

821. LICHTI-FEDEROVICH, S., Geol. Surv. Can.:
Diatom analysis and paleoecological studies of Quaternary sediments, 1972-.
822. MCGREGOR, D.C., Geol. Surv. Can.:
Silurian and Devonian spores of Canada, 1975-.
- See:
Upper Silurian trilete spores and other microfossils from the Read Bay Formation, Cornwallis Island, Canadian Arctic; Can. J. Earth Sci., vol. 15, no. 8, p. 1292-1303, 1978.
823. MOTT, R.J., Geol. Surv. Can.:
Quaternary palynology, 1969-.
824. RICHARD, P.H.J., Univ. Montréal (Géographie):
Analyses polliniques au sud du lac Abitibi, Québec, 1978-79.
L'analyse pollinique de deux carottes de sédiments lacustres montre que la forêt initiale qui a colonisé l'Abitibi lors du retrait du lac Ojibway était plus riche que maintenant. La sapinière a toujours été présente sur les stations mésiques mais c'est l'épinette noire qui dominait la végétation. On note un phase d'ouverture du couvert forestier durant l'Holocène; le genévrier était alors abondant. Six datations au radio-carbone viendront fournir un cadre chronologique à la reconstitution de la végétation.
825. RICHARD, P.H.J., GAUTHIER, R. and JETTE, H., Univ. Montréal (Géographie):
Paléobiogéographie post-Wisconsinienne du Québec, 1979-82; thèse de maîtrise (Gauthier, Jetté).
Projet - Cadre visant la reconstitution de l'histoire de la végétation du Québec depuis le retrait glaciaire. Projets spécifiques: Gaspésie, montérégiennes, et morphologie pollinique. Poursuite des travaux entrepris depuis, 1968.
826. SARJEANT, W.A.S., FENSOME, R.A. and WHEELER, J.W., Univ. Saskatchewan (Geological Sciences):
Dinoflagellates and acritarchs in the Mesozoic; stratigraphical application in Western and Arctic Canada and use in intercontinental correlation, 1962-.
- See:
Arpylorus antiquus Calandra, emend., a dinoflagellate cyst from the Upper Silurian; Palynology, vol. 2, p. 167-179, 1978.
During the past year, my own work has continued to focus on the British and French international type-sections; R.A. Fensome has continued his work on spore-pollen assemblages from the Jurassic - lowest Cretaceous of the Yukon and Northwest Territories; and J.W. Wheeler is making good progress with his work on the Jurassic - lowest Cretaceous of the Alborz Mountains, Iran.

827. SAVOIE, L. and RICHARD, P.H.J., Univ. Montréal (Géographie):
Contribution à la paléophytogéographie de l'épisode de
Saint-Narcisse dans la région de Sainte-Agathe, Québec, 1977-78;
thèse de maîtrise (Savoie).

Un paysage semblable à l'actuelle toundra régnait dans la
région de Sainte-Agathe vers 10,800 ans BP. L'étude ne met
pas en évidence d'oscillation climatique contemporaine a la
mise en place de la moraine de Saint-Narcisse, mais appuie
l'hypothèse d'un climat froid, jusqu'à environ 10,000 BP.

828. SINGH, C., Alberta Research Council (Geology Div.):
Cenomanian microfloras of the Peace River district, Alberta,
1969-78.

The microphotographic work and compilation of data on age and
stratigraphic distribution of 195 species of microspores, megaspores,
pollen and microplankton, characterizing the strata of Cenomanian
age in northwestern Alberta, have been completed.

829. SINGH, C., Alberta Research Council (Geology Div.):
Palynological study of the coal-bearing Late Cretaceous strata
in the Red Deer River Valley, Alberta, 1973-84.

See:

The Cretaceous-Tertiary boundary in south-central Alberta - a
reappraisal based on dinosaurian and microfloral extinctions;
Can. J. Earth Sci., vol. 15, no. 2, p. 284-292, 1978.

830. SINGH, C., Alberta Research Council (Geology Div.):
Late Cretaceous-Tertiary microfloras, west-central Alberta,
1978-.

831. SPEELMAN, J.D. and HILLS, L.V., Univ. Calgary (Geology):
Megaspore palynology and paleoecology, Foremost Formation
(Upper Cretaceous), southeastern Alberta, 1976-78; M.Sc.
thesis (Speelman).

The megaspore content of successive depositional environments
within a regressive marine sequence Pakowki, Foremost, Oldman
formations has been investigated to evaluate the use of megaspore
palynology in paleoenvironmental interpretations. The absolute
abundance of megaspores (megaspores per 150 grams of sediment),
the relative abundances of species and of groups of species and
diversity statistics have been calculated. General conclusions
are: 1) samples with 500 or more megaspores represent continental
or marginal marine sediments; 2) offshore marine deposits yield
very low numbers (0-23 specimens); 3) a gradual increase occurs
when approaching a marginal marine environment; and 4) megaspore
assemblage compositions in offshore marine deposits are varied,
reflecting both inland and coastal vegetation, whereas marginal
marine sediments are strongly dominated by a few species, re-
presenting coastal vegetation. Assemblages in fluvial overbank
and freshwater marsh deposits have highly variable compositions,
dominated by other species than the paralic assemblages. Forty-
five species, assignable to 18 genera were recovered; four species
were new.

