

The alluvial (bedrock channel) sands, located within easy access of Fort McMurray, are also a good potential source of high quality silica sand. After beneficiation, silica (SiO_2) is over 98 percent and iron content (Fe_2O_3) is 0.03 to 0.05 percent. Iron is the main contaminant; mica is not present. These sands are well sorted and within the specified size range for glass and glass fiber manufacture.

Most of dune sands tested are well sorted, fine-to medium-grained, and generally of better quality than dune sands elsewhere in the province. One dune sand sampled in the Clearwater River valley has a silica content of over 98 percent SiO_2 and an iron content of 0.04 to 0.05 percent Fe_2O_3 after beneficiation. However, this deposit is far from Fort McMurray, with difficult access, so it is of purely academic interest at this time. Other dunes of lesser quality are located near Fort McMurray and could be considered as sources of sand for industrial or construction uses.

The non bitumen-saturated McMurray Formation sands are very high in quartz, ranging for 97 to 98 percent SiO_2 , and have iron contents as low as 0.01 percent Fe_2O_3 after beneficiation. Mica is a major problem and would have to be removed to bring these sands to glass grade quality. Exploitation is uncertain as overburden is thick in many localities, and access difficult. Overall, the unsaturated McMurray Formation sands are not considered a potential source of silica sand.

543. PETERSON, B.N., Alberta Research Council (Geology Div.):
Sand and gravel resources of the Grande Prairie area, Alberta, 1977-79.
Potentially exploitable sand and gravel deposits mappable at a scale of 1:50,000 were delineated and described by use of the following: existing surface and subsurface geological information, airphoto interpretation and field checking, examination and description of sections and existing pits, exploratory drilling with a truck mounted auger drill, Becker Hammer drilling to prove up quantities of coarse granular material, and laboratory and field sieving of samples. Quantity estimates based on the above sources were also generated for individual deposits.
544. PETERSON, B.N., Alberta Research Council (Geology Div.):
Sand and gravel resources of the Valleyview and Whitecourt areas, Alberta, 1978-79.
Existing as well as potentially exploitable deposits were examined by airphoto interpretation and field checking. Subsurface testing was carried out by Becker Hammer drilling. Deposits will be delineated on 1:50,000 maps; the geology of the formations described and quality-quantity-estimates made.
545. SANFORD, B.V., Geol. Surv. Can.:
Salt basins in Canada, 1975-.

546. SCAFE, D.W., HAMILTON, W.N., Alberta Research Council (Geology Div.):
Potential industrial clays of Alberta, 1973-79.

Test of samples collected in 1975-76 indicate that clays from the Luscar Formation show the most potential as they work, extrude, and dry well and fine to an appealing dark chocolate colour at the end of a moderate firing range. Moderate potential exists for Kootenay, Dunvegan, Brazeau, and Paskapoo formation clays if they can be blended with other clays to improve drying and firing characteristics. Little potential exists for Blairmore Group, Kaskapau, Wapiabi, Horseshoe Canyon or Porcupine Hills formation clays because of poor drying characteristics and short firing ranges. Pleistocene lacustrine clays generally dry poorly and have a short firing range. Multiple regression analysis using 9 variables indicates that most of the variance in the maximum recommended firing temperature is explained by two variables containing potassium, these being clay mineral illite and potassium oxide content.

Tests completed on samples collected in 1977 from locations in southern Alberta did not reveal any red burning clays (even from clays that are distinctly red in the unfired state). Samples from most formations have short firing ranges but some samples from the Blackstone, Foremost and Pakowki formations have moderate firing ranges. The Whitemud formation maintains its reputation as a valuable clay resources. Formations such as the Bearpaw, Battle, St. Mary River, and Paskapoo exhibit drying problems because of their high contents of montmorillonite.

547. SHETSEN, I.P., Alberta Research Council (Geology Div.):
Sand and gravel resources of the Lethbridge area, Alberta, 1976-79.

The report is written and edited. Fieldwork was accomplished in the summer of 1977 and included surficial mapping of the sand and gravel deposits, description and sampling of gravel pits, ground resistivity measurements and dry auger drilling. The sand and gravel deposits of the entire region were mapped at a scale of 1:250,000 and the major gravel areas were mapped at a scale of 1:50,000.

548. SHETSEN, I.P., Alberta Research Council (Geology Div.):
Sand and gravel resources of the Calgary area, Alberta, 1978-80.

Field work (including surficial mapping and description and sampling of existing pits) was partly done in the summer of 1978. The sand and gravel deposits will be further studied with dry auger and Becker Hammer drilling. The major sand gravel deposits (particularly in the vicinity of the City of Calgary) will be displayed on the 1:500,000 maps. The general distribution of gravel deposits in the area as well as surficial geology will be shown on the 1:250,000 maps.

549. TELFORD, P.G., VERMA, H.M., Ontario Geol. Surv.:
Limestone/dolostone resource assessment of Manitoulin Island, Ontario, 1978-82.

Outcrop reconnaissance survey of the Ordovician and Silurian formations of Manitoulin Island was carried out. On the basis of this survey ten sites were selected to obtain core of representative sections across the island. Ten drill holes totalling about 1000 metres were put down and core obtained. This core is now being analysed for major and minor elements and engineering properties with a view to evaluate the limestones and dolostones according to their usability.

550. THIBAUT, J., BARNETT, D.E., New Brunswick Dep. Nat. Res., (Mineral Resources Br.):

Granular aggregate resources of Edmundston (21N/8) and Grandmaison (21N/9) map-areas, New Brunswick, 1978-79.

Field mapping and sampling of surficial deposits was carried out in the Edmundston-centered region, Madawaska County, New Brunswick to provide basic information on the location and extent of granular aggregate deposits and on the quality and quantity of the material.

551. TROYER, D.R., GULIOV, P., Saskatchewan Geol. Surv.:
Saskatchewan Peat resources, 1976-80.

See:

Peat resource study; Sask. Geol. Surv., Summ. Investig., Misc. Rept. 78-10, 1978.

Reconnaissance-scale work of a limited nature is in progress to determine the quality and magnitude of peat resources of the province primarily south of the Precambrian Shield. Six bog areas were tested and sampled in east-central Saskatchewan during 1978. Analytical work on the samples are in progress. A more extensive peat resource program is anticipated if the results of a peat utilization feasibility study are favorable.

552. TROYER, D.R. GULIOV, P., Saskatchewan Geol. Surv.:
Economic and technical feasibility of peat utilization in northern Saskatchewan communities, 1978-79.

To determine the economic and technical feasibility of using peat for local energy production and as a raw material for various products in northern Saskatchewan communities, and to indicate the specific areas of the province which might benefit most from a peat-based industry.

553. VANDERVEER, D.G., KIRBY, F.T., RICKETTS, R.J., Newfoundland Dep. Mines Energy (Mineral Develop. Div.):
Inventory of aggregate resources, 1978-81.

Inventory of quantity and quality of aggregate materials along 6 km corridor centred on all existing and proposed roads in the province.

MINERAL DEPOSITION EXPLORATION/EVALUATION/RECHERCHE ET EVALUATION DES GITES MINERAUX

554. APPLEYARD, E.C., Univ. Waterloo (Earth Sciences):
Processing lithogeochemical data for exploration, 1978-82.

To evaluate the usefulness of applying the general metasomatic equation of Gresens to lithogeochemical anomalies associated with mineralized rocks and zones of alteration. This equation applies corrections to raw compositional data for differences between sample specific gravities and allows a correction for volume change during mineralization to be applied if such a factor can be identified. The innovative component of the project will involve assessing the possibility of determining the volume change factor and demonstrating the net value of applying the volume and specific gravity corrections to the raw data. If positive responses to these assessments are obtained the objective will be to design practical procedures whereby the method can be implemented within routine exploration programmes.

555. APPLEYARD, E.C., HEALING, D.W., Univ. Waterloo (Earth Sciences):
 Geochemistry of the strataform alteration zone at the Gullbridge Mine, central Newfoundland, 1974-79; M.Sc. thesis (Healing).
556. AUBUT, A., MORTON, R.D., Univ. Alberta (Geology):
 A buried, Tertiary gold-platinum bearing placer in Granite Creek, Tulameen District, British Columbia, 1977-79; M.Sc. thesis (Aubut).
 A mineralogical, petrological, geomorphological and geophysical study of a buried, Tertiary paleoplacer is being performed. The deposit is one of the few buried paleoplacers being worked in British Columbia today. Electron microprobe studies of the gold and platinum alloys/compounds are being performed.
557. BACHINSKI, D.J., JURAS, S.J., Univ. New Brunswick (Geology):
 Stockwork sulphide mineralization, Brunswick No. 12 Mine, New Brunswick, 1978-80; M.Sc. thesis (Juras).
 A study of the geology, mineralogy, petrology and chemistry of stringer/network/pipe-like sulfide zones underlying massive base-metal sulfide ores at the Brunswick Mining and Smelting No. 12 mine, Bathurst-Newcastle district, northern New Brunswick.
558. BELL, R.T., Geol. Surv. Can.:
 Geology of uranium resources of Canada, 1975-.
 See:
 Geology of some uranium occurrences in western Canada; Geol. Surv. Can., Paper 79-1A, p. 397-399, 1979.
559. BRAY, C.J., SPOONER, E.T.C., Univ. Toronto (Geology), Univ. Oxford:
 Sheeted vein tin-tungsten-china clay (Kaolin) deposits in the St. Austell District, Cornwall, England, 1976-80; Ph.D. thesis (Bray).
 In 1978 further fieldwork was carried out in co-operation with English Clays Lovering Pochin and Co. Ltd. and the Goonvean and Rostowrack China Clay Co. Ltd. Six more pits were examined and sampled in order to see whether the qualitative model being developed from Goonbarrow pit is generally applicable.
560. BRISTOL, C.C., Brandon Univ. (Geology):
 Alteration geochemistry of the Centennial orebody, Flin Flan, Manitoba, 1978-79.
 A search for additional elements and factors of use in discriminating between economic and non-economic Precambrian volcanogenic sulphide deposits. Field work completed. Petrographic work 3/4 done. Analytical work 1/3 completed.
561. BROWN, A.C., DUCHESNE, J.C., DIMANCHE, F., EVRARD, P., POULIOT, G., Ecole Polytechnique (Génie Minéral), Univ. Liège:
 The genesis of non-ferrous stratiform ores, 1970-.
 A long term evaluation of stratiform base metal and uranium ores with the intent to define the geologic controls of mineralization, and hence delineate geologic guides for exploration.

562. CHATTERJEE, A.K., Nova Scotia Dep. Mines:
 Geological-geochemical surveys sub-project 4.4: Metallogenesis and mineral deposits, 1978-79.
 The metallogenetic survey of Nova Scotia (1:500,000) is in final stages of drafting and it is hoped that the map and the accompanying memoir will be published by December 1979.
563. CHEVE, S., BROWN, A.C., TRZCIENSKI, W., Ecole Polytechnique (Génie Minéral):
 Metallogeny of massive sulfide deposits, Megantic area, Québec, 1974-80; Ph.D. thesis (Chevé).
 Detailed mapping has led to the definition of the paleogeology of the volcano-sedimentary pile around the Clinton massive sulfide copper-zinc deposits.
564. CHRONIC, F.J., GODWIN, C.I., Univ. British Columbia (Geological Sciences):
 Geology of the Guano rare-earth bearing skarn, Pelly Mountain, Yukon Territory, 1977-70; M.Sc. thesis (Chronic).
565. CLOSS, L.G., COLVINE, A.C., Ontario Geol. Surv.:
 Geology and geochemistry of pyritic and graphitic volcanogenic sediments and their relationship to massive sulphide deposits, 1975-.
566. COLVINE, A.C., Ontario Geol. Surv.:
 Geology of copper, zinc, lead deposits in Ontario, 1974-.
567. COOMBE, W.C., POTTER, D., Saskatchewan Geol. Surv., Univ. Regina (Geological Sciences):
 La Ronge-Wollaston base metals project, 1974-79; M.Sc. thesis (Potter).
 See:
 Sask. Geol. Surv., Summ. Investig., Misc. Rept. 78-10, p. 92-112, 1978.
 In 1978 three areas were investigated in the Wollaston domain. Detailed geological mapping was carried out. A banded silicate and oxide facies iron formation of the Wollaston Group was described at Spence Lake. At Duddridge Lake a red bed-type uranium-copper prospect hosted in meta-arkose was examined. In Sito Lake area, quartzite-hosted zinc-lead mineralization was evaluated. The host rocks have been traced for considerable distances.
568. COWAN, P., KUSMIRSKI, R.T., CROCKET, J.H., FRANKLIN, J.M., McMaster Univ., (Geology), Geol. Surv. Can.:
 Gold mineralization in Archean greenstone belts: a study of genetic relationships using neutron activation analysis, 1978-80; M.Sc. thesis (Cowan, Kusmirski).
 The project involves two distinct studies related to gold metallogeny in the Red Lake area of western Ontario. One is a detailed study of gold distribution in the Dickenson Mine and the other is a comparison of gold in mine host rocks with similar rocks not known to be associated with mineralization (i.e. non-mineralized environments).

The Dickenson Mine study involves sampling of three levels designed to study gold distribution in rocks thought to represent pre-ore and post-ore environments. In the Dickenson environment where a very good case can be made for stratigraphic control on the gold mineralization, we hope to determine whether the immediate pre-ore volcanic pile shows any indication of anomalous or distinctive changes in gold abundance levels. Also we will try to determine whether gold abundance levels in the pre-ore environment show any sympathetic variation with rock alteration patterns (silica enrichment, alkali depletion.).

Complimentary to the mine study we are comparing several parameters of the mine rocks with rocks from non-mineralized environments. One interpretation of the Dickenson mineralization is that the gold is concentrated interflow sediments deposited during hiatuses in volcanic activity when exhalative activity may be important. Therefore, we are attempting to ascertain whether interflow sediments in volcanic sections are geochemically anomalous in regard to gold concentration.

569. DAWSON, K.R., Geol. Surv. Can.:
Geology of barium, fluorine and strontium deposits in Canada, 1972-.
570. DILABIO, R.N.W., Geol. Surv. Can.:
Drift prospecting methods and models, 1978.
To model glacial dispersal from known sources, and to develop drift prospecting methods for use in clay belts.
571. DUNSMORE, H.E., Geol. Surv. Can.:
Geology of uranium resources of Canada, 1976-.
- See:
Low grade uranium mineralization in carbonate rocks from some salt domes in the Queen Elizabeth Islands, District of Franklin; Geol. Surv. Can., Paper 79-1A, p. 61-70, 1979.
572. EKSTRAND, O.R., Geol. Surv. Can.:
Geology of Canadian nickel and platinum group deposits, 1963-.
573. GANDHI, S.S., Geol. Surv. Can.:
Geology of uranium resources of Canada, British Columbia- District of Mackenzie, 1977-.
- See:
Fluid inclusion studies and genesis of the Rexspar uranium-fluorite deposit, Birch Island, British Columbia; Geol. Surv. Can., Paper 78-1B, p. 137-140, 1978
Geological observations and exploration guides to uranium in the Bear and Slave structural provinces and the Nonacho Basin, District of Mackenzie; *ibid*, p. 141-149, 1978.
574. GAUTHIER, M., Québec Min. Richesses Naturelles:
Minéralisations zincifères de la région de Maniwaki, Québec, 1977-81.
Situer la minéralisation par rapport à géologie régionale et à la stratigraphie.

575. GAUTHIER, M., BROWN, A.C., Ecole Polytechnique (Génie Minéral):
Metallogeny of zinc mineralization in the Grenville Supergroup of
Québec, 1979-81; D.Sc.A. (Gauthier).

Voir:

Minéralisations zincifères de la région de Maniwaki, Comté de Gatineau;
Rapport intérimaire, Québec Min. Richesses Naturelles, 1978.

576. GREGORY, D.J., Nova Scotia Dep. Mines:
Mineral resource inventory - Project 2, 1978-79.

See:

Index to open file reports; Nova Scotia Dep. Mines Rept. 78-3, 1978.

577. HAMILTON, W.N., Alberta Research Council (Geology Div.):
Geology of the Clear Hills iron formation, Alberta, 1974-79.

All drill hole and outcrop data have been compiled. Detailed
correlations have been established. Petrologic studies are planned.

578. HARPER, C.T., Saskatchewan Geol Surv.:
Uranium metallogenic studies: Cluff Lake and Maurice Bay areas,
Saskatchewan, 1977-79.

See:

Sask. Geol Surv., Summ. Investig., Misc. Rept. 78-10, p. 74-89, 1978.

