchewan (Geological Sciences), Univ. Cambridge (Earth Sciences), Univ. Oxford, Open Univ.:
Study of early Archaean metamorphic rocks, Limpopo Belt, Zimbabwe, 1982-83.

Study of metamorphism in the Limpopo belt, Zimbabwe, with specific attention to Archaean thermal gradients and to heat production.

785. RAESIDE, R.P., GHENT, E.D., Univ. Calgary (Geology and Geophysics):
Structure, metamorphism and migmatization of the Scrip Range, Mica Creek, British Columbia, 1978-82; Ph.D. thesis (Raeside).

Based on field mapping (1978-1980) in the Scrip Range (map sheets 83 D/2 and 82 M/15), the stratigraphic succession and structural evolution have been determined. Five metamorphic isograds, ranging from the appearance of staurolite and kyanite to the disappearance of muscovite, which are characteristic of high pressure Barrovian metamorphism, have been mapped in pelitic rocks. Temperature and pressures derived by garnet-biotite geothermometry yield maximum metamorphic conditions ranging from 550°C, 580 MPa to 750°C, 760 MPa.

Migmatization occurs by three muscovite consuming reactions, which produce a melt phase. Intrusion of granitoid rocks, ranging from trondhjemite to granite, occurred in increasing abundance with increasing metamorphic grade, and at highest grades become pervasive. Mineral chemistry and structural relationships show the intrusive rocks are not directly related to the migmatites, but were passively intruded during the metamorphic climax.

Research on this topic is complete, preparation of aspects for publication is on-going.

786. WICKS, F.J., Royal Ontario Mus. (Mineralogy and Geology):
Serpentine pseudomorphs after olivine and pyroxene in plastically deformed peridotites, 1981-82.

The serpentinized deformed olivine and pyroxene textures in peridotite xenoliths from kimberlites and basalts, and from alpine peridotites were examined and compared with unserpentinized deformation textures. Criteria for distinguishing serpentinized, previously deformed olivine and pyroxene from deformed serpentine minerals were established. Samples from the highly serpentinized peridotite in Glen Urquhart, Scotland were examined and the pre-serpentinization solid-state deformation textures were identified, inspite of the serpentinization, and a map of the deformation was prepared.

SEDIMENTARY/ROCHES SÉDIMENTAIRES

787. HESSE, R.F., ANDERSON, T., McGill Univ. (Geological Sciences):
Diagenetic relationship between interbedded sandstone and shale in Gulf Coast Pleistocene and Tertiary geopressured and hydropressured zones, 1978-81; M.Sc. thesis (Anderson).

See:
Effects of geopressure on diagenesis in interbedded shale-sandstone sequences of Gulf Coast drill holes; Geol. Soc. Am. Abstr. Progr., vol. 13, no. 7, p. 396, 1981.

788. HESSE, R.F., FONG, C., ISLAM, S., McGill Univ. (Geological Sciences):
Shale diagenesis recorded in carbonate concretions, 1980-84; M.Sc. thesis (Islam).

See:
Mineralogy and isotopic composition of carbonate concretions, Québec Appalachians: Record of early and middle diagenetic shale maturation; Geol. Assoc. Can. – Mineral Assoc. Can., Abstr., vol. 6, p. A-18, 1981.

789. HESSE, R.F., LE GALLAIS, C., ISLAM, S., MOROGAN, T., McGill Univ. (Geological Sciences):
Diagenesis and depositional environments of Paleozoic Continental margin sediments in the northern Appalachians, 1981-84; M.Sc. thesis (Le Gallais), Ph.D. theses (Islam, Morogan).

See:
Pre- and synorogenic diagenesis and epimetamorphism in Early Paleozoic continental margin sequences of the Northern Appalachians near Quebec City, Canada; Bull. Can. Petrol. Geol., vol. 28, no. 4, p. 559-577, 1981.

Albite of secondary origin in Charny sandstones, Québec: a re-evaluation; J. Sediment. Petrol., vol. 51, no. 2, p. 597-606, 1981.

Thermal maturation of Cambro-Ordovician flysch, Northern Appalachians, Québec; Geol. Soc. Am. Northeastern Section, Abstr. Progr., vol. 13, no. 3, p. 139, 1981.

Stages in post-depositional history of Lower Paleozoic continental margin sediments, Québec Appalachians; ibid., p. 137, 1981.

Omission in the Québec Middle Ordovician: nature and possible origin; Geol. Soc. Am. Abstr. Progr. vol. 13, no. 7, p. 543, 1981.

790. HOEVE, J., Saskatchewan Res. Council (Geology Div.):
Clay mineral diagenesis and uranium mineralization in the Proterozoic Athabasca Basin, 1975-.

To study relationships between basin evolution, clay mineral diagenesis and uranium metallogenesis.

791. IWUAGWU, J.C., LERBEKMO, J.F., Univ. Alberta (Geology):
Depositional and post-depositional analysis of the basal Belly River Formation in southwestern Alberta, 1979-83; Ph.D. thesis (Iwuagwu).

Detailed petrographic study of thin-sectioned samples is underway to characterize environments petrographically for adaptation to subsurface samples and will be completed summer 1982.

792. WILSON, J., GODFREY, J.D., Alberta Research Council (Geol. Surv.):
Subsurface study of the Athabasca Basin, northeastern Alberta, 1979-.

The stratigraphy and history of the Athabasca Basin in Alberta is being reconstructed primarily through the study of drill core. The sub-Athabasca regolith and underlying crystalline basement also form part of this investigation.

GENERAL/GÉNÉRALITÉS

793. BÉRARD, J., HOUDE, R., École Polytechnique (Génie Mineral):
Etude des réactions chimiques entre un calcaire et le ciment Portland, 1981-83; thèse de maîtrise (Houde).

Détermination des causes de l'expansion et de la désintégration des bétons faits avec un granulat calcaire dans la région de Trois-Rivières, Québec.

794. GREENWOOD, H.J., YIN, H.A., Univ. British Columbia (Geological Sciences):
Mixing models of OH-F Tremolite, 1981-83.

Displacement of the equilibrium Tremolite = Diopside + Enstatite + Quartz + H_2O by F-substitution in tremolite will be used to estimate Margules parameters for F/OH substitution in amphiboles. Applications to geothermometry will be investigated.

795. HÉBERT, R.H., IMREH, L.I., BLANCHET, R., HEKINIAN, R., Québec Ministère Énergie et Ressources, Univ. Bretagne Occidentale:
Le complexe de filons-couches d'Amos, Québec, 1980-81; thèse de doctorat (Hébert).

La phase des travaux de terrain de l'étude détaillée des filons-couches ultramafiques d'Amos est achevée; la phase de laboratoire, de rédaction de la thèse etc. est en cours. Les travaux de terrain de 1981 constituent une partie de la régionalisation entre Amos et Barraute du projet Gîtologie prévisionnelle (L. Imreh). Ils seront poursuivis en 1982.

796. MARTIGNOLE, J., INDARES, A., Univ. Montréal (Géologie):
Conditions metamorphiques dans le région des indices Pb-Zn de Maniwaki, Québec.

797. MARTIGNOLE, J., NANTEL, S., Univ. Montréal (Géologie):
Thermobarométrie des gneiss pelitiques à cordiérite: le rôle de l'eau.

798. MARTIGNOLE, J., SISI, J-C., Univ. Montéal (Géologie):
Application du géothermomètre Cd-Ga aux gneiss pélitiques catazonaux.

799. MIRKOVICH, V.V., SOLES, J.A., BELL, K.E., EMR (CANMET):
Underground nuclear waste repository, 1977-86.

See:
Petrographic examination of drill core ATK-1 from the Atikokan area, Ontario; CANMET Div. Rept. ERP/MSL 81-53(IR), 1981.

Thermomechanical stability of underground installations: Significance of thermophysical properties rocks; High Termperatures – High Pressures, vol. 13, p. 89-96, 1981.

In this period petrographic examination and measurement of thermal conductivity, thermal diffusivity and linear thermal expansion were carried out on drill core ATK-1 from the Atikokan area.

In co-operation with the Lawrence Berkeley Laboratory thermophysical properties were measured on specimens of rock from the Stripa underground nuclear waste repository in Sweden. Also, in co-operation with the Lawrence Livermore Laboratory there was work on development of a system for measurment of thermal diffusivity of rocks as a function of temperature and pressure (between 0.1 and 100 MPa).

It is planned to measure and evaluate properties of rocks from the site of the proposed underground research laboratory near Pinawa, Manitoba.

800. SOLES, J.A., EMR (CANMET):
Stability of aggregates and cement-aggregate reactivity in concrete, 1965-86.

See:
Thermally destructive particles in sound dolostone aggregate from an Ontario quarry; CANMET Div. Rept. MRP/MSL 82-16(J), 1982.

Research is continuing on the reactivity of various rock types used as aggregate in concrete. It is expected that the work will enable the reactivity and stability to be predicted from detailed petrographic examination.

QUATERNARY GEOLOGY/GÉOLOGIE DU QUATERNAIRE

801. AALTONEN, R.A., DREIMANIS, A., Univ. Western Ontario (Geology):
Geology of the City of London, Ontario, 1970-82; Ph.D. thesis (Aaltonen).

802. ANDERSON, T.W., Geol. Surv. Can.:
Quaternary paleoecology, Great Lakes, 1978-.

See:
Pollen and plant macrofossil analyses on late Quaternary sediments at Kitchener, Ontario; Geol. Surv. Can., Paper 82-1A, p. 131-136, 1982.

803. ANDRIASHEK, L.D., FENTON, M.M., RUTTER, N.W., Univ. Alberta (Geology), Alberta Research Council (Geol. Surv.):
Quaternary stratigraphy in the Cold Lake map area (NTS 73 L), Alberta, 1976-83; M.Sc. thesis (Andriashek).

See:
Quaternary stratigraphy of the Edmonton area, NTS 83 H; Geol. Assoc. Can. – Mineral. Assoc. Can. Annual Meeting, Abstracts, vol. 6, p. A-2, 1981.

Quaternary stratigraphy and surficial geology will be completed for the Sand River map ara (NTS 73 L) in 1982. M.Sc. thesis will be completed along with Alberta Research Council publication. Quaternary stratigraphy of the Edmonton area will be completed in 1983. Field and lab data will be compiled and plotted on to cross-sections in order to interpret history in 1982.

804. BAKER, C.L., Ontario Geol. Surv.:
Stratigraphy and sedimentation in the Munro Esker, east of Kirkland Lake, Ontario, 1978-83.

See:
Quaternary geology of the Magasi River area, Cochrane and Timiskaming Districts; Ontario Geol. Surv., Map P. 2483, 1981.

Detailed investigations of the Munro Esker were carried out in the fourth year of the Kirkland Lake Incentive Program (KLIP). The present phase of the KLIP study attempts to define what parameters control the concentration of heavy minerals in the various facies of the esker and how this can be related to transport distance and dispersion patterns. Field mapping has shown the presence of three depositional environments: 1) esker crest; 2) lie-walled; and 3) glaciolacustrine (deltaic). Each environment was found to have a unique morphology, mode of deposition and sedimentological sequence.

805. BARNETT, P.J., Ontario Geol. Surv.:
Quaternary geology of Renfrew County, Ontario, 1977-84.

The Quaternary geology for 6, 1:50,000 N.T.S. map sheets in the Ottawa-Bonnechere Valley have been mapped during the summers of 1977, 1978 and 1979. Compilation of this data is in progress and several of the preliminary Quaternary geology maps have been published (Prel. maps P. no. 2365, 2366, 2367). A report discussing the properties, distribution and relationships of the deposits mapped will follow.

806. BLAKE, W., Jr., Geol. Surv. Can.:
Quaternary geochronology, Arctic Islands, 1975-.

807. BLASCO, S.M., Geol. Surv. Can.:
Surficial geology and geomorphology, Mackenzie Bay – continental shelf, 1970-.

808. BROSTER, B.E., DREIMANIS, A., Univ. Western Ontario (Geology):
Huron lobe tills in the Goderich area, Ontario, 1976-81; Ph.D. thesis (Broster).

809. CATTO, N.R., RUTTER, N.W., HUGHES, O.L., SCHWEGER, C.E., Univ. Alberta (Geology):
Quaternary geology of the Richardson Mountains region, Yukon-Northwest Territories, 1982-85; Ph.D. thesis (Catto).

Field research during the 1981 season encompassed the description and intensive sampling of major sections along the Rat River and the lower portion of the Peel River. These samples are currently being processed for palynologic, palaeobotanic, and palaeontologic material. As well, the lithology, mineralogy, texture, and sedimentology of the sediments is under study. A preliminary reconnaissance of the upper Peel River area was conducted during 1981; this region will be the focus of research in 1982. Investigations will also be conducted north of the Rat River to delineate the relationship between ice front positions in the Longstick River – Mt. Goodenough area and the impounded waters of the Rat drainage to the west. The purpose of this research is to correlate the events which affected the Mackenzie Delta region to the east and the Old Crow and Bell River Basins to the west. Such correlations are of potential value in the interpretation of the anthropological/archaeological data collected from these regions. Analyses performed to date indicate that the western basins were connected to the Rat River Basin by water flowing eastward through McDougall Pass at one or more periods during the Quaternary.

810. CHAUVIN, L.C., Québec Ministère Énergie et Ressources:
Géologie du Quaternaire de la région de Thetford-Mines-Asbestos, Québec, 1978-82.

Les travaux de terrains et d'analyses sont terminés. Le travail de synthèse et de réflexion est bien avancé. Nous sommes au début de la rédaction du rapport final.

811. CLAGUE, J.J., Geol. Surv. Can.:
Quaternary geology, terrain inventory, Prince Rupert-Terrace, Smithers area, British Columbia, 1975-.

See:
Late Quaternary geology and geochronology of British Columbia, Part 2: summary and discussion of radiocarbon-dated Quaternary history; Geol. Surv. Can., Paper 80-35, 1981.

812. CLAGUE, J.J., Geol. Surv. Can.:
Quaternary geology, upper Fraser River Basin, British Columbia, 1981-.

To describe, map and establish the stratigraphy of unconsolidated deposits in order to: reconstruct the upper Fraser River drainage development as an aid to explaining the distribution of placer deposits; provide information pertinent to forestry, land-use planning, urban and industrial development; and to determine the Quaternary history of the region.

813. COAKLEY, J.P., KARROW, P.F., Univ. Waterloo (Earth Sciences), Environment Canada (National Water Res. Instit.):
Shoreline evolution, Great Lakes, 1980-83; Ph.D. thesis (Coakley).

Further drilling and sampling of late glacial and post glacial sediments at Long Point and off Pointe-aux-Pins. Lab analysis of sediment column for grain size and fossil pollen data.

814. DAVID, P.P., CHAVIN, L., LEBUIS, J., Univ. Montréal (Géologie):
Géologie du Quaternaire de la Gaspésie.

815. DREDGE, L.A., Geol. Surv. Can.:
Surficial geology: Sept Iles-Cap Chat, Québec, 1971-.

816. DREDGE, L.A., Geol. Surv. Can.:
Quaternary geology, terrain inventory, northeastern Manitoba, 1975-.

See:
Trace element concentrations from overburden samples in northeastern Manitoba; Geol. Surv. Can., Paper 82-1A, p. 427-431, 1982.

817. DREDGE, L.A., Geol. Surv. Can.:
Quaternary geology – terrain inventory, northwestern Manitoba, 1980-.

See:
The leaching of carbonates in discontinuous permafrost, Boreal Manitoba; Geol. Surv. Can., Paper 81-1C, p. 23-25, 1981.

818. DREIMANIS, A., BROSTER, B.E., HICOCK, S.R., STEWART, R.A., GIBBARD, P., Univ. Western Ontario (Geology):
Tills, their genesis and classification, 1970-.

819. DREIMANIS, A., GIBBARD, P., Univ. Western Ontario (Geology):
Last glaciation in the eastern North America, 1958-.

820. DUBOIS, J.M.M., GWYN, Q.H.J., Univ. Sherbrooke (Géographie):
Le Quaternaire d'Anticosti, Québec, 1979-84.

Voir:
Anticosti: approche géomorphologique de l'histoire du Quaternaire de la partie ouest; 49e Congrès de l'Ass. Can. Fr. Avancement des Sciences, Sherbrooke, Annales, vol. 48, p. 107, 1981.

Il y a 5 objectifs: 1) cartographie au 1:100 000e de la géomorphologie et des formations meubles; 2) étude de la limite marine maximale; 3) stratigraphie et événements quaternaires; 4) évolution post-glaciaire de la zone côtière; 5) étude de l'évolution récente des littoraux. Deux étés de terrain ont été effectués en 1980 et 1981 alors que la moitié de l'île a été cartographiée.

821. DYKE, A.S., Geol. Surv. Can.:
Quaternary geology – terrain inventory, Boothia Peninsula, northeast Keewatin, and Somerset and Prince of Wales Islands, 1975-.

See:
Late Holocene soliflucation rates and radiocarbon soil ages, central Canadian Arctic; Geol. Surv. Can., Paper 81-1C, p. 17-22, 1981.

822. DYKE, A.S., Geol. Surv. Can.:
Quaternary geology – terrain inventory, Frances Lake, Yukon Territory, 1981-.

To map, describe and explain the landforms and Quaternary deposits in order to understand the Quaternary evolution of the area and to provide information relevant to land-use planning and mineral information.

823. DYKE, A.S., Geol. Surv. Can.:
Quaternary geology – terrain inventory, Prince of Wales Island, King William Island and adjacent mainland Keewatin, 1981-.

To map, describe and explain the Quaternary deposits and landforms in order to understand the Quaternary evolution of the area and to provide information relevant to land-use planning and mineral exploration.

824. EDLUND, S.A., Geol. Surv. Can.:
Surficial geology – terrain inventory, Bathurst-Cornwallis and eastern Melville Islands, District of Franklin, 1974-.

825. ELSON, J.A., HANDA, S., CLARK, T.H., McGill Univ. (Geological Sciences):
Post-glacial pollen record of Beaver Lake, Mount Royal, Montreal, Quebec, 1937-81.

Limnic sediments show a normal pollen sequence from about 10,200 to 5000 years B.P. except for an anomalous non-arboreal pollen peak, which is apparently due to the rapid emergence of new land from subsiding waters in the St. Lawrence Lowlands from about 9,500 to 8,500 years ago.

826. FENTON, M.M., Alberta Research Council (Geol. Surv.):
Quaternary stratigraphy and surficial geology of the Vermilion map sheet 73 E, Alberta, 1978-83.

Fieldwork completed 80% of area. A number of test holes were drilled in the northern half of the area. Current investigations in the northwestern quarter show extensive areas of hummocky glacial thrust terrain. The terrain contains at least three distinct tills 1) a silty till which encloses blocks of 2) a sandy carbonate rich till and 3) of clayey till. The last two tills likely correlate with undisturbed subsurface till recognized in the Sand River area north of the study area. Test holes, drilled south of St. Paul, have allowed the correlation of a coal bed, about 2 metres thick, over a distance of about 10 kilometers.

827. FENTON, M.M., ANDRIASHEK, L.D., Alberta Research Council (Geol. Surv.):
Quaternary stratigraphy and surficial geology Sand River map sheet; Alberta, 1976-82.

Drafting of the 1:250,000 scale geologic map has begun. Laboratory analyses are complete except for clay mineralogy and simple engineering properties of selected samples. The mineralogy samples have been analysed but the results have to be interpreted. Analyses of the engineering properties is in progress. Data compilation for the bedrock topographic map is complete and (C. Gold, Alberta Environment Groundwater Division) has begun work on the map.

The stratigraphic synthesis is 95% complete. Lithostratigraphic units have been defined and traced through the area. A number of geologic cross sections have been prepared. Writing of report will commence fall, 1981. Information on the glacial thrusting was presented in the 1978 A.G.S. Report and that on the Quaternary stratigraphy in the east half of the area in the 1979 report. The upper clayey till and the lower sandy till can be traced into the western half. The middle carbonate rich till is absent in much of the west half of the area.

828. FINAMORE, P.F., KARROW, P.F., Univ. Waterloo (Earth Sciences):
Quaternary geology Orillia-Fenelon Falls area, Ontario, 1981-83; M.Sc. thesis (Finamore).

See:
Quaternary geology of the Orillia area (31 D/11), Victoria and Simcoe Counties, southern Ontario; Ontario Geological Surv., Misc. Paper 100, p. 111-113, 1981.

829. FRITZ, P., EICHER, U., KARROW, P.F., MORGAN, A.V., Univ. Waterloo (Earth Sciences):
Post glacial climatic changes in southwestern Ontario as deduced from environmental isotope studies, 1979-.

Stable isotope, pollen, fossil beetles and geochemical analyses of most deposits in SW Ontario are used to reconstruct the depositional environments. Preliminary results show that detailed information about temperature changes and hydrogeological regimes can be obtained.

830. FULTON, R.J., Geol. Surv. Can.:
Quaternary geology inventory, southern Labrador, 1969-.

831. FULTON, R.J., Geol. Surv. Can.:
Quaternary geology of the Canadian Cordillera, 1975-.

832. GADD, N.R., Geol. Surv. Can.:
Correlation of Quaternary geology; Great Lakes – St. Lawrence Valley region, 1978-.

See:
Late-glacial regional ice-flow patterns in eastern Ontario: reply; Can. J. Earth Sci., vol. 18, no. 8, p. 1390-1393, 1981.

Anorthosite erratics of probable Lauentian origin in the vicintiy of Buffalo, New York; Geol. Surv. Can., Paper 81-1C, p. 63, 64, 1981.

Pre-last-glacial organic remains in Ottawa Valley; ibid., p. 65, 66, 1981.

833. GAUTHIER, C., DREIMANIS, A., Univ. Western Ontario (Geology):
Genetic and maturity distinctions of tills, northern New Brunswick, 1978-82; Ph.D. thesis (Gauthier).

834. GAUTHIER, R.C., Geol. Surv. Can.:
Géologie du Quaternaire région de Bathurst-Campbellton, Nouveau Brunswick, 1976-.

835. GRANT, D.R., Geol. Surv. Can.:
Surficial geology, Cape Breton Island, Nova Scotia, 1970-.

836. GRANT, D.R., Geol. Surv. Can.:
Surficial geology of Newfoundland, 1974-.

837. GRANT, D.R., Geol. Surv. Can.:
Quaternary stratigraphy Yarmouth region, Nova Scotia, 1979-.

838. GRAVENOR, C.P., Univ. Windsor (Geology):
Chattermarked garnets in glacial sediments, 1980-81.

See:
Experimental formation and significance of etch patterns on detrital garnets; Can. J. EArth Sci., vol. 18, p. 765-775, 1981.

An examination of the surface textures on detrital garnets show that conchoidal fractures, "V" shaped etch pits and other marks of unknown origin can be modified by chemical etching to produce features which resemble chattermark trails produced by slip-stick motion. In order to differentiate false trails from those produced by glacial grinding, it is recommended that the altered surfaces of garnets should be examined under a Scanning Electron Microscope.

An analysis of chattermark trails on garnets from glaciogenic deposits from Nova Scotia, Denmark and south-central Ontario shows that there is a wide variation in the percentage of garnets with chattermark trails in different glacial environments. However, after local anomalies in the percentage of chattermarked garnets are averaged out by recycling and dispersion, there is a crude correlation between the type of glaciation and the average percentage of chattermarked garnets in glacial deposits.

It is suggested that detailed experimental studies on the origin and nature of surface textures on garnets would be of considerable use in determining the nature of both Pleistocene and ancient glaciations. In addition, such studies could provide valuable information on the condition at the base of glaciers and the mechanisms involved in the glacial grinding of minerals.

839. GRAVENOR, C.P., Univ. Windsor (Geology):
Paleozoic glacial sedimentation, 1980-82.

The glacial deposits which are found on the platform and edges of the southeast side of the Parana Basin of southern Brazil are termed terrestrial and include basal (lodgement) tillites and associated ablation (supraglacial) sediments such as "flow tills" and ice contact deposits. The glaciogenic sediments found in the subsiding parts of the Parana Basin are termed basinal deposits and include thick sequences of diamictites interbedded with conglomerate, sandstone and shales, some of which are fossiliferous. Much of these glaciogenic sediments, particularly the diamictites, show evidence of mass movement down the paleoslope and, in some places, the debris flows had enormous erosive power, ripping up beds of pre-existing consolidated sediments as they moved into deeper parts of the basin. Fresh water deposits in the form of massive tillites overlain by subaqueous debris flows and varvites were developed in indentations in the shoreline. These deposits are considered to be intermediate between the terrestrial and basinal facies.

840. GRAVENOR, C.P., Univ. Windsor (Geology):
Relationship of anisotropy of magnetic susceptibility to macrofabric analysis, 1981.

The anisotropy of magnetic susceptibility provide a means of measuring till fabric on a micro scale. Although some studies have been made relating macrofabric analysis to magnetic fabric, the purpose of this study is to extend these studies and, in particular, to study the magnetic fabric in tills which have been folded by subglacial shear and by flow. In addition to the fabric analysis, magnetic fold tests will be made to determine if it is possible to differentiate folded structures created by shear versus those by debris flows.

841. GRAVENOR, C.P., Univ. Windsor (Geology):
Ice thrust features and glacial pavements in the Proterozoic Macaúbas Group, Brazil, 1982.

In the Jequitai area of north-central Minas Gerais, Brazil, large bodies of quartzite, up to 25 m in length, are found within tillite of the Proterozoic Macaúbas Group. Although one of the quartzite bodies is intact others have been disrupted and angular blocks of quartzite are intermixed with sheared silt. It is suggested that these quartzite bodies are rafts of bedrock which were sheared up into the overriding glacier. It is possible that the quartzite moved along a water-lubricated bed of silt. The orientation of the long axes of the quartzite blocks and shear planes within the tillite suggest that the ice was moving in a north to northeasterly direction.

Two tillites, separated by a thin layer of conglomerate, are found in a road-cut approximately .4 km west of Jequitai. Striations are found on the top surface of the lower tillite. The striations display two directions of ice-movement. The first is roughly east-west and the second northeast-southwest.

The observations help to confirm that the Proterozoic glaciation in the Jequitai area was terrestrial and the glaciers were moving in a north-east direction.

842. GWYN, Q.H.J., DUBOIS, J.M.M., POULIN, A., Univ. Sherbrooke (Géographie):
Le Quaternaire des Cantons de l'Est, Québec, 1980-86.

Voir:
Le lac proglaciaire Memphrémagog: géologie, géomorphologie et archéologie; Dépt. de géographie, Univ. Sherbrooke, Bull. rech. no. 55, 1981.

Evolution du drainage des lacs proglaciaires et les positions frontales associées, hautes vallées de la Saint-François et de la Chaudière; Annales de l'ACFAS, vol. 48, p. 103, 1981.

Lacs proglaciaires à l'est des monts Stoke, vallée de la Saint-François; Annales de l'ACFAS, vol. 48, p. 103, 1981.

Le projet vise à compléter la cartographie des dépôts meubles et de la géomorphologie des Cantons de l'Est et à faire une mise au point définitive sur l'histoire du Quaternaire.

843. HALE, P.B., McCANN, S.B., McMaster Univ. (Geography):
Sediment dispersal patterns and shore morphology along the Georgia Strait coastline of Vancouver Island, British Columbia, 1978-82; Ph.D. thesis (Hale).

The field work and data reduction phases of this project are finished.

844. HELIE, R.G., ELSON, J.A., McGill Univ. (Geological Sciences):
Differentiation and genesis of diamictons on Somerset Island, Northwest Territories, 1979-81; M.Sc. thesis (Helie).

On Somerset Island diamictons may be glacigenic or the result of physical weathering. Laboratory experiments showed that diamictons can be produced by freeze-thaw activity. Cryogenic diamicton can be distinguished from till by X-ray diffraction studies of the clay-size fraction. Grain-size distributions of the diamictons are similar and most grain surfaces have features attributable to either glaciation or frost action. Etch features are more abundant in cryogenic diamicton than in till but this is partly a result of their presence in some source rocks.

845. HODGSON, D.A., Geol. Surv. Can.:
Surficial geology and geomorphology of central Ellesmere Island, District of Franklin, 1972-.

846. HODGSON, D.A., Geol. Surv. Can.:
Quaternary geology – terrain inventory, Dundas Peninsula, District of Franklin, 1980-.

847. HUGHES, O.L., Geol. Surv. Can.:
Quaternary geology, Aishihik Lake, Yukon, 1965-.

848. HUGHES, O.L., Geol. Surv. Can.:
Quaternary stratigraphy of Old Crow Basin and Porcupine River Valley, Yukon, 1968-.

See:
Upper Pleistocene stratigraphy, paleoecology, and archaeology of the northern Yukon Interior, eastern Beringia 1. Bonnet Plume Basin; Arctic, vol. 34, no. 4, p. 329-365, 1981.