832. SWEET, A.R., Geol. Surv. Can.:
 Palynological studies of Mesozoic and Tertiary coal measures in western and northern Canada, 1971-.
833. SWEET, A.R., Geol. Surv. Can.:
 Palynological study of the Tertiary Coals and associated clastic rocks of the Ravenscrag and Frenchman formations, Saskatchewan, 1973-.
834. SWEET, A.R., Geol. Surv. Can.:
 Taxonomy and biostratigraphic distribution of Mesozoic and Paleogene megaspores, 1977-.
- See:
 Palynology of the lower part, type section Trent Island Formation, Yukon Territory; Geol. Surv. Can., Paper 78-1B, p. 31-37, 1978.
835. TAN, J.T. and HILLS, L.V., Univ. Calgary (Geology):
 Upper Triassic and Jurassic dinoflagellates of the western part of the Sverdrup Basin, District of Franklin, 1976-78; Ph.D. thesis (Tan).
- See:
 Oxfordian-Kimmeridgian dinoflagellate assemblage, Ringnes Formation, Arctic Canada; Geol. Surv. Can., Paper 78-1C, p. 63-73, 1978.
836. VERVLOET, C.C. and KAPP, U.S., Gulf Canada (Geological Serv.):
 Biostratigraphical investigations in the Frontier area.
837. WILLIAMS, G.L., Geol. Surv. Can.:
 Classification of dinocysts, 1973-.
838. WILLIAMS, V.E. and ROUSE, G.E., Univ. British Columbia (Geological Sciences):
 Palynology of Mesozoic and Tertiary sediments in the Labrador Sea, 1978-81; Ph.D. thesis (Williams).
- Cores from wells in the Labrador Sea are being examined for palynomorph distributions in Mesozoic and Tertiary sediments. These will be applied to zoning - dating, and to an assessment of palyno-floral changes throughout the intervals represented. They will also be compared with palyno-patterns in similarly aged sediments of the Beaufort-Mackenzie region.
839. WILSON, M.A. and KUPSCH, W.O., Univ. Saskatchewan (Geological Sciences):
 A study of the climatic and vegetational history of some Quaternary sediments from north-central Saskatchewan, 1977-80; Ph.D. thesis (Wilson).
- The Precambrian Shield of northern Saskatchewan is in part overlain by glacial and postglacial deposits. These comprise organic deposits, peat and gyttja, as well as lacustrine, glaciofluvial, and glacial deposits. Microfossils are well preserved in the organic and lacustrine deposits. A systematic study of the microfossils recovered from the available samples will be followed by an interpretation of the climatic and vegetational history of the area.

EXPERIMENTAL/EXPERIMENTAL

840. ALLEN, J.M. and FAWCETT, J.J., Univ. Toronto (Geology):
 Equilibrium relations of clinozoisite and other phases applicable to marbles, 1978-80.
- Assemblages in marbles containing epidote-group minerals are important because of the constraints they may place on both the temperature of metamorphism, and the composition of the hypothetical H₂O-CO₂ gas phase. These constraints result from the isobarically invariant intersections between the clinozoisite (zoisite) -plagioclase-calcite equilibrium (negative T-X slope) applicable to reactions in marbles. We are determining equilibrium relations among the phases clinozoisite, chlorite, termolite, anorthite, calcite, and quartz in the pressure range 2-6 kilobars and applying the resulting data to the interpretation of isograds mapped around the Tudor Gabbro, southeastern Ontario.
841. CHERRY, M.E. and TREMBATH, L.T., Univ. New Brunswick (Geology):
 Monoclinic-triclinic alkali feldspar ordering paths, 1978-79.
- See:
- Order-disorder paths of alkali feldspars; Amer. Mineral., vol. 64, nos. 1 and 2, p. 66-70, 1979.
- Structural state and composition of alkali feldspars in granites of the St. George Pluton; Mineral. Mag., vol. 42, p. 391-399, 1978.
- Alkali feldspars from coarse grained and porphyritic granite have been heated at 1025°C for runs of different duration and a 2 step disordering path established. A detailed disordering path for an individual phenocryst has been determined and the study will be extended to include disordering under hydrothermal conditions.
842. EDGAR, A.D. and ARIMA, M., Univ. Western Ontario (Geology):
 Phase relations in K-rich mafic undersaturated lavas under mixed volatiles (H₂O & CO₂) up to 40 kb total pressure, 1974-80.
- See:
- Derivation of K-rich ultramafic magmas from a peridotitic mantle source; Nature, vol. 275, p. 639-640, 1978.
843. EDGAR, A.D. and ARIMA, M., Univ. Western Ontario (Geology):
 The non-stoichiometry of analcime under varying $P_{H_2O} \leq P_{total}$ conditions, 1977-79.
844. FARKAS, A. and SCOTT, S.D., Univ. Toronto (Geology):
 Experimental study of the distribution of Co and Ni between pyrite and pyrrhotite, 1975-79; Ph. D. thesis (Farkas).
- The partitioning of Ni and Co between pyrite and pyrrhotite is being measured over a wide temperature range in order to calibrate this potentially useful geothermometer. Our results show that the distribution of Ni and Co between pyrite and pyrrhotite is a non-linear function of reciprocal temperature which will hamper attempts to use the mineral pair for geothermometry.

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The distribution coefficient, K_D^{Ni} , for the pyrite-pyrrhotite pair varies from 2 at 720°C to 12 at 350°C. Nickel in the iron sulfides obeys Henry's law even at high concentration, in the presence of vaesite. Because sphalerite can accommodate only trace amounts of Ni, we can use the FeS content of sphalerite to measure the activity of FeS in nickel-bearing pyrite and pyrrhotite and, thence, to calculate a thermodynamic model for trace element partitioning. Our distribution coefficients are in disagreement with the published data of Besman et al. who utilised nonreversible hydrothermal recrystallisation experiments. A check of their experimental method yielded identical results to our experiments, suggesting that their analyses are in error.