In the summer of 1978, a track etch survey was carried out along the
winter roading across the Carswell Structure, Cluff Lake area.
Emanometry, spectrometry and soil geochemistry surveys were also under-
taken ancillary to this survey. In the summer of 1978, work in the
Maurice Bay area surrounding the Maurice Bay orebody (Uranerz (Canada)
Ltd., Inexco Mining Company (Canada) Ltd., SMDC) mainly comprised
geological mapping 1:50,000 scale of about 200 km². Spotty uranium
mineralization has been described in exposures at or close to the sub-
Athabasca Formation unconformity and uranium mineralized boulders are
described from Spring Point.

579. HOWSE, A.F., MCARTHUR, J.G., Newfoundland Dep. Mines Energy (Mineral
Develop. Div.):
Crown controlled properties mineral evaluation survey, 1976-.

See:

Mineral evaluation activities; Newfoundland Dep. Mines Energy, Rept.
78-1, p. 169, 1978.

An evaluation of Crown controlled mineral properties continued during
the 1978 field season. The objective is to review and evaluate the
mineral potential or value of mineral properties that are under the
control of the Government of Newfoundland and Labrador. These
properties consist of Fee Simple Mining Grants that have been declared
undeveloped under the Undeveloped Mineral Areas Act, Fee Simple Mining
Grants that have reverted to Crown control because of forfeited
mortgages and dissolution of companies, and properties that were form-
erly held under development licences or mining leases before they were
relinquished to the Crown. Also included are some areas that have been
exempted from the Mineral Act, 1976.

During the 1978 field season four properties were examined. Three of these are located in western Notre Dame Bay and the other near Mings Bight on the Burlington Peninsula. Work carried out involved geological mapping, geochemical soil surveys, ground, geophysical surveys and test sampling.

580. KHEANG, L., BROWN, A.C., GELINAS, L., Ecole Polytechnique (Génie Minéral): Fluid inclusion study of Millenbach mine: volcanism, alteration, mineralization and metamorphism, 1978-81; Ph.D. thesis (Kheang).
To establish the sequence of geologic events and their physico-chemical conditions at the Millenbach mine: including initial volcanism, alteration + mineralization by ore fluids, and subsequent metamorphic effects.
581. KIRKHAM, R.V., Geol. Surv. Can.:
Geology of copper and molybdenum deposits in Canada, 1970-.
See:
Base metal and uranium distribution along the Windsor-Horton contact, central Cape Breton Island, Nova Scotia; Geol Surv. Can., Paper 78-1B, p. 121-135, 1978.
582. KISH, L., LASALLE, P., Québec Min. Richesses Naturelles:
Radioactivité dans la fosse du Labrador, Québec, 1977-79 (terminé).
583. KLASSEN, R.A., Geol. Surv. Can.:
Uranium drift prospecting techniques, lower Kazan River area, District of Keewatin, 1975-.
584. LEGGETT, S., BRISBIN, W.C., Univ. Manitoba (Earth Sciences):
The South Heninga Lake Cu-Zn deposit, District of Keewatin, Northwest Territories, 1976-79; M.Sc. thesis (Leggett).
585. LYDON, J.W., Geol. Surv. Can.:
Geology of lead and zinc resources of Canada, 1977-.
586. MACDONALD, A.J., SPOONER, E.T.C., Univ. Toronto (Geology):
The mode of occurrence and origin of molybdenite mineralization at the Boss Mountain Mine, British Columbia, 1978-82, Ph. D. thesis (Macdonald).
To document and interpret molybdenite mineralization at the Boss Mountain Mine, British Columbia in as great a detail as possible in order to assess the possibilities for the existence of extensions of the known ore deposit at depth. Conventional methods will be combined with a very detailed investigation of the three dimensional distribution of fluid inclusion parameters, structural features and metal grades. Mapping and sampling was carried out in 1978.

587. MACRAE, W.E., GORDON, J.B., COLVINE, A.C., Ontario Geol. Surv.:
Atikokan mineral deposits study, 1978-80.

See:

Mineral deposits of the Atikokan area; Ontario Geol. Surv. , Misc.
Paper 82, p. 206-209, 1978.

The Atikokan mineral deposits study was initiated to investigate gold and base-metal occurrences in the Atikokan area. Eleven gold properties have been examined. Additional work is planned on the remaining and more significant properties. The "Ashrock" unit, of the Steep Rock Group, is also being studied. It is an ultramafic pyroclastic rock with recognisable fragments in places, and stratigraphically overlies an iron producing ore zone. This unit has been variably altered, in places to a highly sheared talcose schist. The base metal deposits will be studied in year two of the program (1979).

588. MCDUGALL, F.H., WALTERS, B.R., PARSLow, G.R., Univ. Regina (Geological Sciences), Saskatchewan Geol. Surv.:
Flin Flon base metals project, 1978-80.

See:

Sask. Geol. Surv., Summ. Investig., Misc. Rept. 78-10, p. 90,91, 1978.

Geological documentation and classification of all economic and related mineral occurrences within the project area, evaluation of the geological controls and origin of mineralization in individual and groups of occurrences, determination of criteria for forecasting mineral exploration potential, and appraisal of the effectiveness of mineral exploration techniques. In the first year of the project a compilation was made of all known economic and related mineral occurrences in the area and for each geophysical survey carried out by companies. Samples were also collected for analysis, mainly from the Amisk Volcanic Group.

589. MCMILLAN, W.J., CARTER, N.C., British Columbia Min. Mines Pet. Res. (Geological):

Geology and mineral deposits of the Guichon Creek batholith (NTS 92I), British Columbia, 1969-80.

Preliminary maps and accompanying notes will bridge the time gap during which a bulletin to report completely on the project is being completed. A report on major and minor element geochemistry from several hundred samples collected will be prepared when the analyses are all completed.

590. MESARD, P.M., GODWIN, C.I., BROWN, T.H., SINCLAIR, A.J., Univ. British Columbia (Geological Sciences):

Evolution of the Poplar Cu-Mo porphyry deposit; Tagetochlain Lake, British Columbia, 1978-79; M.A.Sc. thesis (Mesard).

591. MEYN, H.D., Ontario Geol. Surv.:
Iron deposits of Ontario, 1974-.

592. MEYN, H.D., Ontario Geol. Surv.:
Uranium deposits of the Wanapitei watershed (SW. Cobalt Embayment), Ontario, 1979-81.

593. MOORE, J.M. JR., PRIDE, C.T., BELL, K., WARNOCK, B., Carleton Univ. (Geology), Univ. Ottawa (Geology):
 Geochemical signatures and metallogeny, Grenvillian Orogen, Ontario, 1978-81; M.Sc. thesis (Warnock).
 Data of field relations, petrography, elemental and isotopic analyses of plutonic and volcanic units in the Grenvillian Orogen of eastern Ontario are to be collected and compiled. The aim is to establish genetic types and chronology of igneous activity, in order to construct a regional metallogenic model. Fifty samples from major plutons have been analysed to date, mainly from the central plutonic-volcanic region. Plutonic classes include major granodiorite batholiths, deformed potassic granitoids, and higher-level alkalic granites and syenites. Concurrently with new data collection, a file of existing data on the igneous rocks and their associated mineral occurrences is being compiled.
594. MORRISON, G.W., HODDER, R.W., Univ. Western Ontario (Geology):
 Copper distribution and genesis in the Whitehorse Copperbelt, Yukon Territory, 1975-79; Ph.D. thesis (Morrison).
 In the Whitehorse Copper belt calc-silicate rich or magnetite rich skarns with variable amounts of copper occur close to the contact of bioclastic, carbonaceous limestone with dolomitic limestone or siliceous pyritic siltstone. The dolomitic limestone and siliceous pyritic siltstone are part of the back-reef facies and the bioclastic carbonaceous limestone part of the fore-reef facies of a carbonate reef complex within the Upper Triassic Lewes River Group.
 The lack of evidence for the existence of a magmatic-hydrothermal fluid, and the possibility of a lithofacies control to ore distribution suggest that the skarn metal assemblage may have been derived from the host rocks. A mechanism involving leaching of the country rocks by heated, circulating, intraformational fluids during granitic intrusion is considered.
595. MURRAY, D.A., Nova Scotia Dep. Mines:
 Mineral evaluation survey-sub-project 3.1: Industrial minerals, 1978-79.
 The recording of preliminary information for all the industrial mineral deposits in the province is essentially complete. 997 occurrences have been recorded as existing in the province; 461 of those have been verified. All locations have been plotted on 1:250,000 topographic maps and are in the process of being drafted.
596. NORTHCOTE, K.E., GARNETT, J.A., British Columbia Min. Mines Pet. Res. (Geological):
 Assessment of mineral, fuel, aggregate and building stone for inter-agency planning, 1978-.
597. RICHARDS, T.A., Geol. Surv. Can.:
 Geology and mineral deposits of McConnell Creek map-area, British Columbia, 1975-.
598. ROSCOE, S.M., Geol. Surv. Can.:
 Metallogeny of the northwestern part of the Canadian Shield, 1977-.

599. ROSE, E.R., Geol Surv. Can.:
Geology of titanium and titaniferous deposits of Canada, 1958-.
600. ROSE, E.R., Geol. Surv. Can.:
Geology of rare earth deposits of Canada, 1967-.
601. RUZICKA, V., Geol. Surv. Can.:
Geology of uranium and thorium resources of Canada, 1975-.
- See:
Uranium and thorium in Canada, 1978; Geol. Surv. Can., Paper 79-1A, p. 139-155, 1979.
602. SANGSTER, D.F., Geol. Surv. Can.:
Geology of lead and zinc deposits in Canada, 1965-.
- See:
Zn:Cd ratios for sphalerites separated from some Canadian sulphide ore samples; Geol Surv. Can., Paper 78-1B, p. 195-201, 1978.
603. SIBBALD, T.I.I., THOMAS, D., Saskatchewan Geol. Surv., Univ. Regina (Geological Sciences):
Uranium metallogenic studies: Rabbit Lake, Charlebois Lake and Cup Lake areas, Saskatchewan, 1976-; M.Sc. thesis (Thomas).
- See:
Sask. Geol. Surv., Summ. Investig., Misc. Rept. 78-10, p. 56-60,66,72, 1978.
- In 1978 the newly exposed benches of the Rabbit Lake open pit were geologically mapped following the procedure of previous years. Selected development drill holes completed during the winter of 1977 were logged to update the geological cross-section (1+00 N) of the orebody. New conclusions were reached in 1978 concerning the nature of the sub-Athabasca 'regolith', dolomitic recrystallization, and the roles of graphite and methane in an ore emplacement model. New detailed geological maps have been prepared for the Charlebois and Cup Lake areas, both of which contain radioactive 'pegmatities'. Important distinctions exist between the so-called pegmatities in these two areas.
604. SINCLAIR, W.D., Geol. Surv. Can.:
Geology of copper and molybdenum resources of Canada, 1977-.
- See:
Copper-molybdenum occurrences of the Matachewan area, Ontario; Geol. Surv. Can., Paper 79-1A, p. 253-258, 1979.
605. SMEE, B.W., Geol. Surv. Can.:
Development and/or adaptation of mineral exploration approaches to clay covered areas, 1977-.
- See:
A theoretical estimation of ion mobilities through glaciolacustrine sediments: diffusion down a concentration gradient; Geol. Surv. Can., Paper 79-1A, p. 367-374, 1979.

606. SPOONER, E.T.C., Univ. Toronto (Geology):
The origin of ophiolitic cupriferous pyrite ore deposits in Cyprus and Oman, 1975-80.

See:

A theoretical study of hydrothermal convection and the origin of the ophiolitic sulphide ore deposits of Cyprus; Earth Planet Sci. Lett., vol. 40, p. 33-44, 1978.

Finite amplitude convection in a permeable medium with cylindrical geometry and an open top has been studied at Rayleigh numbers between 50 and 20 using finite difference approximations. From the results a model for the convection process responsible for generation of the Cyprus ore deposits has been developed which is semi-quantitatively reasonable in terms of thermal structure, flow rates permeability and bottom heat flux.

607. SPRINGER, J.S., ROBERTSON, J.A., VOS, M.A., Ontario Geol. Surv.:
Revision 1"=16 mile Ontario Mineral Potential in 3-fold rating, 1978-79.

608. SYWULAK, D.L., COLWELL, J.A., Acadia Univ. (Geology):
Economic and geologic study of the Great Horn Mining syndicate's Lochaber Lake copper property, Antigonish County, Nova Scotia, 1978-79; M.Sc. thesis (Sywulak).

A copper deposit containing about 5.7 million tons averaging 0.284% copper was discovered by Great Horn Mining syndicate in 1972 as a result of a drilling program in an area west of Lochaber Lake, Antigonish County. The deposit consists of chalcopyrite and pyrite with minor galena, bornite, and sphalerite disseminated in the lower 250' of a 750' carbonate unit of presumed Devonian age. The thesis will be the study of the deposit itself; its form, mineralogy, controls, genesis, and the unraveling of the stratigraphy, age and structure of the enclosing rocks.

609. STUDEMEISTER, P.A., HODDER, R.W., Univ. Western Ontario (Geology):
Copper, gold, and molybdenum distribution in a volcanic-plutonic complex, Gutcher Lake area, District of Algoma, Ontario, 1979-81; M.Sc. thesis (Studemeister).

See:

Geology and mineralization of the Gutcher Lake Stock; Ontario Geol. Surv., Summ. Field Work, 1978.

To determine the distribution and character of copper, gold, and molybdenum occurrences associated in volcanic and plutonic rocks of the Gutcher Lake area and to account for the nature of these occurrences consistent with local geology and established geological concepts. Up to the present, field work in the Gutcher Lake area (summer 1978) and compilation of accumulated field data have been completed. Petrological and geochemical investigations of rocks collected during the field season are underway.

610. THORPE, R.I., Geol. Surv. Can.:
Geology of silver and gold deposits in Canada, 1968-.

611. TREMBLAY, L.P., Geol. Surv. Can.:
Geology of uranium of Canada, 1975-.
612. UMAR, P.A., STEVENSON, J.S., McGill Univ. (Geological Sciences):
Mineral resource potential, Rouyn-Noranda region, Québec, 1973-78
(completed); Ph.D. thesis (Umar).

Multivariate statistical techniques of regression analysis and discriminant analysis have been used in quantitatively relating known base metal occurrence in the Rouyn-Noranda region to the associated geology. The selection of variables is based on factor analysis. The quantitative relationships developed are then applied in making estimates of undiscovered base metal potential in the Rouyn-Noranda region.
613. WETHERELL, D.G., SINCLAIR, A.J., SCHROETER, T.G., British Columbia Min. Mines Pet. Res. (Geological), Univ. British Columbia (Geological Sciences):
Geology and genesis of the Sam Goosly copper-silver deposit, British Columbia; 1978-79; M.Sc. thesis (Wetherell).

Detailed geological mapping, drill core logging, major and trace element analyses to ascertain the nature and stratigraphic setting of this deposit.
614. WHITTAKER, P.J., INNES, D.G., Ontario Geol. Surv.:
Chromite, 1978-80.

The chromite study involves a survey to distinguish the environments in which chromite bearing rocks occur in Ontario. A map of Ontario showing chromite deposits will summarize the known Ontario occurrences. Studies on individual occurrences will include the geology of the deposit with detailed reference to the form of chromite mineralization as disseminated, layered, or podiform. Petrography of the chromitiferous rocks along with major and trace element geochemistry is being done to further describe chromite occurrences and to aid in understanding their petrogenesis.

PETROLEUM EXPLORATION/EVALUATION/RECHERCHE ET EVALUATION DES GITES PETROLE

615. AMAJOR, L.C., LERBEKMO, J.F., Univ. Alberta (Geology):
Depositional analysis of the Viking formation in Alberta, 1978-80;
Ph.D. thesis (Amajor).

A depositional analysis of the Viking Formation is being undertaken using volcanic ashes (bentonites) and mechanical logs to divide the unit into time slices, and slabbed and unslabbed cores for identification of useful depositional characteristics.

616. JELINKO, K., CIAVAGLIA, L.A., NANDI, B.N., CANMET (EMR):
Coking characteristics of the various constituents of Athabasca bitumen, 1976-78.

See:

Effect of finely divided sub-bituminous coal addition on quality of thermal hydrocracker product; EMR, CANMET Lab. Rep. ERP/ERL78-30(CF), 1978.

Compatibility of hydrocracked products and virgin distillate: Lloydminster heavy oil and Athabasca bitumen-based products and distillate; EMR, CANMET Lab. Rep. ERP/ERL78-94(TR), 1978.

Additional experiments are in progress to test the effect of catalyst addition on the inhibition of coke formation during thermal hydrocracking of bitumen.

617. CHESHIRE, S.G., WARDLAW, N.C., Univ. Calgary (Geology):
An integrated geological and engineering study of the Devonian Meekwap Field, Alberta, 1974-79; Ph. D. thesis (Cheshire).

The reservoir characteristics of the Meekwap Oil field are being investigated using an integrated approach which includes geological modelling, log analysis, statistical analysis, petrophysical methods and numerical simulation.