849. HUGHES, O.L., Geol. Surv. Can.:
Quaternary geology, Mayo-McQuesten, Yukon Territory, 1979-.

850. JACKSON, L.E., Jr., Geol. Surv. Can.:
Quaternary geology, terrain inventory, Kananaskis Lakes, Alberta, 1974-.

851. KARROW, P.F., GREENHOUSE, J.P., Univ. Waterloo (Earth Sciences):
Stratigraphy and geophysical logging of burried valley tills, Elora and Rockwood, Ontario, 1977-82.

A 45 m continuously-cored hole was drilled into the Rockwood valley to calibrate previously-obtained geophysical logs. Samples of tills penetrated are being analysed to aid in correlation to the regional stratigraphy.

852. KARROW, P.F., MILLER, B.B., Univ. Waterloo (Earth Sciences), Kent State Univ. (Geology):
Lake history, Huron basin, Great Lakes region, 1968-.

See:
Non-marine biostratigraphic zones in Late Quaternary sediments (12 000 to 4000 years B.P.) from southwestern Ontario; Geol. Soc. Am., Abstracts with Programs, vol. 13, no. 6, p. 310, 1981.

Raised shorelines were surveyed on St-Joseph Island, at Sowerby, and near Kincardine. Several organic sites were found and radiocarbon dates obtained for sites on St. Joseph Island, at Thessalon, and Kincardine.

853. KARROW, P.F., MORGAN, A., HANN, B.J., POPLAWSKI, S., KALAS, L.L., Univ. Waterloo (Earth Sciences):
Paleontology of the Toronto interglacial 1963-.

See:
Ostracodes and paleoenvironments of the late Quaternary Don and Scarborough formations, Toronto, Ontario; Can. J. Earth Sci., vol. 18, p. 1497-1505, 1981.

854. KARROW, P.F., WARNER, B.G., Univ. Waterloo (Earth Sciences):
Stratigraphy of the Waterloo interstadial site, Ontario, 1980-82.

Analyses completed and manuscript in preparation.

855. KLASSEN, R.A., Geol. Surv. Can.:
Quaternary geology inventory, lower Nelson River basin, Manitoba, 1971-.

856. KLASSEN, R.A., Geol. Surv. Can.:
Surficial geology and Quaternary stratigraphy of north Baffin-Bylot Islands, District of Franklin, 1978-.

See:
Glaciotectonic thrust plates, Bylot Island, District of Franklin; Geol. Surv. Can., Paper 82-1A, p. 369-373, 1982.

857. KOSTASCHUK, R.A., McCANN, S.B., McMaster Univ, (Geography):
Sedimentation in fiord deltas, North Bentincke Arm and Dean Channel, British Columbia, 1981-84; Ph.D. thesis (Kostaschuk).

To explain the subaerial and subaqueous morphology and the patterns of recent sedimentation at the deltas in terms of the following processes:- river discharge regime and sediment delivery rates; effluent mechanisms at the river mouths; and modes and rates of sediment transport in the delta front and prodelta zone.

858. KRAWETZ, M.T., McCANN, S.B., McMaster Univ. (Geography):
The morphology and mobilization of sediments and arctic and subarctic intertidal flats, 1981-84; Ph.D. thesis (Krawetz).

The project continues research on boulder-strewn tidal flats commenced in 1971 at Frobisher Bay, some of the results of which are reported. The new work will focus on tidal flats and the sea ice processes in the Alexandra Fiord and Cape Herschel area of Eastern Ellesmere Island.

859. LAMOTHE, M., DREIMANIS, A., Univ. Western Ontario (Geology):
St. Pierre Interstade in St. Lawrence Lowlands, Quebec, 1980-83; Ph.D. thesis (Lamothe).

860. LaSALLE, P., Québec Ministère Énergie et Ressources:
Géologie de sediments meubles au sud de Montréal, Québec, 1980-82.

Voir:
Géologie de sediments meubles région de St. Jean La Chinè, Québec; Québec Ministère Énergie et Ressources, DPV-780, 1981.

861. LAURIOL, B., GWYN, Q.H.J., BONN, F., Univ. Sherbrooke (Géographie):
Hydrogéologie et hydrogéomorphologie de la dissolution des roches carbonatées au nord du golfe du Saint-Laurent, Québec, 1981-86.

Etude du karst d'Anticosti avec une approche de géomorphologie dynamique.

862. MARTINEAU, G., Québec Ministère Énergie et Ressources:
Géologie des dépôts meubles du Bas St. Laurent, Québec, 1977-83.

863. MARTINEAU, G., BOUCHARD, M.A., Univ. Montréal (Géologie):
Géologie du Quaternaire, région de Chapais-Chibougamau, Québec.

864. OSBORN, G.D., Univ. Calgary (Geology and Geophysics):
Holocene glacial fluctuations and tephro-stratigraphy in the Canadian Cordillera, 1974-.

See:
Origin of an unusual Holocene diamicton in Banff National Park, Alberta, Canada; Zeit. fur Geomorph., vol. 25, p. 290-299, 1981.

The goals are to: 1) identify composition, source, and age of Early Holocene/Late Pleistocene tephras in the Cordillera, by means of field sampling, microprobe analysis, and C^{14} dating, and 2) use these tephras to bracket times of glacial advance and retreat. Elucidation of tephra history is very important as these layers provide absolute dates and allow correlation over wide areas.

865. PARENT, M., DREIMANIS, A., Univ. Western Ontario (Geology):
Quaternary geology of the Highland Front Moraine area, Quebec, 1979-82; Ph.D. thesis (Parent).

866. PELLETIER, B.R., Geol. Surv. Can.:
Quaternary paleo-sealevel map of Canada, 1978-.

867. PROUDFOOT, D.N., MORAN, S.R., RUTTER, N.W., Alberta Research Council (Geol. Surv.), Univ. Alberta (Geology):
Quaternary geology and stratigraphy of the Medicine Hat-Lethbridge area, Alberta, 1978-83; Ph.D. thesis (Proudfoot).

The project will develop a physical stratigraphic framework in the thick complex valley fill sequences of the Lethbridge-Medicine Hat area. Correlation will be bsed primarily on the till portions of the stratigraphic sequence. Conclusions from the first 2 years field work indicate that the 3 or 4 individual till sheets that can be recognized and correlated between the relatively closely spaced sections in the Medicine Hat area on the basis of their physical and mineralogical properties, can be traced as far as Bow Island. The Taber area remains as the only gap in the correlation between Medicine Hat and Lethbridge.

Work during 1981-82 produced a significant refinement of the framework in the Medicine Hat area through indepth study of sedimentary facies relationships in fluvial units in the valley fill. This has permitted a significant clarifiction of stratigraphic relationship in the complex cut and fill valley fill sequence.

868. RICHARD, J.A., KARROW, P.F., Univ. Waterloo (Earth Sciences):
Glacial history of the Hearst area, Ontario, 1981-83; M.Sc. thesis (Richard).

See:
Quaternary geology of the Constance-Hanlon Lakes area (NTS 42 F/16, 42 G/13), District of Cochrane; Ontario Geological Surv., Misc. Paper 100, p. 131-133, 1981.

869. RICHARD, P.J.H., LAROUCHE, A., LABELLE, C., FRÉCHET, M., LEDUC, M.J., DE VERNAL, A., Univ. Montréal (Géographie):
Reconstitution de l'histoire postglaciaire de la végétation et du milieu au Québec; thèse de maîtrise (Frechet, Leduc, De Vernal), thèse de doctorat (Labelle).

Voir:
Végétation tardiglaciaire et postglaciaire au sud-est du parc des laurentides, Québec; Géographie physique et Quaternaire, vol. 35, no. 3, 1981.

Actuellement les recherches portent sur Bromont et sur la Gaspésie. En outre nous travaillons sur les dépôts interglaciaires de Baie-Saint-Laurent (N. E. casse) et sur les sédiments glacio-lacustres de la formation de Gayhurst. Ces projets seront terminés dans 18 mois.

870. RICHARD, S.H., Geol. Surv. Can.:
Surficial geology, Tawatinaw area, Alberta, 1968-.

871. RICHARD, S.H., Geol. Surv. Can.:
Surficial geology, Ottawa Valley lowlands, Ontario-Québec, 1974-.

See:
Pre-last-glacial organic remains in Ottawa Valley; Geol. Surv. Can., Paper 81-1C, p. 65, 66, 1981.

872. RUTTER, N.W., Univ. Alberta (Geology):
Quaternary history of parts of Alberta, British Columbia, and Yukon Territory, 1976-.

873. RUTTER, N.W., CRAWFORD, R.J., Univ. Alberta (Geology):
Development of amino acid racemization dating techniques, 1976-.

See:
Utilizing wood in amino acid dating; Tenth Ann. Workshop, Abstract, INSTARR, Univ. Colorado, p. 44, and Quaternary Dating Methods Symp., York Univ., p. 55-56, 1981.

Relative dating of bones by D/L ratios of amino acids from La Caune de l'Arago, Tautavel, France; in Datations Absolues et Analyses Isotopiques en Prehistoire Methodes et Limites, Colloque Internat. du Centre National de la Recherche Scientifique, p. 601-609, 1981.

874. SADO, E.V., Ontario Geol. Surv.:
Quaternary geology of the Windsor-Essex, Chatham-Wheatley and Wallaceburg map areas, southwestern Ontario, 1981-84.

Quaternary geology maps for 5 areas plus 3 reports published. Maps – show distribution and stratigraphy of Quaternary sediments; reports – properties, relationships and significance of sediments.

875. SHETSEN, I., Alberta Research Council (Geol. Surv.):
Quaternary geology map of southern Alberta, 1978-84.

See:
Analysis of pebble composition in surface tills and glaciofluvial deposits, Calgary-Nanton area, south-western Alberta; Geol. Assoc. Can., - Mineral. Assoc. Can. Annual Meeting, Abstracts, vol. 6, p. A-51, 1981.

During the winter of 1980-81, preliminary Quaternary geology maps at scales of 1:500,000 and 1:1000,000 were completed for the southern portion of the area (south of 52°). The compilation was based on aerial photo interpretation and existing geology and soil maps. Field checking of these maps was carried out in the summer of 1981 and will continue in 1982.

876. SHILTS, W.W., Geol. Surv. Can.:
Properties and provenance of till, 1969-.

877. SHILTS, W.W., Geol. Surv. Can.:
Quaternary geology inventory – southern Keewatin, 1973-.

878. SHILTS, W.W., Geol. Surv. Can.:
Glacial erosion of the Canadian Shield, 1978-.

879. SPARKES, B.G., VANDERVEER, D.G., Newfoundland Dept. Mines and Energy:
Surficial and glacial mapping of the Central Mobile Belt, Insular Newfoundland, 1978-83.

See:
Surficial and glacial mapping, Snowshoe Pond; Newfoundland Dept. Mines and Energy, Rept. 81-1, p. 105-108, 1981.

Mapping was completed on the Snowshoe Pond 12 A/7 map area in 1981. Information was obtained along all existing roads, lake shorelines and some streams. Thirty hand dug pits provided suitable exposures to obtain till fabrics and samples. Two hundred sites were noted of which 80 were striae locations. Sixty till samples were taken for particle size anlaysis and geochemistry, as well as a representative pebble fraction to determine the lithologic composition of the till or tills.

The dominant flow of ice over this area was to the south, and it was an early event. This flow is usually more towards 160 (southeast) in the central to eastern part of the area and 185-195 in the western part of the map area. The source for this flow was probably in the area of Red Indian Lake to the north and northwest. At one location of crossing striae, there is a later westerly flow of ice. Mapping of the volcanic belt will probably be completed in 1983 with the completion of the Buchans 1:50,000 map sheet (12 A/15).

880. STALKER, A.MacS., Geol. Surv. Can.:
Quaternary of southern Alberta, 1965-.

881. STALKER, A.MacS., Geol. Surv. Can.:
Synthesis of Quaternary geology, Great Plains of Canada, 1975-.

882. STEA, R.R., Nova Scotia Dept. Mines and Energy:
Pleistocene geology and till geochemistry northern Nova Scotia, 1981-82.

To systematically map and sample Pleistocene sediments in Nova Scotia, especially tills.

883. STEELE, K.G., RUTTER, N.W., Univ. Alberta (Geology):
Utilizing glacial geology in mineral exploration, Dismal Lakes region, Northwest Territories, 1981-82; M.Sc. thesis (Steele).

884. STEWART, R.A., DREIMANIS, A., Univ. Western Ontario (Geoloyg):
Ice marginal deposition in Lake Maumee, east of Port Stanley, Ontario, 1978-81; Ph.D. thesis (Stewart).

885. TELLER, J.T., THORLEIFSON, H., Univ. Manitoba (Earth Sciences):
Lake Agassiz-Lake Superior connection, northwestern Ontario, 1980-82; M.Sc. thesis (Thorleifson).

The Quaternary sediments and morphology of northwestern Ontario are largely unstudied. An understanding of the sedimentology and chronology of events in this region is essential in order to establish the relationship between the Prairies to the west and the Great Lakes to the east. Of particular importance to this understanding is the history of Lake Agassiz and its periodic connection with Lake Superior through northwestern Ontario. The size and morphometry of the various overflow channels in that region, and the nature of the sediment within and adjacent to them, will contribute a great deal to our understanding of glaciation and deglaciation in north-central North America. Field and air photo studies during 1980 indicated that the Lake Agassiz-Lake Superior connection may have taken place catastrophically, with much of Lake Agassiz draining in only a few weeks. This study will identify, map, measure, describe, and sample the many overflow channels and their sediments and examine the regional Quaternary stratigraphy of northwestern Ontario. This information will be used to correlate late Quaternary events in the Prairies and Great Lakes, and will establish the paleohydrology of the connecting channels and determine their role in the interrelationship between east and west.

886. VANDERVEER, D.G., Newfoundland Dept. Mines and Energy:
Glacial mapping of the Ackley Granite – south half, Newfoundland, 1981-82.

Recent geological work in the area (covering N.T.S. map areas 1 M/10, 11, 14 and 15) has

identified problems in regard to the interpretation of geochemical data – most notably areas of anomalously high values of molybdenum in lake sediments do not show a corresponding high in bedrock samples analysed for the same. The Quatrenary mapping of the area was conducted to determine if the overburden and/or glacial transport could account for these values.

Preliminary results indicate that glacial transport was dominantly to the south with a southeast component in the eastern part of the study area as ice was drawdown towards Placentia Bay and a late southwest component north of Terrenceville as flow was redirected by drawdown into Fortune Bay. The overburden in the area varies from little, over barren outcrop in the south, to extensive drumlinoid and rib moraine in the rest of the area. The anomalous Mo values are related to areas of extensive overburden indicating either enrichment from transported glacial materials or as the result of organic activity of bogs associated with the overburden cover.

887. VICENT, J-S., Geol. Surv. Can.:
Surficial geology inventory, Banks Island, District of Franklin, 1974-.

888. VINCENT, J-S., Geol. Surv. Can.:
Surficial geology, Lac Kipawa region, Québec, 1979-.

889. VINCENT, J-S., Geol. Surv. Can.:
Surficial geology inventory, western Victoria Island, District of Franklin, 1981-.

To map, describe and explain the unconsolidated deposits, landforms, permafrost, ground ice and organic cover, and undertake geomorphic process studies in order to provide areal knowledge of geology and terrain.

890. WATTS, S.H., Sir Sandford Fleming College (Geology):
Bedrock weathering processes and products under arid arctic conditions, 1979-82.

See:
Near-coastal and incipient weathering features in the Cape Herschel – Alexandra Fiord area, Ellesmere Island, District of Franklin; Geol. Surv. Can., Paper 81-1A, p. 389-394, 1981.

To continue to evaluate processes and products of subaerial weathering under arid high arctic conditions combining field studies on widely scattered, highly weathered bedrock terrane with laboratory analyses. To date, progress has been made in establishing the influence both lithology (particularly texture) and salt crystallization have had on bedrock disintegration at five localities. The purpose of this season's field work will be to set up and monitor experiments to evaluate current rates of microfracturing of, and debris removal from, bedrock surfaces at two main sites. Transects will be run to map the distribution of features from upland plateaux down to sea level at these locations.

891. YOUNG, D., RUTTER, N.W., Univ. Alberta (Geology):
Surficial stratigraphy of the Golden map sheet, British Columbia, 1980-84; Ph.D. thesis (Young).

REMOTE SENSING/TELEDETECTION

892. BÉLANGER, J.R., Geol. Surv. Can.:
Remote sensing applied to Quaternary geology and mineral tracing, 1978-.

893. BONN, F., GWYN, Q.H.J., DUBOIS, J.M.M., Univ. Sherbrooke (Géographie):
Utilisation des techniques de télédétection dans l'étude des dépôts meubles et des ressources en eau dans les Appalaches et les Basses-Terres du Saint-Laurent, 1980-85.

Etude de l'utilisation maximale des techniques de télédétection pour la cartographie des dépôts meubles et de la géomorphologie ainsi que pour la détermination des teneurs en eau des sols incluant les relevés hydrogéologiques. Projets pilotes en cours à Anticosti et près de Sherbrooke.

894. BONN, F., GWYN, Q.H.J., DUBOIS, J.M.M., CASTONGUAY, J., BOISVERT, J.J., LAURIOL, B., Univ. Sherbrooke (Géographie):
Télédétection et cartographie des processus côtiers et tendances multi-scalaires d'évolution littorale dans le golfe du Saint-Laurent, 1980-86.

Voir:
Géomorphologie, télédétection et aménagement hydroélectrique au Québec; Dépt. de géographie, Univ. Sherbrooke, Bull. rech. no. 57-58, p. 74-88, 1981.

Etude de l'évolution des littoraux du nord du golfe du Saint-Laurent aux échelles millénaire, centenaire, décennale, annuelle et saisonnière en utilisant des méthodes de terrain et de télédétection. Etude amorcée sur la Moyenne Côte Nord, Anticosti et Saint-Pierre et Miquelon.

895. DONALDSON, J.A., DONALDSON, J., DOW, D.R., Carleton Univ. (Geology):
Aerial photography by means of radio-controlled model aircraft as an aid to geological field studies, 1980-83.

A Schluter Heli-boy helicopter was built, and a pod to hold a Cannon AE-1 35 mm camera and autowinding mechanism was mounted beneath the radio-controlled aircraft. Tests initiated in March 1981 produced high-resolution photographs. Testing in field areas will be initiated in the 1982 field season.

896. HOWARTH, P.J., WICKWARE, G.M., McMaster Univ. (Geography):
Chance detection in the Peace-Athabasca Delta using Landsat satellite data, 1980-83.

See:
Change detection in the Peace-Athabasca Delta using digital Landsat data; Remote Sensing of Environment, vol. 11, p. 9-25, 1981.

Procedures for change detection using Landsat digital data; Internat. J. Remote Sensing, vol. 2, no. 3, p. 277-291, 1981.

The Peace-Athabasca Delta has experienced major changes in water boundaries and vegetation types due to flooding. To determine the feasibility of landsat digital data to monitor such changes, comparisons of parts of the delta under normal and flooded conditions have been made. The main analysis involved supervised classification of digital data on two dates followed by post-classification change detection. A series of procedures for undertaking change detection has been developed. Results indicate that this type of wetland environment can be effectively mapped and changes determined using the landsat digital data. Analysis is complete. Further writing up is to be done.

897. LAURIOL, B., Univ. Sherbrooke (Géographie):
Etude de la couverture neigeuse de l'Ungava par télédétection de 1967 à 1980, Québec, 1981-83.

Variation dans le temps et l'espace de la couverture neigeuse et des masses résiduelles de glace.

898. SEUTHÉ, C., DAVID, P.P., Univ. Montréal (Géologie):
La photographie multispectrale appliquée à l'étude structurale et pétrographique d'un secteur situé au nord-ouest de Rouyn-Noranda, Québec.

899. SPITZER, R., HOWARTH, P.J., McMaster Univ. (Geography):
Landsat and seasat data for lineament and lithologic mapping, 1980-83.

The use of landsat and seasat data for lineament and lithologic mapping has been evaluated for a study area in southeastern Ontario. Lineaments were identified and mapped from several landsat products (Dics CCTs and transparencies, RBV and MSS imagery) and from seasat optically-processed imagery. Interpreted lineament distributions were compared visually and statistically with fault and joint distributions recorded from geologic maps of the area. It was found that lineament identified on dics winter imagery best reflect the fault distributions. A relationship between two lineament parameters and areas of mineralization was found. Information obtained from the remotely sensed data is compatible with the tectonic history of the area.

900. TANGUARY, M.G., SEUTHÉ, C., GAGNIER, B-M., École Polytechnique (Génie Mineral):
Applications des images Landsat en génie et en géologie; applications des images radar SAR en géologie, 1979-83; thèse de maîtrise (Gagnier).

Voir:
Images Landsat: guide d'utilisation et source d'informations géologiques pour la région de Rouyn-Noranda; Rapport de recherche RP82-R-17, École Polytechnique, Montréal, Québec, 1981.

ANCIENT SEDIMENTS/SÉDIMENTS ANCIENS

901. ASPLER, L., DONALDSON, J.A., Carleton Univ. (Geology):
Sedimentology, stratigraphy and structure of the Nonacho Basin, Northwest Territories, 1978-82, Ph.D. thesis (Aspler).

The field work has been completed; laboratory studies are nearing completion.

902. BANNERJEE, I., Geol. Surv. Can.:
Depositional environments and diagenesis of Viking Sandstone reservoirs, Alberta, 1979-.

903. BEAUCHAMP, B., BAMBER, E.W., MAMET, B., RICHARD, B., Univ. Montréal (Géologie), Geol. Surv. Can.:
Pétrographie et sédimentaiton des carbonates tournaisiens de l'Alberta et de la Colombie-Britannique; thèse de maîtrise (Beauchamp).

Voir:
Note sur les Albertaporellinae (Dasycladaceae); Micropaléontologie, vol. 23, nos. 3-4, p. 159-168, 1981.

904. BOUCHARD, M.A., Univ. Montréal (Géolgoie):
Pétrographie et morphologie du till, région de Chibougamau-Lac Mistassini, Québec.

905. BOURQUE, M.S., Ontario Geol. Sur.:
Stratigraphy and sedimentation of carbonate metasediments within the Grenville Supergroup, Ontario, 1981-83.

Extensive carbonate and clastic metasediments in the Marmora Township and surrounding area are Late Precambrian in age and represents deposition in a marine environment. The carbonate metasediments are light to dark grey, fine to medium grained marbles, generally finely laminated to thinly bedded.

At the boundary zone between clastic metasediments and carbonates the argillites and arkosic units are interbedded with the carbonates and form a facies transition. Within the study area metamorphic grade is low, the metasediments are generally fine grained and a variety of primary sedimentary features are well preserved. Bedding is perhaps the most important feature of a sedimentary unit and within the carbonates and other metasediments this feature is well defined. The beds can vary from massive units to thin beds, and internal structures (which is characterized by conditions of deposition) are well preserved in most cases. Other primary sedimentary features are graded bedding, cross-bedding, and ripple marks. Soft sediment deformation features are also noted in places where overloading by the deposition of sand over a hydrostatic mud layer leads to a vertical adjustment of the sand mud interface.

Within the metasediments different environments are indicate from shallow marine environment typified by dolomites with preserved organo-sedimentary structures (stromatolites), carbonate sands, ripple marks, etc., to deeper water environments where fine grained meta-sediments, calcareous siltstones, chert beds, well segregated beds and regularly bedded cyclic rock sequences are common.

Because of the importance of the association of mineral deposits with particular environmental settings in particular stratigraphic horizons, environmental and stratigraphic study in the Grenville metasediments will greatly contribute to mineral exploration.

906. CARMICHAEL, S.M.M., MURRAY, J.W., BUSTIN, R.M., Univ. British Columbia (Geological Sciences):
Sedimentology of the Lower Cretaceous Gates Member, Rocky Mountain Foothill, northeastern British Columbia, 1979-83; Ph.D. thesis (Carmichael).

907. CHANDLER, F.W., Geol. Surv. Can.:
Redbed sequences in Canada, 1976-.

See:
Sedimentology of two Middle Paleozoic terrestrial sequences, King George IV Lake area, Newfoundland, and some comments on regional paleoclimate; Geol. Surv. Can., Paper 82-1A, p. 213-219, 1982.

908. CHANDLER, F.W., Geol. Surv. Can.:
Proterozoic red beds of Richmond Gulf, Quebec, 1977-.

See:
The structure of the Richmond Gulf graben and the geological environments of lead-zinc mineralization and of iron-manganese formation in the Nastapoka Group, Richmond Gulf area, New Quebec – Northwest Territories; Geol. Surv. Can., Paper 82-1A, p. 1-10, 1982.

909. CHIARENZELLI, J., DONALDSON, J.A., Carleton Univ. (Geology):
Study of the sub-Thelon regolith, Northwest Territories, 1981-83; M.Sc. thesis (Chiarenzelli).

The nature and origin of the sub-Thelon regolith is being investigated, with emphasis on criteria for correlation with Proterozoic regoliths beneath the Athabasca Formation and the Hornby Bay Group.

910. COOK, D.G., Geol. Surv. Can.:
Comparative studies of ancient and modern sedimentary environments, 1970-.

911. DIXON, O.A., NARBONNE, G.M., Univ. Ottawa (Geology):
Silurian carbonate facies of Somerset and Cornwallis Islands, Canadian Arctic, 1971-.

912. DONALDSON, J.A., KERANS, C., ROSS, G., Carleton Univ. (Geology):
Sedimentology and stratigraphy of the Hornby Bay and Dismal Lakes groups, Northwest Territories, 1978-82; Ph.D. theses (Kerans, Ross).

See:
Tectonism and depositional history of the Helikian Hornby Bay and Dismal Lakes groups, District of MacKenzie; Geol. Surv. Can., Paper 81-10, p. 157-182, 1981.

The Narakay volcanic complex: mafic volcanism in the Helikian Hornby Bay Group of Dease Arm, Great Bear Lake; Geol. Surv. Can., Paper 82-1A, p. 329-340, 1982.

Field work for this project has been completed. Theses and additional papers are in preparation.

913. DONALDSON, J.A., RICKETTS, B.D., McEWEN, J., WARE, M., Carleton Univ. (Geology), Geol. Surv. Can.:
Sedimentology, stratigraphy and basinal analysis of the Belcher Group, Hudson Bay, 1976-84; M.Sc. thesis (McEwen).

See:
Sedimentary history of the Belcher Group of Hudson Bay; Geol. Surv. Can., Paper 81-10, p. 235-254, 1981.

Basin analysis of the eastern Belcher Islands has been completed, with emphasis on depositional environments, sedimentary structures, dispersal patterns and basin evolution. Work will continue in 1983 on the western Belcher Islands, with emphasis on the influence of volcanism on sedimentation and basin evolution.

914. DUNN, A.P., HODDER, R.W., Univ. Western Ontario (Geology):
The geology of the Chodi Claims, Gataga River, north-central British Columbia, 1981-82; M.Sc. thesis (Dunn):

The Chodi Claims are located along the Gataga River 200 km west of Fort Nelson in northern British Columbia. These claims over a 50 km^2 area. Rocks in the area are a series of platformal to deep-water sediments of Upper Hadrynian to Lower Ordovician age. The rocks, from oldest to youngest are: diamictite, fine grained early to late diagenetic dolostones, dolomitic to argillaceous sandstones, and grey to black shales containing sandstone and limestone turbidites. Contacts between the rocks are all conformable, and reflect a sudden change from stable shelf conditions to an unstable shelf, deepening water sequence associated with Cambrian rifting of the continental shelf. Pyrite, sphalerite, and minor galena occur as stratiform and disseminated occurrences within the upper 10 m of the dolostone. Mineralogy, geology, and location of the sulphides is suggestive of a middle Cambrian to early Ordovician origin, with the metal rich fluids flowing up the normal faults associated with the tensional episode and spreading out laterally upon reaching the relatively impermeable sandstone cap. Reaction of the fluids with seawater sulphate in the sediments and with decaying organic material deposited the metals as sulphides. These faults may have been reactivated during the Devonian.

915. DUNN, C.E., Saskatchewan Geol. Surv.:
Geology of the Middle Devonian Dawson Bay Formation in the Saskatoon potash mining district, Saskatchewan, 1974-82.

To describe the geology of the Dawson Bay Formation within a geographic area which includes all the potash mines in the general vicinity of Saskatoon. The study includes stratigraphy, sedimentation, depositional environment, diagenesis, structure, groundwaters and some paleontologic, rock mechanics, mineralogic, geochemical and geophysical observations. Of prime concern is the relationship of the strata to the underlying potash horizons of the Prairie Evaporite.