845. GITTINS, J., Univ. Toronto (Geology):

Phase equilibrium studies applied to the petrogenesis of carbonatite complexes, 1973-80.

The system Na_2CO_3 - K_2CO_3 - $CaCO_3$ was investigated at a total pressure of 1 Kb in order to elucidate the development of extrusive carbonatite lavas at the Tanzanian volcano Oldoinyo Lengai. From this study the idea developed that alkalic carbonatite magmas may in fact be common in deep-seated carbonatites of the type found in the Canadian Shield, whereas it has been customary to think of the Tanzanian example as a rare petrological curiosity. It is proposed that calcitic and dolomitic carbonatites are the residues remaining after the abstraction of alkalis in aqueous solution (probably involving halides). The study seeks to ascertain the role of alkalis in lowering the liquidus temperatures of carbonatite magmas, and in affecting the solubility in carbonatite magmas of niobium and phosphorous.

846. HUTCHISON, M.N. and SCOTT, S.D., Univ. Toronto (Geology):

Refinement and application of the sphalerite geobarometer, 1974-79; Ph.D. thesis (Hutchison).

Phase relations involving sphalerite + intermediate solid solution (iss) + pyrrhotite + pyrite have been determined over a wide P-T range in an attempt to elucidate the unknown effect on the sphalerite geobarometer of dissolved and/or exsolved chalcopryrite in sphalerite. Copper does not affect the geobarometer over its T-independent portion. Extensive exsolution of chalcopryrite is likely responsible for the inhomogeneity of FeS in many sphalerites and may indicate (1) high T, (2) former sp + po equilibria, or (3) disequilibrium assemblages, when sphalerite is observed in contact with py + po. However, exsolution cannot by itself account for low FeS contents which often yield anomalously high estimates of pressure. Sphalerites from four metamorphosed upper greenschist Cu-Zn-Pb massive sulfide deposits in the Swedish Caledonides range in composition from 7.3 to 19.3 mole % FeS. Distinct compositional distributions are evident within a polished section for sphalerites in different touching assemblages. Equilibrium domains within sulfide assemblages can be extremely small and complex, and textural relations must be investigated thoroughly before applying sphalerite compositions to geobarometry.

847. JAMIESON, H. and ROEDER, P.L., Queen's Univ. (Geological Sciences):
An experimental study of the equilibrium between spinel-hercynite solid solution, olivine and metallic iron at 1300°C, 1977-79; Ph.D. thesis (Jamieson).

Experiments are underway in order to determine the composition of $MgAl_2O_4$ - $FeAl_2O_4$ solid solution in equilibrium with olivine and metallic iron at controlled oxygen fugacities. These experiments are being conducted at 1300°C in a vertical tube furnace with the samples being hung from iron wire. The olivine and spinel crystals are being analyzed with an electron microprobe and many of the runs include a liquid phase in the system $CaO-Al_2O_3-FeO-MgO-Fe_2O_3-SiO_2$.

848. MACLELLAN, E.H. and TREMBATH, L.T., Univ. New Brunswick (Geology):
Crystallization of granite minimum melts, 1977-79; M.Sc. thesis (MacLellan).

Incubation times, growth rates and compositional changes of the crystallizing phases are being determined by a combination of X-ray diffraction and optical methods. We are concentrating on the first stages of crystallization and are making textural comparisons with reaction products from highly undercooled conditions.

849. SPRY, P. and SCOTT, S.D., Univ. Toronto (Geology):
The synthesis and stability of gahnite, 1978-81; Ph.D. thesis (Spry).

Petrological studies and literature research indicate that gahnite (zinc spinel) occurs in deposits representing a variety of environments including mineralized zones, metamorphosed sediments, and pegmatites. Samples have been collected from Broken Hill (New South Wales), Wheal Ellen (South Australia), Mt. Painter (South Australia), Geco (Ontario) and the Yukon Territory. It is intended to study gahnite in as many geological settings as possible by microscope, electron microprobe and x-ray diffraction. Preliminary work suggests that gahnite forms in lower amphibolite to granulite grade rocks and that it does not necessarily form by desulphurisation of sphalerite which has been favoured by most workers in the past. Compositional zoning in gahnites from the three Australian locations indicates that the composition may be related to variations in temperature and oxygen fugacity; however, it is expected that by synthesizing gahnite the exact physical and chemical conditions of its stability will be established.

850. TURNOCK, A.C., Univ. Manitoba (Earth Sciences):
The stability of Ca-Mg-Fe pyroxenes, 1968-80.

The experimental work for the melting of Ca-Mg-Fe pyroxenes at 1 atm. pressure is sufficiently well advanced to define the liquidus and solidus surfaces. A report has been written, in cooperation with J.S. Huebner, who has performed similar experiments on natural pyroxene crystals. These crystals contain Al and Ti, so the effect of these components can be determined by comparison of their solidus and liquidus surfaces with those of the pure synthetic materials. The pyroxene solvus is a natural indicator of crystallization conditions of igneous rocks, and the next goal of this study is to calibrate this solvus. A new design of experiment, with the cooperation of D.H. Lindsley, has been started, and we hope that a new solvus for low pressures may be outlined in a year.

IGNEOUS/ROCHES IGNEES

851. ARNDT, N.T., FLEET, M.E. and CAMPBELL, I.H., Univ. Saskatchewan (Geological Sciences), Univ. Western Ontario (Geology), Univ. Toronto (Geology):

Crystallization of komatiitic lavas, 1976-.