A geological model has been constructed based on the identification of major petrophysical types within the field. All field wells have been subjected to log analysis using a computer program written by Cheshire. Reservoir properties have been determined at an interval of one foot in each producing well. The data includes log and core porosity, various measures of permeability, water saturation, an indication of secondary porosity, shaliness and dolomitization. It is intended to perform a factor analysis to attempt to elucidate the underlying relationships and causal influences on all these variables. An attempt to distinguish reservoir rock-types will be made using the same data and the technique of discriminant function.

Thus the ultimate objectives of the project are to relate direct observations made from core with data derived from well logs, the emphasis being on the identification of petrophysical properties which affect reservoir performance and to relate both of these, integrated into a reservoir model, with a simulation which will provide some indication of sensitivity to several variables.

618. CREANEY, S., Geol. Surv. Can.:
The relationship between kerogen type (known petrographic rank) and chemical extract data, for the purpose of source rock evaluation, 1977-.

619. CURRIE, J.B., Univ. Toronto (Geology):
Experimental study of fracturing in oil sands and their associated rocks, 1978-79.

In recovery of hydrocarbons from oil sands of the McMurray Formation and similar strata, the possible incidence of natural and artificial fractures is commonly significant - examines the failure mode of oil sands, and other rocks associated with them in the stratigraphic column, under laboratory conditions that simulate a wide range of appropriate geologic variables.
620. CURRIE, J.B., Univ. Toronto (Geology):
Fractures and fracture porosity in shale reservoirs, 1978-82.

Fractured shale constitutes the reservoir rock for oil and gas pools within numerous sedimentary basins. Its potential as a source of significant reservoirs depends in part on explorationists' ability to predict the occurrence of naturally fractured intervals of shale in the subsurface. Involves study of subsurface data concerning fractured shale reservoirs and of data from laboratory experiments which examine the physical properties of shales cored from these intervals. Specifically, it deals with analysis of geological conditions that have controlled the incidence of fracture systems in Cretaceous shales of the Alberta Basin and Devonian shales of the Appalachian Basin.
621. FRITZ, P. BARNES, C.R., BARKER, J.F., POWELL, T.G., LEGALL, F., Univ. Waterloo (Earth Sciences), Geol. Surv. Can.:
Hydrocarbon mineral deposits of southwestern Ontario, 1978-80;
M.Sc. thesis (Barnes).
622. GRANT, A.C., Geol Surv. Can.:
Geological interpretation of geophysical data as an aid to basin synthesis and hydrocarbon inventory, 1974-.
- See:

Multichannel reflection seismic survey in the Labrador Sea; Geol. Surv. Can., Paper 78-1C, p. 118, 1978.
623. IWUAGWU, J.C., LERBEKMO, J.F., Univ. Alberta (Geology):
Diagenesis of the basal Belly River sandstone in Keystone 'B' Pool of the Pembina Field, 1976-79; M.Sc. thesis (Iwuagwu).

Thin section and SEM studies of Basal Belly River sandstones in the Keystone 'B' Pool of the Pembina Field show that porosity and permeability are controlled largely by the distribution of kaolinite and calcite cement. Time relationships between diagenetic cements and controls on cement distribution are still under investigation.

624. NANDI, B.N., BELINKO, K., CIAVAGLIA, L.A., CANMET (EMR):
Binders processed from Athabasca bitumen for non-coking coals, 1977-78.

See:

Addition of pitch binders to western Canadian marginal coking coals in coke making: Influence of Pitch Concentration; EMR, CANMET Lab. Rep. ERP/ERL78-77(R), 1978.

Investigations have been carried out to determine the type of bitumen best suited as a binder material and the optimum operation conditions during thermal hydrocracking for the production of the pitch binder. In addition, a study was undertaken to investigate the interaction between the pitch and the coal during co-carbonization and to determine the influence of pitch concentration on coke strength.

625. NANDI, B.N., BELINKO, K., CIAVAGLIA, L.A., ALIAS, E., CANMET (EMR):
Petrographic characterization of Great Canadian Oil Sands coke and fly ash, 1977-79.

See:

EMR, CANMET Lab. Rep. ERP/ERL 79-3 (CF), 1978.

This project was aimed at petrographically characterizing delayed coke produced by Great Canadian Oil Sands Ltd. during up-grading of Athabasca bitumen. Bench-scale combustion trials were carried out with this coke and the fly-ash was examined microscopically to determine the nature of the unburnt carbon.

626. POTTER, W., Nova Scotia Dep. Mines:
Mineral evaluation survey-sub-project 3.4: Oil shales, 1978-79.

The field work portion of the Oil Shale Survey in Nova Scotia is essentially complete and a report is currently in progress.

627. POWELL, T.G., Geol. Surv. Can.:
Diagenesis of organic matter and clay minerals in sediments in relation to petroleum generation, 1975-.

628. REID, J., WARDLAW, N.C., Univ. Calgary (Geology):
Effects of vuggy porosity on the production of carbonate hydrocarbon reservoirs, 1978-80; M.Sc. thesis (Reid).

To investigate the form, origin and distribution of vugs or mega pores in carbonate rocks in selected formations in Alberta. The effects of the form and interconnection of various types of vuggy porosity on oil and gas production will be evaluated. Furthermore, it is hoped to compare estimates of vuggy (secondary) porosity made from well logs with direct measurements made on equivalent cores and likewise to compare "moveable" oil estimated from logs with measurements made on equivalent cores.

629. STEVENS, G.R., COLWELL, J.A., Acadia Univ. (Geology):
Burial diagenesis and origin of clay minerals in Mesozoic-Tertiary strata of Labrador-Newfoundland Continental Shelf, 1976-79.

Clay minerals separated from Mesozoic and Tertiary sediments of the Labrador and northeast Newfoundland Shelves have been analyzed to show the stratigraphic relevance of the clay mineral content, and to evaluate the degree of diagenesis of these minerals in relation to the hydrocarbon potential of the areas. Results from five wells on the Labrador Shelf show good stratigraphic correlation. Kaolinite, for example, is dominant in early Cretaceous sandstones whereas mid-Cretaceous to early Paleocene dark shales are montmorillonite rich. The diagenetic conversion of montmorillonite to illite, which is thought to be important in providing water to move hydrocarbons from source beds to reservoirs is indicated in one well. Gas and condensate discoveries in two of the wells are in a horizon adjacent to the montmorillonite rich shales. The investigation has recently been extended to the northeast Newfoundland Shelf. Samples from two wells analyzed to date cover the interval from early Jurassic to mid-Cretaceous, which is generally absent on the Labrador Shelf. Illite is generally dominant, but a few samples in the early Cretaceous have more montmorillonite and one has kaolinite dominant. Diagenesis of montmorillonite and, possibly, kaolinite to illite is suggested. Correlation of fabric and crystallinity with depth and diagenesis is being attempted by means of texture diffractometry, using the larger cuttings.

630. WARDLAW, N.C., Univ. Calgary (Geology):
Pore systems in sedimentary rocks and their influence on multiphase fluid movements, 1973-82.

See:

A treatise on hydrocarbon recovery from carbonate reservoirs; Petrol. Recovery Instit., Calgary, Res. Rep. RR-36, p. 285, 1978.

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 displaced 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. Typically, fewer than 10 displacement tests, conducted on small, isolated core samples, are available for an entire, large Alberta oil reservoir. These tests are then used in simulating the performance of the reservoir as a whole.

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/GENERALITES

631. BACHINSKI, D.J., Univ. New Brunswick (Geology):
Metamorphism of sulfide-rich rocks, 1978-81.

See:

Sulfur isotopic composition of thermally metamorphosed cupriferous iron sulfide ores associated with cordierite-anthophyllite rocks, Gull Pond, Newfoundland; Econ. Geol., vol. 73, p. 64-72, 1978.

632. BLOOM, M.S., BROWN, T.H., Univ. British Columbia (Geological Sciences):
An analysis of ore-forming processes and chemical mass transfer in stockwork molybdenum deposits, 1975-79; Ph.D. thesis (Bloom).

633. BLUSSON, S.L., Geol. Surv. Can.:
Metallogeny of Selwyn Basin, Yukon Territory, 1973-.

634. BRYNDZIA, T.L., SCOTT, S.D., Univ. Toronto (Geology):
Geochemistry and mineralogy of altered footwall rocks in the Uwamuki #4 deposit, Kosaka area, Japan, 1977-79; M.Sc. thesis (Bryndzia).

The Uwamuki #4 deposit is one of several Kuroko-type deposits in the Kosaka mining area, Hokuroko district, Japan. It differs from most other Kuroko massive sulfide deposits in that it has a very well developed foot-wall siliceous stockwork that is characteristically enriched in Pb + Zn relative to Cu. Our studies are aimed primarily at the relationships between mineralogy, geochemistry and metal distribution in altered footwall rocks both in and out of the siliceous stockwork in both vertical and lateral sections through the deposit. Continuing work will involve XRD and analysis of altered footwall material as well as microprobe studies of alteration minerals. It is expected that this information will enable us to model the chemical evolution of this deposit.

635. BURTON, D.M., MCALLISTER, A.L., Univ. New Brunswick (Geology):
The geology of the Cam-Kerr pegmatitic uranium deposit, 1978-80;
M.Sc. thesis (Burton).

The deposit has mapped in detail, drill core sampled and some preliminary laboratory work carried out - to conduct a petrological study and to relate the deposit to surrounding rocks in terms of genesis and economic possibilities.

636. CARTER, T.P., FAWCETT, J.J., COLVINE, S., Univ. Toronto (Geology):
Cu-Sb-Au-Ag mineralization in carbonate-hosted quartz-carbonate veins in the Renfrew area, Ontario, 1977-79; M.Sc. thesis (Carter).
- An investigation of a series of nine stratabound Cu-Sb-Au-Ag occurrences contained in Late Precambrian marbles near Renfrew, Ontario, in order to establish their geological setting, nature and distribution of the mineralization, mode of emplacement, and origin of the mineralization. The geological setting and nature and distribution of the mineralization has been established as a result of field work completed during 1978. Further work which is contemplated or underway include: 1) Preparation and examination of thin sections of all rock types and polished thin sections of mineralized rocks, 2) analytical work to establish the whole rock chemical compositions of representative and mineralized rock types, representative grades of the occurrences, trace element contents, 3) electron microprobe analysis of vein minerals to establish their compositions, especially trace element contents, and 4) examination of fluid inclusions in the vein minerals to establish the nature of the mineralizing fluid and its P-T conditions of emplacement.
637. CARTER, T.R., FAWCETT, J.J., COLVINE, A.C., MEYN, H.D., Ontario Geol. Surv.:
Metallic mineral deposits exclusive of uranium in the Pembroke-Renfrew area, Ontario, 1976-79.
- See:
Mineral resources studies in the Pembroke-Renfrew area, southeastern Ontario; Ontario Geol. Surv., Misc. Paper 82, p. 189-197, 1978.
638. COLVINE, A.C., Ontario Geol. Surv.:
Mineralization associated with early Precambrian epizonal intrusions in Ontario, 1976-82.
- See:
Early Precambrian porphyry deposits; Ontario Geol. Surv., Misc. Paper 82, p. 216-221, 1978.
639. DAWSON, K.M., Geol. Surv. Can.:
Metallogeny of the northern Canadian Cordillera, 1974-.
- See:
Regional metallogeny of the northern Cordillera: Recent stratiform base metal discoveries in Yukon Territory and District of Mackenzie; Geol. Surv. Can., Paper 79-1A, p. 375, 376, 1979.
640. FEUER, W.J., HODDER, R.W., Univ. Western Ontario (Geology):
Origin of the fragmental rocks of the Cofer Zn-Pb-Cu sulfidated deposit, Virginia, U.S.A., 1977-79; M.Sc. thesis (Feuer).
- To determine the mechanisms of formation and emplacement of fragments in the massive sulfide and the silicate rocks of the Cofer Zn-Pb-Cu sulfidated deposit, Mineral, Virginia. Included will be petrographic and chemical descriptions of the fragments and their host rocks, a review of characteristics of fragmentals in various geologic settings, and an evaluation of the interrelationships between the fragmental rocks and other lithologies in the vicinity of the Cofer deposit. Spatial distribution of the fragmentals and the massive sulfides will also be compared.

641. FISHER, D., NALDRETT, A.J., Univ. Toronto (Geology):
The petrology of Mt. Edwards nickel deposit, Western Australia, 1973-79;
Ph.D. thesis (Fisher).

The research has shown that the host rocks are komatiitic ultramafic flows. The stratigraphy of the pile in the vicinity of the orebodies has been established and the nickel sulphides were found to be depressions at the base of two thick, very magnesian peridotitic flows. It is postulated that the sulphides were extruded as a primary sulphide liquid, intimately mixed with the silicate magma and that the denser sulphide droplets settled to the base of the flow and pooled in depressions on the underlying surface.
642. FRANKLIN, J.M., Geol. Surv. Can.:
Metallogeny of the southwestern part of the Canada Shield, 1975-.
643. FYON, J.A., CROCKET, J.H., KARVINEN, W.O., McMaster Univ. (Geology), Ontario Geol. Surv.:
Volcanism, hydrothermalism and gold metallogeny in the Timmins area, Ontario, 1977-79; M.Sc. thesis (Fyon).

Auriferous, syngenetic, stratiform quartz-ankerite-tourmaline lenses of exhalative origin constitute an important gold deposit type of the Porcupine camp. These chemogenetic sediments of the Tisdale Group metavolcanic sequence lie within carbonate alteration zones and are spatially associated with local accumulations of porphyritic quartz-feldspar-sericite schists. Major and trace element determinations, being carried out at McMaster Univ. and the Ontario Geological Survey, and radiochemical neutron activation analyses for gold are being examined to characterize the carbonate alteration and to define litho-geochemical exploration criteria for this type of gold deposit.
644. FYON, J.A., KARVINEN, W.D., CROCKET, J.H., Ontario Geol. Surv., McMaster Univ. (Geology):
Relationship of carbonate alteration, porphyries and gold deposits, Timmins area, Ontario, 1976-80; M.S. thesis (Fyon).
645. GORDON, J.B., MASSON, S., Ontario Geol Surv.:
Uranium and thorium resource studies, 1976-78; M.Sc. thesis (Masson).

See:
Mineral Resource studies in the Pembroke-Renfrew area, southeastern Ontario - uranium and thorium deposits; Ontario Geol. Surv., Misc. Paper 82, 1978.
646. GREEN, A.H., NALDRETT, A.J., Univ. Toronto (Geology):
Evolution of Fe-Ni sulphide ores associated with Archean ultramafic komatiites, Langmuir Township, Ontario, 1974-79; Ph.D. thesis (Green).
647. GROSS, G.A., Geol. Surv. Can.:
Geology of mineral resources in the ocean, 1976-.
648. HOEVE, J., SIBBALD, T.I.I., Saskatchewan Research Council (Geology Div.), Saskatchewan Geol. Surv.:
Metallogenesis of uranium deposits in northern Saskatchewan, 1976-.

See:

On the genesis of Rabbit lake and other unconformity type uranium deposits in Northern Saskatchewan, Canada; Econ. Geol., vol. 73, no. 12, 1978.

Uranium metallogenesis and its significance to exploration in the Athabasca Basin; Sask. Geol. Soc. Spec. Publ. No. 4, 1978.

Uranium mineralization in the Athabasca Basin appears to be related to diagenetic processes in the Athabasca Formation, which probably also is the source of the ore constituents. Spatial association of uranium deposits with sub-Athabasca unconformity arises from reaction of oxidizing diagenetic solutions of the Athabasca aquifer with reducing rocks of the underlying metamorphic basement. Such solutions, penetrating the basement along fracture zones reacted with graphitic rocks to yield reducing solutions containing carbon dioxide and methane. The latter acted as a mobile reductant to uranium carried by the oxidizing solutions of the Athabasca aquifer. Mineralizations was subjected to hydrodynamic controls.

649. HTOON, M., McTaggart, K.C., SINCLAIR, A.J., Univ. British Columbia (Geological Sciences):

Geology of Clinton Creek asbestos deposit, Yukon Territory, 1975-79; Ph.D. thesis (Htoon).

650. KISSIN, S.A., Lakehead Univ. (Geology):

The genesis of silver deposits in the Southern Province of northwestern Ontario, 1976-.

Work on the Beaver Jr. Mines has revealed that the ore-bearing vein strike nearly perpendicularly to the strike of other veins in the Rabbit Mountain area. In contrast to the simple base metal sulphide-native silver-argentite of other veins in the area, the Beaver Jr. veins contain a complex assemblage including coexisting amalgum (Ag,Hg) and moschellandsbergite (Ag₂Hg₃). Both structure and mineralogy of these veins tend to indicate that they are of a different generation than the others in the Rabbit Mountain area of the Mainland Silver Belt.