916. FLACH, P.D., Alberta Research Council (Geol. Surv.):
Sedimentology of the McMurray Formation, Athabasca oil sands, Alberta, 1977-84.

Maps and text for an Alberta Research Council Bulletin in preparation.

917. GENEST, S., LAJOIE, J., Univ. Montréal (Géologie):
Sédimentologie du Groupe d'Otish, le Bassin de Mistassini, Québec.

918. HARRISON, R.S., Alberta Research Council (Geol. Surv.):
Sedimentology and stratigraphy of the bitumen-bearing Upper Devonian Grosmont Formation in northern Alberta, 1980-84.

919. HARRISON, R.S., CONIGLIO, M., Alberta Research Council (Geol. Surv.):
Genesis and diagenesis of late pleistocene carbonates from the Florida Keys, 1978-82; M.Sc. thesis (Harrison).

A series of cored boreholes were drilled on the islands of Key Largo and Big Pine Key in the Florida Keys to document the late Pleistocene stratigraphy of the Keys, to delineate the major depositional facies, and to evaluate the relative influence of near-surface subaerial, vadose, and fresh-water phreatic diagenesis on these carbonate sequences.

920. HESSE, R.F., TASSÉ, N., McGill Univ. (Geological Sciences):
Sédimentologie du Flysch à Helminthoides, Embrunais-Ubave, Hautes Alpes, France, 1977-82; Ph.D. thesis (Tassé).

See:
Comparison preliminaire des flysches à helminthoides sur trois transversale des Alps; Ecologae Geol. Helvetiae, vol. 74, no. 2, p. 369-378, 1981.

Cretaceous-Paleogene Flysch Zone of East Alps and Carpathians: Identification and plate tectonic significance of 'dormat' and 'active' deep-sea trenches in the Alpine-Carpathian Arc; Geol. Soc. London, Spec. Publ. p. 503-526, 1982.

The significance of synchronous versus diachronous flysch successions and distribution of arc volcanism in the alpine-Carpathian Arc; Eclogae Geol. Helvetiae, vol. 74, no. 2, p. 379-381, 1981.

Flysch Zone of East Alps and Carpathians – Deep-Sea trench deposits associated with dormant and active subduction; 12th Carpatho-Balkan Geological Congr., Abstract, p. 124-125, 1981.

921. KALDI, J.G., PATERSON, D.F., Saskatchewan Geol. Surv.:
Sedimentology, stratigraphy and diagenesis of the Midale Beds of the Midale Field, Southeastern Saskatchewan, 1980-82.

The Midale oil field in southeastern Saskatchewan lies on the northeastern flank of the Williston Basin. The reservoir is in the Midale Beds, a suite of carbonates (limestones and dolomites) and evaporites (mainly anhydrite) that were deposited during a predominantly regressive episode of the shallow Mississippian shelf sea.

The Midale carbonate is divided into a lower, middle and upper zone. Many of the characteristic pore types in these zones, as observed in thin-section and under SEM, can be related to both original depositional environment and post-depositional diagenetic modifications.

The dominant styles of porosity in the fine grained argillaceous limestones of the lower zone are secondary intraparticle, moldic or microvuggy. These fabrics result from the preferential dissolution of cement or very fine shell debris. A lack of pore interconnections precludes these sediments from being effective reservoir rocks.

The most significant pore type in the middle zone is secondary intercrystalline porosity within fine grained dolomite. This fabric is the result of solution of calcite or aragonite from between rhombs after incomplete dolomitization. A crinoidal grainstone with pervasive early diagenetic syntaxial rim cement forms a tight trap in the middle zone.

The upper zone consists of fractured calcareous microcrystalline dolomite. The main pore type is a non-fabric selective system of oblique to vertical microfractures. These fractures may be associated with regional uplift or local salt solution. The presence of dolomite rhombs on fracture surfaces indicates that dolomitization was relatively late, postdating fracturing. The microfractures in the upper zone counteract the porosity-concluding effects of stylolitization and secondary anhydritization.

922. KOSTER, E.H., Alberta Research Council (Geol. Surv.):
Sedimentology and coal resources of the Upper Cretaceous Belly River Group (Foremost and Oldman Formations), southern Alberta plains, 1981-84.

Phase I – Outcrop sedimentological study of Oldman Formation in Dinosaur Provincial Park near Brooks, Alberta. Aims: 1) to document, and understand the origin of spatial and sequencial arrangements of (predominantly fluvial) paleoenvironments; and 2) to provide sedimentological input to ongoing studies of dinosaur taphonomy by the Provincial Museum of Alberta.

Phase II – Regional subsurface stratigraphic study of Belly River Group. Aims: 1) to map and calculate the coal resources; and 2) to attempt log interpretation of stratigraphy between seams with a view to developing an overall depostional model.

923. KRAMERS, J.W., Alberta Research Council (Geol. Surv.):
Sedimentology of the Grand Rapids Formation, Wabasca Oil sand deposit, Alberta, 1972-84.

Continuing study of the sedimentology, facies relationships, petrology and diagenesis of the bitumen saturated Grand Rapids Formation in northeastern Alberta (Tp. 70-90, rge. 13 W4 – rge 5 W5).

924. LAJOIE, J., Univ. Montréal (Géologie):
Sédimentologie des séquences archéennes, nord-ouest québécois.

925. LEGUN, A.S., WOOD, J., Ontario Geol. Surv.:
Huronian sedimentation in the Cobalt Area, northern Ontario, 1981-82.

See:
Ontario Geol. Surv., Misc. Paper 100, p. 88-92, 1981.

1) Determining the environment of deposition of Coleman sediments and the role of the basement as a source of sediment.

2) Producting a computer map of the basement topography based on surface and subsurface data.

3) Determining the relationship between basement topography and stratigraphy.

4) Relating topogrpahic elements to structure (faults etc.) and to the pattern of distribution of Ag-Co ore veins.

926. LORSONG, J.A., Saskatchewan Geol. Surv.:
Sedimentology of the Mannville Group (Lower Cretaceous) in the Celtic Field, west-central Saskatchewan, 1979-82.

See:
Diagenesis and heavy oil emplacement in upper Mannville Reservoirs, Celtic field, west-central Saskatchewan; Saskatchewan Geol. Surv., Misc. Rept. 81-4, p. 141-148, 1981.

Studies focused on interpretation of specific coastal depositional environments, and the relation of sedimentological parameters to physical properties (porosity, permeability, oil saturation) and to diagenetic features. Examination of a substantial number of cores in other areas (primarily Tangleflags, Pikes Peak, Lashburn, Marsden fields) shows that the Celtic field is an adequate type area, in that very similar depositional and diagenetic features are widespread throughout the Lloydminster heavy oil area. In addition, investigations on an anomalous channel deposit and anomalously thick fine-grained sequences in the Pikes Peak area were initiated. Other investigations in progress include: tree-rafted exotic clasts in the channel deposit; vertical sequences of sedimentary structures in wave-generated sand bodies (reservoirs); abundant hummocky cross-stratification.

927. MAMET, B., DELAND, J., HUBERT, C., LESPÉRANCE, P.J., Univ. Montréal (Géologie):
Microfacies carbonatés du Paléozoique.

928. MIALL, A.D., Univ. Toronto (Geology):
Stratigraphy and sedimentology of the Eureka Sound Formation (upper Cretaceous-Paleogene), Canadian Arctic Islands, 1973-84.

See:
Late Cretaceous and Paleogene sedimentation and tectonics, Canadian Arctic Islands; Geol. Assoc. Can., Spec. Paper 23, p. 221-272, 1981.

Tertiary sedimentation and tectonics in the Judge Daly Basin, northeast Ellesmere Island, Arctic Canada; Geol. Surv. Can., Paper 80-30, 1982.

The Eureka Sound Formation (Maastrichtian to Eocene or ?Oligocene) includes at least 3000 m of marine and nonmarine sandstone, siltstone, mudstone, conglomerate and coal. It forms thick wedges flanking the Arctic Ocean and Baffin Bay, and occupies seven major basins within the Arctic Islands (Banks, West Sverdrup, Meighen, Remus, Eclipse, Lake Hazen and Judge Daly).

The Eureka Sound Formation was deposited during the early phases of the Eurekan Orogeny. The first phase, during the Maastrichtian, elevated Storkerson Uplift, Sverdrup Basin Rim, Cornwall Arch, Princess Margaret Arch and the Craton south of Sverdrup Basin, and separated distinct depocentres between these arches. Sedimentation encroached on the uplifts during the Paleocene and Eocene and there the formation rests unconformably on Mesozoic or Paleozoic rocks. Judge Daly Basin formed by rift faulting in the Paleocene and sedimentation ceased there during a thrust faulting episode later in the Paleocene. Lake Hazen Basin probably is entirely Eocene. Eureka Sound sedimentation was terminated by the compressive phase of the Eurekan Orogeny (Eocene-early Miocene).

The development of the formation can be correlated in part with seafloor spreading events in Baffin Bay-Labrador Sea. The basin and uplift phase (Maastrichtian) resulted from anticlockwise rotation of Greenland about a pole in northern Baffin Island, causing rotation and compression in the northeast Arctic Islands and, probably, sinistral strike-slip movement along Parry Channel. Judge Daly Basin formed during a short interval of plate divergence, and sedimentation there was terminated when Greenland commenced northward transpressional movement. This mid-Paleocene to Eocene phase caused extensive thrust faulting in eastern Ellesmere Island and, probably, extensive strike slip movement along Nares Strait. Sedimentation was terminated by folding and faulting in the late Eocene or Oligocene during convergence between the Atlantic and Arctic oceanic plates.

929. MIALL, A.D., CHOWDHURY, A., Univ. Toronto (Geology):
Diagenetic modification of Jurassic gas reservoirs, Western Sverdrup Basin, Canadian Arctic Islands, 1981-82.

To deduce the diagenetic processes which have modified the reservoir quality of the Lower Jurassic sandstones in the Western Sverdrup Basin, to demonstrate the diagenetic trends in the basin and to show the relationship between the timing of diagenetic reactions relative to hydrocarbon maturation and migration. The gas discovery wells are spread throughout the basin and provide a representative data set to study the diagenetic trends in the Lower Jurassic reservoir sandstones. Diagentic modifications were achieved by physicochemical processes, with pressure solution of quartz, deformation of chert and illite and development of quartz overgrowth, dissolution of illite and growth of authigenic kaolinite in the muddy sandstones and late illitization of kaolinite. The degree and type of diagenesis are related to depth of burials-shallow reservoirs exhibit primary porosity, whereas deeper reservoir display secondary porosity resulting from moderate to deep subsurface leaching of the matrix. This late diagenetic events are related to generation and migration of hydrocarbon gas-migration of gas inhibited further diagenetic leaching whereas in barrier water-filled zones illite-diagenesis proceeded unimpeded. It is proposed that this diagenetic model can be applied to other Mesozoic-Tertiary formations in the Frontier basin to predict

reservoir quality and timing of diagenetic reactions. The diagenetic model will be presented in the forthcoming International Sedimentologist's Conference. Additional research will enable us to publish a comprehensive research paper.

930. MIALL, A.D., ELLINGHAM, E., Univ. Toronto (Geology):
Stratigraphy and sedimentology of the Canyon Fiord Formation (Carboniferous-Permian), central Ellesmere Island, 1982-84; M.Sc. thesis (Ellingham).

This study involves a sedimentological investigation of the Canyon Fiord Formation, a Carboniferous-Permian unit of redbeds that outcrops along the south and south-east margins of the Sverdrup Basin. The objective is to analyse and interpret, by both qualitative and quantitative methods, features of the paleo-environment such as depositional regime, paleogeography, tectonic setting and source area. Hopefully, this research will further elucidate the sedimentologic framework of the Sverdrup basin which is considered one of the promising frontier petroleum basins of Canada.

No in-depth sedimentological study of the Canyon Fiord Formation has been undertaken, but preliminary evidence suggests that it may represent an alluvial fan or fan-delta.

Field techniques will include detailed stratigraphic sections, collection of samples and paleocurrent data, and clast studies of the conglomeratic units. Subsequent laboratory analysis will depend on the nature of the formation and the samples that were obtained, but may include: sand petrographic studies, grain size analysis studies of cement and porosity, studies of cyclicity of beds, interpretation of paleocurrent data and interpretation of stratigraphic successions, all compiled for a reconstruction of depositional history.

931. MIALL, A.D., FRALICK, P.W., Univ. Toronto (Geology):
Sedimentology on an early Proterozoic continental margin: Lower Huronian Supergroup Elliot Lake area, Ontario, 1980-83; Ph.D. thesis (Fralick).

Rocks of the Lower Huronian succession (Matinenda, McKim, Ramsay Lake, and Pecors Formations) in the Elliot Lake area can be divided into ten lithofacies: 1) quartz pebble conglomerate assemblages; 2) trough cross-stratified quartzites; 3) planar cross-stratified quartzites; 4) immature sandstones; 5) lenticular bedded units; 6) rhythmites; 7) massive mixtites; 8) bedded mixtites; 9) varved units; 10) massive sandstones and siltstones. Matinenda quartzites and quartz pebble conglomerates were deposited by braided, glacial (?) outwash streams. Marine delta sediments (McKim Formation) are interbedded with Matinenda quartzites in the upper portion of the pre-Ramsay Lake succession. Matinenda fluvial deposition ended as the Ramsay Lake ice sheet advanced into and retreated from the area leaving a layer of glacial debris. Isostatic depression and rebound caused by the ice advance and retreat produced the marine transgression-regression which deposited fine grained material of the prodelta Pecors Formation.

Favourable lithotopes for placer exploration are the lower fluvial rocks of the Matinenda Formation and beach deposits developed where the Matinenda Formation and McKim Formation interbed.

932. MIALL, A.D., WAHEED, A., Univ. Toronto (Geology):
Sedimentology of Cretaceous coals, Drumheller area, Alberta, 1980-82; M.Sc. thesis (Waheed).

The coal-bearing strata of Upper Cretaceous Horseshoe Canyon Formation, exposed in Drumheller area, southern Alberta, are interpreted to have been deposited in deltaic and fluvial environments.

The deltaic sequence can be differentiated into subenvironment of low sinuosity meandering channel levees, crevasse splay-crevasse channel, bay or marsh and coal swamp. Fluvial subenvironments includes those of high-sinuosity meandering channel levees, crevase channel, floodbasin and coal swamp. The fluvial channels exhibit well-developed point-bar bedding (episilon cross beds).

Strata of underlying barren Bearpaw Formation identified on logs and examined in cores, appears to have been deposited in delta-front, prodelta, tidal channel, foreshore and shoreface environments.

Majority of coal beds were deposited in swamps that developed in a channel margin setting (e.g. back-levee and flood basin). However, few coal beds are considered to have been deposited in channel-fill and back-barrier swamps.

Markov analysis of coal-bearing strata indicates that sedimentation was cyclic. Paleoslope during sedimentation was generally towards east with some minor variations.

933. MIALL, A.D., YAGISHITA, K., Univ. Toronto (Geology):
Sedimentology and stratigraphy of the Hanna and Haida Formations (Cretaceous), Queen Charlotte Islands, 1981-83; Ph.D. thesis (Yagishita).

934. MOSSOP, G.D., FLACH, P.D., Alberta Research Council (Geol. Surv.):
Sedimentology and petrology of the Athabasca Oil Sands, northern Alberta, 1975-84.

See:
The role of regional growth in oil sands development; Proc. AOSTRA/CPM Conf. Advances in Petroleum Recovery and Upgrading, Calgary, 1981.

Oil sands geology and technology; GAC/MAC Field Guide to Geology and Mineral Deposits, Calgary, p. 143-154, 1981.

Facies distribution, depositional environments, paleocurrent patterns, paleohyrology, basin development, provenance, paleogeography, oil migration and maturation history, mineralogy, petrography, synergistic and geotechnical characteristics of the McMurray Formation oil sands in the Athabasca deposit.

935. MUIR, I.D., RUST, B.R., Univ. Ottawa (Geology):
Sedimentology and tectonic setting of the Devonian Snowblind Bay Formation, Cornwallis Island, Northwest Territories: A coastal alluvial fan complex, 1980-82; M.Sc. thesis (Muir).

The Devonian Snowblind Bay Formation is recognised as an alluvial fan complex transitional into shallow marine deposits. The formation is part of the Devonian clastic wedge generated in response to the Boothia Uplift and can be related to structural features in the locally underlying rocks.

Three facies associations are present: a conglomerate association formed on proximal and mid-fan regions of the subaerial fan complex, a conglomerate-sandstone associaiton of mid to distal subaerial regions, and a fine-grained association. The latter was found on coastal to shallow marine parts of the complex and shows alteration of alluvial, wave-generated and tidal influence.

936. NEALE, K., DONALDSON, J.A., Carleton Univ. (Geology):
Stratigraphy and sedimentology of the Island Lake area, northeastern Manitoba, 1981-83; M.Sc. thesis (Neale).

See:
Island Lake; Manitoba Min. Res. Div., Rept. Field Activities, p. 39-42, 1981.

Island Lake – Sinclair – Savage Islands; Manitoba Res. Div., Prel. map 1981-I-2, 1981.

937. PATERSON, D.F., Saskatchewan Geol. Surv.:
Geology and shale-oil potential of the Speckled shales (Cretaceous) in Saskatchewan, 1982-84.

The Cretaceous Speckled shales outcrop in the Pasquia Hills of east-central Saskatchewan and have been shown to contain up to 46 L/tonne oil over a 33 m interval. The strata extend westward to the Alberta border and southward to the United States border thus covering some 270 000 km^2 in Saskatchewan. The aim of this project is to show their geographic limits, depth of burial, thickness and variations in oil content with a veiw to assessing their economic potential.

938. POEY, J-L., DIXON, O.A., Univ. Ottawa (Geology):
Carbonate facies of the Silurian shelf-to-basin transition, Baumann Fiord area, Ellesmere Island, 1981-84; M.Sc. thesis (Poey).

See:
Preliminary report on Upper Ordovician to Upper Silurian carbonates, Baumann Fiord area, southwestern Ellesmere Island, District of Franklin; Geol. Surv. Can., Paper 82-1A, p. 75-77, 1982.

939. ROTTENFUSSER, B.A., Alberta Research Council (Geol. Surv.):
Peace River oil sands study, northern Alberta, 1975-.

940. RUST, B.R., Univ. Ottawa (Geology):
Sedimentology of the Camberland Group south of Joggins, Nova Scotia, 1981-83.

The Cumberland Group succession south of Joggins, Nova Scotia, is an alluvial deposit with minor coal seams. It is predominantly mudstone, with thin sandstones attributed to overbank deposition on an alluvial plain. Channel sandstones are restircted in lateral extent, and are interpreted to be of anastomosing type.

941. RUST, B.R., MASSON, G., DILLES, S., Univ. Ottawa (Geology):
Sedimentology in relation to coal deposits of the eastern part of the Sydney Basin, Nova Scotia, 1981-85; Ph.D. thesis (Masson); M.Sc. thesis (Dilles).

The sedimentology of the complete Morien Group is under investigation in the eastern part of the Sydney Basin, and the lower part (below the productive coal seams) in the western part of the basin. The aims are to investigate 1) the influence of clastic sedimentology on coal type and quality; 2) depositional environments of the Sydney Basin; and 3) paleoclimatic and tectonic controls on sedimentation in the Sydney Basin.

942. RUST, B.R., NALDRETT, D., Univ. Ottawa (Geology):
Shallow marine ice contact deposits in the Quaternary of Ottawa area, Ontario, 1980-85; Ph.D. thesis (Naldrett).

Sand and gravel deposits in Quaternary of Ottawa area are mainly proximal subaqueous outwash deposits formed in close association with the retreating ice front, and overlain by littoral marine strata. Some subaqueous outwash units contain diamictons, interpreted as flow tills that slid off adjacent ice masses.

943. SHILTS, W.W., Geol. Surv. Can.:
Mineral indicator tracing, southern Keewatin, 1970-.

944. SONNENFELD, P., HUDEC, P.P., DAVIS, M.W., DERMITSAKIS, M., Univ. Windsor (Geology):
Messinian sandstones in the Mediterranean Region, 1978-82.

See:
Postulates for massive evaporite formation; Rev. Geol. Mediterr., vol. 7, p. 103-113, 1981.

Gypsiferous sandstones and conglomerates occur all along the north rim of Mediterranean basins and are of end-Miocene (Messinian) age. They are thus contemporaneous to and interfingering with end-Miocene massive evaporite beds in onshore and offshore poistion in the Mediterranean region. Their grain size diminishes from the Aegean Sea and Crete to the Ionian islands, Toscana, Sicily and Spain. Their cross-bedding and flow structures show a similar current direction. Embedded faunas are brackish water forms of Romanian and Ukrainian affinities. A petrological examination shows the fine-grained matrix of conglomerates to be alien to local surroundings. Fine-grained sandstones and fine-grained matrix of conglomerates are derived from a mature provenance area composed primarily of metamorphic rocks, such as can be found around the Aegean Sea and to the north of the Dardanelles.

945. SONNEVELD, E., BARNES, W.C., Univ. British Columbia (Geological Sciences):
Paleotopography of the pre-Cretaceous unconformity and sedimentation patterns of the Lower Mannville Group near Drumheller, Alberta, 1980-82; M.Sc. thesis (Sonneveld).

The paleotopography on the pre-Cretaceous unconformity and distribution of overlying Aptian and Albian Mannville sediments has been studied in an area near Drumheller, Alberta. From core examination and geophysical well log interpretation, regional correlation of units has been made. Paleontological data was obtained to aid in correlation of units and environmental interpretation. Detailed petrographic examination of sandstones with additional information from scanning electron microscope and x-ray diffraction studies has been completed on a local scale.

Strata of the Cretaceous Mannville Group rest with slight angular unconformity on Mississippian shales and carbonates. Distribution of the Cretaceous clastic units reflects the relief on the erosional surface, which is partially controlled by the subcropping lithologies. The Basal Quartz sandstone in the Drumheller area has previously been considered one sand unit. Careful examinaiton reveals the existence of several distinct units separated by pyritization in the sands.

A model has been constructed to account for the distribution of Lower Mannville strata in the study area. Lowermost Cretaceous sands reflects basal filling of the erosional surface, whereas by mid-Aptian time, a marine transgression is clearly indicated.

946. THOMAS, R.G., Univ. Calgary (Geology and Geophysics):
The stratigraphy, sedimentology and palynology of the Lower Devonian Cosheston Group, southwestern Dyfed, Wales, 1972-74.

947. THOMAS, R.G., Univ. Calgary (Geology and Geophysics):
The sedimentology and petrography of some upper Cretaceous sandstones in southern Alberta, 1981-83.

948. TILLEY, B.J., Alberta Research Council (Geol. Surv.):
Sedimentology and mineralogy of the glauconitic sandstone in the Suffield area, southeastern Alberta, 1980-82; M.Sc. thesis.

The Lower Cretaceous glauconitic sandstone in the Suffield Heavy Oil Pilot Project is a 45 metre thick uninterrupted sandstone with a pay zone averaging 20 metres in thickness. The study area is centered around this heavy oil pilot site operated by Alberta Energy Company with Alberta Oil Sands Technology and Research Authority, Dome Petroleum, and Westcoast Petroleum as partners. The purpose of this study was to: 1) determine the depositional environment and facies distribution within the glauconitic sandstone; and 2) determine the mineralogical and diagenetic variations within the sandstone in order to determine the reservoir quality and fluid sensitivity. The local portion of the study centered around the Suffield pilot site has been completed. The project is now to apply the local findings on a more regional scale.

949. VALADE, M., BOUCHARD, M.A., Univ. Montréal (Géologie):
Pétrographie et sédimentologie du till de Thetford-Mines, Québec, 1980-; thèse de M.Sc. (Valade).

950. WIGHTMAN, D.M., Alberta Research Council (Geol. Surv.):
Cold Lake oil sands, Alberta, 1980-84.

To gain insight into the controls on oil saturation in the Lower Cretaceous Mannville Group by doing regional stratigraphy and detailed facies analysis on the sands.

951. WILSON, M.A., PATERSON, D.F., Saskatchewan Geol. Surv.:
Sedimentology of the Mannville Group (Lower Cretaceous) in the Tangleflags Field, west-central Saskatchewan, 1981-.

An investigation into the sedimentology of the Mannville Group in the Tangleflags Field was initiated in September 1981. This study will focus on the interpretation of the depositional environments present in this relatively extensive field. An attempt will be made to relate the sedimentological parameters to the physical properties and diagenetic features of the sediments (an extension of a study of the Celtic Field). The study will involve the examination of cores, where they are available, and geophysical well logs. In addition, a search for anomalous features in the ara covered by the Brightsand Lake map sheet was initiated. These features include anomalously thick fine-grained sequences and channel deposits (for example, those found in the Pikes Peak Field).

RECENT AND UNCONSOLIDATED SEDIMENTS/SÉDIMENTS RÉCENTS ET NON CONSOLIDÉES

952. ADSHEAD, J.D., Geol. Surv. Can.:
Geological characterization of Arctic lakes: sediment properties and sedimentary processes, 1977-.

953. AMOS, C.L., Geol. Surv. Can.:
Sediment dynamics at the head of the Bay of Fundy, 1978-.

954. AMOS, C.L., Geol. Surv. Can.:
Stability and transport of sediments on Continental Shelves, 1980-.

955. BORNHOLD, B.D., Geol. Surv. Can.:
Marine surficial geology and sedimentation, British Columbia, 1975-.

956. BORNHOLD, B.D., Geol. Surv. Can.:
Coastal geology – British Columbia, 1978-.

957. BUCKLEY, D.E., Geol. Surv. Can.:
Multidisciplinary environmental marine geological analysis of the Miramichi Estuary and Bay, New Brunswick, 1975-1980.

958. EGAN, D.M., LAST, W.M., SCHWEYEN, T.H., Univ. Manitoba (Earth Sciences):
Mineralogy and sedimentology of selected saline lakes in southern Saskatchewan, 1981-83; M.Sc. thesis (Egan).

We propose to study the sediment record of selected saline and hypersaline lakes in southern Saskatchewan. The major biological and hydrochemical characteristics of these lakes have been studied for over fifty eyars and are relatively well documented. There is, however, very little modern sedimentological data and essentially no stratigraphic information on these lacustrine deposits. The main purpose of study, therefore, is to gain a basic understanding of the sedimentological and diagenetic processes controlling deposition and alteration of the record within the basins. Specifically, our objectives are to: 1) map the modern sedimentary facies that exist in the selected lakes; 2) relate these modern facies to the important physical and chemical characteristics and processes operating in the basins; and 3) determine the nature and mechanisms of any post-depositional changes that have occurred in the last 10,000 years. The modern and post-glacial sediments of these Saskatchewan lakes offer a unique natural laboratory in which to study not only evaporite formation and brine evolution, but also details of diagnetic reactions involving both clastic and chemically precipitated sediments.

This research will involve acquiring sediment samples and cores from Muskiki, Waldsea and Dana lakes. A modified Livingstone corer will be used to collect the cores. The clay and evaporite mineralogy will be studied by X-ray diffraction methods used in conjunction with chemical analyses. Scanning electron microscopy will be employed to specify the clay microstructure and evaporite crystal morphology. In addition, the electron microprobe will be used to crystal morphology. In addition, the electron microprobe will be used to define the chemical composition, including the presence of minor and trace elements of the evaporites, silicates, and carbonates. The chemistry of the brine and interstitial water will be studied using standard chemical techniques.

959. JANSA, L.F., Geol. Surv. Can.:
Stratigraphy and sedimentology of the Mesozoic and Tertiary rocks of the Atlantic continental margin, 1971-.

960. LAST, W.M., EGAN, D.M., SCHWEYEN, T.H., LOCKHART, B., Univ. Manitoba (Earth Sciences):
Sedimentology of saline lakes in southern Saskatchewan, 1981-84.

The plains of western Canada are occupied by dozens of hypersaline, saline, and brackish-water lakes. These lakes range in size from small (less than 1 km^2) prairie "potholes" to relatively large (greater than 300 km^2) bodies of water. The shallowest lakes exhibit playa characteristics, filling with water during the wet season but drying up during the summer and fall. The greatest concentration of saline lakes occurs in southern and west-central Saskatchewan. In April, 1981, we began a long-term study of the sediments, sedimentary processes, and post-glacial sedimentary records contained in these lakes.