Electron microprobe analyses and X-ray crystallographic studies have clarified the differences between the compositions and crystal structures of pyroxenes that crystallized rapidly in the upper parts of thick flows, and pyroxenes that formed more slowly in the centres of flows. Metastable pigeonite crystallization appears to have played an important role in the fractional crystallization of these lavas. To substantiate this concept, an integrated approach is planned, involving field mapping, petrography, major and trace element analysis and experimental petrology. The samples studied will be from layered flows and sills as well as thinner simple flows from Munro Township, Ontario, and the Cape Smith Fold Belt, Québec. Dynamic crystallization experiments designed to reproduce the conditions of metastable pigeonite crystallization will be carried out by Campbell and University of Toronto.

852. BACHINSKI, S.W., HENDERSON, P.H., ROGERS, N.W. and PARRY, S.J., Univ. New Brunswick (Geology):

Rare-earth element contents of minette lamprophyres from the Navajo Country, U.S.A., 1977-79.

See:

Rare-earth and other trace element contents and the origin of minettes (mica-lamprophyres); *Geochim. et Cosmochim. Acta*, vol. 43, 1979.

Rare-earth element contents of lamprophyres associated with kimberlites are virtually identical with those of lamprophyres elsewhere, not associated with kimberlites. Minettes' magma is from mantle, but minettes are not related to kimberlites by any crystal-liquid fractionation process.

853. BALD, R.C. and AYRES, L.D., Univ. Manitoba (Earth Sciences):
Metamorphosed, pre-volcanism basement beneath the Lake of the Woods greenstone belt, Ontario, 1977-79; M.Sc. thesis (Bald).

On the north margin of the Lake of the Woods greenstone belt, a narrow strip of metamorphosed, gneissic trondhjemite basement has been identified between the greenstone belt and the younger granitic batholith. The basement has been metamorphosed to amphibolite facies and contains numerous, deformed basaltic dikes that were apparently feeders for the overlying volcanic sequence. A preliminary Rb-Sr isochron age of 2.95 b.y. has been obtained for the trondhjemite.

854. BARAGAR, W.R.A., Geol. Surv. Can.:
Volcanic stratigraphy and geochemistry of the Cape Smith belt, New Québec, 1973-.

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855. BARAGAR, W.R.A., Geol. Surv. Can.:
Stratigraphy and petrology of the Natkusiak basalts, Victoria Island, District of Franklin, 1975-.
856. BARNES, S.J. and NALDRETT, A.J., Univ. Toronto (Geology):
Petrology and geochemistry of the Katiniq Sill and related rocks in the Proterozoic Ungava nickel belt, 1977-79; M.Sc. thesis (Barnes).
857. BARR, S.M. and MACDONALD, A.S., Acadia Univ. (Geology):
Geochemistry of gem-bearing alkaline basalts of southeast Asia and origin of megacryst phases, 1974-80.
- Papers discussing the geochemistry, age and palaeomagnetism of the alkaline basalts of Southeast Asia are near completion. The next phase of this project involves the geochemistry of megacrysts (including zircon, ruby, and corundum) and ultramafic nodules associated with these basalts in order to interpret their origins.
858. BARR, S.M. and MACDONALD, A.S., Acadia Univ. (Geology):
Carboniferous-Triassic mafic and ultramafic rocks in Thailand: Their petrology, geochemistry and tectonic significance, 1975-79.

See:

Tectonic significance of a Late Carboniferous volcanic arc in northern Thailand; Proc. Third Regional Conf. Geol. Mineral Res. Southeast Asia, Bangkok, Thailand, p. 151-156, 1978.

Remnants of a Late Carboniferous volcanic arc extend through central northern Thailand. The assemblage consists of predominantly basaltic aquagene tuffs, agglomerates and flows with diabasic and pyroxene-olivine porphyry intrusions and pyroxene and olivine cumulates. Having been subjected to deformation and low-grade regional metamorphism, the rocks are locally foliated and commonly contain chlorite, amphibole, calcite, and sericite. Chemical analyses and plots of relatively immobile elements show that the rocks are essentially tholeiitic basalts, possibly generated in an island-arc environment. As the arc lies west of younger andesitic arcs and an ultramafic belt, it is interpreted to have been a precursor to convergence and eventual collision in the Triassic-Jurassic between the Thai-Burma-Malay and Indochina continental blocks. The distribution of volcanic and granitic rocks in northern Thailand implies convergence along a westward dipping subduction zone.

859. BARR, S.M., O'REILLY, G. and O'BEIRNE, A.M., Acadia Univ. (Geology), Nova Scotia Dep. Mines:
Geological - geochemical surveys-sub-project 4.6A: Geochemistry of granitoid rocks, 1978-79.
- To map and determine the geochemistry of a representative suite of plutonic igneous bodies in Nova Scotia. To undertake reconnaissance sampling for geochemistry of plutonic igneous bodies in northern Nova Scotia.

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860. BARR, S.M., O'REILLY, G.A., O'BEIRNE, A.M. and KEPPIE, J.D., Acadia Univ. (Geology):

Petrology and geochemistry of granitoid plutons of Cape Breton Island, Nova Scotia, 1978-83.

Six plutons, selected to represent different ages, geographic areas, and lithologies (both mineralized and unmineralized) were mapped and sampled in detail. Petrographic studies and chemical analyses for major elements and 18 minor and trace elements are nearing completion. In addition to providing new geological information on the specific plutons studies, the study will provide guidelines for future reconnaissance sampling. Selected plutons studied in detail will serve as "type plutons" to which others may be compared. It is anticipated that in this way a relatively complete petrological and chemical characterization of plutonic rocks in Cape Breton Island can be completed within a few years. These data will be useful in interpreting geological and tectonic history, and in mineral exploration programmes.