651. MORTON, R.D., Univ. Alberta (Geology):

Studies on the nature and genesis of uranium deposits in northern Canada, 1967-.

This project has so far involved studies on the deposits of the Beaverlodge district, Saskatchewan, the U-Ni, Co arsenide - Bi - Ag deposits of the Great Beaver Lake region, the U deposits of the Athabasca basin, Saskatchewan and Alberta, the Rexspar deposit at Birch Island, British Columbia and the U occurrences associated with alkalic intrusives in the Tombstone Range, Yukon Territory.

652. MORTON, R.D., VAN DYKE, C., MACDONALD, R., Univ. Alberta (Geology):
 Uranium resource potential of the post-Precambrian strata of Alberta, 1977-79; M.Sc. theses (Van Dyke, MacDonald).
 The uranium potential of the post-Precambrian strata of Alberta are being assessed and possible targets for exploration are being identified. This work will form the basis of subsequent groundwater-geochemical studies and an analytical program which will examine the uranium contents of strata in Alberta. The study integrates with an overall ongoing program of resource assessment in Alberta.
653. NALDRETT, A.J., HOFFMAN, E.L., CHOU, C.L., NALDRETT, S.R., Univ. Toronto (Geology):
 The precious metal content of some nickel sulphide ores, 1976-80; Ph.D. thesis (Hoffman).
 See:
 The determination of all the platinum group elements and gold in rocks and ores by neutron activation analysis; Anal. Chem. Acta, 1978.
654. NALDRETT, A.J., INNES, D.J., SOWA, J., Univ. Toronto (Geology):
 Platinum group elements in sulfide ores in Ontario, 1978-81.
 To use newly developed analytical techniques of PGE analysis to extend our knowledge of Ontario's resources of PGE metals, thirty sulfide deposits have been or are being sampled. In addition to providing important information on resources, the data will be used to place genetic constraints on the ore deposits to which they apply.
655. NOAV SCOTIA DEP. MINES:
 Mineral resources planning - Project 1: core storage, Debert, Nova Scotia, 1978-79.
656. OWSIACKI, L., MCALLISTER, A.L., RAST, N., Univ. New Brunswick (Geology):
 Structure and stratigraphy of the 'C' zone, Heath Steele mines, New Brunswick, 1976-79; M.Sc. thesis (Owsiacki).
 The area has been ampped in detail, both structure and stratigraphy of the 'C' zone massive sulphides have been worked out and described, and new ideas relating to the emplacement of the ores have been proposed. In short, a complete study and interpretation of the geology of an area of which little has been formerly know. Results should aid in feasibility studies of the ore body as well as future exploration for ore on the property.
657. PIRIE, J., Ontario Geol. Surv.:
 Metallogenetic relationships of gold mineralization in the Red Lake area, Ontario, 1978-82.
 To investigate and characterize the occurrences of gold mineralization in the Red Lake geenstone belt with a view to indicating relationships between deposit environments and stratigraphic positions and to outlining a metallogenetic framework for gold deposits in the area.

658. PIRIE, J., VALLIANT, W., Ontario Geol. Surv.:
 Gold mineralization at the Dickenson Mine, Red Lake area, Ontario, 1978-80.
 Economic gold mineralization occurs in a number of settings in the Dickenson Mine including sulphide-rich shears and lenses in mafic metavolcanics, quartz-carbonate veins and lenses, layered sulphide-bearing cherty interflow metasediments and sulphide-rich stages and lenses in felsic metavolcanics-to document ore and gange mineralogy, petrology and alteration of wall-rocks and to unravel the relationships between the various mineralization types.
659. RANKIN, L.D., MCALLISTER, A.L., DAVIES, J.L., Univ. New Brunswick (Geology):
 Comparison of the Murray-Brook and Restigouche sulphide zones, New Brunswick, 1977-79; M.Sc. thesis (Rankin).
 The area between the two sulphide bodies has been mapped in detail and the ore zones have been reexamined by logging available drill cores. The sulphide bodies have been placed in their respective stratigraphic horizons and the general features of the ore bodies in terms of structure, stratigraphy and mineralogy established.
660. ROBERTSON, J.A., Ontario Geol. Surv.:
 Ontario Uranium deposits, 1973-.
 See:
 Uranium deposits in Ontario; Mineral Assoc. Can., short course in uranium deposits: Their Mineralogy and Origin, p. 220-280, 1978.
661. SAGE, R.P., PYKE, D.R., Ontario Geol. Surv.:
 Alkalic rock- carbonatite complexes, 1974-81.
662. SCOTT, S.D., Univ. Toronto (Geology):
 Tectonic controls on the distribution of massive sulfide ores of the Hokuroku District, Japan, 1977-80.
 See:
 Structural control of the Kuroko deposits of the Hokuroku District, Japan; Min. Geol., vol. 28, p. 301-311, 1978.
 Clusters of Kuroko deposits of Miocene age in the Hokuroku district of northern Honshu lie along one of a conjugate set of lines with NNW and NE strike and most of the larger deposits lie at or close to the intersections of these lines. A wide variety of structural features of northern Honshu have NNW and NE strikes cross-cutting the predominant N-S structural trends of Miocene and younger age and are thought to be of basement (pre-Tertiary) origin. It is proposed that fractures in the basement of the Hokuroku district and particularly their intersections were responsible for the distribution of the Kuroko deposits. Presumably, such sites facilitated the diapiric rise of dacite domes and provided a suitable plumbing system for metal-bearing hydrothermal fluids. Several intersections of the NNW and NE lines do not have known Kuroko deposits and may be good exploration targets. Current studies are focusing on the relation of these major lineaments to the plate tectonic evolution of northern Honshu.

663. SINCLAIR, A.J. and CAMPBELL, S.W., Univ. British Columbia (Geological Sciences):
Cu-Ni sulphide deposits, Kluane Ranges, southwestern Yukon, 1974-79;
Ph.D. thesis (Campbell).

664. SINCLAIR, A.J., GODWIN, C.I., and RYAN, B., Univ. British Columbia (Geological Sciences):
Pb isotope study of mineral deposits in the Canadian Cordillera, 1978-.

A study of 34 Pb isotope analyses have been obtained mainly from the McKenzie Mountains in Northwest Territories and Yukon. These provide interesting support for a proposed metallogenic model involving two different periods of formation of Zn-Pb deposits in carbonate hosts. Additional studies are in progress dealing with Pelly Mountain, Keno Hill area, Selwyn Basin, Northair Mines, Casino area, and massive sulphide deposits in the Coast Range.

665. SINCLAIR, A.J. and GOLDSMITH, L.B., Univ. British Columbia (Geological Sciences):
Quantitative metallogeny of the British Columbia Cordillera, 1978-;
M.Sc. thesis (Goldsmith).

A computer based file containing detailed production information (grade and tonnage) is being prepared in conjunction with the B.C. Ministry of Mines. This file will be compiled in a "first draft" by the end of Dec. 1978 and will then be subjected to thorough editing.

666. SINCLAIR, A.J. and MILLER, J.H.L., Univ. British Columbia (Geological Sciences):
Geology and mineral deposits, Callaghan Creek area, southwestern British Columbia, 1977-79; M.A.Sc. thesis (Miller).

See:

Geology of part of the Callaghan Creek roof pendant; in Geological Fieldwork 1977, British Columbia Min. Mines Petrol Res., p. 96-102, 1978.

Stratigraphy of a thick pyroclastic sequence of Lower Cretaceous or earlier age, and related mineral deposits including those of Northair Mines Ltd. and Van Silver Explorations Ltd.

667. SINCLAIR, A.J. and WETHERELL, D.G., Univ. British Columbia (Geological Sciences):
Geology of Sam Goosly Cu-Ag deposit, central British Columbia, 1978-79; M.Sc. thesis (Wetherell).

This study emphasizes (1) detailed stratigraphy in and adjacent to the mineralized zone, (2) sulphide mineralogy and textures, (3) age dating, and (4) origin of the mineral deposit.

668. SOUTHER, J.G., Geol. Surv. Can.:
Geothermal energy resources in Canada, 1973-.
669. SPRINGER, J.S., Ontario Geol. Surv.:
Mineral Potential, Southern Ontario (1:10,000), 1979-82.
To provide an overall mineral potential evaluation for bedrock commodities exclusive of crush aggregate, suitable for use by a non-specialist public. To highlight geologically related factors which influence development of mineral resources, eg. surface conditions, natural pollutants, bedrock surface configuration.
670. SPRINGER, J.S. and ROBERTSON, J.A., Ontario Geol. Surv.:
Ontario Mineral Map 1"=25 Miles (Revision), 1979-80.
Revision of the 1"=25 mile sheet of Ontario which shows metallic and industrial mineral locations, mining recorder districts, against a simple geological background. Deposits are listed on map margin, by recorder's district, alphabetically by name.
671. SUTHERLAND BROWN, A., SINCLAIR, A.J., GARNETT, J.A. and FLETCHER, W.K., Univ. British Columbia (Geological Sciences), British Columbia Min. Mines Pet. Res. (Geological):
Metallogeny of the Canadian Cordillera, 1970-.

See:

An analysis of distribution of mineral occurrences in British Columbia; British Columbia Min. Mines Pet. Res., Bull. 68, 1978.

To integrate geochemical and production data for modelling for better resource analysis; to create superior models to guide exploration; and, to test relationships between economic/near economic deposits and the distribution of showings, geochemical backgrounds, etc.

672. WARREN, H.V. and GOULD, C.E.C., Univ. British Columbia (Geological Sciences, Pathology):
1) New tools for mineral exploration, 1947-; 2) Possible relationships between trace metals and multiple sclerosis, 1976-.

See:

Biogeochemical prospecting for lead; the biogeochemistry of lead in the environment; Elsevier/North-Holland Bio-Medical Press, p. 395-408, 1978.

1) We wish to now expand our investigations into the practical application of biogeochemistry into exploration for silver, tellurium, arsenic, tungsten, and mercury, making use of neutron activation methods of analysis. 2) Possible correlations between the trace elements in soil, dusts, vegetables and water, with the epidemiology of multiple sclerosis and some cancers.

673. WATSON, G.P., MCALLISTER, A.L. and HALLE, W.E., Univ. New Brunswick (Geology):

Wall-rock alteration at Lake George antimony mine, York County, New Brunswick, 1977-79; M.Sc. thesis (Watson).

Study of wall-rock alteration geochemistry around stibnite/quartz veins at Consolidated Durham's Lake George antimony mine includes chemistry and mineralogy of alteration zones, general geology of deposit, structure and nature of host Silurian sediments, relationship to later Devonian intrusives, mineralogy and paragenesis of ore minerals.

674. WATSON, P.H., GODWIN, C.T., SINCLAIR, A.J., and ARMSTRONG, R.L., Univ. British Columbia (Geological Sciences):

Study of geology, geochronology and mineralization of Ram Claim group, southwestern Yukon (Zn-Pb-Ag mineralization), 1978-79; M.Sc. thesis (Watson).

Detailed mapping carried out in summer of 78; winterwork: petrology of rock units; detailed analysis of Zn-Pb-Ag mineralization; geochronology of various units; and Pb isotope work on mineralization.

679. BERUBE, M-A., Univ. Laval (Géologie et Minéralogie):
La mesure quantitative du degré de libération des minerais broyés.
680. BRISTOL, C.C., Brandon Univ. (Geology):
Composition of iron sulphide minerals from the Centennial and White Lake ore bodies, Flin Flon area, Manitoba, 1978-79.

To continue work by Byers related to Co and Ni contents of iron sulphide minerals to economic potential of sulphide deposits in the Flin Flon district. It is hoped to relate iron sulphide mineral composition to depositional environment.
681. CABRI, L.J., CANMET (EMR):
Platinum, 1971-80.

See:

On cooperite, braggite and vysotskite; Amer. Mineral., vol. 63, p. 832-329, 1978.

Determination of ideal formulae for new minerals of the platinum group; XI General meeting Internat. Mineral. Assoc., Novosibirsk, vol. I, p. 147, 1978.
682. CABRI, L.J., CANMET (EMR):
Mineralogical characterization of inorganics in Canadian Coals, 1977-.

To provide, on a continuing basis, mineralogical characterizations of inorganics in Canadian coals, in particular low-rank coals, stressing, whenever possible, applications to current or future beneficiation or other industrial processes.
683. CAMERON-SCHIMANN, M., and SMITH, D.G.W., Univ. Alberta (Geology):
Electron microprobe study of uranium minerals and its application to some Canadian deposits, 1974-78 (completed); Ph.D. thesis (Cameron-Schimann).
684. CERNY, P., Univ. Manitoba (Earth Sciences):
Mineralogy and petrology of pegmatites, 1971-.

See:

The Tanco pegmatite at Bernic Lake, Manitoba. X. Pollucite; Can. Mineral., vol. 16, p. 325-333, 1978.

The Tanco pegmatite at Bernic Lake, Manitoba. XI. Native elements, alloys, sulfides and sulfosalts; Can. Mineral., vol. 16, p. 625-640, 1978.

The Tanco pegmatite, southwestern Manitoba; CIM Bull., vol. 72, no. 802, p. 142-150, 1979.

Continuing investigation of the Tanco pegmatite deals recently with the compositional variations of the Ta-oxide minerals and associated phases, and their distribution in the deposit. The study of alteration of natural pollucite contributed to solving of technological problems in geological storage of radioactive waste containing Cs137.

A description of a new mineral species, stibiobetafite, is ready for publication. Crystal chemistry of beryl, pollucite, monazite group from southeastern Manitoba, petalite, and milarite are being examined. Feldspar studies concentrate on the petrology of feldspar crystallization in different paragenetic and geochemical types of pegmatites. Continuing study of the Greer Lake pegmatite group in southeastern Manitoba deals recently with feldspars, micas, and garnets.

685. CHAGNON, A., INRS - Pétrole, Univ. Québec:
Evolution et néoformation des minéraux des argiles lors de la diagenèse d'enfouissement, 1977-.
- Etude de la transformation des minéraux argileux lors de la diagenèse d'enfouissement. L'évolution des smectites vers l'illite ou la chlorite est principalement visée. Le travail a débuté par l'étude de sédiments d'âge Tertiaire qui sont plus propices à l'observation des transformations premières des smectites.
686. CHAGNON, A. et BRUN, J., INRS - Pétrole, Univ. Québec:
Etude minéralogique, géochimique et stratigraphique des K-Bentonites des Groupes de Trenton et Black River, Québec, 1976-79.
- Déterminer la minéralogie et la géochimie des horizons de K-Bentonites en vue de leur utilisation comme marqueurs stratigraphiques et diagénétiques. Les analyses minéralogiques ont révélé la présence de minéraux semblables à ceux observés par Weaver et d'autres auteurs pour des séquences semblables dans l'Est des Etats-Unis et par Bystren en Suède.
687. CHAGNON, A. et ESQUEVIN, J., INRS - Pétrole, Univ. Québec:
Etude des minéraux néoformés dans les Grès de Potsdam, 1978-79.
- Déterminer les conditions de genèse des minéraux argileux (phyllosilicates) rencontrés dans les formations du Groupe de Potsdam. Déterminer par la méthode du K/Ar l'âge des illites authigènes rencontrés dans ces formations. Une étude préliminaire a indiqué un âge Acadien pour ces illites. Relation entre ces minéraux et les propriétés de réservoir de ces grès.
688. CHEN, T.T., CANMET (EMR):
Mineralogy, geochemistry and distribution of silver and other trace elements in the Caribou deposit, New Brunswick, 1976-78.
- The laboratory study has been completed. A similar type of study has been carried over to the Brunswick 12 and Heath Steele deposits, New Brunswick. However, only samples from grinding and flotation circuits of these two deposits are studied.