The specific long-term objectives of this project are to: 1) characterize and delineate the modern sedimentary facies patterns of the saline lakes; 2) investigate the genesis and diagenesis of both the clastic and

chemical sediments in the saline lake environment; and 3) identify and interpret the physical, chemical, and possibly biological changes that have occurred during the post-glacial period. Field parties were sent to 35 lakes and playas to collect representative water samples, bottom grab samples, and short (1 m or less in length) cores. On the basis of preliminary examination of the lakes and analysis of the samples, we have chosen 10 lakes for detailed stratigraphic and sedimentologic investigation over the next three-year period. These lakes are Muskiki, Berry, Grandora North, Grandora South, Lydden, Boot, Ceylon, Vincent, Porter, and Waldsea.

961. LUTERNAUER, J.L., Geol. Surv. Can.:
Fraser Delta sedimentation, British Columbia, 1974-.

962. LUTERNAUER, J.L., Geol. Surv. Can.:
Marine delta sedimentation, British Columbia, 1979-.

963. McLAREN, P., Geol. Surv. Can.:
Environmental geology of eastern Arctic coasts, 1976-.

964. MAH, A., STEARN, C.W., McGill Univ. (Geological Sciences):
Effect of hurricane Allen (1980) on the biota and sediments of the Bellairs Reef, Barbados, W.I., 1981-83; M.Sc. thesis (Mah).

965. PELLETIER, B.R., Geol. Surv. Can.:
Bottom studies of the Beaufort Sea, 1972-.

966. RASHID, M.A., Geol. Surv. Can.:
Geochemical transformations and reactions of organic compounds in Recent marine sediments, 1975-.

967. RUKAVINA, N.A., Environment Canada (National Water Res. Instit.):
Nearshore profile changes in the Great Lakes, 1978-83.

To measure nearshore profile changes in lakes and their dependence on wave properties and seasonal water level variations. Profile monitoring was continued at a site on the Burlington Bar from May 1981 to January 1982 and continuous measurements of profile change during storms were made on three occasions.

968. SCHAFER, C.T., Geol. Surv. Can.:
The Recent paleoclimatic and paleoecologic records in fjord sediments, 1980-.

969. SONNENFELD, P., Univ. Windsor (Geology):
Evaporite formation, 1978-82.

Hypersaline brines develop a density stratification against inflowing waters. A hot water lens develops below the interface by absorption of solar radiation. Above the interface waters remain cool due to evaporation, bottom waters also remain cool. The hot water lens creeps up into the inflow. The interface is thus bulging upwards at the mouth of the inflow, and sags in the centre of the lake or lagoon. The bulge in the interface juxtaposes cool low-salinity waters above the interface with hot hypersaline brines below the interface. Both must have equal density to keep the system stable. Minimum density difference for development of a hotwater lens is 15 g/l. Evaporation eventually overtakes the downward advancing mixing front between the two waters, while even strong winds are unable to overturn the gravitationally stable system.

970. SYVITSKI, J.P.M., Geol. Surv. Can.:
The physical behaviour of suspended particulate matter (sp m) in natural aqueous environments, 1981-.

971. SYVITSKI, J.P.M., Geol. Surv. Can.:
Sedimentology of fjords, 1981-.

To complete a comprehensive study on the climatology, hydrography, physical oceanography, sediment dynamics, sedimentological history, and animal sediment relationships of west coast fjords and Arctic fjords.

972. TAYLOR, R.B., Geol. Surv. Can.:
Coastal erosion – sedimentation, northern Somerset Island, District of Franklin, 1973-.

973. TAYLOR, R.B., Geol. Surv. Can.:
Coastal morphology and sediment dynamics, southeast and east Cape Breton Island, Nova Scotia, 1980-.

974. VILKS, G., Geol. Surv. Can.:
Pleistocene-Holocene basin sedimentation, 1975-.

SOIL SCIENCE/PEDOLOGIE

975. MORAN, S.R., WALLICK, E.I., MACYK, T., MASLOWSKI, A., TRUDELL, M., SCAFE, D.W., Alberta Research Council (Geol. Surv.):
Reclamation of open-pit mined coal deposits, western Alberta, 1979-84.

To evaluate the potential for change, over time, in the productive capability of soils that are established on reclaimed landscapes as a result of the release of salts through weathering of cast overburden material followed by transport and accumulation of salt by subsurface water; to evaluate the potential for the change, over time, in the chemical quality of groundwater within or beneath reclaimed areas and of surface water that is fed from reclaimed areas; to evaluate the potential for reoccupation and utilization of post-mining landscapes from the standpoint of availability of water supply, surface subsidence and stability, and slope stability adjacent to valley edges; and to evaluate whether techniques of surface contouring or selective material placement can significantly mitigate any potential deleterious conditions that are identified as likely to occur.

STRATIGRAPHY/STRATIGRAPHIE

PRECAMBRIAN/PRÉCAMBRIEN

976. AITKEN, J.D., Geol. Surv. Can.:
Helikian and Hadrynian stratigraphy Eastern Cordilleran and Interior Platform, 1973-.

See:
Stratigraphy and sedimentation of the Upper Proterozoic Little Dal Group, Mackenzie Mountains, Northwest Territories; Geol. Surv. Can., Paper 81-10, p. 47-72, 1981.

977. CAMPBELL, F.H.A., Geol. Surv. Can.:
Geology of the Coronation Gulf area, District of Mackenzie, 1977-.

978. CHANDLER, F.W., Geol. Surv. Can.:
Geology of the Helikian sediments and adjacent gneisses, Fury and Hecla Strait area, District of Franklin, 1979-.

979. EISBACHER, G.H., Geol. Surv. Can.:
Stratigraphy, sedimentation, structure and tectonic setting of the Windermere Supergroup, 1979-.

See:
Sedimentary tectonics and glacial record in the Windermere Supergroup, Mackenzie Mountains, northwestern Canada; Geol. Surv. Can., Paper 80-27, 1981.

Age and stratigraphic-tectonic significance of Proterozoic diabase sheets, Mackenzie Mountains, northwestern Canada; Can. J. Earth Sci., vol. 19, no. 2, p. 316-323, 1982.

980. GOBEIL, A.G., Québec Ministère Énergie et Ressources:
Stratigraphie des roches volcano-sédimentaires d'âge archéenne de la région de Chibougamau, Québec, 1979-82.

A la suite de l'établissement d'un modèle stratigraphique pour la région immédiate de Chibougamau, réalisation de diverses coupes géologiques le long de la ceinture Chibougamau-Matagami dans le district de Chibougamau pour étendre ce modèle à la ceinture de roches vertes qui s'étend vers l'ouest.

981. HENDERSON, J.R., Geol. Surv. Can.:
Geology of the Foxe Fold belt (East half), Baffin Island, District of Franklin, 1979-.

982. HOFFMAN, P.F., Geol. Surv. Can.:
Hepburn batholith, Hepburn Lake map-area, District of Mackenzie, 1977-.

983. JACKSON, G.D., Geol. Surv. Can.:
Operation Borden, District of Franklin, 1977-.

See:
Evaporites and folding in the Neohelikian Society Cliffs Formation, northeastern Bylot Island, Arctic Canada; Geol. Surv. Can., Paper 81-1C, p. 35-44, 1981.

984. LANGFORD, F.F., Univ. Saskatchewan (Geological Sciences):
Stratigraphy of the Martin Group in the Greater Beaverlodge area, Saskatchewan, 1978-82.

See:
The Martin Group in the Greater Beaverlodge area; Sask. Geol. Surv., Summ. Investig. 1981, Misc. Rept. 81-4, p. 38-43, 1981.

985. SIRAGUSA, G.M., TROWELL, N.F., Ontario Geol. Surv.:
Swayze belt synoptic project, Ontario, 1979-83.

To arrive at a general synthesis of the structural and stratigraphic features of the Swayze belt, and thus gain insight in its mineral potential. The first phase of study (i.e. mapping at 1" = 1/4 mile of southern margin of belt) will be completed in the summer of 1982.

986. WALLACE, H., Ontario Geol. Surv.:
Red Lake synoptic survey, Ontario, 1978-83.

See:
Red Lake synoptic project, District of Kenora; Ontario Geol. Surv., Misc. Paper 100, p. 12-14, 1981.

A program of areal mapping, petrochemical investigations and mineral deposits studies in the Red Lake area of northwestern Ontario was continued in 1981-82. Detailed mapping of Baird Township completed updating of the geological data base for the Red Lake supracrustal belt. Extensive bedrock sampling in that township and adjacent areas will be used in metallogenetic studies of local gold deposits, and in attempts to correlate volcanic stratigraphy across the Dome Stock. Recent U-Pb zircon age determinations have been used in conjunction with field evidence to interpret the structure and stratigraphy of the belt which takes the form of a broad anticlinorium made up of a least three volcanic cycles with ages of 2.74, 2.80 and 2.98 + b.y.

Preliminary interpretation of petrochemical data from the western part of the Red Lake belt indicates widespread alteration of the mafic and felsic metavolcanics characterized by intense soda depletion and addition of CO_2. This is similar to the alteration identified by Pirie in the Balmertown-Cochenour gold camps at the eastern end of the belt.

PALEOZOIC/PALÉOZOIQUE

987. AITKEN, J.D., Geol. Surv. Can.:
Lower Paleozoic stratigraphy, southern Rocky Mountains, Alberta and British Columbia, 1972-.

988. BIRON, S., ST-JULIEN, P., Québec Ministère Énergie et Ressources:
Le Cambro-Ordovicien du nord de la Gaspésie, Québec, 1973-82; thèse de doctorat (Biron).

989. BOEHNER, R.C., GILES, P.S., Nova Scotia Dept. Mines and Energy:
Windsor Group project, Loch Lomond Basin, Nova Scotia, 1980-83.

See:
Preliminary report on the geology and mineral deposits of the Loch Lomond Basin, Cape Breton Islands; Nova Scotia Dept. Mines Energy, Report 81-1, p. 153-165, 1981.

Field work and research in the Loch Lomond area was postponed during 1981 because of the lack of funds. Efforts were concentrated on reducing the backlog of reports on previous project areas including the Antigonish Basin and a general report on salt and potash resources in Nova Scotia. Activities in the Loch Lomond Basin will resume in the 1982 field season under a joint program of the Province of Nova Scotia and Canada Department of Energy, Mines and Resources.

990. BOLTON, T.E., Geol. Surv. Can.:
Silurian-Ordovician macrobiostratigraphy of Anticosti Island, Québec, 1974-.

See:
Ordovician and Silurian biostratigraphy, Anticosti Island, Quebec; IUGS Subcommission on Silurian Stratigraphy, Ordovician-Silurian Boundary Working Group. Field Meeting, Anticosti-Gaspé, Québec 1981, vol. II, p. 41-59, 1981.

Late Ordovician and Early Silurian Anthozoa of Anticosti Island, Québec; ibid., p. 107-135, 1981.

Early Silurian Anthozoa of Chaleurs Group, Port Daniel-Black Cape region, Gaspé Peninsula, Québec; ibid., p. 299-314, 1981.

991. CARSON, D.M., Ontario Geol. Surv.:
Paleozoic geology of the Peterborough-Kingston area, southern Ontario, 1979-82.

See:
Paleozoic geology of the Bath-Yorkshire Island area, southern Ontario; Ontario Geol. Surv., Prel. Map P. 2497, 1981.

Paleozoic geology of the Gananoque-Wolfe Island area, southern Ontario; Ontario Geol. Surv., Prel. Map P. 2496, 1981.

During the 1981 field season, the Bath, Gananoque and Wolfe Island N.T.S. sheets were mapped at a scale of 1:50 000. Preliminary maps for these areas are currently in press. A formal geological report covering the areas mapped in the 1979, 1980 and 1981 field seasons is currently in preparation.

992. CARSON, D.M., Ontario Geol. Surv.:
Paleozoic geology of the Ottawa-St. Lawrence Lowlands, Ontario, 1981-83.

See:
Paleozoic geology of the Brockville-Mallorytown area, southern Ontario; Ontario Geol. Surv., Prel. Map P. 2495, 1981.

Paleozoic geology of the Merrickville area, southern Ontario; Ontario Geol. Surv., Prel. Map P. 2494, 1981.

Paleozoic geology of the Kemptville area, southern Ontario; Ontario Geol. Surv., Prel., Map P. 2493, 1981.

During the 1981 field season, the Mallorytown, Brockville, Merrickville, Kemptville, Winchester, Morrisburg and Cornwall N.T.S. sheets were mapped at a scale of 1:50 000. Preliminary maps were prepared for the first four areas listed. An open file report was prepared for the first four areas listed. An open file report was prepared covering all areas listed. In the 1982 field season, the Ottawa, Thurso, Russell, Hawksbury, Alexandria, Lachute, Vaudreuil and Huntingdon N.T.S. sheets will be mapped and preliminary maps will be prepared for these areas as well as the remainder from the 1981 field season. Following the completion of this field work, a formal geological report covering the areas mapped in the 1981 and 1982 field seasons will be produced.

993. CECILE, M.P., Geol. Surv. Can.:
Lower Paleozoic basin-to-platform relationships in the Cordillera, District of Mackenzie-British Columbia, 1977-.

See:
Plateau overthrust and its hydrocarbon potential, Mackenzie Mountains, Northwest Territories; Geol. Surv. Can., Paper 82-1A, p. 89-94, 1982.

994. CHRISTIE, R.L., Geol. Surv. Can.:
Geological reconnaissance, southeastern margin of Franklinian geosyncline, 1980-.

995. FRITZ, W.H., Geol. Surv. Can.:
Cambrian biostratigraphy of the Canadian Cordillera, 1965-.

996. GELDSETZER, H.H.J., Geol. Surv. Can.:
Carboniferous and Triassic strata of Appalachian region, 1974-.

997. GELDSETZER, H.H.J., Geol. Surv. Can.:
Middle and Upper Devonian rocks of east-central British Columbia and west-central Alberta, 1979-.

998. GILES, P.S., BOEHNER, R.C., Nova Scotia Dept. Mines and Energy:
Stratigraphy and sedimentology of the middle to late Visean Windsor Group in Nova Scotia, 1975-.

See:
Major transgressive-regressive cycles in middle to late Visean rocks of Nova Scotia; Nova Scotia Dept. Mines Energy, Paper 81-2, 1981.

Formal publication of Shubewacadie-Musquodoboit research is the primary goal, with concurrent effort to complete reports on Eureka and Antigonish basin areas; regional correlation of parts of the Windsor Group has recently been proposed, allowing the next step which will be to model the depositonal regime through time.

New and exciting tectonic concepts provide a link between deformational events and mineral deposits which at present is unsupported, but which provides an intriguing model for testing.

999. GLOBENSKY, Y., Québec Ministère Énergie et Ressources:
Géologie de la région de Saint-Chrysostome, Québec, 1982.

Recartographier, a l'aide de l'information relevé dans les régions avoisinantes, la region de Saint-Chrysostome en vue de publier une nouvelle interprétation géologique de cette région.

1000. HOWIE, R.D., Geol. Surv. Can.:
Compilation of geoscientific data in the Upper Paleozoic basins of southeastern Canada, 1971-.

1001. LACHAMBRE, G., BOURQUE, P.A., SKIDMORE, W.B., Univ. Laval (Géologie), Québec Ministère Énergie et Ressources:
Stratigraphie du groupe de Chaleurs, Gaspésie nord-centrale, Québec, 1980-82; thèse de maîtrise (Lachambre).

Etude completée pour la bande d'appleurement entre les cantons de Lafrançois et Courcelette.

1002. LÉSPERANCE, P.J., Univ. Montréal (Géologie):
Stratigraphie des calcaires de Gaspé supérieurs (Dévonien inférieur de la Gaspésie et du Bas-du-fleue).

Voir:
Les calcaires supérieurs de Gaspé (Dévonien inférieur) dans le nord-est de la Gaspésie; Québec Dept. Energy and Ressources, DPV-751, 1981.

1003. McCABE, H.R., BANNATYNE, B.B., Manitoba Dept. Energy and Mines (Mineral Res. Div.):
Stratigraphic and industrial minerals core hole program, southwestern Manitoba, 1969-.

Recent drilling has obtained structural and stratigraphic data regarding the Highrock Lake Crater Structure, and Devonian reef structures in the Dawson Bay area, especially as these structures relate to high-calcium limestone distribution. A regional correlation profile has been established, utilizing all core hole data for Ordovician, Silurian, and Devonian strata. Sufficient regional data now are at hand, and preparation of a comprehensive compilation of all core hole data is being started. This report will include a review of revisions to the structure and stratigraphy of southwestern Manitoba, based on the drill results.

1004. MALD, M., BÉLAND, J., SKIDMORE, W.B., Univ. Montréal (Géologie), Québec Ministère Énergie et Ressources:
Stratigraphie et tectonisme de l'Anticlinorium Percé-Matapédia, Québec, 1981-82; thèse de doctorat (Mald).

1005. MAYR, U., Geol. Surv. Can.:
Stratigraphy and correlation of lower Paleozoic subsurface, Arctic Island, 1975-.

1006. MAYR, U., Geol. Surv. Can.:
Paleozoic stratigraphy of central and southern Ellesmere Island and northern Devon Island, District of Franklin, 1981-.

See:
Lithostratigraphy (Ordovician to Devonian) of the Grise Fiord area, Ellesmere Island, District of Franklin; Geol. Surv. Can., Paper 82-1A, p. 63-66, 1982.

Cambrian and Ordovician stratigraphy of southern Ellesmere Island, District of Franklin; ibid., p. 67-74, 1982.

Stratigraphic and structural studies, southern Ellesmere Island, District of Franklin; ibid., p. 441-443, 1982.

1007. MEIJER-DREES, N.C., Geol. Surv. Can.:
Middle and Upper Devonian rocks in the subsurface of west-central Alberta, 1981-.

To establish the depositional environment and paleogeography of the original sediments and their subsequent diagenesis for the purpose of correlating the depositional framework (sedimentological history) with that of the Middle and Upper Devonian sediments in the Rocky Mountains to the west.

1008. MORROW, D.W., Geol. Surv. Can.:
Stratigraphy, sedimentology and diagenesis of Paleozoic rocks in the southern Mackenzie Mountains and northern Rocky Mountains, Yukon Territory-British Columbia, 1975-.

See:
Correlations between the Sunblood, Esbataottine and Whittaker Formations in the Lower Paleozoic sequence of the southern Mackenzie Mountains; Geol. Surv. Can., Paper 82-1A, p. 95-98, 1982.

1009. NASSICHUK, W.W., Geol. Surv. Can.:
Stratigraphy and paleontology of Upper Paleozoic rocks on Ellesmere and Axel Heiberg Island, District of Franklin, 1968-.

1010. NASSICHUK, W.W., Geol. Surv. Can.:
Carboniferous biostratigraphy in the northern Yukon, British Columbia, and Alberta, 1975-.

1011. NORFORD, B.S., Geol. Surv. Can.:
Ordovician and Silurian biostratigraphy of British Columbia, Alberta, Manitoba, Yukon, Mackenzie and Franklin, 1961-.

See:
The trilobite fauna of the Silurian Attawapiskat Formation, Northern Ontario and northern Manitoba; Geol. Surv. Can., Bull. 327, 1981.

1012. NORRIS, A.W., Geol. Surv. Can.:
Devonian biostratigraphy of the northern Yukon Territory and adjacent District of Mackenzie, 1970-.

1013. PACKARD, J.J., DIXON, O.A., Univ. Ottawa (Geology):
Upper Silurian Barlow Inlet Formation on eastern Cornwallis Island, Canadian Arctic, 1977-82; Ph.D. thesis (Packard).

See:
Marine depositional response to epeirogenesis: The evolution of Upper Silurian platform carbonates on Cornwallis Island; 3rd Internat. Symp. Arctic Geology, Calgary, Progr. with Abstr. 1981.

1014. PEDDER, A.E.H., Geol. Surv. Can.:
Upper Silurian and Devonian biostratigraphy western and northern Canada, 1968-.

1015. POLAN, K.P., STEARN, C.W., McGill Univ. (Geological Sciences):
Allochthonous reefal carbonate blocks in the Stuart Bay Formation (Devonian), Bathurst Island, Arctic Canada, 1980-82; M.Sc. thesis (Polan).

See:
Allochthonous origin of Devonian "bioherms" on Bathurst Island, Arctic Canada; Geol. Soc. Am., Progr. with Abstracts, vol. 13, p. 170, 1981.

1016. RICHARDS, B.C., Geol. Surv. Can.:
Carboniferous stratigraphy and sedimentology of northeastern British Columbia and northwestern Alberta, 1981-.

1017. ROUILLARD, M., LESPÉRANCE, P.J., SKIDMORE, W.B., Univ. Montréal (Géologie), Québec Ministère Énergie et Ressources:
Stratigraphie des calcaires supérieurs de Gaspé, Québec, 1981-82; thèse de doctorat (Rouillard).

Converture completée, bande Lefrançois-Deslairdes.

1018. SANFORD, B.V., Geol. Surv. Can.:
Lower Paleozoic geology of Eastern Canada, 1975-.

1019. SMITH, G.P., STEARN, C.W., McGill Univ. (Geological Sciences):
Stratigraphy and paleontology of the Blue Fiord Formation (Devonian) on Ellesmere and adjacent islands, Arctic Canada, 1978-83; PH.D. thesis (Smith).

1020. THOMPSON, R.I., Geol. Surv. Can.:
Structure and stratigraphy of Paleozoic and lower Mesozoic rocks in Halfway River map-area, northeastern British Columbia, 1975-.

1021. THORSTEINSSON, R., Geol. Surv. Can.:
Structure and stratigraphy of western Devon Island and Vendom Fiord map-ara, Ellesmere Island, District of Franklin, 1976-.

1022. ZODROW, E.L., College of Cape Breton (Geology):
Pecopterids: biostratigraphy of Sydney Coalfield, Nova Scotia, 1973-.

Reassessment and collection of huge amounts of pecopterid plants from new coal mines, necessitated re-evaluation of age of the relatively youngest strata in the Point Aconi area. The diversity and abundance of the genus **Pecopteris** Brongniart, in addition to other significant finds (genera **Odontopteris** Brongniart, and **Callipteridium** C.E. Weiss) in the Point Aconi area prompted placement of a Westphalian D/Stephanian boundary in the roof of the Stubbart seam. Comparison with Wagner's Cantabrian flora of Northwest Spain is premature, but certainly a possibility. The transition from Westphalian D to Stephanian rocks is gradual so that the boundary placement must be regarded as arbitrary. Much additional work is necessary and in progress. Other studies include comparison of standing fossil forests (Cape Breton, Joggins, West Virginia) with tropical forests (living) in the Orinoco Delta which is taken as an analogue to Upper Carboniferous situations (studied in conjunction with Prof. H. Pfefferkorn, University of Pennsylvanian, 1981). Revision of sphenopterids is carried on in conjunction with Prof. Gastaldo (Auburn University, 1982).

MESOZOIC/MÉSOZOIQUE

1023. ASCOLI, P., Geol. Surv. Can.:
Biostratigraphic zonation (Formaniniferа-Ostracoda) of the Mesozoic and Cenozoic rocks of the Atlantic Shelf, 1971-.

1024. CHRISTOPHER, J.E., Saskatchewan Geol. Surv.:
The Mannville Group (Lower Cretaceous) of Saskatchewan, 1976-83.

Province-wide integration of stratigraphic nomenclature, mapping of paleo-surfaces, depositional facies, regional and salt solution-induced tectonics, formation-water flow and hydrocarbon migration and emplacement.

1025. DIXON, J., Geol. Surv. Can.:
Geology of the Beaufort-Mackenzie Basin, 1979-.

1026. EMBRY, A.F., Geol. Surv. Can.:
Mesozoic stratigraphy and basin analysis of the Sverdrup Basin; Arctic Archipelago, 1975-.

1027. GIBSON, D.W., Geol. Surv. Can.:
Stratigraphic and sedimentological studies of Lower Cretaceous rocks, Rocky Mountain Foothills and Front Ranges, Alberta and British Columbia, 1975-.

1028. GIBSON, D.W., Geol. Surv. Can.:
Stratigraphy and sedimentology of the Lower Cretaceous Gething Formation, Rocky Mountain Foothills, Alberta and British Columbia, 1979-.

1029. HAYES, B.J.R., WILLIAMS, G.D., Univ. Alberta (Geology):
Upper Jurassic and Lower Cretaceous stratigraphy of southern Alberta and north-central Montana, 1978-82; Ph.D. thesis (Hayes).

1030. JANSA, L.F., Geol. Surv. Can.:
Reconnaissance field study of the Mesozoic sequences outcropping on the Iberian Peninsula, 1977-.

1031. KOSTER, E.H., Alberta Research Council (Geol. Surv.):
Geophysical log response of Horseshoe Canyon Formation sequence and lithology, using cores from the Drumheller area, Alberta, 1980-82.

Aims: 1) to recognise and quantify the controlling factors on log, principally gamma ray, response of each lithologic (?facies) type, in terms of their peak and boundary values; 2) to gauge the influence of these controlling factors on log profiles presented on different scales and generated with different combinations of logging speed and time constant; 3) to check the accuracy of log-derived estimates of 'sand/shale' ratios, and fining- and coarsening-upward cycles; and 4) (?) to conclude the minimum amount of core data necessary to ensure statistically valid log-core calibration.

Current status: A) virtually concluded identification and role of lithologic factors that explain the observed log response as the basis of manually determined log data; and B) commenced calibration of available core data against digitised log values using findings in A and with a view to satisfying aims 2-4.

1032. POULTON, T.P., Geol. Surv. Can.:
Jurassic biostratigraphy of selected areas of western and Arctic Canada, 1976-.

See:
Stratigraphic distribution and taxonomic notes on bivalves of the Bathonian and Callovian (Middle Jurassic) Upper Yakoun Formation, Queen Charlotte Islands, British Columbia; Geol. Surv. Can., Paper 81-1B, p. 63-71, 1981.

1033. PRICE, L.L., Geol. Surv. Can.:
Geological observations at shafts of potash mines, Saskatchewan, 1964-.

1034. STOTT, D.F., Geol. Surv. Can.:
Jurassic and Cretaceous Minnes Group, Alberta and British Columbia, 1978-.

See:
Bickford and Gorman Creek, two new formations of the Jurassic-Cretaceous Minnes Group, Alberta and British Columbia; Geol. Surv. Can., Paper 81-1B, p. 1-9, 1981.

1035. STOTT, D.F., Geol. Surv. Can.:
Syntheses of Mesozoic and Cenozoic rocks of eastern Cordillera and Plains, 1981-.

To provide regional syntheses, including maps and correlations concerning sedimentary sequences, particularly of Mesozoic clastic sequences in Western Canada.

1036. TEMPELMAN-KLUIT, D.J., Geol. Surv. Can.:
Stratigraphy, structure and metallogeny of the northern part of the Intermontane Belt (Whitehorse trough) in the Canadian Cordillera, 1977-.

1037. TIPPER, H.W., Geol. Surv. Can.:
Biostratigraphic study of Mesozoic rocks in the Intermontane and Insular Belts of the Canadian Cordillera, 1975-.

See:
Offset of an upper Pliensbachian geographic zonation in the North American Cordillera by transcurrent movement; Can. J. Earth Sci., vol. 18, no. 12, p. 1788-1792, 1981.

1038. WADE, J.A., Geol. Surv. Can.:
Regional subsurface geology of Mesozoic and Cenozoic rocks of the Atlantic continental margin, 1972-.

1039. WILLIAMS, G.L., Geol. Surv. Can.:
Palynostratigraphy and paleocology of the Mesozoic and Cenozoic rocks of the Atlantic Continental margin, 1971-.

1040. YOLE, R.W., IRVING, E., Carleton Univ. (Geology):
Stratigraphy and displacement history of Vancouver Island, British Columbia, 1969-82.

To determine by geological and geophysical methods whether Paleozoic and post-Triassic rocks of Vancouver Island have origins and displacment histories compatible with those based on Late Triassic data; to more accurately define the ages(s) of Sicker Group rocks by geological and geochronological methods; to determine whether major unconformities are present within the Paleozoic sequence of Vancouver Island; and to compare Paleozoic/Mesozoic sequences and geologic history of Vancouver Island and other parts of the Insular Belt.

1041. YOLE, R.W., YUAN, P., NENTWICH, F., Carleton Univ. (Geology):
Stratigraphic, petrographic, and diagenetic studies of subsurface Mesozoic and Tertiary deltaic sequences, offshore areas northern and eastern Canada, 1977-82; M.Sc. theses (Yuan, Nentwich).

Subsurface studies of Mesozoic and Tertiary delta systems, emphasizing stratigraphic and petrographic aspects, are intended to refine models of deltaic sedimentation and diagenesis. The addition of such data to that obtained from log analysis and geophysical work will enhance the evaluation of petroleum potential and reservoir properties for future exploration and development.

CENOZOIC/CENOZOIQUE

1042. CHURCH, B.N., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Br.):
Tertiary stratigraphy and resource potential in south-central British Columbia, 1977-.