861. BICZOK, J. and AYRES, L.D., Univ. Manitoba (Earth Sciences):
Altered subvolcanic granodiorite stocks in the Missi Island
Volcanic centre of the Amisk Group, Saskatchewan, 1977-79; M.Sc.
thesis (Biczok).

Several granodiorite to trondhjemite stocks were emplaced in the mafic flow sequence of the Amisk Group at Missi Island of Amisk Lake. The stocks are variably altered and show asymmetric zonal to irregular distribution patterns of both primary and secondary minerals. The stocks are spatially associated with, but are younger than, an altered porphyritic dike suite that appears to define a volcanic centre related to the overlying felsic to intermediate part of the Amisk Group.

862. BOSTOCK, H.H., Geol. Surv. Can.:
Volcanic rocks of the Appalachian region, 1973-.

See:

Age of the Roberts Aim Group north-central Newfoundland; Can. J. Earth Sci., vol. 16, no. 3, pt. 1, p. 599-606, 1979.

863. CERNY, P., ZIEHLKE, D., GOAD, B.E. and PAUL, B.J., Univ. Manitoba (Earth Sciences):

Pegmatite mineral evaluation project, Manitoba, 1976-79.

See:

Distribution and petrogenesis of lithium pegmatites in the Western Superior Province of the Canadian Shield; Energy, Vol. 3, p. 365-377, 1978.

The project documents the character of pegmatites and their geological setting in the Cat Lake - Winnipeg River district and in the Herb Lake district, Manitoba, and it is expected to provide a scientific basis for future exploration activities. In the Cat Lake - Winnipeg River district, a regional anatectic event is suggested, producing diversified melts in dependence on the composition of the source rock(s) and on the degree and style of their melting.

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Each of the resulting major intrusions, granitic plutons and pegmatitic granites, separated its characteristic pegmatite swarm. In the Herb Lake district, similar relationships seem to be indicated, although clear-cut evidence of the pegmatite genesis has not been yet obtained.

864. CHANCE, P. and EDGAR, A.D., Univ. Western Ontario (Geology):
The alkaline rocks of eastern Iran, 1977-79; Ph.D. thesis (Chance).
865. CHUTE, M.E., and AYRES, L.D., Univ. Manitoba (Earth Sciences):
Altered subvolcanic dike suites and associated mineralization in the Missi Island volcanic centre of the Amisk Group, Saskatchewan, 1976-82; Ph.D. thesis (Chute).
- A felsic to intermediate porphyritic dike suite was intruded into a mafic flow sequence that forms the lower part of the Amisk Group at Missi Island, Amisk Lake. The dikes are restricted to the island and its immediate vicinity and are concentrated in two zones up to 500 m wide. These zones are 100% dikes and appear to represent progressive expansion of subvolcanic magma chambers by the addition of new magma. The dikes are strongly altered and have associated pyrite and minor chalcopyrite and molybdenite mineralization. The dike suite appears to represent a volcanic centre related to the overlying felsic to intermediate part of the Amisk Group.
866. CURRIE, K.L., Geol. Surv. Can.:
Alkaline rocks in Canada, 1968-.
- See:
Petrologic studies of sapphirine-bearing granulites around Wilson Lake, Labrador; Geol. Surv. Can., Paper 79-1A, p. 77-82, 1979.
867. CURRIE, K.L., Geol. Surv. Can.:
Granite studies in the Appalachians, 1973-.
- See:
Tectono-stratigraphic problems in the Carmanville area, northeastern Newfoundland; Geol. Surv. Can., Paper 79-1A, p. 71-76, 1979.
868. DAVIDSON, A., Geol. Surv. Can.:
Granite studies in the Ennadai-Rankin Inlet region, District of Keewatin, 1966-.
869. DAVIDSON, A., Geol. Surv. Can.:
Granite studies in the Slave Province, District of Mackenzie, 1971-.
870. EDGAR, A.D., Univ. Western Ontario (Geology):
The paragenesis of kalsilite ($KAlSiO_4$) in biotite mafurite from southwestern Uganda, 1978-79.
871. EMSLIE, R.F., Geol. Surv. Can.:
Anorthosite study, Newfoundland-Québec, 1967-.

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872. EMSLIE, R.F., Geol. Surv. Can.:
 Geology, petrology and economic potential of the anorthosite suite in southern Labrador, 1975-.
873. FRANCIS, D.M., HYNES, A.J., ERIKS, R.S. and OZORAY, J., McGill Univ. (Geological Sciences):
 The evolution and mineral potential of the Cape Smith Fold Belt, Québec, 1977-; M.Sc. theses (Eriks, Ozoray).
 Three 2-man teams were deployed in the Cape Smith Fold Belt for a total of 280 man days this summer (1978). The following were investigated: 1) the surface geology and stored drill core of the Cross Lake Ni prospect presently held by Falconbridge Mines Ltd.; 2) the stratigraphy of three periodotite-gabbro intrusive complexes located at Vaillant Lake between Lac Carré and the Povungnituk River, and just north of Cross Lake; 3) stratigraphy of a series of intercalated, differentiated lava flows and sills between Cross Lake and Lac Watts; and 4) nature of the contact between the northern gneisses and amphibolites near the Upper Deception River. Sample preparation and analysis are now in progress. In addition to our own chemical work, Allen Zindler (Mass Inst. of Tech.) and Nicholas Arndt (Univ. Saskatchewan) are studying the rare earth content and isotopic character of returned samples.
874. GOAD, B.E. and CERNY, P., Univ. Manitoba (Earth Sciences):
 Mineralogy, geochemistry, and petrology of pegmatitic granites in the Winnipeg River area, southeastern Manitoba, 1976-79; M.Sc. thesis (Goad).
875. GOODWIN, A.M. and SMITH, I.E.M., Univ. Toronto (Geology):
 Petrographic development of Archean volcanic rocks, 1976-79.
876. GORDON, T.M., Geol. Surv. Can.:
 Petrology and structure of the Daly Bay Complex and environs, District of Keewaten, 1970-.
877. GORMAN, B.E. and EDGAR, A.D., Univ. Western Ontario (Geology):
 Petrology and geochemistry of the Fiskaenasset anorthosite, western Greenland, 1975-79; Ph.D. thesis (Gorman).
878. HARRISON, J.C. and GITTINS, J., Univ. Toronto (Geology):
 Petrology of the Ting Creek alkalic intrusion, Yukon Territory, 1978-80; M.Sc. thesis (Harrison).
 Agpaitic and miaskitic feldspathoidal syenite intrude unmetamorphosed Selwyn basin shales and platform carbonates. The work is aimed at petrogenetic model for the alkalic intrusive suite through whole rock chemical analyses, and determination of major element variations within rock-forming mineral phases. Neutron activation analyses are intended to shed light on the relationships between base metal and radioactive mineralization, and magma genesis.
879. HEBIL, K. and STEVENSON, J.S., McGill Univ. (Geological Sciences);
 Origin of granite breccia, Levack Mine, Sudbury, Ontario, 1976-78 (completed); M.Sc. thesis (Hebil).