689. CHEN, T.T., CANMET (EMR):
 Mineralogy, geochemistry and distribution of silver and other trace elements in the New Brunswick type ore, 1976-79.
- See:
- Lautite and cadmium-rich sphalerite from the Ross Mine, Hislop Township, Ontario; Can. Mineral., vol. 16, pt. 4, p. 665-670, 1979.
- Electron microprobe analyses of silver-bearing minerals in samples collected from the Heath Steele Mill, New Brunswick, March, 1977; EMR, Canmet, Lab. Rep. MRP/MSL 78-23 (IR), 1978.
- Mineralogical studies of the silver-bearing minerals and sphalerite in a Cu-Pb concentrate and Zn pre-concentrate from Brunswick Mining and Smelting Ltd., New Brunswick; EMR, Canmet, Lab Rep. MRP/MSL 78-75 (IR), 1978.
- The distributions of silver in the sulfide concentrates, tailing and feed are currently being studied. The occurrences of mercury in some sulphide concentrates from Pamour-Porcupine Mines Ltd. and Brunswick Mining and Smelting Ltd. have been determined.
690. DONNAY, G.D., McGill Univ. (Geological Sciences):
 The crystallography and crystal structure of friedelite, a manganese-rich pyrosomalite $(\text{Mn}^{2+}, \text{Fe}^{2+})_8 (\text{Si}_6\text{O}_{15}) (\text{OH}, \text{Cl})_{10}$ from the Sullivan Mine, Kimberley, British Columbia, 1978-79.
- Friedelite is incorrectly described in the literature. We have a new space group $R3m$ or $R\bar{3}m$ and cell dimensions $a = 13.4\text{\AA}$, $c = 86.20\text{\AA}$ and are attempting a structure determination. The a and c dimensions show a pronounced subcell of $a/4$, $c/4$ dimensions. Disorder diffuse scattering is pronounced in all $(10\bar{1}0)_{4n}^*$ nets, where $n = 1, 2, \dots$
691. DONNAY, G.D., McGill Univ. (Geological Sciences):
 The crystallography and crystal structure of sursassite, a manganese-rich epidote from Woodstock, New Brunswick, 1978-79.
- The literature description of sursassite from this locality, the only one on this continent and only the second one in the world, is incorrect. We wish to straighten it out and to refine the structure.
692. DUKE, J.M., Geol. Surv. Can.:
 Mineralogy of nickel deposits in serpentized ultramafic rocks, 1975-.
693. FOSCOLOS, A.E., Geol. Surv. Can.:
 Mineralogy and chemistry of fine-grained rocks in Central Sverdrup Basin, 1973-.
694. GOBLE, R.J. and SCOTT, S.D., Univ. Toronto (Geology):
 Estimation of compressibility in minerals from fundamental properties, 1977-79.

A theoretical expression for approximating compressibility has been evaluated for 196 solids. Three correlations have been derived from which compressibility may be approximated: interionic distance with the exponent of repulsive potential, from which compressibility may be calculated; compressibility with hardness; and compressibility with interionite distance. The derived correlations have been tested by comparing compressibilities approximated for troilitite, FeS, with the value of $1.34 (9) \times 10^{-3} \text{ kb}^{-1}$ recently measured by King (1977). The compressibility estimated from the interionic distance-exponent of repulsive potential correlation is 30% lower than the measured value, that estimated from the hardness-compressibility correlation is 20% lower, and that estimated from the interionic distance-compressibility correlation is within the experimental error of the measured value.

695. GOBLE, R.J. and SCOTT, S.D., Univ. Toronto (Geology):
Diffusion rates in sphalerite, 1977-79.

Diffusion rates in the refractory sulfide, sphalerite, are being measured by the radiotracer method. Self-diffusion of Fe and Zn has been determined in 30 specimens covering a temperature range from 300°C to 850°C. Self-diffusion rates of Fe and Zn are approximately equal, with the latter rate being defined by a narrow band at any given temperature ($D_{\text{Zn}} \approx 10^{-12.5 \pm 0.3} \text{ cm}^2 \text{ sec}^{-1}$ @ 800°C, $D_{\text{Zn}} \approx 10^{-16.6 \pm 0.3} \text{ cm}^2 \text{ sec}^{-1}$ @ 300°C). Diffusion rates are approximately equal to those measured for Fe self-diffusion in pyrite by previous workers. The effects of vapour transport on the experimental results are being evaluated. Pending completion of these studies, inter-diffusion of Fe and Zn between sphalerites of variable Fe-content will be determined.

696. HAMILL, G., McGill Univ. (Geological Sciences):
The structural mechanism of pyroelectricity in zincite, 1977-79.

We are using a large and highly accurate set of Fobs values with a least-squares refinement program (Oak Ridge) which does not force ellipsoidal shape on the temperature factors. They will be refined as 2nd-order tensors and their values should indicate whether the thermal motions of Zn, or O or both are asymmetric as we hypothesized for O(1) in tourmaline.

697. HUTCHISON, M.N., and SCOTT, S.D., Univ. Toronto (Geology):
Experimental calibration of the sphalerite cosmobarometer, 1976-79.

The FeS content of sphalerite, a minor phase in some meteorites, varies as a function of pressure and temperature when the sphalerite is in equilibrium with troilite. Schwarcz et al. (1975) calculated this variation to develop a "cosmobarometer" which they used to estimate the radii of parent objects of some iron meteorites. We have experimentally measured the P-T dependence for the assemblage sphalerite + troilite + iron + Fe-oxide from 400 to 800°C at 2.5 and 5 kbar. The composition of sphalerite is best described by a second-degree equation:

$$\text{mole \% FeS} = 35.290 - 5.427P + 0.0385T + 0.0703P^2 + 0.00216PT - 0.0000164T^2 \cdot (+0.65) \dots\dots\dots (1)$$

The use of equation (1) as a barometer requires an estimate of the last temperature of equilibration between sphalerite and troilite, which Schwarcz et al. assumed to be 350°C for irons and 600°C for enstatite chondrites, in which cases equation (1) becomes:

$$P_{350^\circ\text{C}} = 33.212 - (437.953 + 14.224 \times \text{mole \% FeS})^{1/2} \dots\dots\dots (2)$$

$$P_{600^\circ\text{C}} = 29.367 - (115.745 + 14.224 \times \text{mole \% FeS})^{1/2} \dots\dots\dots (3)$$

Application of equations (2) and (3) to published analyses of sphalerites provides estimates of pressures of formation of meteorites and possible radii of their parent objects as follows: IA irons (Landes, Sardis, Gladstone, Bogou, Odessa) 0.1 to 2.6 kbar, 75 to 380 km; enstatite chondrites (Yilmia, Pillistfer)-0.3 to 0.7 kbar, 0 to 200 km.

698. JAMBOR, J.L., CANMET (EMR):
 Producibility of resources, 1977-80.

See:

The mineral sources of silver and their distribution in the Caribou massive sulfide deposit, Bathurst area, New Brunswick; Canmet Rep. 78-14, 1978.

699. KARKHANIS, S., GOODWIN, A.M. and PONNAMPERUMA, C., Univ. Toronto (Geology), Univ. Maryland (Lab Chem. Evol.):
 Mineralogy and trace fossil content of Archean iron-formation, Superior Province, 1977-79.

700. KISSIN, S.A., Lakehead Univ. (Geology):
 Crystal chemistry and stabilities of sulphide minerals, 1976-.

See:

Cernyite, a copper-cadmium-tin sulfide with the stannite structure; Can. Mineral, vol. 16, p. 139-146, 1978.

New data on stannite and related tin sulfide minerals; Can. Mineral, vol. 17, pt. 1, p. 125-136, 1979.

Continued study of an apparent new species of tin-bearing sulphides revealed that it has the empirical formula $\text{Cu}_{2-x}\text{Fe}_{1+x}\text{SnS}_4$ and has a hexagonal or pseudo-hexagonal, orthorhombic symmetry. Analogies to other structures suggest that this mineral has a wurtzite derivative structure rather than a sphalerite derivative structure, as believed previously. The structural formula is then probably $(\text{Cu,Fe})_3\text{SnS}_4$, analogous to that of enargite. Study of material from various localities indicates that a zinc analog, i.e. $(\text{Cu,Zn})_3\text{SnS}_4$ likely exists, as well.

701. LEDOUX, R.P., LASALLE, P. and PAYETTE, S., Univ. Laval (Géologie et Minéralogie), Québec Min. Richesses Naturelles:
Minéralogie des saprolites du Québec, 1978-.
702. MACEK, J.J., FERGUSON, R.B., SCOATES, R.F.J., and AMBACH, H., Univ. Manitoba, (Earth Sciences), Manitoba Dep. Mines, Res. Env. Mgmt. (Geology Division):
New determination curves for albite-twinned plagioclase feldspars based on an analysis of optical crystallographic scatter, 1971-79.
703. MEAGHER, E.P., Univ. British Columbia (Geological Sciences):
Structure and crystal chemistry of silicate minerals, 1975-.
- See:
- High temperature structural study of six olivines; Am. Mineral., vol. 63, p. 365-377, 1978.
- Quantum mechanical methods are commonly used in organic and inorganic molecular chemistry for structural and conformational studies. Likewise, molecular orbital formalisms such as CNDO/2 can provide a meaningful rationalization of the nature of bonding in minerals. A CNDO/2 molecular orbital study has recently been completed on the silica polymorphs: quartz, cristobalite and coesite. Currently, a molecular orbital study is underway to determine equilibrium conformations in two-repeat silicate single chains independent of the effect of non-tetrahedral cations. In the future these calculations will be applied to double chain and sheet silicates.
704. MYSYK, W.K., FERGUSON, R.B., HAWTHORNE, F.C., and RAMLAL, K., Univ. Manitoba (Earth Sciences):
The chemistry and mineralogy of the Homewood, Manitoba, meteorite. 1974-79; M.Sc. thesis (Mysyk).
705. PAUL, B.J., and CERNY, P., Univ. Manitoba (Earth Sciences):
The Huron Claim pegmatite, southeastern Manitoba, 1976-79; M.Sc. thesis (Paul).
706. PERRAULT, G., and CAMERON-SCHIMANN, M., Ecole Polytechnique (Génie Minéral):
Minéralogie de l'uranium, 1978-83.
707. PERRAULT, G. and LEVESQUE, A., Ecole Polytechnique (Génie Minéral):
Minéralogie du Mont St-Hilaire, Québec, 1965-80.
Continuation de la définition de la structure atomique des minéraux de St-Hilaire; description de leur mode d'occurrence; définition de nouvelles espèces.
708. PETRUK, W., CANMET (EMR):
Mineralogy applied to ore dressing of Zn-Pb-Cu ores from northwestern New Brunswick, 1975-80.

See:

Image analysis study of mill products from batch tests on Brunswick Mining and Smelting mill tailings; EMR, Canmet Lab. Rep. MRP/MSL 78-187 (IR) and Canmet Rep. 78-23, 1978.

A complete suite of samples has been collected under operating conditions from the grinding and flotation circuits of the Brunswick Mining and Smelting Mill. A materials balance has been obtained for the samples and all the samples have been analysed chemically for Zn, Cu, Pb, Fe, Ag, Sb, Bi, In, Sn and Hg. A mineralogical analysis has been performed on the samples and all elements except Ag have been correlated to minerals. Image analysis is being performed on the samples to determine the quantities and sizes of minerals recovered in each flotation cell. The results will be evaluated to determine the behaviour of minerals during ore dressing.

709. PLANT, A.G., Geol. Surv. Can.:
Electron beam microanalysis, 1962-.

See:

Composition of pyroxene phenocrysts from Lower Mesozoic volcanics, north-central British Columbia; Geol. Surv. Can., Paper 78-1C, p. 113-117, 1978.

New data on unnamed $\text{Ca Zr Si}_2\text{O}_7$ from Kipawa, Québec; Geol. Surv. Can., Paper 79-1A, p. 391, 392, 1979.

710. RIMISAITE, J.Y.H., Geol. Surv. Can.:
Mineralogical research on the Rabbit Lake uranium deposit, Saskatchewan, 1975-.

711. RIMSAITE, J.Y.H., Geol. Surv. Can.:
Mineralogy of uranium deposits in granitic rocks in the Grenville structural province, Ontario and Québec, 1977-.

See:

Mineralogy of radioactive occurrences in the Grenville structural province Ontario and Québec: a preliminary report; Geol. Surv. Can., Paper 78-1B, p. 49-58, 1978.

712. RUCKLIDGE, J.C. and MIURA, Y., Univ. Toronto (Geology):
Chlorine in relation to rock alteration, 1970-80.

A solid submicroscopic phase with a probable formula of $\text{M}_2(\text{OH})_3\text{Cl}$ occurs as an intermediate reaction product in the alteration of olivine to serpentine. M is dominantly Fe, but Mg may be expected to substitute. The hydroxychloride phase is stabilised by alkaline conditions produced at the reaction front, and is subsequently dissolved as fresh fluids replace those modified by the production of serpentine. This phase will only be found in rocks under-going alteration at the time of sampling. $\text{Fe}_2(\text{OH})_3\text{Cl}$ provides a mechanism for removing Fe and possibly other metals from the olivine and redistributing them.

Magnetite stringers may be precipitated in the centres of veins as FO_2 increases away from the reaction front. Current research is concerned with isolating the Cl bearing phase, using scanning and transmission electron microscopy. Similar mechanisms are being sought in other rock alteration systems.

713. SMITH, D.G.W. and FOLINSBEE, R.E., Univ. Alberta (Geology):
The mineralogy and classification of the Innisfree (Alberta) meteorite, 1977-79.

Detailed analyses have now been carried out on olivine, orthopyroxene, chromite, ilmenite, apatite, whitlockite, troilite, kamacite and taenite. Certain aspects of the mineral compositions suggest that the initial indications that the meteorite belongs to the LL6 type may not be correct.
714. TRAILL, R.J., Geol. Surv. Can.:
Studies of meteorites and other extra-terrestrial materials, 1957-.
715. TRAILL, R.J., Geol. Surv. Can.:
X-ray diffraction analysis and mineralogical studies, 1968-.
716. VON BITTER, P.H. and GAIT, R., Royal Ontario Mus. (Invert. Palaeo., Mineralogy and Geology):
Calcite pseudonorphs from the Pleistocene of western Newfoundland - possible palaeoenvironmental indicators, 1976-79.

PALEONTOLOGY/PALEONTOLOGIE

INVERTEBRATE/INVERTEBRES

717. BAMBER, E.W., Geol. Surv. Can.:
Carboniferous and Permian biostratigraphy and coral faunas,
western and northern Canada, 1971-.
718. BARNES, C.R. and KENNEDY, D.J., Univ. Waterloo (Earth Sciences):
Ordovician conodont biostratigraphy, southern Canadian Rocky
Mountains, 1970-82.
719. BARNES, C.R., LANDING, E., and CARSON, D.M., Univ. Waterloo,
(Earth Sciences):
Lower Paleozoic conodont biostratigraphy, Arctic Islands, 1970-;
M.Sc. thesis (Carson).
720. BARNES, C.R., NOWLAN, G.S., UYENO, T.T., FAHRAEUS, L.E., and
MCCRACKEN, A.D., Univ. Waterloo (Earth Sciences), Geol. Surv. Can.,
Memorial Univ. (Geology):
Ordovician and Silurian conodont biostratigraphy and paleoecology,
Anticosti Island, Québec, 1975-82; M.Sc. thesis (McCracken).
721. BRAUN, W.K., BROOKE, M.M. and JOHNSTON, P., Univ. Saskatchewan
(Geological Sciences), Chevron Standard Ltd.:
Jurassic microfaunas and biostratigraphy of western and northern
Canada, 1975-80; Ph.D. thesis (Johnston).
722. BRAUN, W.K., FEATHERSTONE, R., MATHISON, E., MATHEWS, D., and
YAYCHUK, D., Univ. Saskatchewan (Geological Sciences):
Devonian microfaunas and biostratigraphy of western and northern
Canada, 1964-84; M.Sc. theses.

M.Sc. studies include: ostracode fauna of the Middle and
Upper Devonian Slave Point and Swan Hills formations, Alberta
(Featherstone); Middle and Upper Devonian ostracode faunas and
biostratigraphy of Saskatchewan and western Manitoba (Mathison);
aspects of the Upper Devonian Nisku Formation, central Alberta,
(Mathews); and Upper Devonian ostracode faunas, biostratigraphy
and faunal provincialism, southern Northwest Territories.
723. BRAUN, W.K. and FOWLER, S., Univ. Saskatchewan (Geological Sciences):
Early Cretaceous microfaunas and biostratigraphy of northern
Richardson Mountains, Northwest Territories and Yukon, 1978-82;
M.Sc. thesis (Fowler).

To describe and illustrate the foraminiferal faunas contained in
sequences dated to be of Early Cretaceous age and assess their
usefulness in biostratigraphic correlations. The study is
supplementary to ongoing and past research carried out by officers
of the GSC.