See:
Notes on the Penticton Group: A progress report on a new stratigraphic subdivision of the Tertiary, south-central British Columbia; British Columbia Ministry Energy, Mines, Petrol. Res., Paper 1982-1, p. 12-16, 1982.

The Riddle Creek uranium-thorium prospect; ibid., p. 17-22, 1982.

Gravity survey of the Colwood section of the Leech River Fault; ibid., p. 75-77, 1982.

A study of Tertiary outliers to better define their energy resources, including coal, uranium and geothermal energy, precious metal deposits, chronology, and stratigraphy, and of Tertiary tectonics in southern British Columbia to assist in the predicton and interpretation of the structural control of deposits.

1043. MATHEWS, W.H., ROUSE, G.E., Univ. British Columbia (Geological Sciences):
Tertiary stratigraphy and palynology, south-central British Columbia, 1979-.

1044. YORATH, C.J., Geol. Surv. Can.:
The Canadian Pacific Continental margin, 1977-.

STRUCTURAL GEOLOGY/TECTONICS/GÉOLOGIE STRUCTURALE/TECTONIQUE

ALBERTA/ALBERTA

1045. CHARLESWORTH, H.A.K., GAGNON, L., Univ. Alberta (Geology):
Structure of coal-bearing strata, Rocky Mountain Foothills, west-central Alberta, 1976-; M.Sc. thesis (Gagnon).

See:
Thrust nappes in the Rocky Mountain Foothills near Mountain Park, Alberta; Geol. Soc. London, Spec. Publ. 9, p. 475-482, 1981.

Calculating thickness from outcrop and drill-hole data; Bull. Can. Petrol. Geol., vol. 29, p. 277-292, 1981.

Coal resource evaluation in deformed sequences using digital terrain models; ibid., p. 259-266, 1981.

1046. LANGENBERG, C.W., Alberta Research Council (Geol. Surv.):
Structural analysis of macroscopic structures in the Shield of northeastern Alberta, 1976-81.

A report that summarizes the structural geology of our study area was finished in 1981 and is in the editorial stage.

1047. LANGENBERG, C.W., Alberta Research Council (Geol. Surv.):
Structural geology of coal measures, foothills of Alberta, 1981-83.

1048. SPRATT, D.A., Univ. Calgary (Geology and Geophysics):
Deformation mechanics associated with the growth and emplacement of thrust sheets, 1980-84.

See:
Permian stratigraphy, disconformities, facies changes, and structure, Kananaskis and Spray Lakes areas, southern Canadian Rockies; Bull. Can. Petrol. Geol., vol. 29, p. 96-109, 1981.

The Foreland Thrust Belt of the Southern Canadian Rockies contains a wealth of oil and gas reservoirs, yet the details of the structural evolution of the thrust belt are not completely understood. The mechanics of evolution will be quantitatively analyzed for the following stages of development: 1) the localization, initiation, and propagation of individual thrust faults; 2) the emplacement and internal deformation of eastward moving thrust sheets; and 3) folding of thrust sheets by later movement on underlying faults.

Provisional work suggests that the creation of the fault surface is a problem of ductile or semi-brittle fracturing; investigation of the areas around the tips of well exposed thrust faults will aid in the description of the mechanics of fracture. Emplacement of a thrust sheet sets up a finite strain field within the sheet; correlation of this finite strain with the physical mechanisms which caused it will provide a guide to the overall stress – strain rate response of the thrust sheet. Additional strain within a thrust sheet is the result of folding as an underlying sheet moves up a ramp. Preliminary work suggests that during the evolution of a thrust belt, different deformation mechanisms occur in different regions. We find: zones of intense fracturing, ductile deformation zones, pressure solution cleavage in fold hinge regions, and vein filling in tensile regions. By separating out the effects due to each stage of development, we can begin to understand how the porosity and permeability of the rock can be locally altered by deformation.

BRITISH COLUMBIA/ COLOMBIE-BRITANNIQUE

1049. CAMPBELL, R.B., Geol. Surv. Can.:
Geology of the Cariboo Mountain, British Columbia, 1968-.

1050. DANNER, W.R., Univ. British Columbia (Geological Sciences):
Plate tectonics, stratigraphy and paleontology of the Paleozoic and early Mesozoic of southwestern British Columbia and adjacent parts of Washington State, 1967-.

Work continuing on labratory examination of carbonate rocks and chert to identify microfossils of Cache Creek Group, Sicker Group, Harper Ranch Group and Chilliwack Group. Carbonate petrology being studied in detail.

1051. HUTCHISON, W.W., Geol. Surv. Can.:
Prince Rupert-Skeena map-areas, British Columbia, 1962-.

See:
Geology of the Prince Rupert-Skeena map-area, British Columbia; Geol. Surv. Can., Mem. 394, 1982.

1052. LEECH, G.B., Geol. Surv. Can.:
Geology survey of NTS 83 J W 1/2 (Kananaskis Lakes, W 1/2), British Columbia, 1962-.

1053. OLLERENSHAW, N.C., Geol. Surv. Can.:
Structural analysis of the Fernie Basin, British Columbia, 1975-.

See:
Parcel 82, Dominion Coal Block, southeastern British Columbia; Geol. Surv. Can., Paper 81-1B, p. 145-152, 1981.

1054. TAYLOR, G.C., Geol. Surv. Can.:
Structural and stratigraphic studies of northeast British Columbia, 1981-.

To provide a synthesis of the geology of the northern Rocky Mountains in terms of the tectonic response of the stratigraphic record.

1055. THOMPSON, R.I., Geol. Surv. Can.:
Detailed geological study of selected areas within the Foothills and Rocky Mountain belts of the Monkman Pass map area – with emphasis on the sturcture, 1978-.

NEW BRUNSWICK/ NOUVEAU-BRUNSWICK

1056. GRANT, R.H., RAST, N., Univ. New Brunswick (Geology), Univ. Kentucky (Geology):
Carboniferous structure and stratigraphy in southern New Brunswick, Musquash to Pocologan, 1972-82; Ph.D. thesis (Grant).

1057. STRINGER, P., BURKE, K.B.S., Univ. New Brunswick (Geology):
Structural analysis of the Upper Devonian Perry Formation, St. Andrews area, New Brunswick, 1980-83.

See:
Joints, tensile strength and preferred fracture orientation in sandstones, New Brunswick and Prince Edward Island, Canada; Maritime Sediments and Atlantic Geology, vol. 17, p. 70-87, 1981.

Orthogonal joint sets trend 065° and 155° in a thick homoclinal sequence of Upper Devonian red sandstones and conglomerates (Perry Formation) inclined gently southeast on the St. Andrews peninsula and Minister Island, southwestern New Brunswick. The 065° joints are planar with rare plumose structures and persistently cut through pebbles in the sandstones and conglomerates. The 155° joints are curviplanar, deflect around pebbles, lack plumose structures and commonly terminate against the 065° joints. A Triassic diabase dyke north of St. Andrews, delineated from outcrops and magnetometer surveys, trends 065° and dips steeply NNW within the Perry Formation. The dyke is coplanar with the 065° joints and is cut by the 155° joints. Further delineation of the dyke indicates that it extends westward into Maine, post-dating the major Oak Bay strike-slip fault, and extends eastward for at least 20 km toward St. George where it is apparently offset by strike slip-faults. The relations of faulting, jointing and dyke intrusion are being investigated.

1058. STRINGER, P., PAJARI, G.E., Jr., Univ. New Brunswick (Geology):
Analysis of polyphase deformation is selected areas of New Brunswick, 1972-82.

See:
Deformation of pre-Triassic rocks of Grand Manan, New Brunswick; Geol. Surv. Can., Paper 81-1C, p. 1-15, 1981.

Preliminary investigation on Cookson Island and in the Oak Bay area, southwestern New Brunswick, indicates that penetrative deformation of Ordovician rocks occurred during both the Taconic (Ordovician) and Acadian (Devonian) orogenies. In Lower Ordovician pelites of the Cookson Formation, subvertical N to NW trending S_1 foliation and intrafolial F_1 minor folds are deformed by subparallel S_2, gently dipping S_3 and subvertical E trending S_4 crenulation cleavages and associated F_2-F_4 minor folds. Similar trends and styles of deformation are shown by probable Ordovician rocks on Grand Manan Island 60 km southeast of Oak Bay. In Upper Silurian conglomerates, sandstones, and mudstones dipping 50-75°SE at Oak Bay and on Cookson Island in a thick (ca. 3000 m) homoclinal sequence, a single subvertical cleavage persistently strikes clockwise of bedding. Minor folds are very rare. The contact between the Cookson Formation and massive Silurian conglomerates on Cookson Island, although sheared and faulted, appears in part to be an original erosion surface at which S_1 foliation in the Cookson Formation is truncated.

1059. VAN STAAL, C.R., WILLIAMS, P.F., Univ. New Brunswick (Geology):
Deformation and metamorphism of the region around Brunswick no. 6 and Brunswick no. 12, Bathurst area, New Brunswick, 1980-83; Ph.D. thesis (van Staal).

The deformation and metamorphic history of the ore bodies and surrounding rocks are being studied with a view to: 1) looking for possible localization of the ore bodies by rock deformation and/or metamorphism; and 2) understanding the behaviour of sulphides during deformation. A structural history has been determined. Work so far suggests that economic limits are related to fold interference patterns or large sheath fold.

1060. WILLIAMS, P.F., Univ. New Brunswick (Geology):
Deformation mechanisms and tectonic processes, 1980-.

See:
Garnet rotation and the development of axial plane crenulation cleavage; Tectonophysics, vol. 78, p. 307-334, 1981.

Deformed rocks are being studied with a view to better understanding the processes involved in their deformation. The ultimate goal is a better understanding of the processes involved in large scale tectonics.

NEWFOUNDLAND/LABRADOR/ TERRE-NEUVE/LABRADOR

1061. CHORLTON, L.B., SMYTH, W.R., CALON, T., Memorial Univ. (Geology):
Geological history of southwest Newfoundland, 1974-82; Ph.D. thesis (Chorlton).

See:
General geology and regional significance of the Grandys Lake area (110/15), Newfoundland; Newfoundland Dept. Mines and Energy, Rept. 82-1, p. 65-77, 1981.

The pre-Carboniferous geology of southwest White Bay; ibid., p. 78-98, 1981.

1) Study of granitoid genesis, evolution etc. (beginning with tonalite genesis, age); 2) metamorphic/structural study of shear zones, hydrothermal alteration in southwest Newfoundland; and 3) further synthesis of southwest Newfoundland geology to be attempted in near future.

1062. GILLESPIE, R.T., WILLIAMS, H., Memorial Univ. (Earth Sciences):
Relationships between the carbonate and metaclastic terranes in the Pasadena area, west Newfoundland, 1981-82; M.Sc. thesis (Gillespie).

See:
Geology of Pasadena map area, Newfoundland; Geol. Surv. Can., Paper 82-1A, p. 281-288, 1982.

Three distinct lithic assemblages occur between the Humber Arm Allochthon (west) and the Baie Verte-Brompton Line (east) in the Pasadana area. These assemblages represent the overridden portion of the ancient eastern continental margin of North America. From west to east there are an early Paleozoic autochthonous carbonate sequence which includes the well known St. George Group; an assemblage of shales and quartzites which have been correlated with lower portions of the Humber Arm Supergroup; and a basement complex overlain by a thick metaclastic cover sequence which have been correlated with the Grenvillian Long Range Complex and Fleur de Lys metaclastics, respectively.

Folds in the carbonate terrane are upright to westerly inclined while the two eastern terranes are characterized by east-facing folds and west-dipping cleavage. Thrust faults which have been overturned to the east separate the shale sequence from the carbonates and the basement complex from the shales.

1063. O'BRIEN, S.J., SMYTH, W.R., O'DRISCOLL, C.F., TAYLOR, S.W., NUNN, G.A.G., HUSSEY, E.M., STRONG, D.F., Newfoundland Dept. Mines and Energy:
Tectonic evolution of the southeastern Avalon Zone of the Newfoundland Appalachians, 1977-82.

Final colored 1:250 000 maps 1M and 1L in preparation and to be released upon completion of summary paper on regional synthesis.

1064. VAN DER PLUIJM, B., WILLIAMS, P.F., Univ. New Brunswick (Geology):
Deformation and metamorphic history of New World Island, Newfoundland, 1981-84; Ph.D. thesis (Van der Pluijm).

The project is aimed at understanding the development of deformational structures and the tectonic history of New World Island. Specific problems include the reported inverted sequence over much of the Island, cleavage transected folds and the place of faulting in the tectonic history. Results so far show that the overturning is only local; the sequence in fact is not homoclinal but tightly folded. Early thrust faults have been identified and most faults shown on existing maps have been shown to be late.

1065. WILLIAMS, H., Memorial Univ. (Geology):
Accretionary history of the Canadian Appalachians, 1981-.

The accretionary history of the Appalachian Orogen is emphasized by the viewpoint that the orogen is a mosaic or suspect terranes.

The Dunnage and Gander terranes were juxtaposed with the North American miogeocline and with one another during the Middle Ordovician. The presence of the outboard Avalon terrane cannot be demonstrated until Silurian or Devonian time, and the more eastern Meguma terrane exhibits only a Carboniferous linkage. Thus the accretion of the orogen appears to have progressed from west to east, or from the miogeocline outward.

The boundaries of terranes accreted during the Ordovician are broad soft zones marked by melanges and ophiolites. The boundaries of outboard terranes, accreted during the middle to late Paleozoic are steep zones of ductile deformation and mylonite formation. Early accretion was achieved by head-on plate convergence. Later accretion seems to relate to major transcurrent movements.

Deformation, plutonism and metamoprhism in the Appalachian Orogen are all linked temporally to accretionary events.

NORTHWEST TERRITORIES/TERRITOIRES DU NORD-OUEST

1066. DYKE, L.D., Geol. Surv. Can.:
Comparative study of Campbell, White and Baron uplifts, Yukon Territory-District of Mackenzie, 1973-.

1067. HENDERSON, J.R., Geol. Surv. Can.:
Geology of the Penrhyn Fold Belt, Melville Peninsula, District of Franklin, 1976-.

1068. HOFFMAN, P.F., Geol. Surv. Can.:
Thrust-fold belt of Wopmay Orogeny – external zone, District of Mackenzie, 1981-.

See:
Cloos Nappe in Wopmay Orogen: significance for stratigraphy and structure of the Akaitcho Group, and implications for opening and closing of an early Proterozoic continental margin; Geol. Surv. Can., Paper 82-1A, p. 109-115, 1982.

To extend the stratigraphic and structural study of an early Proterozoic passive continental margin and its destruction by collisional orogeny.

1069. HURDLE, E., FYSON, W.K., Univ. Ottawa (Geology):
Stratigraphy, structure and metamorphism of the Yellowknife Supergroup, Clan Lake, Northwest Territories, 1981-83; M.Sc. thesis (Hurdle).

1070. OKULITCH, A.V., Geol. Surv. Can.:
Stratigraphy, structure and tectonics, Innuition Fold Belt, Ellesmere Island, District of Franklin, 1979-.

See:
Stratigraphic and structural studies, southern Ellesmere Island, District of Franklin; Geol. Surv. Can., Paper 82-1A, p. 441-443, 1982.

Preliminary structure sections, southern Ellesmere Island, Disrict of Franklin; ibid., p. 55-62, 1982.

1071. ST-ONGE, M.R., Geol. Surv. Can.:
Thrust-fold belt of Wopmay Orogen – internal zone, District of Mackenzie, 1981-.

See:
Geology of the central Wopmay Orogen (Early Proterozoic), Bear Province, District of Mackenzie: Redrock Lake and the eastern portion of Calder River map areas; Geol. Surv. Can., Paper 82-1A, p. 99-108, 1982.

1072. WILLIAMS, G.K., Geol. Surv. Can.:
Northern basin analysis progress: Great Bear, Redstone and Great Slave map-areas, District of Mackenzie, 1971-.

NOVA SCOTIA/NOUVELLE-ECOSSE

1073. DONOHOE, H.V., Nova Scotia Dept. Mines and Energy:
Geology and mineral resources of the Cobequid Highland region, northern Nova Scotia, 1974-82.

Memoir and four coloured maps to be published during 1982.

1074. KEPPIE, J.D., Nova Scotia Dept. Mines and Energy:
Tectonic map and memoir of Nova Scotia, Scale 1:50 000, 1974-82.

See:
Principles of tectonic mapping based upon plate tectonic theory; Episodes, vol. 4, 1981 and Nova Scotia Dept. Mines Energy, Paper 81-4, 1981.

The tectonic map shows the evolution of Nova Scotia from Precambrian to Cretaceous times. Tectono-stratigraphic and tectono-plutonic rock units are interpreted in terms of plate tectonic theory.

ONTARIO/ONTARIO

1075. BEDELL, R.L., SCHWERDTNER, W.M., Univ. Toronto (Geology):
Structural controls of U-ore bearing pegmatite dykes, Madawaska Mines, Bancroft, Ontario, 1980-82; M.Sc. thesis (Bedell).

1076. CULSHAW, N., FYSON, W.K., Univ. Ottawa (Geology):
Structural evolution of gneisses, northern part of Harvey-Cardiff arch, Grenville Province, Ontario, 1976-82; Ph.D. thesis (Culshaw).

1077. HANMER, S.K., Carleton Univ. (Geology):
The microstructure and geochemistry of naturally deformed feldspars, 1981-.

1078. HUBBS, A.F., SCHWERDTNER, W.M., GITTINS, J., LUMBERS, S.B., ROBIN, P-Y.F., Univ. Toronto (Geology):
Strain analysis of metaplutonic rocks from the Muskoka District, Ontario, 1980-82; M.Sc. thesis (Hubbs).

In recent years a number of methods of strain analysis have been developed. What has been lacking is a comparison of the results produced by a number of methods on the same rock samples.

For the present study 7 suites of rocks including tonalites, anorthosites, and gabbros have been analysed using the Robui (1977) and Fry (1979) methods. The results from the Robui method will also be compared to data collected using the magnetic susceptibility torque meter.

Schnorr (1979) studied the number of inclusions it is necessary to measure to preproduce principal strain ratios with an error of ± 10%. Schnorr only considered one rock type. The present study expands this work checking to see if this number remains constant for differing rock types.

This study proposes to suggest the advantages and disadvantages of the methods and their suitability for a particular rock type.

1079. ROBIN, P-Y.F., SAWYER, E.J., Univ. Toronto (Geology):
Deformation meechanisms under deep crustal conditions and migmatite genesis, 1978-83; Ph.D. thesis (Sawyer).

Field work in the Quetico metasedimentary belt and petrographic/geochemical examination of samples so far suggest that the rôle of melting in the generation of the Quetico migmatites is very small. Much of the structures, mineralogy and geochemistry can be accounted for by transfers (similar to metamorphic segregation) at temperatures below that of melting.

A structural history can more or less be fitted within the model proposed by West and Marechal for the evolution of Archean belt structure, although the anisotropy of this structure remains unaccounted for.

1080. STOTT, G.M., SCHWERDTNER, W.M., Univ. Toronto (Geology):
A structural analysis of the central part of the Shebandowan metavolcanic-metasedimentary belt, 1977-82; Ph.D. theis (Stott).

1081. SCHWERDTNER, W.M., MAWER, C.K., Univ. Toronto (Geology):
Structural development of the Gravenhurst region (East Half), Ontario, 1980-82.

The final report and geological map are nearing completion and should be submitted to the Geological Survey soon. This contribution discusses the preliminary mapping results for the Gravenhurst region. Much work remains to be completed, especially in mapping the eastern part of the region, and in petrography and petrology of the various rock types. During the 1981 mapping season, emphasis will be placed on determining the as yet unclear, but critical, tectonic significance of the oval structures and their encompassing lenticular granitoid domains.

1082. SCHWERDTNER, W.M., MAWER, C.K., VAN BERKEL, J.T., Univ. Toronto (Geology):
Analysis of paleostrain in the Canadian Shield, 1973-88.

See:
Major diapiric structures in the Superior and Grenville Provinces of the Canadian Shield, Geol. Assoc. Can., Sp. Paper 20, p. 149-180, 1980.

A test of sample size and precision of Robin's method of strain analysis; Tectonophysics, vol. 73, p. T1-T8, 1981.

Although it offers invaluable direct clues to early crustal deformation, the state of paleostrain within the ancient shields has been widely ignored in the contemporary research on Precambrian tectonic processes. Recognizing the great importance of this direct imprint of tectonism, we are systematically analysing the state of paleostrain in the Precambrian crust of Ontario.

This task is best accomplished by determining the characteristic strain patterns of important types of major tectonic structures and integrating results thus obtained for a particular crustal segment made up of a set of different major structures. Meaningful anlaysis of a major structure requires detailed field mapping and includes semi-qantitative field estimates of local strain fabrics and systematic collection of large rock specimens for laboratory measurement. Strain patterns thus determined are then compared with those of dynamic models, e.g. centrifuge models of geneiss diapirs. Commonly, models of the required geometry are not available and must be constructed by the analyst. Together with associates and students, I am analysing natural strain fields in four types of major Archean structures, 1) gneiss domes, 2) greenstone belts, 3) mylonite zones, and 4) large plutons of granitic and syenitic composition. In the Grenville Prov. of Ont. we are studying the strain patterns of major folds, oval structures, shear zones and deformed plutons. In addition, we are making theoretical or physical strain models of diapiric plutons and metavolcanic depressions between three rising gneiss diapirs. We are also investigating the precision of strain analyses by various methods.

1083. SCHWERDTNER, W.M., VAN BERKEL, G.T., Univ. Toronto (Geology):
Boundary between Moon River and Go Home Lake Subdomains, Grenville Gneiss segment, central Ontario, 1982-.

See:
Geology of the Gravenhurst region, Grenville structural province, Ontario: Preliminary mapping results; Geol. Surv. Can., Paper 81-1B, p. 167-169, 1981.

Davidson and Morgan (1980) divided the Grenville gneiss terrain of Ontario into structural domains that are separated by geological breaks. One large domain, the Muskoka Domain, has been split into several subdomains supposedly bounded by ductile shear zones (Davison et al., 1982). This supposition is now being tested by studying the geometry and orientation of passive minor folds in the boundary zone of the Moon River Subdomain, east of Georgian Bay.

The recognition of pseudo-sheath-folds in road cuts and cliffs is fraught with geometrical difficulties. To make an objective test for sheath folding, large rock specimens or sizable blocks must be taken that contain passive folds. The blocks are sawn along the hinge surface of internal folds or sectioned serially normal to the hinge plane. The passive character of minor folds in gneissosity can be ascertained for rock types such as faintly banded meta-anorthosite. Owing to the sugary texture of recrystallized plagioclase and the low proportion of mafic minerals, this rock has never been schistose or well-layered. Preliminary results suggest that there are no minor sheath folds in the southeastern contact zone of the supposed Moon River Subdomain.

1084. THIVIERGE, R.H., FYSON, W.K., Univ. Ottawa (Geology):
Structure and metamorphism of Grenville gneiss, Bangor Township, Ontario, 1980-83; M.Sc. thesis (Thivierge).

1085. THOMAS, P., FYSON, W.K., Univ. Ottawa (Geology):
Structures and mineral deposits of the Cordova gabbro, Grenville Province, Ontario. 1981-82; M.Sc. thesis (Thomas).

1086. WILLIAMS, H.R., Brock Univ. (Geological Sciences):
Analysis of part of the Britt Domain, Ontario gneiss segment, Grenville Province, 1982-85.

Relationships between structure, strain and metamorphism of a complexly folded suite of meta-igneous bodies and the enclosing metasediments and migmatites within the Britt Domain are at present known only in

general terms from recent reconnaissance mapping. The proposed research seeks to amplify the present state of knowledge by detailed investigation of part of this well exposed terrain at 1:15000 scale or larger, in order to provide a data base for structural, petrological and geochemical studies. Such a study of the development of the Britt Domain will contribute to a fuller understanding of the mechanisms operating and the physical conditions prevailing during the formation of the crustal segments which were incorporated to form the lower structural levels of the Grenville Province.

QUÉBEC

1087. BÉLAND, J., HUBERT, C., LESPÉRANCE, P.J., Univ. Montréal (Géologie):
Analyse structurale de la tectonique superposée de divers secteurs de l'anticlinorium d'Aroostook-Percé en Gaspésie, Québec, 1980-.

1088. FYSON, W.K., Univ. Ottawa (Geology):
Structural patterns in metamorphic rocks, 1970-.

1089. HUBERT, C., LUDDEN, J., BOUCHARD, M.A., BABINEAU, J., PARENT, G., LAMARCHE, F., Univ. Montréal (Géologie):
Analyse structurale de la tectonique superposée et stratigraphie de la ceinture de l'Abitibi, secteurs de Rouyn et Val d'Or, Québec, 1980-; thèse de doctorat (Bouchard).

1090. LAMOTHE, D.L., SHARMA, K.N.M., FRANCONI, A., Québec Ministère Énergie et Ressources:
Capisisit-Desmaraisville, Québec, 1980-.

1091. MALO, M., BÉLAND, J., Univ. Montréal (Géologie):
Structure et stratigraphie de l'anticlinorium d'Aroostook-Percé en Gaspésie, Québec, 1981-; thèse de doctorat (Malo).

1092. RINGELÉ, H., PIQUÉ, A., BÉLAND, J., Univ. Montréal (Géologie):
Analyse structurale du groupe de Maquereau, Gaspésie, Québec, 1980-83; thèse de M.Sc. (Ringelé).

1093. VALLIERES, A., ST-JULIEN, P., Univ. Laval (Géologie), Québec Ministère Énergie et Ressources:
Stratigraphie et structure de l'orogène taconique de la région de Rivière-du-loup, Québec, 1973-82; thèse de doctorat (Vallieres).

Présentation des resultats de 5 annees de recherche 1973 à 1977 dans une thèse de doctorat au printemps 1982 et dans un rapport géologique final au Ministère de l'Energie et des Ressources du Québec.

YUKON TERRITORY/TERRITOIRE DE YUKON

1094. CLAGUE, J.J., Geol. Surv. Can.:
Structural geology-geomorphology, southwest Yukon, 1978-.

See:
Neoglacial Lake Alsek; Can. J. Earth Sci., vol. 19, no. 1, p. 94-117, 1982.

1095. COOK, D.G., Geol. Surv. Can.:
Structural studies in the Mackenzie Arc, Franklin Mountains and Colville Hill, Yukon, and District of Mackenzie, 1975-

See:
Upper Ramparts River (106 G) and Sans Sault Rapids (106 H) map areas, District of Mackenzie; Geol. Surv. Can., Mem. 388, 1982.

1096. NORRIS, D.K., Geol. Surv. Can.:
Structural geology of northern Yukon Territory and northwestern District of Mackenzie, 1969-.

1097. TEMPELMAN-KLUIT, D.J., Geol. Surv. Can.:
Stratigraphy, structure and metallogeny of Pelly Mountains, and Yukon Plateau, Yukon Territory, 1973-.

GENERAL/GÉNÉRALITÉS

1098. KING, L.H., Geol. Surv. Can.:
Bedrock and surficial geology, Grand Banks, 1973-80.

1099. RANALLI, G., MORAVEC, A., FADAIE, K., Carleton Univ. (Geology):
Role of rheology in geodynamics, 1978-84; M.Sc. thesis (Moravec), Ph.D. thesis (Fadaie).

Objectives are the determination of the rheology of lithosphere and mantle, and the modelling of selected geodynamic processes on the basis of realistic rheological equations. Attention is focused on the following four problems: 1) variations of effective viscosity across the mantle transition zone and in the lower mantle on the basis of recent results on the pressure-, temperature-, and phase change-dependence of creep activation parameters; 2) possible role of transient creep in small-strain mantle deformation on the basis of theoretical and experimental transient creep equations; 3) continuum-mechanics modelling of the geotectonic evolution of foreland belts; and 4) analysis of shear zones and intra-lithospheric decoupling, including the effects of grain size reduction and hydrolytic weakening.

1100. STRINGER, P., TREAGUS, J.E., Univ. New Brunswick (Geology), Univ. Manchester:
Relation of cleavage to folding in the Caledonian-Appalachian orogenic belt, Scotland, 1975-85.

See:
Asymmetrical folding in the Hawick Rocks of the Galloway area, Southern Uplands; Scott. J. Geol., vol. 17, p. 129-148, 1981.