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Detailed petrographic studies, particularly textural of the several modifications of granite breccias with which the nickel ores at Levack are associated, have shown that these breccias have three diverse origins, related to the footwall migmatite, to the common Sudbury breccia, and to the ore-bearing sub-layer of the norite.

880. HILL, J. and EDGAR, A.D., Univ. Western Ontario (Geology):
Petrochemistry of the granitic plutons in the Back River - Nose Lake area, Slave Province, Northwest Territories, 1974-79; Ph.D. thesis (Hill).
881. KUEHNER, S.M. and EDGAR, A.D., Univ. Western Ontario (Geology):
Geochemistry and petrology of rocks of the Leucite Hills, Wyoming, U.S.A., 1978-80; M.Sc. thesis (Kuehner).
882. LAMBERT, M.B., Geol. Surv. Can.:
Archean volcanic studies in the Slave-Bear Province, District of Mackenzie, 1973-.
883. LAMBERT, M.B., Geol. Surv. Can.:
Archean felsic volcanic complex near Regan Lake, District of Mackenzie, Northwest Territories, 1974-.
884. LAURENT, R., HEBERT, Y., HERBERT, R., BEULLAC, R., and RODRIGUE, G., Univ. Laval (Géologie et Minéralogie):
Géologie des complexes ophiolitiques des Appalaches du Québec, 1972-81; thèse de doctorat (Hébert), thèse de maîtrise (Hébert, Beullac, Rodrigue).
885. MILLER, R. and GITTINS, J., Univ. Toronto (Geology):
Petrology of magmatic nepheline-bearing rocks in the Haliburton-Bancroft region, Ontario, Canada, 1976-81; Ph.D. thesis (Miller).
To determine the spatial, temporal and geochemical relationships between the massive alkaline rocks, the gneissic alkaline suite and the surrounding metasediments and intrusives. The first priority will be to establish petrographical-geochemical groups within the alkaline rocks, and within the other intrusives in the Haliburton-Bancroft region. Previous work has revealed the occurrence of three groups in the massive alkaline suite and has suggested at least two comparable groups within the nepheline-bearing gneissic suite. Spatial relationships will be determined by reconnaissance mapping of the study region, and by detailed mapping of key areas within the region. Both cross-cutting relationships and U/Pb dates from zircons will aid in establishing the age relationships.
886. NALDRETT, A.J., Univ. Toronto (Geology):
Study of Komatiitic and tholeiitic rocks in Dundonald and McCart Townships, Ontario, 1975-81.

See:

Contrasting Archean ultramafic rocks - Dundonald and Clergue Twsp., Ontario; Can. J. Earth Sci., vol. 5, p. 111-143, 1968.

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887. NALDRETT, A.J. and HASKINS, L., Univ. Toronto (Geology), Washington Univ. (St-Louis - Chemistry):
 Rare earth elements in komatiites and tholeiites of Munro Township and a model for their genesis, 1977-79.
 Field and major element studies in Munro Township have suggested that komatiites are the result of the melting of a mantle source that has already undergone an earlier stage of melting. Their very magnesian nature, high Ni and Cr and low Ti and Mg/Fe ratio are explicable in this way. This study of REE, Sc, Ba, Sr, and RC is providing confirmatory evidence of this hypothesis.
888. NIXON, G.T. and ARMSTRONG, R.L., Univ. British Columbia (Geological Sciences):
 Petrology of volcan Iztaccihuatl, central Mexico, 1974-79, (completed); Ph.D. thesis (Nixon).
889. O'BEIRNE, A.M. and BARR, S.M., Acadia Univ. (Geology):
 Geology of the Gillis Mountain Pluton, southeastern Cape Breton Island, Nova Scotia, 1978-79; M.Sc. thesis (O'Beirne).
 The Gillis Mountain pluton is a post-tectonic, high-level, composite stock, intruding Lower and Middle Cambrian shales and siltstones in southeastern Cape Breton Island. Associated with the intrusion is porphyry-type copper and molybdenum mineralization which is pervasive throughout the pluton and the contact aureole. Three main phases are present in the pluton: 1) quartz diorite/monzodiorite; 2) fine-grained granite; and 3) porphyritic granite/quartz monzonite. Several late aplitic and granitic porphyry dykes cut the intrusion. On the basis of field relations, the sequence of events is:
 1) intrusion of quartz diorite/monzodiorite; 2) intrusion of fine-grained granite; 3) intrusion of porphyritic granite/quartz monzonite; 4) intrusion of dykes and porphyries; and 5) mineralization and associated alteration. New Rb-Sr dating of the pluton yields an age of 407 ± 22 Ma. Studies of petrography and geochemistry of the pluton are continuing.
890. PAJARI, G.E., GUNTER, W.D. and STUPAK, W., Univ. New Brunswick (Geology):
 The petrology of the Rattlesnake Hills, Wyoming, U.S.A., 1978-80; M.Sc. thesis (Stupak).
 The Rattlesnake Hills volcanic field, Wyoming, ranges from under-saturated mafic through to silica oversaturated felsic compositions - to define the character of this variation through detailed mapping and major, trace element and isotope analyses.
891. PAJARI, G.E., TREMBATH, L.T., CORMIER, R.F., FYFFE, L.R., CHERRY, M.E., and BUTT, K.A., Univ. New Brunswick (Geology):
 The plutonic rocks of southwestern New Brunswick, 1970-; M.Sc. thesis (Fyffe), Ph.D. theses (Cherry, Butt).
 The post-Acadian plutons in southwestern New Brunswick comprise a bimodal granite-gabbro suite which were intruded over a period of 60 m.y. Small volumes of intermediate rocks were formed by