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724. CALDWELL, W.G.E., NORTH, B.R., WATKINS, R.A., and WRIGHT, C.E., Univ. Saskatchewan (Geological Sciences):
 Stratigraphic studies in the Cretaceous system of the Interior Plains, 1961-; M.Sc. theses (Watkins, Wright).
 A study of the Cretaceous section in the Alwinal Corporation's second potash mine shaft, near Lanigan, in south-central Saskatchewan, has been completed (Watkins) and the results will be submitted shortly for publication. The study has shown the presence of a new fauna near the base of the Late Albian Joli Fou Formation that has close affinity to the fauna of the Late Albian Kiowa Formation of Kansas. The fauna includes some distinctively Tethyan elements and provides new evidence for dating the establishment of the Cretaceous Western Interior seaway as a continuous strait and as a molluscan migration route. The section at Lanigan also contains an important sub-Santonian unconformity; many foraminiferal and molluscan zones are absent. Investigation of the Cretaceous rocks exposed in, and preserved in the shallow subsurface of, the Qu'Appelle River valley of southern Saskatchewan has been completed (Wright). The study has thrown new light on the facies relationships of the Judith River, Bearpaw, and Riding Mountain formations and on the strong westward diachronic rise of the Judith River-Bearpaw contact across southern Saskatchewan.
725. CAMERON, B.E.B., Geol. Surv. Can.:
 Tertiary foraminiferal succession of western Cordillera and Pacific Margin, 1969-.
 See:
 Jurassic biostratigraphy of Skidegate Inlet, Queen Charlotte Islands; Geol. Surv. Can., Paper 79-1A, p. 396, 1979.
726. CHATTERTON, B.D.E., Univ. Alberta (Geology):
 Systematic and biostratigraphic studies of trilobite and conodont faunas of western and northern Canada, 1972-.
727. COPELAND, M.J., Geol. Surv. Can.:
 Paleozoic ostracodes of Canada, 1972-.
 See:
 Some Wenlockian (Silurian) Ostracoda from southwestern District of Mackenzie; Geol. Surv. Can., Paper 78-1B, p. 65-72, 1978.
728. COPPER, P., GRAWBARGER, D.J., MORRISON, R., POPE, C., and HORST, R., Laurentian Univ. (Geology):
 Benthic Marine Communities of the Ordovician to Devonian with emphasis on paleoecology, taxonomy, evolution of brachiopods, corals, stromatoporoids, calcareous algae, 1965-.
 See:
 Morphology and paleoecology of Ordovician tetradiid corals from the Manitoulin District, Northern Ontario; Can. J. Earth. Sci., vol. 15, no. 12, p. 2006 - 2020, 1978.

PALEONTOLOGY/PALEONTOLOGIE

Paleoecological succession leading to a late Ordovician biostrome on Manitoulin Island, Ontario; *ibid.*, p. 1987-2005, 1978.

Paleoenvironments and paleocommunities in the Ordovician-Silurian sequence at Manitoulin Island; Michigan Basin, Geol. Surv. , Sp. Papers, No. 3., p. 47-61, 1978.

729. DIXON, O.A., Univ. Ottawa (Geology):
Ordovician and Silurian heliolitid corals of Anticosti Island, Québec and Canadian Arctic Islands, 1968-.
- Long term investigation of the systematics, environmental variability, associated sedimentary environments and evolutionary succession of Ordovician-Silurian heliolitid coral faunas. Material presently under investigation includes Late Ordovician - Early Silurian faunas of Anticosti Island, and Late Silurian faunas of Somerset Island, Canadian Arctic.
730. ECKERT, J.D., VON BITTER, P.H., LUDVIGSON, R., and KOBLUK, D.R., Univ. Toronto (Geology):
A new early Silurian (Llandoveryian) echinoderm fauna from southern Ontario, 1977-80; M.Sc. thesis (Eckert).
731. ELIAS, R.J., CASTER, K.E., MEYER, D.L., and POTTER, P.E., Univ. Cincinnati (Geology):
Late Upper Ordovician solitary rugose corals of eastern North America, 1977-79.
732. FAHRAEUS, L.E., Memorial Univ. (Geology):
Paleozoic conodonts and related bio- and chronostratigraphy, 1970-.
- See:
Franconian (Late Cambrian) to Early Champlainian (Middle Ordovician) conodonts from the Cow Head Group, western Newfoundland; *J. Paleontol.*, vol. 52, no. 2, p. 444-471, 1978.
733. FERGUSON, L., Mount Allison Univ. (Geology):
A biometrical study of the Scottish Lower Carboniferous ostracod genera Bairdia and Paraparchites, 1969-81.
- Currently disintegrating material from Granard, Co., Longford, Ireland in order to obtain topotype material of Bairdia curta McCoy (the genotype) and to establish growth series of this material also extracting growth series from specimens from the Craigen Glen section (near Glasgow, Scotland).
734. GRADSTEIN, F.M., Geol. Surv. Can.:
Biostratigraphic history of the Mesozoic - Cenozoic sediments of the Grand Banks, northeast Newfoundland and Labrador shelves (based on Foraminifera and Ostracoda), 1974-.

735. HALL, R.L. and STRONACH, N., Univ. Calgary (Geology):
Lithostratigraphy and biostratigraphy of the Fernie Group (Jurassic), Alberta, 1978-80; Ph.D. thesis (Stronach).
Fieldwork during the summer of 1978 led to the recognition of several well-known ammonite horizons within the Fernie at several new localities; in the Foothills of southern Alberta 19 sections (of which 9 are new) were examined. In addition, beds of Upper Bajocian age have been recognized for the first time (Zone of Megasphaeroceras rotundum) and strata bearing sonniniids of the Zone of Otoites Sauzei have been found at two localities from which they were previously unknown. These finds "fill in" some of the gaps in the fossil ammonite sequences of the Fernie Group, which have heretofore been interpreted as unconformities. Ongoing studies involve a detailed analysis of the ammonites from the Bajocian (so-called "Rock Creek fauna") and of the rich bivalve faunas, specifically from the Bajocian and Callovian. The latter work will concentrate on paleoecological analysis using taxonomic, diversity, trophic and sedimentological data.
736. HOFMANN, H.J., Univ. Montréal (Géologie):
Precambrian and Lower Paleozoic paleontology and stratigraphy, 1966-.
737. JELETZKY, J.A., Geol. Surv. Can.:
Monograph of the Canadian belemnites, 1959-.
738. JOHNSON, M. and JULL, R.K., Univ. Windsor (Geology):
Paleoecology of coral-stromatoporoid biostromes in the Fossil Hill Formation on the Bruce Peninsula, Ontario, 1977-79; M.Sc. thesis (Johnson).
The biota and sedimentary characters of biostromes in the Middle Silurian Fossil Hill Formation is being studied from vertical and bedding plane exposures at selected sites ranging from Owen Sound northward to Lion's Head.
739. JONES, B., Univ. Alberta (Geology):
Biostratigraphy of Siluro-Devonian strata of Arctic Canada, 1971-.

See:

Atrypoidea erebus n.sp. from the Late Silurian of Arctic Canada;
J. Paleontol. vol. 53, no. 1, p. 187-196, 1979.

Polarichnus, a new trace fossil from Siluro-Devonian strata of Arctic Canada; ibid., p. 133-141, 1979.

Project has comprised examination of the brachiopod fauna of the Read Bay Formation of Somerset Island. Member A of the type section of the Read Bay Formation on Cornwallis Island and examination of Silurian strata in the Baumann Fiord area, Ellesmere Island. Current work involves study of brachiopods from Member C of the Read Bay Formation of Cornwallis Island; brachiopods from the Eids Formation of southwest Ellesmere Island and re-examination of topotypic material of Atrypoidea phoca from Cape Riley, Devon Island. All studies embrace detailed taxonomy, detailed analysis of stratigraphic distribution and effects of environment on the faunas. Sedimentological

and stratigraphic studies concentrated mainly on the Leopold Formation of eastern Somerset Island. This involves detailed analysis of primary and diagenetic sedimentary features, facies patterns and determination of paleogeographic setting.

740. JULL, R.K. and PERRY, D.G., Univ. Windsor (Geology), Univ. British Columbia (Geological Sciences):

A Middle Devonian brachiopod and coral dominated fauna from northeastern British Columbia, 1978-79.

Brachiopods, corals and conodonts from a sequence of argillaceous limestones exposed at a number of localities near Mt. Borden, northeastern British Columbia demonstrate a late Eifelian to early Givetian age. The fauna contains elements closely comparable with faunas in the Hume Formation in the Northwest Territories and also in units in Nevada. The sequence lies unconformably over the Stone Formation and is overlain by the Besa River Shales.

741. KLEIN, K. and JULL, R.K., Univ. Windsor (Geology):

Structure and distribution of Middle Devonian bioherms in the Formosa area, Ontario, 1977-80; M.Sc. thesis (Klein).

Study is in progress on the biota and sedimentary characters of the Middle Devonian bioherms in the vicinity of Formosa, Ontario. Faunal succession, geometry and distribution of reefs, character of reef-interreef contacts and diagenetic history of the reefs are being studied, principally from surface outcroppings.

742. KOBLUK, D.R., Univ. Toronto (Erindale-Earth Planetary Sci.):

The structure and evolution of reef cavity faunas in Lower Paleozoic reefs, 1978-82.

In modern reefs, cavities provide suitable habitats for diverse faunas and floras of coelotitic (cavity dwelling) organisms (fungi, algae, bacteria, worms, bryozoa, bivalves, etc.), many of which are contributors to reef growth, and some to reef destruction by their boring into cavity walls. As a group, coelobites are poorly known in modern reefs, and in ancient reefs. Some studies of ancient reefs mention coelobites, or describe the presence of some organisms in cavities which may be readily interpreted as coelobitic. This study is investigating primary cavity systems in reefs of Cambrian, Ordovician, Silurian, and Devonian ages in an attempt to describe the floras and faunas of lower Paleozoic reef cavities and to reconstruct the paleoecology and community structures of these ancient cryptic systems.

743. KOBLUK, D.R., Univ. Toronto (Erindale - Earth Planetary Sci.):
Modern platy algal bioherms from Bonaire, Netherlands Antilles, 1978-79.

In the shallow marine (1-5 m) Lac lagoon of Bonaire, Dutch West Indies has been found soft yet self-supporting Halimeda algal bioherms. These bear a striking resemblance to many of the upper Paleozoic platy algal (phylloid) mounds, and may provide the first very close modern analog for these ancient structures.

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744. KOBLUK, D.R. and KAROLYI, M.S., Univ. Toronto (Erindale - Earth Planetary Sci.):
Modern reef cavity systems, Dutch West Indies, 1978-80.
The paucity of published information dealing with modern reef cavity-dwelling organisms and the potential application of such information to studies of ancient reef cavity systems has sparked this program. The work involves extensive reef-surface mapping and cavity description in living reefs of Bonaire, Dutch West Indies, all accomplished by scuba diving. To date, a reef surface measuring 32 m x 6 m at a depth of 10-21 m has been mapped in detail, and a similar mapping program is planned for August, 1979 at depths of 21 m to 50 m.
745. LUDVIGSEN, R., Univ. Toronto (Geology):
Middle and Late Ordovician trilobites of the Sunblood, Esbataottine, and Whittaker Formations, District of Mackenzie, 1972-.
746. LUDVIGSEN, R., Univ. Toronto (Geology), Royal Ontario Mus. (Invert. Palaeo.):
Trilobites of Ontario, 1975-.
747. LUDVIGSEN, R. and HARRINGTON, J.W., Univ. Toronto (Geology), SUNY (Cortland):
The brachiopod Warrenella in the Upper Devonian of New York State, 1978-.
The large smooth spiriferid brachiopod Warrenella is a common constituent of moderately deep water and soft bottom carbonate mud environments of Early and Middle Devonian age in western and northern North America and in western Europe. The occurrence of Warrenella laevis (Hall) in the Sherburne Formation (early Frasnian) at Ithaca, New York in a similar paleoecologic setting suggests that this species had its ancestry in northern Canada. It was able to migrate to this side of the continent in the latest Middle or earliest Late Devonian when the Transcontinental Arch became flooded during the Kaskaskia transgression.
748. LUDVIGSEN, R., TAYLOR, M.E., and FORTEY, R.A., Univ. Toronto (Geology), USGS (Denver), British Mus. Nat. Hist. (London):
Early Paleozoic trilobite biofacies, 1976-.
Late Cambrian, Early Ordovician and Middle Ordovician trilobites from warm climatic regions can be divided into as many as four parallel benthic biofacies that are related to habitats ranging from shallow shelf to deeper water slope. In general, shallow shelf trilobite faunas were mainly stenogeographic, eurytopic, and thermophilic, whereas slope faunas were mainly eurygeographic, stenotopic and cryophilic. These ecologic/biogeographic characteristics of shelf-to-slope biofacies parallel those shown by living marine isopod crustaceans and suggest that actualistic models can be used to interpret trilobite distributional patterns.

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Through the Early Paleozoic, greatest phyletic continuity was maintained between deeper water habitats. Periodic high extinction rates are shown by shallow shelf faunas. Following extinctions, recolonization of the shallow shelf was accomplished by lineages previously adapted to deeper water horizons.

749. LUDVIGSEN, R., VON BITTER, P.H., and LANDING, E., Univ. Toronto (Geology), Univ. Waterloo (Earth Sciences):
Trilobite and conodont biostratigraphy of the Cambrian-Ordovician boundary beds in the Rabbitkettle Formation, District of Mackenzie, 1977-79.
750. MALOTT, M.L., MURRAY, J.W., CAMERON, B.E.B., CHASE, R.A., and PERRY, D.G., Univ. British Columbia (Geological Sciences), Geol. Surv. Can.:
A study of Foraminifera on the Juan de Fuca Ridge, 1977-80; M.Sc. thesis (Malott).
751. MATHEWS, J.V., Jr., Geol. Surv. Can.:
Late Cenozoic fossil insects and Late Cenozoic paleoecology, 1973-.
752. MCGUGAN, A., Univ. Calgary (Geology):
Profusulinella, Kananaskis Valley, British Columbia.
A new occurrence of Profusulinella (early Middle Pennsylvanian) is reported from the Fortress Mountain beds, silty facies, Kananaskis Formation, of the Kananaskis Valley, Alberta. The outcrop, formed by a new roadcut, also exposes the unconformity at the Pennsylvanian/Permian Boundary. The lithology of the succession is described in detail in outcrop, hand specimens and thin sections.
753. MCGUGAN, A., Univ. Calgary (Geology):
Upper Cretaceous Foraminifera, Gulf Islands, British Columbia.
The Maestrichtian Bolivina incrassata fauna (Upper Spray Formation) of Hornby Island (Northern Comox Basin) McGugan (1962), is now recognized in the southern Nanaimo Basin on Gabriola and Galiano Islands. The Maestrichtian planktonic index species Globotruncana contusa occurs in the Spray Formation of Mayne Island and Globotruncana calcarata (uppermost Campanian) occurs in the Spray Formation of Mayne Island and also in the Spray Formation at Manning Point on the north shore of Hornby Island (Comox Basin). Very abundant benthonic and planktonic foraminiferal assemblages from the upper Campanian Northumberland Formation of Mayne Island enable paleoecological interpretations to be made using the Fisher diversity index, triangular plots of Textulariina/Rotaliina/Miliolina, calcareous/agglutinated ratios, planktonic/benthonic ratios, generic models and associated microfossils and megafossils. Combined with local geology and stratigraphy a relatively shallow neritic depositional environment is proposed for the Northumberland Formation in agreement with Scott (1974) but not Sliter (1973) who proposed an outer shelf/slope environment with depths of 300 to 400 m.

754. MCGUGAN, A., and GALLAGHER, M.T., Univ. Calgary (Geology):
Recent Foraminifera, Vancouver Island area, British Columbia,
1979; Ph.D. thesis (Gallagher).

A 400 sq. km. area of the continental shelf and slope off Barkely Sound, west Vancouver Island was sampled to determine the relationship of the microfauna to the sedimentary substrate in a transgressive sequence. The shelf in this region has been extensively altered by glacial activity and much of the surficial sediment is composed of relict sands and gravel interspersed with finer sediments. In the outer shelf relict sediments are rare and glauconite sands predominate. The microfauna contains an abundant and diverse benthonic foraminiferid population. Statistical analysis of distribution indicates that the foraminiferids are typically more numerous and the assemblages more diverse in the coarser sediments. Depth dependant groups can be determined but their influence is masked by the overall substrate related assemblages. Results also suggest that the biocoenosis and thanatocoenosis are essentially coincident making post mortem transportation of tests on the open shelf relatively unimportant in their redistribution. Palaeoecological implications therefore suggest that in a transgressive sequence the more abundant faunas are to be found in the coarser (ie. relict) sediments and not in the finer sediments most often sampled.

755. MCGUGAN, A., and OLIVER, M., Univ. Calgary (Geology):
Upper Cretaceous Foraminifera, Trent River, Vancouver Island,
British Columbia, 1979; M.Sc. thesis (Oliver).

Investigations of shales and interbedded sandstones from the Trent River area, Northern Comox Basin, show an uninterrupted sequence correlative in age with the Haslam and Cedar District Formations of the Nanaimo Basin to the south. Foraminiferal and macrofossil studies indicate an age range from uppermost Santonian to Middle Campanian. Detailed statistical analysis of the diverse foraminiferal fauna using the Fisher diversity index and Q- and R- mode Factor Analysis indicates environments from shallow shelf to shelf slope. Calcareous/agglutinated benthonic foraminifera ratios, a direct indication of depth, show a similar trend with a major reversal for a large debris flow, previously called the Extension-Protection conglomerate by Muller and Jeletzky (1968). Thin-sections of clasts from this debris flow show little similarity to the Extension-Protection conglomerate of the Nanaimo Basin. Causality of the two may be similar as they occupy a similar stratigraphic position. Analysis of individual species of foraminifera shows several index fossils to be environmentally rather than stratigraphically controlled, occurring at several intervals in the section. Refined biostratigraphy was still possible due to the presence of fairly abundant species of the genus Globotruncana for which an extremely accurate zonation has been established in the Upper Cretaceous.