The asymmetry, scale and regionally uniform distribution of F_1 folds in the Hawick Rocks do not support previous interpretations of the regional structure as a major north-facing monocline. The F_1-F_3 phases of folding previously proposed are re-interpreted as two phases. The F_2 folds are largely restricted to a 2-3 km wide strike belt within the 30 km width of Hawick Rocks investigated. The asymmetry of F_1 folds throughout the region implies original southeastward vergence. Non-axial planar S_1 cleavage strikes predominantly clockwise of F_1 folds. F_1 folds plunge steeply (locally downward-facing) in a belt near the southeast margin of the Hawick Rocks. Variations in the scale and asymmetry of F_1 folding across the Southern Uplands is outlined. The style of F_1 folding in the Hawick Rocks is consistent with deformation accompanying sequential accretion of sediments at a subduction zone.

1101. SOUTHER, J.G., Geol. Surv. Can.:
Study of the Cenozoic evolution of the Western Cordillera, 1977-.

1102. SRIVASTAVA, S.P., Geol. Surv. Can.:
Comparative studies of the continental margins of the Labrador Sea and of the North Atlantic, 1978-.

1103. VAN DER LEEDEN, J., FYSON, W.K., Univ. Ottawa (Geology):
Nature of Grenville Front in western Québec, 1976-82; Ph.D. thesis (van der Leeden).

1104. WHITE, J.C., Univ. New Brunswick (Geology):
Transmission electron microscopy studies of rock deformation, 1982-.

See:
On the nature of grain boundaries in tectonites; Tectonophysics, vol. 78, p. 613-628, 1981.

Quartz deformation and the recognition of recrystallization regimes in the Flinton Group conglomerates, Ontario; Can. J. Earth Sci., vol. 19, no. 1, p. 81-93, 1982.

To characterize the microstructures of deformed rocks using transmission electron microscopy (TEM) and relate these microstructures to the grain-scale deformation mechanisms. Knowledge of these fundamental micro-mechanisms is basic to interpretation of the dynamics of large-scale geological deformations.

1105. AUBERTIN, R.A., ROBERT, C.R., WARREN, B.W., Québec Ministère Énergie et Ressources:
Lithogéochimie des roches volcaniclastiques felsiques du canton de Lamarcké, Québec, 1981-82.

Voir:
Demie est du canton de Lamarck Abitibi-est; Québec Ministère Énergie et Ressources, DPV-811, 1981.

Le projet s'inscrit dans un programme de recherche basé sur l'étude prévisionnelle cupro-zincifère dans le Nord-Ouest québécois de R. Assad et G. Favini. Il consiste en une étude d'altération de deux bandes de roches volcaniclastiques felsiques afin de délimiter des aires d'enrichissement et/ou de lessivage en certains éléments majeurs. La compilation des analyses est complétée, il reste à localiser des aires d'intérêt pouvant servir de cibles pour des travaux futurs.

1106. BÉLANGER, J., LAURENT, R., SKIDMORE, W.B., Univ. Laval (Géologie), Québec Ministère Énergie et Ressources:
Roches volcaniques de Groupe de Chaleurs, Gaspé, Québec, 1981-82.

Couverture compléte, bande de Restigouche.

1107. CHURCH, B.N., BARASKO, J.J., BRADSHAW P.M.D., KOWALCHUCK, J.M., British Columbia Ministry Energy, Mines, Petrol. Res. (Geol. Br.):
Geology and mineralization in the Buck Creek cauldera, British Columbia, 1980-.

A sub-circular distribution of upper Cretaceous rhyolite beds in the Buck Creek area of central British Columbia is believed to delineate a caldera structure containing early Tertiary moat volcanics and a central resurgent dome in vicinity of the Equity Mine near Goosly Lake. Weak porphyry-type copper and molybdenum mineralization is associated with upper Cretaceous granitoid intrusions, believed to be fedders to the rhyolites, on the rim and central area of the structure. Younger copper-lead-zine vein deposits and higher temperature hydrothermal silver-copper fillings disseminations and replacements are correlated to Tertiary igneous events and resurgence.

It is the aim of current studies to further delineate the elements of the cauldera structure, its history and associated mineralization.

1108. JENSEN, L.S., TROWELL, N.F., Ontario Geol. Surv.:
Stratigraphic mapping of the Timiskaming Series, Kirkland Lake, Ontario, 1980-82.

1109. JOLLY, W.T., Brock Univ. (Geological Sciences):
Volcanic petrology of Huronian, northern Ontario, 1980-84.

1110. ROOTS, C.F., DONALDSON, J.A., Carleton Univ. (Geology):
Geology of the Montana Mountain volcanic complex, south central Yukon, 1980-82; M.Sc. thesis (Roots).

Montana Mountain area, 100 km south of Whitehorse, contains a late Cretaceous volcanic complex, 6 km in diameter. It correlates with both Mount Nansen plug domes in south-central Yukon and layered Sloko piles in northern British Columbia.

The southern part of the complex is a down-faulted block of andesite lavas and breccias at least 1200 m thick. Sedimentary horizons and distinctive breccias suggest caldera formation.

The northern part consists of subvolcanic intrusion breccias which were emplaced as fluidized rubble by hydrothermal systems that may have been related to growth of andesite plug domes. Subsequent intrusion of a granite pluton emplaced fluidal-layered quartzofeldspathic dikes in the breccias.

Gold- and silver-bearing quartz veins postdating the intrusion fill fractures controlled by previous volcanic structures.

1111. SHARMA, K.N.M., LAMOTHE, D.L., FRANCONI, A., Québec Ministère Énergie et Ressources:
Projet Capisisit-Desmaraisville, Québec, 1981-.

1112. SIMARD, A.S., Québec Ministère Énergie et Ressources:
Stratigraphie et volcanologie de la partie est de la bande volcano-sédimentaire archéenne Frotet-Evans, Québec, 1978-85.

Ce projet s'appuie surune cartographie détaillée au 1:10 000 et au 1:20 000. La campagne de terrain de 1982 sera pa 5^{e} et autres sont programmes (1983, 1984) d'ici la fin du projet. Concurremment, la carte géologique synthetique (1:50 000) progresse et des coupes stratigraphiques ont été établies a partir des séquences homoclinales.

1113. THURSTON, P.C., HODDER, R.W., FRYER, B.J., Univ. Western Ontario (Geology), Ontario Geol. Surv.:
Volcanology and trace element geochemistry of cyclical volcanism, Confederation Lake, Ontario, 1976-82; Ph.D. thesis (Thurston).

Project has examined REE geochemistry and physical volcanology of cyclical volcanism in the Uchi-Confederation greenstone belt. Volcanology and geochemistry of basalts completely separated from that of the felsic metavolcanic rocks, leading to the observation that Archean volcanism is largely bimodal.

Alberta Research Council,
Geological Survey,
3rd Floor, Terrace Plaza,
4445 Calgary Trail South,
Edmonton, Alberta
T6H 5R7

Alberta University,
Department of Geology,
Edmonton, Alberta
T6G 2E3

Alberta University,
Department of Zoology,
Biological Sciences Building,
Edmonton, Alberta
T6G 2E9

Bristol University,
Department of Geology,
Bristol, England
BS8 1TR

British Columbia University,
Department of Geological Sciences,
6339 Stores Road, University Campus,
Vancouver, British Columiba
V6T 2B4

British Columbia University,
Department of Geophysics
and Astronomy,
Vancouver, British Columbia
V6T 2B4

British Columbia Ministry of Energy,
Mines, and Petroleum Resources,
Geological Branch,
Parliament Buildings,
Victoria, British Columbia
V8V 1X4

Brock University,
Department of Geological Sciences,
St. Catharines, Ontario
L2S 3A1

Calgary University,
Department of Geology and Geophysics,
2500 University Drive N.W.,
Calgary, Alberta
T2N 1N4

Canada Centre for Mineral and
Energy Technology (CANMET)
Department of Energy, Mines and
Resources,
555 Booth Street,
Ottawa, Ontario
K1A 0G1

Carleton University,
Department of Geology,
Ottawa, Ontario
K1S 5B6

College of Cape Breton,
Department of Geology,
P.O. Box 5300
Sydney, Cape Breton,
Nova Scotia
B1P 6L2

Concordia Univsersity,
Department of Geology,
1455, blvd. de Maisonneuve Ouest,
Montréal, Québec
H3G 1M8

Dalhousie University,
Department of Biology,
Halifax, Nova Scotia
B3H 3J5

École Polytechnique,
Département de Génie civil,
Campus de l'Université de Montréal,
Case postale 6079, Succ. "A",
Montréal, Québec
H3C 3A7.

École Polytechnique,
Departement de Génie mineral,
Campus de l'Université de Montréal,
Case postale 6079, Succ. "A",
Montréal, Québec
H3C 3A7

Environment Canada,
National Water Research Institute,
Canada Centre for Inland
Waters (CCIW),
867 Lakeshore Road,
P.O. Box 5050,
Burlington, Ontario
L7R 4A6

Environment Canada,
National Hydrology Research Institute,
Ottawa, Ontario
K1A 0E7

Geological Survey of Canada,
Department of Energy, Mines
and Resources,
601 Booth Street,
Ottawa, Ontario
K1A 0E8

Laurentian University,
Departmnt of Geology,
Ramsey Lake Road,
Sudbury, Ontario
P3E 2C6

Laval University,
Département de Géologie
et Minéralogie,
Cité univèrsitaire,
Québec, Québec
G1K 7P4

Manitoba University,
Department of Earth Sciences,
Winnipeg, Manitoba
R3T 2N2

Manitoba Department of Energy
and Mines,
Mineral Resources Division,
993 Century Street,
Winnipeg, Manitoba
R3H 0W4

McGill University,
Department of Geological Sciences,
3450 University Street,
Montréal, Québec,
H3A 2A7

McGill University,
Redpath Museum,
859 Sherbrook St. W.,
Montréal, Québec
H3A 2K6

McMaster University,
Department of Geography,
Hamilton, Ontario
L8S 4K1

Memorial University of Newfoundland,
Department of Geology,
St. John's Newfoundland
A1B 3X5

Memorial University of Newfoundland,
Department of Physics,
St. John's, Newfoundland
A1B 3X7

Ministère de l'Énergie et des
Ressources du Québec,
1620, boul. de l'Entente,
Québec, Québec
G1S 4N6

Université de Montréal,
Département de Géographie,
C.P. 6128, Succ. "A",
Montréal, Québec
H3C 3J7

Université de Montréal,
Département de Géologie,
C.P. 6128, Succ. "A",
Montréal, Québec
H3C 3J7

National Museum of Natural Sciences,
Paleobiology Division,
Ottawa, Ontairo
K1A 0M8

National Research Council,
Division of Building Research,
Ottawa, Ontario
K1A 0R6

New Brunswick University,
Department of Geology,
Box 4400,
Fredericton, New Brunswick
E3B 5A3

New Brunswick University,
Department of Geology,
Tucker Park,
P.O. Box 5050,
Saint John, New Brunswick
E2L 4L5

New Brunswick Department
of Natural Resources,
Mineral Resources Branch,
P.O. Box 6000,
College Hill Road,
Fredericton, New Brunswick
E3B 5H1

Newfoundland Department of
Mines and Energy,
Mineral Development Division,
P.O. Box 4750,
St. John's, Newfoundland
A1C 5T7

Nova Scotia Department of
Mines and Energy,
1690 Hollis Street,
P.O. Box 1087,
Halifax, Nova Scotia
B3J 2X1

Ontario Ministry of the Environment,
Water Resources Branch,
Suite 100-135 St. Clair Avenue West,
Toronto, Ontario
M4V 1P5

Ontario Ministry of Natural Resources,
Ontario Geological Survey,
11th Floor - 77 Grenville Street,
Toronto, Ontario
M5S 1B3

Ottawa University,
Département de Géographie,
Ottawa, Ontario
K1N 6N5

Ottawa University
Department of Geology,
Ottawa, Ontario
K1N 6N5

Polar Continental Shelf Project,
Department of Energy, Mines
and Resources,
880 Wellington Street,
Ottawa, Ontario

Université du Québec à Québec,
Institut National de la Recherche
Scientifique (INRS-Géoressources),
555, boul. Henri IV,
Case postale 7500,
Ste-Foy, Québec
G1V 4C7

Queen's University,
Department of Geological Engineering,
Kingston, Ontario
K7L 3N6

Royal Ontario Museum,
Department of Invertebrate Palaeontology,
100 Queen's Park,
Toronto, Ontario
M5S 2C6

Royal Ontario Museum,
Department of Mineralogy and Geology,
100 Queen's Park,
Toronto, Ontario
M5S 2C6

Royal Ontario Museum,
Department of Vertebrate Palaeontology,
100 Queen's Park,
Toronto, Ontario
M5S 2C6

Saskatchewan Museum of Natural History,
Wascana Park,
Regina, Saskatchewan
S4P 3V7

Saskatchewan University,
Department of Geological Sciences,
Saskatoon, Saskatchewan
S7N 0W0

Saskatchewan Department of
Mineral Resources,
Saskatchewan Geological Survey,
1211-1914 Hamilton Street,
Regina, Saskatchewan
S4P 4V4

Saskatchewan Research Council,
Geology Division,
30 Campus Drive,
Saskatoon Saskatchewan
S7N 0X1

Université de Sherbrooke,
Département de Géographie,
Sherbrooke, Québec
J1K 2R1

Simon Fraser University,
Department of Physics,
Burnaby, British Columbia
V5A 1S6

Sir Sandford Fleming College,
Department of Geology,
Frost Campus,
P.O. Box 8000,
Lindsay, Ontario
K9V 4S6

Toronto University,
Department of Geology,
Toronto, Ontario
M5S 1A7

Toronto University,
Erindale College,
Department of Earth and
Planetary Sciences,
33359 Mississauga Road,
Mississauga, Ontario
L5L 1C6

Waterloo University,
Department of Earth Sciences,
Waterloo, Ontario
N2L 3G1

Western Ontario University,
Department of Geology,
Biological and Geological Building,
London, Ontario
N6A 5B7

University of Windsor,
Department of Geography,
Windsor, Ontario
N9B 3P4

University of Windsor,
Department of Geology,
Windsor, Ontario
N9B 3P4

Department of Energy, Mines and Resources, Research Agreements 1981-82/ Ministère de l'Énergie, des mines et des ressources, conventions de recherche 1981-82

BRITISH COLUMBIA

University of British Columbia

Chase, R.L. (Geological Sciences, Oceanography)
Geology of Explorer Seamount, northeastern Pacific Ocean, $2,900.00.

Clowes, R.M. (Geophysics and Astronomy)
Interpretation of explosion/air gun refraction profiles recorded on ocean bottom seismometers west of Vancouver Island, $8,000.00.

Ellis, R.M. (Geophysics and Astronomy)
Interpretation of refraction and reflection data from the Queen Charlotte Fault Zone, $7,000.00.

Godwin, C.I. (Geological Sciences)
Lithogeochemical study with special emphasis on REE, of baritic stratiform deposits in the Canadian Cordillera; development of genetic and exploration models, $10,000.00.

Greenwood, H.J. (Geological Sciences)
Structure and metamorphism of the northern Cariboo Mountains, British Columbia, $8,750.00.

Simon Fraser University

Huntley, D.J. (Physics)
Thermoluminescence dating of terrigenous sediments, $4,500.00.

ALBERTA

University of Alberta

Chatterton, B.D.E. (Geology)
Silurian trilobite and conodont faunas of Mackenzie Mountains, $4,000.00.

Jones, F.W. (Physics)
An investigation of the relationship between geothermal and other geophysical data in high temperature regions of Alberta, $3,000.00.

Lambert, R. St. J. (Geology)
Continental structure, southeast British Columbia, $5,000.00.

Lerbekmo, J.F. (Geology)
A magnetostratigraphic type section for the Maastrichtian of Western Canada, $5,000.00.

Longstaffe, F.J. (Geology)
Stable isotope geochemistry of shale host-rocks, Jason Pb-Zn Property, MacMillan Pass, Selwyn Basin, $5,000.00.

Rutter, N.W. (Geology)
Amino acid analysis of fossils from northern Canada, $4,000.00.

University of Calgary

McGugan, A. (Geology and Geophysics)
Micropaleontology – Cretaceous subsurface section – Vancouver Island area, $1,000.00.

Simony, P.S. (Geology and Geophysics)
Stratigraphy, tectonics and metamorphism in Blue River area of Cariboo Mountains, $14,500.00.

SASKATCHEWAN

University of Saskatchewan

Braun, W.K. (Geological Sciences)
Biostratigraphy and microfaunas of the Mesozoic rocks in Western Canada, $4,150.00.

Gendzwill, D.J. (Geological Sciences)
Study of mine subsidence using geophysical techniques, $10,000.00.

King, M.S. (Geological Sciences)
Acoustic borehole logging, $10,000.00.

MANITOBA

University of Manitoba

Hall, D.H. (Earth Sciences)
Interpretation of MAGSAT data and the magnetic signatures of Provinces and Sub-provinces in the Canadian Shield, $7,500.00.

Moon, W. (Earth Sciences)
Interpretation of CO-CRUST (1977, 1979) refraction data and related research, $4,500.00.

Teller, J.T. (Earth Sciences)
The Lake Agassiz-Lake Superior connection, $8,000.00.

ONTARIO

Carleton University

Watkinson, D.H. (Geology)
Geology, petrology and chromite chemistry of Cr occurrences in ophiolitic complexes, British Columbia, $5,000.00.

Watkinson, D.H. (Geology)
Geological mapping and petrological interpretation of relationships between alteration and Cu-Zn deposits, Noranda, Quebec, $6,500.00.

McMaster University

Clarke, W.B. (Physics)
Development of a new prospecting method for uranium – measurements of $^3He/^4He$, He, Ne, and tritium in groundwater, lakes and gas, $12,000.00.

Crocket, J.H. (Geology)
Gold mineralization in Archean greenstone belts: a study of Dickenson Mine, Red Lake area, Ontario, $8,500.00.

McCann, W.B. (Geography)
Sediment dispersal patterns and shore morphology along the Georgia Strait coastline of Vancouver Island, $8,250.00.

Schwarcz, H.P. (Geology)
Oxygen and hydrogen isotopic study of altered volcanic rocks, Timmins gold deposits, $7,000.00.

Queen's University

VanDine, D.F. (Geological Sciences)
Engineering geology of the glaciolacustrine deposits of southeastern British Columbia, $8,000.00.

Royal Ontario Museum

Collins, D. (Invertebrate Palaeontology)
Determination of Middle Cambrian soft-bodied fossil localities of the Burgess Shale type along the Cathedral Escarpment, $8,200.00.

Sir Sandford Fleming College

Watts, S.H. (Geology
Bedrock weathering processes and products under arid arctic conditions, $4,800.00.

University of Ottawa

St. Onge, D.A. (Geography)
Mapping of unconsolidated deposits, Dismal Lakes and Coppermine River valleys, Northwest Territories, $6,500.00.

University of Toronto

Bailey, R.C. (Physics)
Automatic correction for atmospheric background in airborne radiometric surveys, $7,000.00.

Campbell, I.H. (Earth and Planetary Sciences)
Rare Earth elements in acid volcanics associated with Cu-Zn massive sulfide mineralization, $7,500.00.

Dunlop, D.J. (Physics)
Paleomagnetic dating of metamorphic events in Canadian Precambrian rocks, $5,000.00.

Edwards, R.N. (Physics)
Controlled source electromagnetic sounding of the sea floor, $10,000.00.

Ludvigsen, R. (Geology)
Upper Cambrian and Ordovician trilobite biostratigraphy of Canada, $5,300.00.

Norris, G. (Geology)
Upper Cretaceous and Tertiary palynostratigraphy, Arctic Canada, $5,800.00.

Spooner, E.T.C. (Geology)
Tin and tungsten mineralization in Nova Scotia and the Yukon Territory, $10,000.00.

University of Waterloo

Appleyard, E.C. (Earth Sciences)
Metallogeny of basement gneisses, metasomatic rocks and regoliths of the Wollaston Lake area, Saskatchewan, $4,500.00.

Barker, J.F. (Earth Sciences)
The source correlation and thermal maturation history of hydrocarbon deposits in Southern Ontario, $9,400.00.

Cherry, J.A. (Earth Sciences)
Retardation of contaminants and acid front in a shallow sand aquifer at the Nordic main tailings area, Elliot Lake, Ontario. $10,000.00.

Roberts, R.G. (Earth Sciences)
Stable isotopes of gold-bearing quartz veins and their carbonate-rich host rocks at Dome Mine, Timmins, $7,500.00.

University of Western Ontario

Beck, A.E. (Geophysics)
Estimates of climate for the past millenium using precision borehole temperature gradient logs and statistical tests for systematic errors in continental heat flow data, $9,000.00.

Luckman, B.H. (Geography)
Oxygen isotope and tree-ring densitometric estimates of paleotemperature during the Hypsithermal Interval in the Middle Canadian Rockies, $3,000.00.

QUEBEC

Concordia University

Kumarapeli, S. (Geology)
Petrochemistry and tectonic significance of Tibbit Hill volcanics, $4,000.00.

Kumarapeli, S. (Geology)
Investigations into seismotectonics of Eastern Canada, $1,000.00.

École Polytechnique

Gélinas, L. (Génie minéral)
Etude des complexes rhyolitiques de la région de Rouyn-Noranda, $6,500.00.

Pouliot, G. (Génie minéral)
Minéralogie et géochimie des principaux gîtes d'ilménite associés aux complexes anorthositiques du Québec, $3,500.00.

Saint-Amant, M. (Génie minéral)
Magnétotellurométre à calculateur hybride le MTCH, $8,000.00.

Tanguay, M.G. (Génie minéral)
Applications des images Landstat en génie et en géologie, $15,000.00.

INRS - Université du Québec à Québec

Achab, A. (Pétrole)
Etude des chitinozoaires de l'Est du Canada et des Iles de l'Arctique, $5,200.00.

Tessier, A. (Eau)
Evaluation d'une méthode de lessivages "selectifs" des sédiments aquatiques en vue de la prospection géochimique, $13,000.00.

INRS - Université du Québec à Rimouski

Long, B. (Océanologie)
Conséquences sédimentologiques et géomorphologiques des aménagements hydro-électiques sur les estuaires des Riviéres de la Basse Côte du Golfe du St-Laurent, $8,200.00.

McGill University

Doig, R. (Geological Sciences)
Rb-Sr geochronological study of the gneissic terrain north of the Cape-Smith Fold Belt, $5,000.00.

Francis, D.M. (Geological Sciences)
The evolution and mineral potential of the Cape Smith Fold Belt, $12,000.00.

Grice, R.H. (Geological Sciences)
Weathering processes of mudrocks – measurement of fundamental properties by surface absorption and other laboratory methods and comparison with index tests in engineering use, $6,500.00.

Hesse, R. (Geological Sciences)
Application of thermal maturation studies to Appalachian tectonics, ore genesis and exploration for hydrocarbons, $6,500.00.
Jenson, O.G. (Mining and Metallurgical Engineering)
Geophysical application of VHF-EMR (Very High Frequency Electromagnetic) waves and fields, $15,000.00.

Université Laval

Habashi, F. (Mines and Metallurgy)
The recovery of uranium from phosphate rock, $10,000.00.
Seguin, M.K. (Géologie)
Paleomagnetic studies on the tectonic evolution of Avalon Zone, eastern Newfoundland, $8,000.00.

Université de Montreal

Gray, J. (Geography)
Geothermal modelling of deep drill hole data aimed at reconstruction of Late Quaternary environments in northern Québec and Gaspésie, $6,500.00.

Université du Québec à Chicoutimi

Dimroth, E. (Sciences de la Terre)
Volcanologie physique et sédimentologie de la région de Chibougamau-Chapais, $6,000.00.
Woussen, G. (Sciences de la Terre)
Evolution magmato-tectonique de la Province Grenville dans la région du Saguenay-Lac St-Jean, $7,500.00.

Université du Québec à Montréal

Occhietti, S. (Sciences de la Terre)
Lithologie et stratigraphie du Quaternaire de l'île du Cap-Breton, $5,000.00.
Prichonnet, G. (Sciences de la Terre)
Cartographie des dépôts meubles de la Feuille de St-Hyacinthe (el H/10) – Ech: 1/50,000 – complément sur Cowansville, $4,000.00.

Université de Sherbrooke

Dubois, J-M. M. (Géographie)
Le Quaternaire d'Anticosti: formations meubles, stratigraphie et evolution littorale, $8,200.00.

NEW BRUNSWICK

University of New Brunswick

Noble, J.P.A. (Geology)
Silurian-Devonian Paleontology and Stratigraphy of the northern Appalachians, $4,500.00.
Pajari, G.E. (Geology)
Stratigraphic and petrologic studies in New Brunswick and Newfoundland, $4,500.00.

NOVA SCOTIA

Dalhousie University

Clarke, D.B. (Geology)
Mesozoic-Cenozoic volcanicity of the eastern North American continental margin, $5,500.00.
Cooke, R.C. (Geography)
The fundamental chemical dynamics implicit in the sea bed disposal program, $5,000.00.
Hall, J.M. (Geology)
Continental margin and ocean crust geological investigations through further development of the Bedford Institute shipborne electric drill and other remotely controlled underwater devices, $19,000.00.
Huntley, D.A. (Oceanography)
Coastal waves and currents, southern Gulf of St. Lawrence, $9,000.00.
Jamieson, R.A. (Geology)
Cape Breton Highlands geological mapping, $6,850.00.

Ogden, III, J.G. (Biology)
Vegetational and climatic history of Late Quaternary environments in the Parrsboro, Nova Scotia, area, $5,000.00.
Piper, D.J.W. (Geology)
Geological mapping and interpretation of proglacial sediments, Frobisher Bay and elsewhere in eastern Canada, $10,000.00.
Scott, D.B. (Geology)
Observed relative sea level rise and its effect on tidal amplification in the Bay of Fundy as determined from the Greenberg Tidal Function, $6,000.00.
Zentilli, M. (Geology)
Geological controls of tin-bearing zones in the Dominque-Plymouth area, Yarmouth County, Nova Scotia, $6,000.00.

Nova Scotia Research Foundation Corporation

Bidgood, D.E.T. (Geophysics)
Gravity investigation of the Stellarton-New Glasgow Pennsylvanian Graben, Pictou County, Nova Scotia, $12,000.00.

NEWFOUNDLAND

Memorial University of Newfoundland

Vetter, W. (Engineering and Applied Science)
Ocean sediment properties using acoustic sensing, $12,000.00.
Williams, H. (Geology)
Geology of Pasadena map-area (12 H/4) Newfoundland with possible future extensions northward (Lomond 12 H/5 and Gros Morne 12 H/12 areas), $13,000.00.
Wright, J.A. (Physics)
Marine geothermal measurements Offshore Eastern Canada, $10,000.00.

Department of Environment Canada, Water Resources Research Support Program, Research Agreements 1981-82/Ministère des Environnement Canada, Programme de subvention à la recherche sur les ressources en eau, conventions de recherche 1981-82

University of British Columbia

Clarke, G.K.C. (Geophysics and Astronomy)
Glacier beds: their relationship to ice dynamics, glacier hydrology and erosion, $12,000.00.

University of Saskatchewan

Gray, D.M. (Hydrology)
Infiltration into frozen and partially frozen soils, $18,000.00.

McMaster University

Kramer, J.R. (Geology)
Geochemical processes, emphasizing protons, relative to time trends of water quality in softwater systems, $27,000.00.

Queen's University

Ongley, E.D. (Geography)
Sediment-related contaminant transport in river systems, $9,500.00.

University of Waterloo

Barker, J.F. (Earth Sciences)
Transport of hazardous organic solutes and metals in groundwaters at a special waste disposal site, $12,000.00.
Gale, J.E. (Earth Sciences)
Assessment of the anisotropic characteristics of a fractured porous aquifer to determine potential contaminant migration pathways, $11,000.00.

Polar Continental Shelf Project Field Support Non-Governmental Activities 1981-82/Aide de l'étude du Plateau continental polaire en faveur d'activités non gouvernementales pour 1981-82

ALBERTA

University of Alberta

England, J.
Glacial geomorphology, northern Ellesmere Island, District of Franklin.
Jones, B.
Silurian-Devonian paleontology, Ellesmere, Devon, Bathurst and Melville Islands, District of Franklin.
Mortensen, P.
Sedimentology and paleontology, Stefansson and Prince of Wales Islands, District of Franklin.

University of Calgary

Hills, L.V.
Geology and stratigraphy, Greely Fiord, Eureka, Ellesmere Island, District of Franklin.

SASKATCHEWAN

University of Saskatchewan

Coleman, L.C.
Meterorites, Devon and Ellesmere Islands, District of Franklin.

ONTARIO

Lakehead University

Mitchell, R.H.
Petrology and volcanology, Precambrian, Somerset and Bathurst Islands, District of Franklin.

McMaster University

Woo, M-K.
Hydrology, Mould Bay, Resolute, Eureka, District of Franklin.