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hybridization between granite melt and older but still hot gabbro. The bimodal character of these rocks precludes their origin directly through subduction related processes.

892. SCARFE, C.M., HAMILTON, T.S. and CASEY, J.J., Univ. Alberta (Geology): The petrology of the Level Mountain and Heart Peaks volcanic centers, northern British Columbia, 1974-79; Ph.D. thesis (Hamilton), M.Sc. thesis (Casey).

See:

Petrogenesis of Late Cenozoic alkaline volcanics, Level Mountain, northern British Columbia; Geol. Soc. Amer. Abstracts within programs, vol. 10, no. 7, p. 414, 1978.

893. SCHAU, M., Geol. Surv. Can.: Volcanic rocks of the Prince Albert belt, Districts of Franklin and Keewatin, 1972-.

894. SCHAU, M., Geol. Surv. Can.: Geology of southeast Baker Lake, District of Keewatin, 1976-.

See:

Granulites and plutonic complexes northeast of Baker Lake, District of Keewatin; Geol. Surv. Can., Paper 79-1A, p. 311-316, 1979.

Surficial geology near the mouth of the Quoich River, District of Keewatin; *ibid.*, p. 389, 390, 1979.

895. SCOTT, R.W. and NALDRETT, A.J., Univ. Toronto (Geology): Petrology of a portion of the Bell River Complex in Bourbaux Township, Québec, 1976-79; M.Sc. thesis (Scott).

Initial work suggests that the complex is one of a number of large gabbro-anorthosite complexes characteristic of a certain type of intrusive magmatism within the Abitibi belt. For this study, the petrology and geology of the eastern lobe of the Bell River Complex will be studied and compared with the western lobe of the complex and other complexes of the same type such as the Dore Lake Complex near Chibougamau, Québec and the Kamiskotia Complex near Timmins, Ontario.

896. SIMPSON, E. and BACHINSKI, S.W., Univ. New Brunswick (Geology): Role of liquid immiscibility in the crystallization history of minettes, 1979-80; M.Sc. thesis (Simpson).

Spherical globules of ocelli within minettes (mica-K-feldspar Lamprophyres) may be the result of liquid immiscibility in minette magma. The chemistry of minerals in the globules and the matrix will be compared to test the Hypothesis of Liquid Immiscibility.

897. SMITH, I.E.M. and GOODWIN, A.M., Univ. Toronto (Geology): Trace element geochemistry of Archean volcanic piles, 1976-79.

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Detailed field studies have defined a progression from geochemically primitive rocks in the lower parts of Archean volcanic piles through intermediate types to evolved rocks at the top. Trace element work on samples collected across major boundaries between rock types can place constraints on the nature of processes which gave rise to the different rock types. In turn, this work can lead to a better understanding of Archean tectonic environments.

898. SOUTHER, J.G., Geol. Surv. Can.:
Geology of the Mt. Edziza volcano, British Columbia, 1965-.
899. STEVENSON, J.S., McGill Univ. (Geological Sciences):
Origin of the Onaping Formation, Sudbury and its relation to the granophyre (micropegmatite), 1972-80.

Further details on the petrography and chemistry of the Onaping Formation are being obtained, with particular reference to its origin and probable relations to the underlying granophyre (micropegmatite).
900. STEVENSON, L.S. and STEVENSON, J.S., Redpath Mus., McGill Univ. (Geological Sciences):
Feldspar replacement in dawsonite-bearing rock in the Montréal area, Québec, 1976-80.

Feldspar phenocrysts in rocks from Mount Royal and Mount St. Hilaire have been altered to an aggregate of dawsonite, fluorite, quartz and calcite. The study is being broadened to include alteration of phenocrysts in the sill rocks of the Francon quarry.
901. STEVENSON, L.S. and STEVENSON, J.S., Redpath Mus., McGill Univ. (Geological Sciences):
Petrogenesis of dawsonite in new material from Mount St-Bruno, Québec, 1977-79.