756. MCNEIL, D.H., Geol. Surv. Can.:
Mesozoic and Cenozoic Foraminifera of the Arctic Western mainland
of Canada, 1978-.

757. MITCHELL, P., WIGHTON, D., and WILSON, M.V.H., Univ. Alberta (Zoology):
 Paleocene larval and adult insects from the Paskapoo Formation, Alberta, 1977-80.
 New insect faunas discovered in the Paleocene Paskapoo Formation are unusual because of the preponderance of preserved larval stages and because of the rarity of Paleocene insect faunas in North America. The faunas are being intensively collected and will be summarized with consideration of their paleoecologic and evolutionary significance. Detailed description of the more significant taxa will be undertaken subsequently.
758. NOBLE, J.P.A., Univ. New Brunswick (Geology):
 Ecology of recent and fossil brachiopods, 1974-82.
 A recent Brachiopod Community in the Bay of Fundy has been examined and conclusions drawn with respect to its composition, structure and relation to measurable parameters of the environment. In addition, the processes of fossilization from death to burial in sediment have been examined and reported and conclusions drawn on the significance to paleontology. Initial studies have been carried out on other brachiopods in the North Atlantic and in the Mediterranean and they are expected to further our understanding of brachiopod ecology and taphonomy and its relevance to the interpretation of paleoenvironments.
759. NORRIS, A.W., Geol. Surv. Can.:
 Brachiopods of the lower Upper Devonian Waterways Formation of northeastern Alberta, 1977-.
760. NOWLAN, G.S., Geol. Surv. Can.:
 Paleozoic conodonts of eastern Canada, 1977-.
- See:
 Franconian (Late Cambrian) to Early Champlainian (Middle Ordovician) conodonts from the Cow Head Group, Western Newfoundland; J. Paleontol., vol. 52, no. 2, p. 444-471, 1978.
 Fused clusters of the conodont genus Belodina Ethington from the Thumb Mountain Formation (Ordovician), Ellesmere Island, District of Franklin; Geol. Surv. Can., Paper 79-1A, p. 213-218, 1979.
761. PARKINS, W.G. and DIXON, O.A., Univ. Ottawa (Geology):
 Late Silurian rugose corals of Somerset and Cornwallis Islands, Arctic Canada, 1977-81; Ph.D. thesis (Parkins).
 Systematic, paleoecological and biostratigraphic study of solitary rugose coral faunas from the Late Silurian Read Bay Formation of Somerset and Cornwallis Islands; about half of the intended field collecting was completed in 1978.
762. PEDDER, A.L.H., Geol. Surv. Can.:
 Stratigraphically important cystimorph corals from the Lower Devonian of western Canada, 1975-.

763. PERRY, D.G., Univ. British Columbia (Geological Sciences):
 Biostratigraphy, paleoecology, and taxonomy of Siluro-Devonian
 brachiopods, conodonts, and trilobites of northwestern Canada,
 1977-.

See:

A new fossil occurrence from the Vendom Fiord Formation (type
 area), Ellesmere Island; Can. J. Earth Sci., vol. 15, no. 10,
 p. 1675-1679, 1978.

764. PICKERILL, R.K., Univ. New Brunswick (Geology):
 Paleontology, ichnology, sedimentation and stratigraphy of
 selected Lower Paleozoic sequences in eastern Canada, 1976-.

See:

Geology of the Lower Devonian rocks of southwest New Brunswick;
 N.E.I.G.C. Field Guide, Geol. Bull. 6, A-3, p. 38-56, 1978.

A trace fossil preserving its producer (Trentonia shegiriana)
 from the Trenton Limestone of the Québec City area; Can. J. Earth
 Sci., vol. 15, p. 659-664, 1978.

By its very nature this research programme is an extensive one,
 as trace fossils in eastern Canada generally remain undescribed.
 The two major field priorities would be collection of ichnofaunal
 data in the Ordovician-Silurian of the Matapedia Basin of Québec
 and northern New Brunswick (which includes the Llandoverly Siegas
 Formation) and the Albert Formation of southeastern New Brunswick.
 The latter project is extremely useful because the Albert Formation
 is a classical lacustrine deposit and thus far in ichnology lacustrine
 trace fossils remain poorly documented. In addition I plan to
 finalize my research on the ichnology of the Trenton Group (Ordovician)
 of the Québec City area. Additional possibilities in New Brunswick
 include the Silurian turbidites of the Fredericton Trough and the
 Devonian shallow water sediments of northern New Brunswick because
 at some future date I intend to produce a documented and illustrated
 guide of trace fossils in New Brunswick. In addition to these field
 orientated studies I plan in the near future, perhaps the winter
 of 1979, to undertake laboratory experimentation on the production
 and preservation of trace fossils. One of the ultimate goals in
 ichnology is to determine as closely as possible the nature of the
 producing organism(s) of particular traces. This particular facet
 of ichnological research is still poorly documented and understood
 and is one which will be extremely useful and rewarding for ichnologists
 in general.

765. PLINT-GEBERL, H.A. and VON BITTER, P.H., Univ. Toronto (Geology),
 Royal Ontario Mus. (Invert. Palaeo.):
 Conodont biostratigraphy, palaeoecology and taxonomy, Windsor Group
 (Lower Carboniferous), Magdalen Islands, Québec, 1978-81; M.Sc.
 thesis (Plint-Geberl).

To study the biostratigraphy, palaeoecology, and taxonomy of
 conodonts recovered from strata of Carboniferous age on the Magdalen
 Islands, comparing the results with those obtained in similar
 studies conducted on conodonts recovered from the Windsor and
 Codroy Groups of Nova Scotia, New Brunswick and Newfoundland.

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766. RIGBY, J.K., and LEITH, E.I., Brigham Young Univ. (Geology), Univ. Manitoba (Earth Sciences):
Laminadictya manitobensis, a new dictyosponge, and an unusual specimen of the lithistid sponge, Aulocopella winnipegensis from Ordovician of Manitoba, 1979.
767. RIVA, J.F. and BUSSIERES, L., Univ. Laval (Géologie et Minéralogie): Ordovician graptolites, 1967-; M.Sc. (Bussieres).
768. RUDKIN, D.M., Royal Ontario Mus. (Invert. Palaeo.):
 Healed injuries in Ogygopsis klotzi (Trilobita) from the Middle Cambrian of British Columbia, 1977-79 (completed).
769. RUDKIN, D.M. and LUDVIGSEN, R., Univ. Toronto (Geology), Royal Ontario Mus. (Invert. Palaeo.):
 Trilobites of the Verulam Formation (Middle Ordovician), southern Ontario, 1978-81; M.Sc. thesis (Rudkin).
 Diverse and well preserved trilobite faunas, comprising at least 22 genera and representing 13 families, occurs in the very fossiliferous Verulam Formation of southern Ontario. Old and new collections, from a series of prolific localities along the east-west trending outcrop belt, will form the basis for systematic studies. A comprehensive evaluation of the component taxa will be undertaken in order to further delineate the Shermanian Stage of the North American "reference standard", as well as to improve the Middle Ordovician trilobite biostratigraphy of Ontario. New collections and field observations will be utilized with a view to elucidating the paleoecologic and biofacies significance of the fauna.
770. SARJEANT, W.A.S., Univ. Saskatchewan (Geological Sciences):
 Bibliography of works on the history of geology, 1958-79.
 Research for the bibliography has essentially been completed and all references put onto computer. The work remaining to be done involves the correcting of two further printouts, its printing (by the computer) onto paper of correct size for publication and its sending to press. The introductions to the eight main sections have gone through proof stages and the publishers (Arno Press of New York) have assured me that publication, in an estimated ten volumes, will take place within six months of their receipt of the complete text.
771. SKEVINGTON, D., Memorial Univ. (Geology):
 Ordovician graptolite faunas of Newfoundland, 1977-.
 Measurement and systematic collection of a potential Cambrian-Ordovician boundary stratotype section at Broom Point, western Newfoundland, has been completed. A Lower and Middle Ordovician, richly graptolitic section at St. Paul's Inlet has been measured and collected. A Middle Ordovician graptolite fauna from a new locality on the Port-au-Port Peninsula has been described and illustrated and is in manuscript form.

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772. SMITH, G.P. and STEARN, C.W., McGill Univ. (Geological Sciences):
Bioherms and biostromes in the lower Blue Fiord Formation
(Early Devonian), Ellesmere Island, 1978-80; M.Sc. thesis
(Smith).
773. STEARN, C.W., McGill Univ. (Geological Sciences):
Microstructure and the taxonomy of Paleozoic stromatoporoids,
1964-.
774. STOUGE, S.S. and FAHRAEUS, L.E., Memorial Univ. (Geology):
Conodonts of the Table Head Formation (Middle Ordovician),
western Newfoundland, 1975-79; Ph.D. thesis (Stouge).
775. TOZER, E.T., Geol. Surv. Can.:
Canadian Triassic Ammonoidea and Bivalvia, 1967-.
776. UYENO, T.T., Geol. Surv. Can.:
Stratigraphy and conodont zonation of Lower and Upper Devonian
strata of southwestern Ontario, 1966-.
777. UYENO, T.T., Geol. Surv. Can.:
Conodont biostratigraphy of Siluro-Devonian rocks of the Arctic
Islands, 1968-.
- See:
- Lithofacies interpretation and conodont biostratigraphy of the
Blue Fiord Formation in the subsurface of Cameron and Vanier
Islands, Canadian Arctic Archipelago; Geol. Surv. Can., Paper
79-1A, p. 233-240, 1979.
778. VERMA, H.M. and WESTERMANN, G.E.G., Royal Ontario Mus. (Invert.
Palaeo.):
The ammonoid fauna of the Kimmeridgian-Tithonian boundary beds
of Mombasa, Kenya, 1974-79.
779. VON BITTER, P.H., and LUDVIGSEN, R., Royal Ontario Mus. (Invert.
Palaeo.), Univ. Toronto (Geology):
Formation and function of protegular pitting of some acrotretid
brachiopods from North America, 1977-79.
780. VON BITTER, P.H. and MERRILL, G.K., Royal Ontario Mus. (Invert. Palaeo),
College of Charleston (Geology):
Conodont distributions in the Pennsylvanian of North America - their
taxonomic and palaeoecologic implications, 1968-.
781. VON BITTER, P.H. and PLINT-GEBERL, H.A., Royal Ontario Mus. (Invert.
Palaeo.), Univ. Toronto (Geology):
Palaeoecology and biostratigraphy of Lower Carboniferous (Windsor
and Codroy Groups) conodonts, Atlantic Provinces, Canada, 1971-.
782. WALL, J.H., Geol. Surv. Can.:
Reconnaissance of Mesozoic Foraminifera of Arctic Islands, 1972-.

783. WESTROP, S. and LUDVIGSEN, R., Univ. Toronto (Geology):
Systematics and palaeoecology of Ordovician trilobites from the Selkirk Member of the Red River Formation, southern Manitoba, 1977-79; M.Sc. thesis (Westrop).
- Trilobite assemblages dominated by illaenids, cheirurids, and lichids occur in the burrow-mottled dolomitic limestones of the Selkirk Member. They form a minor part of a subtidal benthic association dominated by ? arthropod burrows, stromatoporoids, corals and receptaculitids. This type of association is characteristic of the Upper Ordovician "arctic province" which extended from Greenland to New Mexico. Similar Ordovician trilobite assemblages have been described from carbonate mud mound and patch reef palaeoenvironmental settings. Illaenids are the most important components of these assemblages, and their abundance appears to have been controlled largely by substrate firmness. Work on the synecology of the Selkirk Member, together with the systematics and palaeoecology of the trilobite assemblage, has been completed. Future work will involve study of the carbonate sedimentology of the Selkirk Member and examination of comparable trilobite collections from the Ordovician of the Hudson Bay Basin.

VERTEBRATE/VERTEBRES

784. BRINKMAN, D.B. and CARROLL, R.L., McGill Univ. (Biology):
The structural and functional evolution of the diapsid tarsus, 1975-79; Ph.D. thesis (Brinkman).
- A study of the locomotion in lizards and crocodiles has provided a basis for interpreting the mechanics of the tarsus in these animals and in a number of early diapsid reptiles. Comparison of successive stages in the evolution of the tarsus allows the structural changes that occurred during the evolution of the tarsus to be identified. Comparison of the mechanics of these tarsus allows the adaptive significance of the structural changes to be identified. The major mechanical changes are a consolidation of the tarsus with the development of an intratarsal joint and the consolidation of the metatarsus allowing it to be used efficiently as a propulsive lever with various tubercles developed to increase the leverage of the muscles flexing the metatarsus.
785. CARROLL, R.L., McGill Univ. (Biology), Redpath Mus.:
Ancestry of Plesiosaurs.
- Description of skeletal anatomy of fossil reptiles from the Upper Permian of Madagascar demonstrating the origin of nothosaurs and plesiosaurs from diapsid, eosuchian reptiles.
786. CARROLL, R.L. and HOLMES, R.B., McGill Univ. (Biology), Redpath Mus.:
Skull and jaw musculature as guides to the ancestry of salamanders, 1975-78.
- Establishment of the probable ancestry of modern salamanders on the basis of the cranial anatomy and jaw musculature in comparison with the cranial anatomy of paleozoic amphibians indicates the most probable antecedent of salamanders are microsaur.

787. DINELEY, D.L. and LOEFFLER, E.J., Univ. Bristol (Geology):
 Studies of Canadian fish faunas of Silurian and Devonian age, 1965-.
- Studies on the ostracoderm faunas of the Silurian and Devonian formations of Somerset and Prince of Wales Islands continue. Attention is being concentrated on the systematic description of the heterostracan faunas of the Cape Storm Formation equivalents on Somerset Island.
788. ELLIOTT, D.K. and DINELEY, D.L., Univ. Bristol (Geology):
 Pteraspidean faunas of the Somerset Island Formation and the lower member of the Peel Sound Formation on Somerset and Prince of Wales Islands, 1974-79.
789. GRANT-FRANCIS, D. and HILLS, L.V., Univ. Calgary (Kananaskis Environmental Centre):
 The identification of goose bone by discriminant function analysis, 1977-78; M.Sc. thesis (Grant-Francis).
- Numerous goose bones have been recovered from archaeological sites in the Canadian Arctic. Their identification at the generic and specific level is difficult or impossible. Proper identification of these remains could add to our understanding of past distribution of various species of geese, lead to a better understanding of resource utilization by native populations, and possibly indirectly to inferences on paleoclimates. Therefore a study was undertaken utilizing discriminant function analysis to determine if extant taxa of geese could be distinguished and if so could this technique be applied to the archaeological materials. Preliminary results indicate that the technique can be applied and that application to the archaeological materials suggests that there have been changes in the ranges of some of the high Arctic population.
790. HOLMES, R.B. and CARROLL, R.L., McGill Univ. (Biology):
Proterogyrinus scheeli, a primitive anthracosaur from the Upper Mississippian of North America, 1975-80; Ph.D. thesis (Holmes).
- Proterogyrinus scheeli, a primitive anthracosaurian amphibian from the Mauch Chunk Formation of the Upper Mississippian of West Virginia is being described. Since this animal is one of the earliest known tetrapods, it not only provides much information on the early evolution of anthracosaurian amphibians (Long proposed as the reptile ancestors) but also on the origins and evolution of early tetrapods.
791. MCGOWAN, C., Univ. Toronto (Zool.):
 Interrelationships within the Ichthyosauria (Reptilia):
- Now that the taxonomy of the major groups of ichthyosaurs has been clarified, it is possible to investigate interrelationships within the Ichthyosauria (Reptilia). I propose to generate a data matrix for each genus for both morphometric and dichotomous characters.

A phenetic assessment of the similarity among genera will be made using Q-mode clusters and principal coordinate analyses on the combined data sets. Shared derived character states will then be extracted from the dichotomous data set and a cladistic analysis conducted to generate a phylogenetic tree. The results will be compared and used to construct a classification of the order Ichthyosauria. A taxonomic question of particular interest is whether the dichotomy of the Ichthyosauria into latipinnate and longipinnate suborders is justified. The earlier ichthyosaurs were already highly derived from the primitive reptilian condition, consequently the recognition of the stock from which they evolved is problematic. Numerous groups have been proposed as the ancestral stock, but the problem has never been satisfactorily resolved. If a resolution is possible it will only be through a sound understanding of the earliest and most primitive ichthyosaurs. I propose to study the Triassic ichthyosaurs of Europe and North America, making comparisons with representatives of other reptilian groups.