University of Ottawa

Dixon, O.A.
Paleontology and sedimentology, southwestern Devon Island and Cornwallis Island, District of Franklin.
French, H.M.
Geomorphic processes, Banks Island, District of Franklin.

Sir Sandford Fleming College

Watts, S.H.
Bedrock geology, Aston Bay, Coburg Island, District of Franklin.

University of Toronto

Irving, W.N.
Quaternary stratigraphy, Old Crow, Yukon Territory.
Ritchie, J.C.
Quaternary paleobotany, Tuk Peninsula and Richards Island, Northwest Territories.

University of Waterloo

Fritz, P.
Permafrost studies, Richards Island, Northwest Territories.

QUEBEC

McGill University

Stearn, C.W.
Devonian stratigraphy and paleontology, Bathurst, Devon and Ellesmere Islands, District of Franklin.

U.S.A.

University of Chicago

Smith, D.
Paleontology and stratigraphy, Ellesmere Island, District of Franklin.

University of Colorado

Andrews, J.
Paleontology, Steensby Inlet, Baffin Island, District of Franklin.

University of Washington

Washburn, A.L.
Periglacial features, Resolute, Cornwallis Island and Eureka, Ellesmere Island, District of Franklin.

UNITED KINGDOM

University of Reading

Worsley, P.
Quaternary periglacial geomorphology, southwestern Banks Island, District of Franklin.

JAPAN

Hokkaido University

Kinosita, S.
Permafrost, Tuktoyaktuk, District of Mackenzie.

Ontario Geological Survey, Geoscience Research Grants 1981-82/ Commission géologique de l'Ontario subventions de recherche en sciences de la terre pour 1981-82

Brock University

Dalrymple, R.W.
Terraine characteristics and physical processes in small lagoon complexes, $6,370.00.
Haynes, S.J.
Characterization of assimilation-type uraniferous pegmatites, Bancroft region, $12,900.00.

Carleton University

Bell, K.
"Latter-stage decay products" of ^{222}Rn use in radioactive waste management, $22,750.00.

Laurentian University

Rousell, D.H.
Mineralization in the Whitewater Group, Sudbury Basin, $7,500.00.

McMaster University

Crocket, J.H.
Stable isotope studies – gold metallogeny, Timmins, Ontario, $22,400.00.

Queen's University

Nichol, I.
Speciation of free gold in glacial overburden, $35,000.00.

University of Toronto

Campbell, I.H.
Rare earth elements in acid volcanics, $25,000.00.
Kenney, T.C.
Field investigation of factors controlling changes of groundwater pressure in clay slopes, $19,000.00.
Naldrett, A.J.
Platinum group elements in layered intrusions, $18,000.00.
Norris, G.
Palynostratigraphy of lignites near Adam Creek and Onakawana Moose River Basin, Ontario, $8,600.00.
Schwerdtner, W.M.
Structure controls of uranium deposits in the Bancroft-Gooderham area, Ontario, $24,250.00.
Strangway, D.W.
Surface electromagnetic mapping in selected positions of Northern Ontario, $51,396.00.
West, G.F.
Simulation of complex EM targets, $19,600.00.
York, D.
Direct dating of ore minerals, $20,500.00.

University of Waterloo

Barker, J.F.
Source correlation and thermal maturation history of hydrocarbon mineral deposits of southern Ontario, $20,000.00.
Gale, J.
Impact of groundwater on mining activities in Niagara Escarpment area, $14,070.00.

University of Western Ontario

Edgar, A.D.
The petrology, geochemistry and economic potential of the Nipissing Gabbro, $10,163.00.
Fyfe, W.S.
Geochemistry and field relations of lode gold deposits in felsic igneous intrusions, $33,800.00.
Mansinha, L.
Interpretation of gravity data from Northerr Ontario, $12,000.00.
Mereu, R.F.
A micro-earthquake survey of Gobles Oil Field area of southwestern Ontario, $18,500.00.

University of Windsor

Hudec, P.P.
Petrographic number re-evaluation, $16,490.00.

Natural Sciences and Engineering Research Council Canada PRAI and Special Projects Grants 1981-82/ Subvention PRAI et subvention de projets spéciaux données par le conseil de recherches en sciences naturelles et en génie Canada 1981-82

Lever, A.B.P., York University (Chemistry) and Scintrex Limited, Concord, Ontario.
Development of analytical techniques for the measurement of tungsten, tin and molybdenum using laser – induced fluorescence, $25,750.00.

Miller, J.R., York University (Physics) and Moniteq Limited, Concord, Ontario.
Water depth mapping by passive optical remote sensing, $72,850.00.
Paulson, K.V., University of Saskatchewan (Physics) and AVF Investments Ltd., Calgary, Alberta.
The development of GEDCOM-1: an interactive geophysical computing system, $52,000.00.

Stevens, G.R., Acadia University (Geology) and Saarberg Interplan Canada Ltd., Wolfville, Nova Scotia.
Digital LANDAT imagery analyses of regional fracture patterns applied to mineral exploration, $9,560.00.

Natural Sciences and Engineering Research Council Canada Earth Science Operating Grants 1981-82/Conseil de recherches en sciences naturelles et en génie Canada sciences de la terre subventions pour dépenses courantes 1981-82

Achab,A. INRS-Pétrole Québec-INRS	Chitinozoaires de l'Ordovicien inférieur et moyen du Québec et de l'Est du Canada
Adamowski,K. Civil Engineering Ottawa	Stochastic modelling of the hydrologic cycle
Aldridge,K.D. Physics York	Laboratory studies in geophysical fluid dynamics
Allen,J.M. Geology Toronto	1) Experimental and field studies in metamorphic petrology 2) Mineralogy and petrology of Ca-Al-rich inclusions in the Allende meteorite
Anderson,G.M. Geology Toronto	Metasomatic and ore-forming solutions
Anderson,M.M. Biology Memorial	Contributions to palaeontology and stratigraphy, mainly Newfoundland
Armbrust,G.A. Geology Ottawa	Genesis of hydrothermal Cu-Au and Ag deposits associated with felsic intrusions
Armstrong,R.L. Geological Sciences British Columbia	Geochronometry of Cordilleran rocks and isotope studies of crustal evolution
Ayres,L.D. Earth Sciences Manitoba	Physical volcanology, stratigraphy, and geochemistry of Precambrian and Early Paleozoic volcanoes
Baadsgaard,H. Geology Alberta	Isotope geology of polymetamorphic rocks, salt beds and uranium deposits
Bachinski,D.J. Geology New Brunswick	Field and laboratory studies in economic geology
Bailey,R.C. Physics/Geology Toronto	Geomagnetic sounding of the crust and upper mantle/Uranium exploration
Ballivy,G. Génie civil Sherbrooke	Comportement des coulis d'étanchéité et de scellement dans le roc: ancrages, pieux, barrages
Barker,J.F. Earth Sciences Waterloo	Aspects of organic and bio-geochemistry in the groundwater environment
Barnes,C.R. Earth Sciences Memorial	Lower Paleozoic conodont biostratigraphy, paleoecology and ultrastructure
Barnes,W.C. Geological Sciences British Columbia	Sedimentology and organic geochemistry of lacustrine and shallow marine sediments of southwestern British Columbia
Barr,S.M. Geology Acadia	Petrology, petrogenesis, and economic potential of igneous rocks from southern Nova Scotia, Cape Breton Island and Thailand
Bayliss,P. Geology Calgary	Applied crystallographic-mineralogy
Beales,F.W. Geology Toronto	Limestone studies and strata-ground mineral deposits
Beaumont,C. Oceanography Dalhousie	Earth rheology
Beck,A.E. Geophysics Western Ontario	Investigation of pure and applied geothermal problems
Bell,K. Geology Carleton	Isotope geochemistry of carbonatites
Beswick,A.E. Geology Laurentian	Determination of the primary geochemical characteristics of Precambrian Volcanism and nature of the early upper mantle
Bilodeau,M.L. Mining/Metal. Eng. McGill	Geostatistical estimation in the presence of geological trends
Bland,C.J. Physics Calgary	Radioactivity measurements of geological samples
Blenkinsop,J. Geology Carleton	Rb-Sr geochronology of mid-Proterozoic granitoid intrusions from the Churchill Province of Saskatchewan
Borradaile,G.J. Geology Lakehead	Structural and metamorphic geology with emphasis on Archean rocks of NW Ontario
Bourque,P.A. Géologie Laval	Analyse paléo-environnementale des ensembles carbonates du siluro-devonien de la Gaspésie
Bovis,M.J. Geography British Columbia	Slow mass movement in southwestern British Columbia
Bowen,A.J. Oceanography Dalhousie	Dynamics of waves, currents and sediments
Brand,U. Geological Sciences Brock	Carbonate diagenesis and metals and hydrocarbon exploration geochemistry
Brookfield,M.E. Land Resource Sc Guelph	Studies of recent and ancient desert deposits
Brooks,C. Geology Montréal	Evolution of the Precambrian Shield of Canada as determined by geochemical, isotopic and geochronologic analysis
Broughton,R.S. Agricult. Eng. Macdonald Coll.	An analysis of the effects of drainage works on downstream flood peaks
Brown,A.C. Génie minéral Ecole Polytech.	Etude métallogenique des gisements stratiformes de métaux non-ferreux
Brown,R.L. Geology Carleton	Structural investigations in the Canadian Cordillera
Brown,R.M. Earth Sciences Waterloo	A study of uranium isotope disequilibrium in the pre-Cambrian environment
Bryan,R.B. Geography Toronto	Erodibility of soils and erosion processes in laboratory and badland areas
Burwash,R.A. Geology Alberta	Uranium and thorium in crystalline rocks of the western shield
Bustin,R.M. Geological Sciences British Columbia	Structure, sedimentology and coal petrology of cretaceous coal measures in the Eastern Canadian Cordillera
Byrne,P.M. Civil Engineering British Columbia	Analytical methods in soil & soil-structure interaction problems
Calder,P.N. Mining Eng. Queen's	Detection of loose ground near underground openings
Caldwell,W.G.E. Geological Sciences Saskatchewan	Biostratigraphic studies in the cretaceous system of Western Canada

Calon,T.J.	Geology Memorial	Structural studies of ophiolites and associated rocks
Calvert,S.E.	Oceanography British Columbia	Geochemistry of trace metals in recent marine sediments
Campbell,F.A.	Geology & Geophys. Calgary	Geochemistry, mineralogy, and isotope studies of rocks and ores
Campbell,I.A.	Geography Alberta	Runoff sediment yields and partial area contributions in a badlands drainage basin
Campbell,I.H.	Earth/Planet. Sci. Toronto	Nickel activity in silicate liquids
Cannon,W.H.	Physics York	Applications of long baseline interferometry to geodesy, geophysics, and planetary dynamics
Carmichael,C.M.	Geophysics Western Ontario	Geomagnetism
Carmichael,D.M.	Geological Sciences Queen's	Metamorphic studies in Canada
Carroll,R.L.	Redpath Museum McGill	Evolution and functional anatomy of Paleozoic and Early Mesozoic reptiles
Cawker,K.B.	Geography Western Ontario	Fire and vegetation history, Ontario
Cerny,P.	Earth Sciences Manitoba	Mineralogy, petrology, and genesis of granitic pegmatites
Chao,G.Y.	Geology Carleton	1) Descriptive, comparative and structural studies of minerals from Mont St-Hilaire, Quebec 2) Phase relations in the system Pt-Pd-Te-Sb
Chapman,C.H.	Physics Toronto	Seismic body wave theory
Charlesworth,H.A.K.	Geology Alberta	Structural study of coal-bearing and adjacent strata,Rocky Mountain Foothills, central Alberta
Chatterton,B.D.E.	Geology Alberta	Taxonomic, paleoecologic, biostratigraphic and biogeographic studies of Paleozoic faunas of western and northern Canada, with concentration on conodonts and trilobites
Cherry,J.A.	Earth Sciences Waterloo	Migration of contaminants and environmental isotopes in shallow groundwater flow systems
Chesworth,W.	Land Resource Sc Guelph	Weathering of igneous rocks
Church,M.A.	Geography British Columbia	Studies of the hydraulics of rivers
Church,W.R.	Geology Western Ontario	Comparative evolution of ophiolite-bearing Proterozoic and Paleozoic orogenic systems
Churcher,C.S.	Zoology Toronto	Quaternary mammalian faunas, especially of Canada and Africa
Clark,A.H.	Geological Sciences Queen's	Origin and delimitation of metallogenetic provinces at convergent lithosphere plate boundaries
Clarke,D.B.	Geology Dalhousie	Petrogenesis of igneous rocks: 1) Granites 2) Kimberlites and peridotites 3) Basic rocks
Clarke,G.K.C.	Geophys./Astron. British Columbia	Glaciology: field study, theory and instrumentation
Clarke,W.B.	Physics McMaster	Investigations of isotope patterns in nature
Clowes,R.M.	Geophys./Astron. British Columbia	Reflection/refraction seismology on land and at sea for crustal/upper mantle investigations
Cogley,J.G.	Geography Trent	Palaeoclimate and global tectonics
Collins,S.H.	Engineering Guelph	Stereoscopic depth perception in photogrammetry
Cooke,H.B.S.	Geology Dalhousie	1) Studies on the quaternary in Atlantic Canada 2) Studies on the neogene/quaternary of Africa and Eurasia
Cooke,R.C.	Oceanography Dalhousie	Reactions of gaseous, dissolved and particulate carbon in the sea
Copper,P.	Geology Laurentian	Paleoecology, evolution and morphology of Ordovician to Devonian atrypoid brachiopods; ecological succession in reefs
Crocket,J.H.	Geology McMaster	Applications of geochemistry to mineral deposit genesis
Crossley,D.J.	Mining/Metal. Eng. McGill	1) Physics of the earth's interior 2) Exploration geophysics
Cruden,D.M.	Geology Alberta	Stability of natural slopes in rock
Cumming,G.L.	Physics Alberta	Systematics of PB isotope variations in ores and rocks - crustal seismic reflection and refraction studies
Curran,J.H.	Civil Engineering Toronto	Constitutive equations for porous geologic materials
Currie,J.B.	Geology Toronto	Development of fracture porosity in sedimentary strata
D'Anglejan,B.F.	Marine Sci. Centre McGill	Benthic boundary layer sedimentation processes in estuaries
Dalrymple,R.W.	Geological Sciences Queen's	Sedimentation dynamics and facies modelling of Cobequid Bay sediments
David,M.	Génie minéral Ecole Polytech.	Développements géostatistiques pour l'inventaire de réserves
David,P.P.	Geology Montréal	Study of eolian deposits in Canada
Davidson-Arnott,R.G.D.	Geography Guelph	Beach and nearshore processes - erosion and sedimentation
Davies,J.F.	Geology Laurentian	CO2 CaO molar ratios: A measure of the intensity of carbonate alteration * with R.F.Whitehead(Laurentian)
Davis,A.M.	Geography Toronto	Palynology and paleoecology of peatlands in Newfoundland .

De Vries,J.
Soil Science
British Columbia
Hydrologic behaviour of soils of the urban-rural fringe area of the lower Fraser Valley

Delisle,C.E.
Génie civil
Ecole Polytech.
Liens entre les métaux lourds dans l'environnement, les précipitations acides et l'alcalinité

Denner,W.W.
Physics
Memorial
Numerical modeling of ice conditions in the Labrador current

Deutsch,E.R.
Physics
Memorial
Rock magnetism and geological structure in the Newfoundland region

Dickinson,W.T.
Engineering
Guelph
Erosion and sedimentation modelling

Dimroth,E.
Sc. appliquées
Qué-Chicoutimi
1) Volcanologie physique et sédimentologie d'un bassin volcano-sé-dimentaire Archéen et 2) Evolution de la Province Grenville dans la région Saquenay-Lac-St-Jean

Dixon,J.M.
Geological Sciences
Queen's
Centrifuge modelling of gravity-driven geologic structures and tectonic consequences of ridge subduction

Dixon,O.A.
Geology
Ottawa
Ordovician-Silurian invertebrate fossils and sedimentary facies

Doig,R.
Geological Sciences
McGill
Geological applications of isotopic analysis

Donaldson,J.A.
Geology
Carleton
Comparative studies of Precambrian sedimentary rocks

Donnay,G.
Geological Sciences
McGill
Relation of physical and chemical properties to crystal structure

Dosso,H.W.
Physics
Victoria
Geomagnetic variations and electromagnetic modelling

Dostal,J.
Geology
Saint Mary's
Geochemical studies of some rocks

Drake,J.J.
Geography
McMaster
Studies of carbonate terrain erosion and water quality

Dreimanis,A.
Geology
Western Ontario
Glacigenic deposits and stratigraphy of last glaciation in southern part of Canada

Dudas,M.J.
Soil Science
Alberta
1) Processes in the experimental weathering of fly ash 2) Effect of humic compounds on the transport of heavy metals in soil

Dunlop,D.J.
Physics
Toronto
Rock magnetism and paleomagnetism of continental and oceanic rocks

Durand,M.
Sciences de la terre
Qué-Montréal
Etude des implications de la géologie urbaine pour l'aménagement et la construction à Montréal

Dusseault,M.B.
Mineral Eng.
Alberta
Geomechanics of oil sands: In situ processes and materials behavior

Edgar,A.D.
Geology
Western Ontario
Geochemical and experimental studies of igneous rocks and minerals

Edmund,A.G.
Geology
Toronto
Osteology, stratigraphic relationships and systematic revision of giant armadillos and ground sloths

Edwards,R.N.
Physics
Toronto
Crustal electrosounding

Eisenstein,Z.
Civil Engineering
Alberta
1) Application of constitutive models to analysis of earth structures 2) Behaviour of tunnels in soil 3) Stress-strain behaviour of oil sands

Elias,R.J.
Earth Sciences
Manitoba
Upper Ordovician solitary rugose corals of central and western North America

Ellis,R.M.
Geophys./Astron.
British Columbia
Seismic crustal and array studies

Elrick,D.E.
Land Resource Sc
Guelph
Transport phenomena in natural porous media

Emery,J.J.
Civil Engineering
Toronto
Simulation of time-dependent problems in geotechnology

Emery,W.J.
Oceanography
British Columbia
Monthly surveys of the upper waters in the Central Strait of Georgia

England,J.
Geography
Alberta
Quaternary glaciation, glacio-isostasy and paleoclimatic change, Northern Ellesmere Island

Evans,L.J.
Land Resource Sc
Guelph
Phenolic acids and podzolisation

Evans,M.E.
Physics
Alberta
Quaternary paleomagnetism of Western Canada and archeomagnetic investigations

Evensen,N.M.
Geology
Toronto
Analysis and modeling of isotopic variations in geologic systems

Everell,M.D.
Mines & métallurgie
Laval
Dimensionnement des circuits industriels de comminution

Fahey,B.D.
Geography
Guelph
Hydration shattering as a rock weathering mechanism in cold climates

Fahraeus,L.E.
Geology
Memorial
Conodontophorid paleobiology, ordovician chrono- and biostratigraphy, and Lower Carboniferous ostracodes from south-western Newfoundland

Farquhar,R.M.
Physics
Toronto
Lead isotope ratio variations

Farrar,E.
Geology
Queen's
Cordilleran geochronology and the kinematic and tectonic consequences of ridge subduction

Farvolden,R.N.
Earth Sciences
Waterloo
1) Studies in groundwater runoff 2) Well field response to long term pumping

Fawcett,J.J.
Geology
Toronto
Field and experimental studies in igneous and metamorphic petrology

Feininger,T.
Geology
Laval
Comparative petrology and tectonic history of the Quebec Appalachians and the Ecuadorian Andes

Fellenius,B.H.
Civil Engineering
Ottawa
The geotechnical engineering behaviour of Champlain Clays and soil improvement methods

Ferguson,R.B.	Earth Sciences Manitoba	Crystal-chemical and petrogenetic studies of the rock-forming feldspars and other minerals
Finn,W.D.L.	Graduate Studies British Columbia	1) Seismic response of ground, slopes and earth dams 2) Simulated earthquake testing of soils 3) Geotechnical engineering in ocean 4) Soil-structure interaction 5) Yielding and deformation of soils 6) Seepage and heat condition in soils
FitzGibbon,J.E.	Geography Saskatchewan	Water balance and runoff study of an organic drainage system
Fleet,M.E.L.	Geology Western Ontario	Crystal chemistry and physics of minerals
Fletcher,W.K.	Geology British Columbia	Development and utilization of regional geochemical techniques
Flint,J.J.	Geological Sciences Brock	Fluvial morphology and sediment transport in armoured streams
Ford,D.C.	Geography McMaster	1) Groundwater flow and cavern genesis in soluble rocks 2) Quaternary dating & palaeothermometry of calcite speleothem 3) Karst studies in Canada
Fox,R.C.	Geology/Zoology Alberta	Upper cretaceous and lower tertiary vertebrates from western Canada
Francis,D.	Geological Sciences McGill	Origin and evolution of basic magmas in the upper mantle
Fransham,P.B.	Earth Sciences Waterloo	Geophysical response of surficial geologic materials
Fredlund,D.G.	Civil Engineering Saskatchewan	Engineering behavior of unsaturated and swelling soils
Freeze,R.A.	Geological Sciences British Columbia	Groundwater in geological processes
French,H.M.	Geology/Geography Ottawa	1) Geomorphic process studies, Banks Island, Western Arctic 2) Late Quaternary coastal and fluvial environments, Ottawa region
Frind,E.O.	Earth Sciences Waterloo	Mathematical modelling of flow and transport in hydrogeologic systems
Fritz,P.	Earth Sciences Waterloo	Environmental isotopes in the hydrosphere and freshwater sediments for hydrogeologic and paleoclimatic investigations
Fryer,B.J.	Geology Memorial	Igneous and sedimentary geochemistry of the Precambrian and the geochronology of Newfoundland
Fyfe,W.S.	Geology Western Ontario	Fluid flow in the crust: The limit on ancient geothermal gradients
Fyson,W.K.	Geology Ottawa	Structural patterns in metamorphic rocks
Gale,J.E.	Earth Sciences Waterloo	Factors controlling the movement of fluids through fractured argillaceous and crystalline rocks
Gangloff,P.	Géographie Montréal	Morphogenèse du socle de l'Ungava
Gardner,J.S.	Geography Waterloo	Ephemeral and episodic fluvial transport of debris on mountain slopes
Garland,G.D.	Physics Toronto	Thermal and electrical properties of the earth
Garrett,C.J.P.	Oceanography Dalhousie	Physical oceanography
Gelinas,L.	Génie minéral Ecole Polytech.	Géochimie et pétrogénèse des empilements volcaniques de l'Archéen en relation avec les gisements de sulfures massifs
Gendzwill,D.J.	Geological Sciences Saskatchewan	Seismic investigation of a salt collapse structure near Saskatoon
Geurts,M.A.	Géographie Ottawa	Palynostratigraphie et variations climatiques tardiglaciaires et postglaciaires
Ghent,E.D.	Geology Calgary	Petrologic and geochemical studies in the cordillera and electron microprobe study of minerals
Gibson,I.L.	Earth Sciences Waterloo	Igneous processes at accreting plate margins
Gilbert,R.	Geography Queen's	Nearshore marine environments of eastern Baffin Island & Labrador
Gill,D.E.	Génie minéral Ecole Polytech.	Le poinçonnement des roches
Gillham,R.W.	Earth Sciences Waterloo	Implications of the capillary fringe in the hydraulic and geochemical interactions of groundwater and surface water
Gittins,J.	Geology Toronto	Petrogenesis of alkalic rocks and carbonatite complexes
Godwin,C.I.	Geology British Columbia	Metal and rare earth element zonation in baritic stratiform and volcanogenic deposits, Canadian Cordillera
Goodchild,M.F.	Geography Western Ontario	Generalization and error in cartography and geographical data processing
Goodwin,A.M.	Geology Toronto	Nature and development of earth's early crust
Gough,D.I.	Physics Alberta	Magnetometer array studies and paleomagnetism
Gravenor,C.P.	Geology Windsor	Environment of deposition of ancient glacial deposits
Gray,D.M.	Agricult. Eng. Saskatchewan	Simulation of hydrological processes
Gray,J.	Physics Alberta	An investigation of long-term climatic and environmental changes by stable isotope analysis of tree-ring, peat moss and stalagmite material
Gray,J.T.	Géographie Montréal	Permafrost studies & geothermal modelling in Northern Quebec & Gaspésie
Greenwood,B.	Geography Toronto	Coastal hydrodynamics and sedimentation

Greenwood,H.J.	Geological Sciences British Columbia	Geological phase equilibrium studies
Grundy,H.D.	Geology McMaster	The characterization of minerals and their use as indicators of earth history
Hajnal,Z.	Geology Saskatchewan	1) Seismic investigation of deep seated structures in Saskatchewan 2) Seismic investigation of Precambrian contact zones
Hall,D.H.	Earth Sciences Manitoba	Rock magnetism, regional magnetic anomalies, and explosion seismology in synthesis of crust mantle evolution
Hall,J.M.	Geology Dalhousie	The nature, structure and history of oceanic crust through drilling, geological and geophysical investigations
Hall,R.L.	Geology & Geophys. Calgary	Lithostratigraphy and biostratigraphy of the Fernie Formation (Jurassic), Alberta
Halls,H.C.	Geology Toronto	Paleomagnetism of Precambrian rocks
Harris,S.A.	Geography Calgary	Late glacial and postglacial geomorphology and climate in the south-eastern Rocky Mountains
Hay,J.E.	Geography British Columbia	Determination of the radiance distribution for the sky hemisphere using radiometric and photometric techniques
Hayatsu,A.	Geophysics Western Ontario	Study of initial argon by K-Ar isochron method
Heaton,M.J.	Earth/Planet. Sci. Toronto	Late paleozoic terrestrial sedimentology and paleoecology
Helbig,J.A.	Physics Memorial	Labrador current and Grand Banks circulation study
Helmstaedt,H.	Geological Sciences Queen's	Fabrics of metamorphic rocks, tectonic setting of mineral deposits, xenoliths from kimberlites
Hendry,H.E.	Geological Sciences Saskatchewan	Studies in clastic sedimentology
Heroux,Y.	INRS-Pétrole Québec-INRS	Maturation thermique des kérogènes des Appalaches du Québec
Hesse,P.R.	Geological Sciences McGill	Modern and ancient continental margin sedimentation (diagenesis, processes and environments of deposition, tectonic setting)
Hickin,E.J.	Geography Simon Fraser	The character of river-channel migration rates in western Canada
Hill,A.R.	Geography York	Nitrogen flux and cycling in rivers
Hillaire-Marcel,C.	Sciences de la terre Qué-Montréal	Paleoenvironnements isotopiques continentaux et paleoclimats
Hills,L.V.	Geology & Geophys. Calgary	Palynology, stratigraphy and sedimentation, and Quaternary research
Hiscott,R.N.	Geology Memorial	1) Orogenic flysch, ordovician, Appalachians; 2) Late Precambrian and early Paleozoic sedimentology, Newfoundland Appalachians
Hodgson,C.J.	Geology Queen's	Metallogenic studies of Canadian ore-bearing environments
Hodych,J.P.	Physics/Geology Memorial	Physics of rock magnetism emphasizing stress effects; paleomagnetism of Appalachian Nfld.
Hofmann,H.J.	Geologie Montréal	Precambrian and lower Paleozoic paleontology and stratigraphy
Hogarth,D.D.	Geology Ottawa	Petrogenesis of certain alkalic rocks and carbonatites
Holm,P.E.	Geology Windsor	Fold generations and cleavages in the Bancroft-Madoc area, Ontario
Howarth,P.J.	Geography McMaster	Development and applications of Landsat analytic methodology for the physical environment
Hron,F.	Physics Alberta	Numerical modelling of seismic waves in structurally complicated media
Huang,C.H.	Geology Windsor	Analytical methods in geochemistry
Hubert,C.	Géologie Montréal	Tectonique et stratigraphie des terrains appalachiens du Québec et tectonique des terrains archéens de l'Abitibi, Québec
Huntley,D.A.	Oceanography Dalhousie	Nearshore and boundary layer dynamics
Hutcheon,I.E.	Geology & Geophys. Calgary	1) Geochemistry and water-rock interaction: 2) Theoretical and applied to economic problems
Hutchinson,R.W.	Geology Western Ontario	Geology, origin and metallogenic relationships of exhalative ore deposits
Hynes,A.J.	Geological Sciences McGill	Geologic evolution and mineral potential of the Cape Smith foldbelt
Ingram,R.G.	Marine Sci. Centre McGill	Effect of environmental changes on estuarine circulation and mixing
Jacobs,J.D.	Geography Windsor	Palaeoenvironments of the Frobisher Bay area, Baffin Island
James,N.P.	Geology Memorial	Facies anatomy and diagenetic evolution of Paleozoic carbonates: Northern Maritime Appalachians
Jamieson,R.A.	Geology Dalhousie	1) Regional geology and petrological studies in Cape Breton Highlands 2) Petrological research on ophiolites
Jarvis,G.T.	Geology Toronto	The tectonic role of the lithosphere
Jensen,O.G.	Mining/Metal. Eng. McGill	Earth mechanics - seismology at ultra-long periods Seismic analysis - parametric deconvolution
Johnson,P.G.	Geography Ottawa	Mass movement in alpine environments: structure, deformation rates and age
Jolly,W.T.	Geological Sciences Brock	Metamorphism and geochemistry of the volcanic rocks of the Southern Province of the Canadian Shield and Archean geochemical studies