792. MCGOWAN, C. and BAKER, A.J., Univ. Toronto (Zool.), Royal Ontario Mus. (Vert. Palaeo.):

Relationships among the moas, kiwis and tinamous.

An assessment of the phenetic relationships among the moas will be made using R-mode principal component analyses. The question of the relationships between moas and Recent ratites will be investigated using cladistic techniques. Cracraft (1974), also using a cladistic analysis concluded that kiwis and moas formed a monophyletic group, but our preliminary results suggest that the kiwis are probably less closely related to the moas than they are to the other living ratites, and appear to be as closely related to the tinamous as they are to the rhea, cassowary and ostrich. The tinamous possess a mixture of ratite and carinate features which make their phylogenetic relationship unclear, and it is planned to marshal biochemical data to clarify the interrelationships of the extant ratites. The rationale for this is that several workers have suggested that biochemical data are more reliable as phyletic indicators than morphological data. Blood samples will be obtained from kiwis, tinamous, emus, ostriches, cassowaries and rheas. Isozyme variability in esterases, transferrins and haemoglobins will be documented by isoelectric focussing on thin layer polyacrylamide gels. Gels will be stained and scored for isozyme variants for each taxa. Biochemical similarity will be computed on the presence/absence of homologous isozymes, using Q-mode cluster analysis and Wagner trees. The skeletal and biochemical data will be complemented with data from the study of the pelvic and pectoral musculature.

793. RUSSELL, L.S., Royal Ontario Mus. (Vert. Palaeo.):

The Cretaceous-Tertiary transition in central Alberta, 1976-80.

An attempt to correlate the occurrence of dinosaurs and Cretaceous-type mammals, and of Paleocene mammals and mollusks, with the stratigraphic record based on coal seams, etc.

The date and duration of the Scollard-Pakapoo interval and the most appropriate horizon at which to draw the Cretaceous-Tertiary boundary, should be established by this study. Numerous sections of the Scollard Formation have been examined and measured. Two previously unknown occurrences of fossil mollusks have been found just above the Ardley coal seam and are being studied. Evidence has been found to support the correlation of the Ardley seam with the No. 14 seam of the Big Valley area. During 1979, additional sections will be measured to determine the uppermost limits of the Lancian mammalian fauna in the Scollard Formation, as well as those of the dinosaur fossils. Additional collections will be made from the Ardley fossil beds.

794. SARJEANT, W.A.S., MOSSMAN, D.J., CURRIE, P., and STRINGER, P., Univ. Saskatchewan (Geological Sciences):

Vertebrate footprints in the Carboniferous and Triassic rocks of the Maritime Provinces and the Cretaceous rocks of eastern British Columbia, 1976-80.

Preliminary work on material from the Carboniferous of Nova Scotia has been completed; however, Dr. Mossman (currently on sabbatical leave) is currently studying type material in museums in Ottawa and Toronto, as a prelude to our further studies. Further footprints from the late Triassic - Lower Jurassic of New Brunswick have been studied and the results are being prepared for publication. A first report on the Cretaceous footprints from the Peace River Canyon is in press; Dr. Currie will be principally responsible for future work on this ichnofauna.

795. SKAWARA WOOLF, T. and KUPSCH, W.O., Univ. Saskatchewan (Geological Sciences):

Quaternary chronostratigraphy of the Interior Plains, Canada, 1979-81, Ph.D. thesis (Skawara-Woolf).

The stratigraphy of the late Pleistocene sequence in the Saskatoon area has been refined on the basis of a contained vertebrate fauna, the Riddell local fauna (Skawara-Woolf, 1978, M.Sc. thesis). That fauna is representative of late Rancholabrean time and indicates that at the time of deposition warm, temperate, ice-free conditions predominated. It also indicates that the intraformational stratigraphy of the Floral Formation is complex locally, comprising at least four separate units. This project is aimed at determining the ages of the various units within the Floral Formation, at extending the local stratigraphy regionally across central and southern Saskatchewan. Potentially fossiliferous deposits will be examined and the results will serve as a basis for regional correlation. Key fossiliferous and volcanic marker beds reported in the literature will be the focal point for correlation.

PALEONTOLOGY/PALEONTOLOGIE

796. STORER, J.E., Sask. Mus. Nat. Hist. (Sask. Culture and Youth):
Oligocene (Chadronian) mammals, Cypress Hills Formation,
Saskatchewan, 1975-.

The Oligocene fauna of the Cypress Hills, though extensively studied, has not been correlated precisely and the biostratigraphy and paleoecology of the deposits has not been investigated. This project is aimed at all these aspects, starting with the description of the CalfCreek local fauna and moving in future to intensive collection and study of other localities.

797. STORER, J.E., Sask. Mus. Nat. Hist. (Sask. Culture and Youth):
Eocene (Vintan) mammals, Cypress Hills Formation, Swift Current,
Saskatchewan, 1970-85.

The Eocene fauna of the Swift Current area, known since the 1930's, is poorly known in collections. This project includes review of known material and will include new collections by screening at the one known productive locality. Elucidation of the fauna and faunal correlation, are the aims.

798. STORER, J.E., Sask. Mus. Nat. Hist. (Sask. Culture and Youth):
Miocene (Hemingfordian) mammals, Cypress Hills Formation,
Saskatchewan, 1977-80.

The presence of Miocene deposits in the Cypress Hills has been recognized only since 1975. This project, which involves standard surface collecting, recovery of small mammals through screening, study and description of recovered fauna and at least approximate faunal correlation, is designed to elucidate the content and age of the Miocene fauna of the formation. No other fauna of Hemingfordian age is known from Canada.

799. WELLSTEAD, C.F., McGill Univ. (Biology):
Taxonomic re-assignment of the Miocene lizard, Peltosaurus
minimus, from Nebraska, 1977-79.

Fossil material from the Miocene (Barstovian) Valentine Formation of Nebraska incorrectly assigned to the anguinid species Peltosaurus minimus is re-assigned to the scincid genus Eumeces. This re-assignment lowers the upper limit of the known stratigraphic range of Peltosaurus to the lower Arikareean Gering Formation.

800. WELLSTEAD, C.F. and CARROLL, R.L., McGill Univ. (Biology):
Comparative and taxonomic study of the extinct amphibian
families Lysorophidae and Molgophidae, 1977-80; Ph.D.
thesis (Wellstead).

The project is an anatomical description and reconstruction of the lysorophid genera Lysorophus and Cocytinus and molgophid genera Molgophis and Megamolgophis. Anatomical comparisons of the material representing these genera with that of other aquatic vertebrates should indicate the approximate environmental niche held by these extinct amphibians. As the genera concerned are based on limited material originally, the results of the project may necessitate taxonomic revision.

801. WELLSTEAD, C.F. and CARROLL, R.L., McGill Univ. (Biology):
Description of "Ophiderpeton" Stock, 1979.

The Lower Carboniferous aistopod "Ophiderpeton" is described for the first time, since discovery of the specimen by Stock in 1882. Early Mississippian in North American equivalents, the specimen represents the earliest known lepospondyl amphibian.

802. WILSON, M.V.H., Univ. Alberta (Zoology):
Cretaceous marine fishes of western Canada, 1975-.

See:

Upper Cretaceous marine Teleostei from the basal Kanguk Formation, Banks Island, Northwest Territories; Can. J. Earth Sci., vol. 15, no. 11, p. 1799-1807, 1978.

Continued collecting and study of Cretaceous fishes from the Bearpaw Formation of Alberta are planned. Upper Cretaceous fishes from the basal Kanguk Formation, Banks Island, include Ichthyodectidae, Osmeroididae, Salmoniformes, and Alepisauroides. This assemblage indicates a Cenomanian or Turonian age for the basal Kanguk, with an Early Turonian age preferred by correlation with the late Early Turonian fishes of Lac des Bois, Northwest Territories.

803. WILSON, M.V.H., Univ. Alberta (Zoology):
Paleogene freshwater fishes of western North America, 1975-.

See:

Eohiodon woodruffi n. sp. (Teleostei, Hiodontidae), from the Middle Eocene Klondike Mountain Formation near Republic, Washington; Can. J. Earth Sci., vol. 15, no. 5, p. 679-686, 1978.

The Eocene fauna of the Klondike Mountain Formation in Washington State includes Amiidae, Hiodontidae, Salmonidae, Castostomidae, and Percopsidae. The fauna is best considered as a southward extension of the approximately contemporaneous Eocene fauna of British Columbia. Recent intensive collecting in the Paskapoo Formation of Alberta has resulted in the discovery of articulated and disarticulated teleost remains at at least five sites, with at least six teleost families represented. This study will initially emphasize determination of the systematics and anatomy of the taxa represented and stratigraphic control on the localities.

804. WILSON, M.V.H., Univ. Alberta (Zoology):
Paleogene insects of western North America, 1975-78.

See:

Paleogene insect faunas of western North America; Quaest. Ent., vol. 14, no. 1, p. 13-34, 1978.

Evolutionary significance of North American Paleogene insect faunas; *ibid.*, p. 35-42, 1978.

PALEONTOLOGY/PALEONTOLOGIE

North American Paleogene insect faunas are concentrated in lacustrine sediments of the Cordillera, and represent cool temperate to tropical paleoclimatic conditions. More than 200 insect families are represented, with only about 90 having geologic ranges extending back to Paleocene or Eocene times. The faunas are dominated by Coleoptera, Hymenoptera, and Diptera, especially Bibionidae. Comparison of family frequencies suggests an increase in the number of families of Coleoptera and Hymenoptera between Eocene and Oligocene times, Diptera between Oligocene and Recent times, and Lepidoptera between Eocene and Recent times in the North American fauna. The suggested insect radiation has stratigraphic, paleoenvironmental, biogeographic, and phylogenetic implications.

805. WILSON, M.V.H., Univ. Alberta (Zoology):
Paleoecology of British Columbia Eocene freshwater sediments,
1975-79.

Eocene lacustrine sediments in British Columbia and northern Washington contain abundant fossils of fish scales, fish bones, articulated fishes, and coprolites, along with abundant terrestrial plant fossils and adult insects. Species associations of fishes and preservation of the fish remains will be used to classify the collecting localities. This classification will be compared with that revealed by associations of the major types of insects and of the major types of plant fossils. It is predicted that the three independently derived classifications will contain a major common component interpretable as a nearshore/offshore or a shallow water/deep water component. With corroboration from geologic and sedimentologic data an estimate of the effects of paleoenvironments, as opposed to geologic ages, on the taxonomic composition of the faunas, can be made.

PALEOBOTANY/PALYNOLOGY/PALEOBOTANIQUE ET ANALYSE POLLINIQUE

806. ACHAB, A., INRS - Pétrole, Univ. Québec:
Etude palynologique de l'Ordovicien supérieur de l'Est du Canada,
1975-81.
807. ACHAB, A., INRS - Pétrole, Univ. Québec:
Etude des chitinozoaires de l'Ordovicien inférieur de la province
de Québec, 1978-.
- Etude des assemblages de chitinozoaires caractéristiques de l'Arenig
(zones A, B, C, D) de la Formation de Lévis et de niveaux attribués
au Tremadoc à Lauzon et à St-Michel, Québec, Canada.
808. 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-.
809. BRAMAN, D.R., HILLS, L.V., and GUNTHER, P.R., Univ. Calgary (Geology):
Palynology, stratigraphy and sedimentation of the Imperial Formation,
District of Mackenzie and Yukon Territory, 1978-80; Ph.D. thesis
(Braman).

See:

Sedimentary structures of the Imperial Formation, northwest Canada; p. 35-37 in display summaries CSPG Core and Field Conference, 1978.

To outline the stratigraphy and sedimentation of the Imperial Formation throughout its distribution and to determine its paleogeographic significance. Megaspore and miospore palynology will be used to provide a biostratigraphic means of correlation.

810. BUJAK, J., Geol. Surv. Can.:
Biostratigraphy and paleoecology (palynology) of Mesozoic and Cenozoic of the Atlantic Shelf, 1976-.

See:

Cretaceous palynostratigraphy of offshore southeastern Canada; Geol. Surv. Can., Bull. 297, 1978.

811. BURDEN, E. and HILLS, L.V., Univ. Calgary (Geology):
Palynology and paleoenvironments of the McMurray Formation, west-central Alberta, 1978-81; Ph.D. thesis (Burden).

To palynologically zone the McMurray Formation and to relate palynomorphs to depositional environments as determined by previously conducted sedimentologic studies.

812. COMTOIS, P. and RICHARD, P.H.J., Univ. Montréal (Géographie):
Evolution de la végétation et des tourbières de la région de Lanoraie, basses terres du Saint-Laurent, Québec, 1977-79; thèse de maîtrise (Comtois).

L'analyse pollinique de quatre profils de tourbe dans divers secteurs du complexe de tourbières de Lanoraie est comparée à celle d'un lac voisin. Le tout couvre environ 6000 ans, jusqu'à nos jours. L'objectif est de reconstituer l'histoire de la végétation locale et régionale et d'en étudier le caractère plus ou moins synchrone. Nous espérons pouvoir discuter des changements paléohydrologiques. Une carte géomorphologique locale a été dressée.

813. EDLUND, S.A., Geol. Surv. Can.:
Vegetation distribution and relationships to surficial materials, Arctic Canada, 1976-.

814. HILLS, L.V. and SANGSTER, E., Univ. Calgary (Geology):
Paleoclimates of the last 20,000 years, 1977-82.

The purpose of this project which is sponsored by the National Museum of Natural Sciences is to detail the climates of the last 20,000 years utilizing paleobotany, dendrochronology, vertebrate paleontology, and historic records. The initial phase has been completed, ie. a compilation of all published papers on palynology and paleobotany has been compiled and is in press. Current research is being directed towards acquiring palynological data from: 1) upper Elk River valley, British Columbia; 2) Crowsnest Lake, Alberta; 3) North Saskatchewan River; and 4) series of sites in the foothills southwest of Calgary, Alberta.

815. HILLS, L.V. and SUNEY, L., Univ. Calgary (Geology):
 Paleobotany, palynology, paleoclimatology, stratigraphy and
 sedimentation of the Beaufort Formation, Arctic Canada, 1968-79.
 The Beaufort, a late Tertiary fluvial deposit fringing the Beaufort
 Sea, contains a well preserved fossil flora. The purpose is to
 identify species and their modern counterparts and determine their
 paleoclimatic significance.
816. HOPKINS, W.S., Jr., Geol. Surv. Can.:
 A palynological study of the Shell Anglo Harlequin D-86,
 Murrelet L-15, Auklet G-14 and Osprey D-36 wells, offshore
 British Columbia, 1974-.
817. IOANNIDES, N.S., Geol. Surv. Can.:
 Taxonomy, biostratigraphic and paleoecology of Mesozoic and
 Tertiary microspore and microplankton assemblage from the Mackenzie
 Delta, Beaufort Sea regions, District of Mackenzie, 1978-.
818. JANSONIUS, J. and HILLS, L.V., Imperial Oil Ltd., Univ. Calgary
 (Geology):
 Genera card file of fossil spores and pollen, 1976-.
- See:
 Genera Card File of fossil spores and pollen update #2 - 120 cards;
 Univ. Calgary, Spec. Publ. Dep. Geology.
 To compile and maintain an up to date list of genera of fossils
 spores and pollen. This file which is in English provides the
 researcher with the definition, any modification, type species,
 nomenclatural status and place of publication of all genera of
 fossil spores and pollen.
819. LABELLE, C., and RICHARD, P.H.J., Univ. Montréal (Géographie):
 Contribution à l'étude de la végétation tardiglaciaire au
 sud et à l'est du Parc des Laurentides, Québec, 1977-78; thèse
 de maîtrise (Labelle).
 L'histoire de la végétation depuis au moins 10 710 BP a pu être
 reconstituée à partir de trois diagrammes polliniques très détaillés.
 La végétation de type Toundra y est très bien représentée. La
 fermeture de la forêt n'intervient que vers 7600 BP. Une méthode
 fine de sous-échantillonnage des sédiments a permis de dresser des
 courbes polliniques détaillées, notamment pour le tardiglaciaire.
820. LAROUCHE, A. and RICHARD, P.H.J., Univ. Laval (Foresterie):
 Histoire postglaciaire comparée de la végétation à Sainte-Foy
 et au Mont des Eboulements, Québec, par l'analyse macrofossile
 et l'analyse pollinique, 1976-78; thèse de maîtrise (Larouche).
 A Sainte-Foy, l'étude a permis de reconstituer les principaux
 stades d'évolution de la tourbière depuis son émergence des eaux
 du paléo-Saint-Laurent. Au mont des Eboulements, l'analyse des
 macrorestes a permis d'identifier une douzaine de taxons arctiques-
 alpins et de reconstituer deux phases d'abaissement relatif du
 niveau des eaux d'un petit lac, dont une pourrait être reliée à
 l'épisode de Saint-Narcisse, durant le tardiglaciaire.