Jones,B.
Geology
Alberta
Upper silurian and lower devonian brachiopods of Arctic Canada

Jones,F.W.
Physics
Alberta
Electromagnetic induction, heat flow, and Earth tides and tilts

Jopling,A.V.
Geography
Toronto
Palechydrology of the Oak Ridges (Kame) Moraine, Ontario

Kaiser,P.K.
Civil Engineering
Alberta
1) Time-dependent properties of weak rock: 2) Rock debris transport mechanisms: 3) Field instrumentation: 4) Filter function of geotextiles

Kanasewich,E.R.
Physics
Alberta
Gecphysical investigation of the crust and mantle

Karrow,P.F.
Earth Sciences
Waterloo
Quaternary chronology and interglacial-interstadial environments

Kay,B.D.
Land Resource Sc
Guelph
Quantitative characterization of mass and heat transfer in freezing soils

Kennedy,M.J.
Geological Sciences
Brock
Tectonic development in mobile belts

Kenney,T.C.
Civil Engineering
Toronto
Properties of natural soils and rocks

Kerrich,R.
Geology
Western Ontario
Thermal and volume history of Archaean oceans with geochemical implications

King,A.F.
Geology
Memorial
Eo-Cambrian studies on the Avalon and Western Platforms of Newfoundland

King,M.S.
Geological Sciences
Saskatchewan
Mechanical and electrical properties of rocks

King,R.H.
Geography
Western Ontario
Effects of environmental change on soil properties

Kissin,S.A.
Geology
Lakehead
Crystal chemistry and stabilities of sulphide minerals

Kobluk,D.R.
Geology
Toronto
Cavity-dwelling organisms in Paleozoic reefs

Kramer,J.R.
Geology
McMaster
Metal-ligand speciation and particulate interaction in natural waters

Krebes,E.S.
Geology & Geophys.
Calgary
Seismic waves in anelastic media

Kretz,R.
Geology
Ottawa
Geological history of a segment of the St. Lawrence rift system

Krogh,T.E.
Geology
Toronto
Research in geochronology: techniques, tests and applications to geological problems

Krouse,H.R.
Physics
Calgary
Stable isotope fractionation studies

Kukalova-Peck,J.
Geology
Carleton
Morphology and evolution of paleozoic insects with reference to phylogeny of recent insects

La Rochelle,P.
Génie civil
Laval
Propriétés fondamentales et comportement des argiles sensibles

Ladanyi,B.
Génie civil
Ecole Polytech.
Propriétés géotechniques des sols gelés et leur comportement en relation avec les fondations les souterrains

Lafleur,J.
Génie civil
Ecole Polytech.
Résistance au cisaillement des argiles altérées

Lagarec,D.
Géographie
Ottawa
Etude climatique de la vallée Gladstone, Yukon

Lajoie,J.
Géologie
Montréal
1) Etudes sédimentologiques des roches volcanoclastiques de l'Abitibi 2) Sédimentologie du flysch cambro-ordovicien des Appalaches du Québec

Lajtai,E.Z.
Geology
New Brunswick
Tensile fracture in rocks

Lajtai,E.Z.
Geological Eng.
Manitoba
Tensile fracture in rocks

Lambert,R.S.J.
Geology
Alberta
Neodymium, strontium and lead isotopic variations applied to terrestrial evolution

Langleben,M.P.
Physics
McGill
Drift and thermal regime of sea ice

Last,W.M.
Earth Sciences
Manitoba
Sedimentology and post-glacial history of saline lakes in Saskatchewan

Laurent,R.
Géologie
Laval
Géologie des complexes ophiolitiques des Appalaches du Québec

Lauriol,B.M.E.
Géographie
Sherbrooke
La couverture neigeuse de l'ungava entre 1967 et 1980

Lawton,D.C.
Geology & Geophys.
Calgary
Reflection seismic investigations of western Canadian coalfields

Le Blond,P.H.
Oceanography
British Columbia
Ocean waves and coastal oceanography

Lebel,J.
Océanographie
Québec-Rimouski
Hydrogéochimie des estuaires

Lee,D.R.
Earth Sciences
Waterloo
Grcundwater contaminant-flux to surface waters

Lefebvre,G.
Génie civil
Sherbrooke
Etude des caractéristiques des argiles cimentées

Legault,J.A.
Earth Sciences
Waterloo
Palynostratigraphy of the Early Paleozoic of Canada

Lenz,A.C.
Geology
Western Ontario
Paleontology, paleoecology, biostratigraphy and stratigraphy of lower paleozoic of Northern and Arctic Canada

Lerbekmo,J.F.
Geology
Alberta
Magnetostratigraphic correlation of Upper Cretaceous to Paleocene sediments; deposition and diagenesis of the Basal Belly River Sandstone

Leroueil,S.
Génie civil
Laval
Comportement général des argiles sensibles et ses applications pratiques

Lesperance,P.J.
Géologie
Montréal
Biostratigraphie de l'Ordovicien Supérieur au Dévonien Inférieur du Québec

Levinson,A.A.	Geology & Geophys. Calgary	Exploration and environmental geochemistry
Lewis,J.E.	Geography McGill	Urban climate and land-cover: Surface energy exchange as a function of urban terrain characteristics
Lewry,J.F.	Geology Regina	Stratigraphic, sedimentary and structural investigations in the eastern La Ronge domain, western Churchill Province, northern Saskatchewan
Lo,K.Y.	Civil Engineering Western Ontario	Thermal stresses and deformations in underground structures
Logan,A.	Geology New Brunswick	Sessile invertebrate communities of cryptic habitats, Caribbean and Bay of Fundy, and their paleoecological significance
Long,B.F.N.	INRS-Océanolog. Québec-INRS	Evolution sédimentologique et géomorphologique des estuaires de la côte nord du Golf du Saint-Laurent
Longstaffe,F.J.	Geology Alberta	Physico-chemical investigations of water-rock interaction in low-temperature environments
Luckman,B.H.	Geography Western Ontario	Little ice age in Jasper National Park
Ludden,J.N.	Géologie Montréal	Fine-scale evaluation of the petrogenesis and metallogenesis of igneous rocks from Archaean to recent terrains
Ludvigsen,R.	Geology Toronto	Lower paleozoic trilobite biostratigraphy
Luk,S.H.	Geography Toronto	Spatial variability of soil loss within small areas
MacLean,W.H.	Geological Sciences McGill	Geology and origin of the ore deposits at Matagami, Quebec
MacRae,N.D.	Geology Western Ontario	Geochemistry of crustal fusion processes
Mackay,J.R.	Geography British Columbia	Origin of permafrost and ground ice, Western Arctic, and alpine permafrost in B.C.
Macqueen,R.W.	Earth Sciences Waterloo	Paleozoic carbonate/shale suites, Western Canada: Nature, origin, mineralization; Ontario Paleozoic carbonate/shale studies
Malpas,J.G.	Geology Memorial	1) Investigation of ophiolitic and related rocks and comparison to oceanic crust 2) Petrogenesis of Labrador Kimberlites
Mamet,B.L.	Géologie Montréal	Microfaciès carbonatés de Paléozoique; microfaune et microflore
Mandarino,J.A.	Geology Toronto	Assessment of the compatibility of mineralogical data
Mark,D.M.	Geography Western Ontario	Topology and geometry of deranged drainage networks
Martignole,J.	Géologie Montréal	Recherches pétrologiques dans le sud de la province tectonique de Grenville (Québec)
Martin,R.F.	Geological Sciences McGill	Magmatic and metasomatic processes in the genesis of "igneous" rocks
Martini,I.P.	Land Resource Sc Guelph	Quantitative studies of clastic sediments and rocks
Mathewes,R.W.	Biolog. Sciences Simon Fraser	Late-quaternary vegetation and environmental changes in British Columbia
Mathews,W.H.	Geological Sciences British Columbia	Sedimentology, geomorphology, and Cenozoic geochronology in southern British Columbia
May,R.W.	Geology Alberta	1) Lithology and genesis of Quaternary deposits 2) Application of statistical methods to the analysis of geological data
McCann,S.B.	Geography McMaster	Morphology, sediments and dynamics of the shore zone
McCaughey,J.H.	Geography Queen's	Measurement and estimation of radiation and energy balance components for forested and logged surfaces
McGowan,C.	Zoology Toronto	Functional anatomy and phylogenetic relationship within selected vertebrates, recent and fossil
McGugan,A.	Geology & Geophys. Calgary	1) Cretaceous micropaleontology 2) Pennsylvanian/permian stratigraphy
McNutt,R.H.	Geology McMaster	Rb/Sr isotopic studies in metamorphic terrains; Sr isotopic studies in the Andes and Himalayas
Meagher,E.P.	Geological Sciences British Columbia	Chemical bonding and crystal chemical studies of minerals
Medioli,F.S.	Geology Dalhousie	Foraminiferal distribution in coastal and inland marine water and its importance in the study of eustatic sealevel changes
Menzies,J.	Geography Frock	The mechanics of subglacial sedimentation
Mereu,R.F.	Geophysics Western Ontario	Deep and shallow seismic sounding research
Miall,A.D.	Geology Toronto	Basin analysis of clastic sedimentary rocks
Michel,B.	Génie civil Laval	Mécanique des glaces
Middleton,G.V.	Geology McMaster	Field and experimental studies of clastic sediments
Miller,H.D.S.	Min./Min. Proc. British Columbia	Computer modelling of mine layouts and structures
Miller,H.G.	Physics Memorial	Geophysical investigations of submarine extensions of Nfld. geology
Mitchell,R.H.	Geology Lakehead	Petrology of kimberlites and alkaline rocks
Mitchell,R.J.	Civil Engineering Queen's	Model studies on earth structures
Moon,W.	Earth Sciences Manitoba	Whole earth geodynamics and seismological projects

Moore,J.M.
Geology
Carleton
Evolution of the Grenvillian Orogen in Eastern Ontario

Moore,R.M.
Oceanography
Dalhousie
Trace metal marine geochemistry and chemical tracers in the Arctic Ocean

Moore,T.R.
Geography
McGill
Soil forming processes, opal phytoliths and archaeological features in boreal, subarctic and arctic soils

Morgan,A.V.
Earth Sciences
Waterloo
Spatial changes in the Canadian insect fauna during the late Pleistocene and recent * with M.A.Morgan(Waterloo)

Morgan,M.A.
Biology
Waterloo
* Chercheur principal A.V.Morgan(Waterloo)

Morgenstern,N.R.
Civil Engineering
Alberta
Geotechnical behaviour of permafrost, oil sands, and other natural materials

Mossman,D.J.
Geological Sciences
Saskatchewan
Petrology and chemistry of ore deposits

Mothersill,J.S.
Geology
Lakehead
Late quaternary paleomagnetic curves 1) Time parallel correlation 2) Secular variations of paleomagnetic field

Mountjoy,E.W.
Geological Sciences
McGill
Carbonate sedimentation and diagenesis Paleozoic reefs and platform margins

Muecke,G.K.
Geology
Dalhousie
Geochemical and isotopic studies on metamorphic and igneous rocks, minerals and ores, using established and newly developed methods of neutron activation analysis

Muehlenbachs,K.
Geology
Alberta
Stable isotope exchange studies and their application to geological problems

Murthy,G.
Physics
Memorial
Paleomagnetic and rock magnetic investigations of anorthositic and other intrusive rocks from Labrador, Greenland and the island of Newfoundland and the study of implications of these results

Naldrett,A.J.
Geology
Toronto
Field and experimental studies of Pt and Ni deposits and their host rocks

Nelson,S.J.
Geology & Geophys.
Calgary
Palaeozoic correlations

Nesbitt,B.E.
Geology
Alberta
Chemical and mineralogical effects of the metamorphism of massive sulfides

Nesbitt,H.W.
Geology
Western Ontario
The sedimentary geochemistry of the Lanthanides

Nichol,I.
Geological Sciences
Queen's
Geochemical exploration in Canada

Nicholls,J.W.
Geology & Geophys.
Calgary
Chemical analyses of rocks and minerals, molar volumes of pyroxenes and H2O contents of magmas

Nickling,W.G.
Geography
Guelph
Effects of surface and textural variables on the threshold velocity of sand in air

Nkemdirim,L.C.
Geography
Calgary
Calgary's urban heat island

Noble,J.P.A.
Geology
New Brunswick
Faunal and sedimentary history of the north Appalachian Orogen, Silurian-Devonian

Norris,G.
Geology
Toronto
Biostratigraphy of Mesozoic-Cenozoic miospores and dinoflagellates

Nyland,E.
Physics
Alberta
Geodynamics of slow plate deformation at plate margins

Occhietti,S.
Géographie
Qué-Montréal
Paléoenvironnements Quaternaires de l'Île du Cap-Breton

Oke,T.R.
Geography
British Columbia
Climate modification by urbanization

Oldenburg,D.W.
Geophys./Astron.
British Columbia
Inversion and inference of geophysical data

Oldershaw,A.E.
Geology & Geophys.
Calgary
Natural and induced diagenetic relationships in sedimentary rocks

Ongley,E.D.
Geography
Queen's
Sediment-related nutrient and contaminant transport in fluvial systems

Osborn,G.D.
Geology & Geophys.
Calgary
1) Holocene/late pleistocene glacial chronology and tephrostratigraphy 2) Dynamics of glacier bergschrunds

Osborn,T.R.
Oceanography
British Columbia
Dissipation measurements in the warm core rings experiment

Pajari,G.E.
Geology
New Brunswick
1) Geologic study of the Precambrian rocks of Saint John, N.B. 2) The petrology of the Nashwaak Pluton, central New Brunswick

Palmer,H.C.
Geophysics
Western Ontario
Paleomagnetism of late precambrian rock units

Papezik,V.S.
Geology
Memorial
Geology and industrial mineral deposits of volcanic rocks in the Avalon Zone of the Appalachian orogenic belt

Parslow,G.R.
Geology
Regina
1) U and associated elements - their geochemistry & relation to mineralization in N. Sask. 2) Base & Precious metals - their geochem. & relation to mineralization in Flin Flon volcanics

Pearce,T.H.
Geological Sciences
Queen's
Petrology of Archean and analogous phanerozoic igneous rocks

Pearce,W.G.
Earth/Planet. Sci.
Toronto
Paleomagnetism of Paleozoic and Quaternary sedimentary deposits

Perrault,G.
Génie minéral
Ecole Polytech.
Recherche en métallogénie, minéralogie et cristallographie

Peterson,R.C.
Geological Sciences
Queen's
Charge density analysis of mineral structures

Peucker,T.K.
Geography
Simon Fraser
Computer-assisted data input for digital terrain models

Pickerill, P.K. Geology New Brunswick	Palaeontology, ichnology, sedimentology and stratigraphy of selected Palaeozoic sequences in Eastern Canada
Piper, D.J.W. Geology Dalhousie	Deep water sedimentology and quaternary history, offshore Eastern Canada
Platt, R.G. Geology Lakehead	Petrogenetic studies of alkaline and related rocks
Pond, G.S. Inst. Oceanography British Columbia	Inlet and coastal circulation, dynamics and mixing
Price, A.G. Geography Toronto	Snowmelt and runoff in a forest
Price, R.A. Geological Sciences Queen's	Cordilleran tectonics and evolution of continental lithosphere
Pride, C.R. Geology Ottawa	Rare earth element geochemistry of "granitic" and volcanic rocks
Protz, R. Land Resource Sc Guelph	1) Genesis and classification of Northern Ontario gleysolic, podzolic, regosolic and organic soils
Quigley, R.M. Civil Engineering Western Ontario	Applications of soil mineralogy and physicochemistry
Ranalli, G. Geology Carleton	Role of rheology in geodynamics
Rankin, D. Physics Alberta	Magnetotellurics and micropulsations
Reardon, E.J. Earth Sciences Waterloo	Modelling water chemical evolution in the unsaturated and saturated zones/ion pair dissociation constants/silicate mineral dissolution kinetics
Reynolds, P.H. Physics/Geology Dalhousie	K-Ar, 40Ar/39Ar geochronology, paleomagnetism, oxygen isotopic studies
Risk, M.J. Geology McMaster	1) Responses of modern and ancient reefs to siltation 2) Depositional environment of the Cardium Sandstone, based on trace fossils
Riva, J. Géologie Laval	Study of Ordovician graptolites (a continuing project)
Rivers, C.J.S. Geology Memorial	Investigation of metamorphism and tectonism in the Grenville province of western Labrador
Robin, P.Y.F. Geology Toronto	Rock deformation and its effects on fluid flow: mechanisms, mineralogical and petrological consequences
Robinson, P.T. Geology Dalhousie	The petrology, structure and origin of the ocean crust
Rochester, M.G. Physics Memorial	Theoretical global geophysics and planetary physics
Rodriques, C.G. Geology Windsor	Paleoecology of late pleistocene foraminiferida and ostracoda from the western Champlain basin
Roeder, P.L. Geological Sciences Queen's	Electron microprobe and experimental study of basaltic rocks
Roegiers, J.C. Civil Engineering Toronto	Stability of underground openings
Rogerson, R.J. Geology/Geography Memorial	Cirque glaciers in Northern Labrador
Ross, J.V. Geological Sciences British Columbia	Structure and mechanical properties of silicate minerals: Structural studies in southern central B.C.
Rouse, W.R. Geography McMaster	Energy and water balance studies in the low and high Arctic
Roy, D.W. Sc. appliquées Qué-Chicoutimi	Analyse structurale du socle dans la région du Haut-Saguenay, Québec
Roy, M. Génie civil Laval	Capacité portante des pieux flottants dans les argiles sensibles
Rucklidge, J.C. Geology Toronto	Geological studies using ultra-sensitive and x-ray analysis
Russell, L.S. Geology Toronto	The Cretaceous-Tertiary transition in central Alberta
Russell, R.D. Geophys./Astron. British Columbia	1) Isotopic studies of the early history of the earth 2) Geophysical instrumentation
Rust, B.R. Geology Ottawa	Depositional models for alluvial sedimentation
Rutter, N.W. Geology Alberta	Amino acid dating techniques and Quaternary history of parts of Alberta, British Columbia, Yukon and Northwest Territories
Sanderson, M.E. Geography Windsor	Trace metals in precipitation - Essex County, Ontario
Sarjeant, W.A.S. Geological Sciences Saskatchewan	Dinoflagellates and acritarchs of the mesozoic: stratigraphical application in Western and Arctic Canada and use in intercontinental correlation
Saunderson, H.C. Geography Wilfrid Laurier	Flume experiments on stratification and hydraulic interpretation of eskers
Scarfe, C.M. Geology Alberta	Physical properties and structure of silicate melts of geological interest
Schenk, P.E. Geology Dalhousie	Sedimentologic-stratigraphic studies of the early through late Paleozoics sedimentary rock of Nova Scotia
Schloessin, H.H. Geophysics Western Ontario	Physical properties, (mechanical, thermal, electrical, magnetic) of matter under conditions of planetary interiors
Schreier, H. Soil Science British Columbia	An assessment of the chemical & spectral variability of terrain & soil mapping units
Schwarcz, H.P. Geology McMaster	Isotopic geochemistry
Schwartz, F.W. Geology Alberta	Influence of porous medium structure on contaminant transport
Schwerdtner, W.M. Geology Toronto	Paleostrain analysis in the Canadian Shield

Scott,S.D.
Geology
Toronto
Geology and geochemistry of massive sulfide ores

Sequin,M.K.
Geology
Laval
Paleomagnetism and physical properties of Quebec Archean greenstones

Selvadurai,A.P.S.
Civil Engineering
Carleton
1) Group effects in soil foundation interaction; plane strain and 3-D effects 2) In-situ testing of soils by screwplate and pressuremeter tests

Shaw,D.M.
Geology
McMaster
Geochemical studies of minerals and rocks

Shaw,J.
Geography
Alberta
Sedimentation by rivers and glaciers

Sheqelski,R.J.
Geology
Lakehead
Precambrian sedimentation and volcanism

Shoemaker,E.M.
Mathematics
Simon Fraser
Studies in glaciology and tectonophysics

Silverberg,N.
Oceanography
Québec-Rimouski
Sediment accumulation phenomena in the St. Lawrence Estuary

Silvestri,V.
Génie civil
Ecole Polytech.
Résistance au cisaillement des argiles sensibles de l'est du Canada

Simony,P.S.
Geology
Calgary
Structure of Mackie and Bonnington plutons

Simpson,F.
Geology
Windsor
Cratonic-interior sedimentation and related tectonic controls

Sinclair,A.J.
Geological Sciences
British Columbia
Mineral deposits of the Canadian Cordillera--rock geochemistry, geostatistics and genetic models

Singh,B.
Géographie
Montréal
Etudes à long terme de quelques aspects de l'hydrométérologie et la microclimatologie de la région de la Baie James, Québec

Skippen,G.B.
Geology
Carleton
Geochemistry of pelitic schists and marbles from eastern Ontario; geochemistry of the Hotailuk Complex, British Columbia

Sklash,M.G.
Geology
Windsor
Investigation of the role of groundwater in storm runoff

Slaymaker,H.C.
Geography
British Columbia
Theoretical and applied significance of solute and sediment production, transport and yield in southern coast mountains

Smith,D.G.
Geography
Calgary
Geomorphology and sedimentology of anastomosed river systems

Smith,D.G.W.
Geology
Alberta
Applications of the microprobe in mineralogy, petrology, economic geology and meteoritics

Smith,M.W.
Geography
Carleton
Thermal properties of freezing soils

Smith,T.E.
Geology
Windsor
Archean magmatism and tectonics: a geochemical study of the evolution of granitic rocks in the Superior Province and subsidiary projects

Smylie,D.E.
Earth Sciences
York
Dynamics of the earth

Sonnenfeld,P.
Geology
Windsor
Evaporite formation

Spanos,T.J.T.
Physics
Alberta
Transport phenomena during "in-situ" recovery

Spooner,E.T.C.
Geology
Toronto
Geochemical and geological studies of hydrothermal ore deposits

St-Onge,D.A.
Géographie
Ottawa
Le lac glaciaire Coppermine

Starkey,J.
Geology
Western Ontario
Analysis of the fabrics of deformed rocks

Stauffer,M.R.
Geological Sciences
Saskatchewan
Structures in rocks

Stearn,C.W.
Geological Sciences
McGill
Paleoecology of reefs

Stene,L.P.
Geography
Manitoba
Stream ice-breakup and effects on channel morphology

Stesky,R.M.
Earth/Planet. Sci.
Toronto
Geophysical properties of fractured and jointed rock

Stevens,R.K.
Geology
Memorial
Lower Paleozoic evolution of the West Newfoundland and adjacent areas

Stewart,I.C.F.
Physics
Memorial
Crustal and upper mantle structure, with particular reference to Newfoundland

Stimpson,B.
Mineral Eng.
Alberta
Control of spoil pile movements in strip coal mines

Stockey,R.A.
Botany
Alberta
Cretaceous and tertiary plants of Western Canada

Strangway,D.W.
Geology
Toronto
Magnetic and electrical studies of geological significance

Stringer,P.
Geology
New Brunswick
Relation of cleavage to folding in the Appalachian - Caledonian orogenic belt

Strong,D.F.
Geology
Memorial
Crustal and metallogenic studies of regions bordering the North Atlantic

Stupavsky,M.
Geology
Windsor
Paleomagnetism of the Grenville Front and members of the Cobalt group in the Southern Province

Sundby,B.
Oceanography
Québec-Rimouski
Estuarine geochemical processes

Symons,D.T.A.
Geology
Windsor
Paleomagnetic studies on the pre-Jurassic Geotectonic evolution of the Cordillera

Tavenas,F.A.
Génie civil
Laval
1) Lois de comportement des argiles sensibles 2) Application des concepts d'état limite aux calculs des ouvrages dans les argiles sensibles

Taylor,C.H.
Geography
Trent
1) Effects of urban construction on runoff and water quality. 2) Variable source area delivery of pollutants. 3) Hydrology of the Peterborough region

Teller,J.T. Earth Sciences Manitoba	The Lake Agassiz-Lake Superior connection
Terasmae,J. Geological Sciences Brock	Correlation of radiocarbon chronology and palynostratigraphy of postglacial lake sediments and peat deposits
Thomson,S. Civil Engineering Alberta	Engineering characteristics and behaviour of stiff clay (till) and soft rocks and their application to engineering projects
Trak,B. Civil Engineering Ottawa	Empirical and analytical study of stability problems in Champlain Clays
Trembath,L.T. Geology New Brunswick	Factors affecting the crystallization of feldspar in synthetic and natural systems
Trenhaile,A.S. Geography Windsor	The processes of coastal hard rock erosion
Trzcienski,W.E. Génie minéral Ecole Polytech.	Petrology & tectonics of the Canadian Appalachians
Turek,A. Geology Windsor	Geochronology of Lake Superior region
Turnock,A.C. Earth Sciences Manitoba	Experimental mineralogy of pyroxenes and amphiboles
Ulrych,T.J. Geophys./Astron. British Columbia	Communication theory and potential field research
Vaid,Y.P. Civil Engineering British Columbia	Stress-strain and strength properties (including time effects) and cyclic loading behavior of natural soils
Van de Poll,H.W. Geology New Brunswick	Role of liquefaction in the formation of sedimentary features
Vanicek,P. Surveying Eng New Brunswick	Non-tidal tilts of bedrock
Veizer,J. Geology Ottawa	Evolution of the terrestrial exogenic system
Vetter,W.J. Eng./Applied Sci. Memorial	Ocean sediment classification using acoustic sensing
Vreeken,W.J. Geography Queen's	Quaternary environments and paleosols in southern Alberta
Walker,R.G. Geology McMaster	Development of clastic facies models; emphasis on shallow marine systems
Wardlaw,N.C. Geology & Geophys. Calgary	Reservoir properties of sedimentary rocks
Warren,H.V. Geolcgical Sciences British Columbia	Biogeochemical exploration for gold and silver using neutronactivation
Watkinson,D.H. Geology Carleton	Exploration for and genesis of ore deposits
Watters,B.R. Geology Regina	Geochemical study of volcanic rocks in the La Ronge and Flin Flon areas, northern Saskatchewan
Weaver,J.T. Physics Victoria	Electromagnetic induction in the earth and oceans
West,G.F. Physics Toronto	Applied, regional and tectono-geophysics
Westermann,G.E.G. Geology McMaster	Jurassic ammonites and cephalopod shell function
Westgate,J.A. Geology Toronto	Quaternary tephrochronology of western Canada and adjacent parts of Alaska
Whitehead,R.E. Geology Laurentian	* Principal investigator J.F.Davies(Laurentian)
Williams,H. Geology Memorial	Anatomy of an orogen
Williams,P.F. Geology New Brunswick	Deformation mechanisms and tectonic processes
Williams-Jones,A.E. Geological Sciences McGill	An investigation of porphyry-type copper mineralization in the Gaspé region, Quebec
Wilson,M.V.H. Zoology Alberta	Late Cretaceous and early Tertiary fishes of western North America
Woo,M.K. Geography McMaster	Snow and permafrost hydrology in a High Arctic environment
Woods,D.V. Geological Sciences Queen's	1) Quantitative analysis of borehole transient electromagnetics. 2) One-dimensional geomagnetic depth sounding
Wright,J.A. Physics Memorial	Geothermal and geomagnetic measurements in Atlantic Canada and the Eastern Arctic
Yole,R.W. Geology Carleton	Stratigraphy and displacement history of Vancouver Island
Yong,R. Civ Eng/App Mech McGill	Stability of soil structural units relative to transient and natural environmental stresses
York,D. Physics Toronto	Isotope studies and age determinations
Young,G.M. Geology Western Ontario	Stratigraphy and sedimentology of Proterozoic supracrustal rocks
Zentilli,M. Geology Dalhousie	Metallogenic studies in Nova Scotia, the Andes and Iceland
Zodrow,E.L. Geology St. F. Xavier	1) Pyrite, trace elements and hydrated sulfates in coal, Cape Breton 2) Pecopterids: biostratigraphy of Sydney Coalfield, Nova Scotia, Canada