A feldspathic dyke at Mont St-Bruno contains dawsonite, principally in vugs, associated with fluorite, calcite, dolomite and aragonite in a typical hydrothermal assemblage. The dawsonite occurs as blades with satin lustre and fine striae, in contrast to the fine acicular crystals of dawsonite in rosettes occurring along a joint plane in black hornfels previously found at Mont St-Bruno. The two varieties of dawsonite illustrate the various geological environments in which dawsonite can form even in a small area.
902. ST. SEYMOUR, K.C. and FRANCIS, D.M., McGill Univ. (Geological Sciences):
Ultramafic lavas and possible associated mineralization at Lac Guyer, James Bay, Québec, 1976-80; Ph.D. thesis (St. Seymour).

A turbidite-like sediment of ultrabasic composition has been recognized in an Archean suite of pillowed basaltic komatiite and massive peridotitic komatiite lavas near Lac Guyer in the James Bay region of Québec. Undeformed blocks of this sediment consist of a rhythmic repetition of units which display a 'Bouma sequence', internal stratigraphy. Each fully developed cyclic unit starts with a frequently graded, arenaceous A division, followed by the finely parallel - and cross - laminated B and C divisions respectively.

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A pervasively foliated pelitic E division terminates the sequence. The B and C layers preserve such sedimentary features as climbing ripples, dewatering structures and soft sediment deformation defined by the alignment of chromian magnetite and ilmenite grains. Although the rock presently exhibits an ultramafic mineral assemblage corresponding to amphibolite grade metamorphism, low calcium pyroxene, olivine and chromite predominate in the norm. The well foliated, pelitic E division consistently yields higher normative olivine to pyroxene ratios than the arenaceous divisions. This implies that serpentine rather than olivine may have been present in the original sediment. We interpret this rock unit to represent an immature sediment, which was developed by the degradation of the associated komatiitic volcanics.

903. VALENCA, J.G. and EDGAR, A.D., Univ. Western Ontario (Geology):
Petrogenesis of the alkaline complexes of Rio de Janeiro State, Brazil, 1978-79; Ph.D. thesis (Valenca).
904. VALENCA, J.G. and EDGAR, A.D., Univ. Western Ontario (Geology):
Pseudoleucites from Rio de Janeiro State, Brazil, 1978-79.
905. WONG, R.H., MCTAGGART, K.C. and GODWIN, C.I., Univ. British Columbia (Geological Sciences):
Geology of a zoned ultramafic body in north-central British Columbia, 1977-79; M.Sc. thesis (Wong).

METAMORPHIC/ROCHES METAMORPHIQUES

906. APPLEYARD, E.C., Univ. Waterloo (Earth Sciences):
Metasomatic alkaline gneisses and fenites, 1976-79.
Gresens' general metasomatic equation is being applied to determining metasomatic gains and losses in three examples of alkaline rocks.
907. APPLEYARD, E.C., Univ. Waterloo (Earth Sciences):
The petrology and geochemistry of scapolite-rich gneisses of the Grenville Province in eastern Ontario, 1979-81.
Cl- and CO₂-rich scapolite in gneissic rocks are regionally associated in the Haliburton-Renfrew area of eastern Ontario with alkaline-rich gneisses. They also show a common tendency to be mineralized or closely associated with rocks mineralized with Mo and U. A geochemical-petrological study is planned to investigate the nature of these apparent associations.
908. BARAGAR, W.R.A., Geol. Surv. Can.:
Studies in the Seal Lake volcanic province, Newfoundland, 1968-.
909. BURWASH, R.A., Univ. Alberta (Geology):
Petrologic control of uranium and thorium accumulation in crystalline rocks, 1976-79.

See:

Uranium-Thorium enrichment in alkali olivine basalt magma - Simpson Islands dyke, Northwest Territories; Contrib. Mineral. Petrol., vol. 66, p. 243-250, 1978.

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Uranium and thorium in the Precambrian basement of western Canada, II. Petrologic and tectonic controls; Can. J. Earth Sci., vol. 16, no. 3, pt. 1, p. 472-483, 1979.

Cumulative frequency plots of Log U and Log Th values for the basement rocks of Western Canada show a split into two sample populations (35% - 65%). Plots of Log K vs Log U show a group of samples with K/U values greater than 3×10^A which are ascribed principally to granulite facies metamorphism. The geographic distribution of samples from this group can be related to relict Kenoran granulite facies terranes in the subsurface of northeastern Alberta and west central Saskatchewan similar to those mapped on the exposed shield in northwestern Saskatchewan.

910. DE VRIES, C.D.S., GHENT, E.D. and SIMONY, P.S., Univ. Calgary (Geology): Geology of the Precambrian Shield of Somerset Island, Northwest Territories, 1975-79; Ph.D. thesis (DeVries).

Regional geothermometry and geobarometry of metamorphic rocks. In the metabasalts, geothermometry is based on coexisting orthopyroxene-clinopyroxene and garnet-clinopyroxene. In pelitic rocks emphasis has been on garnet-biotite geothermometry. Pressure estimates have been made using garnet-plagioclase- Al_2SiO_5 -quartz equilibria. Relationships between metamorphic crystallization and structure are also under investigation.

911. FRASER, J.A., Geol. Surv. Can.:

Metamorphism in the Canadian Shield, 1974-.

912. FRISCH, T., Geol. Surv. Can.:

Gneisses of the Prince Albert belt, Districts of Franklin and Keewatin, 1972-.

913. FROESE, E., Geol. Surv. Can.:

Petrological studies in the Sherridon area, Manitoba, 1974-.

914. FROESE, E., Geol. Surv. Can.:

A survey of metamorphism in the Canadian Shield, 1978-.

See;

A reaction grid for biotite - bearing mafic granulites; Geol. Surv. Can., Paper 79-1A, p. 83-85, 1979.

915. GHENT, E.D., STOUT, M.Z., KNITTER, C. and RAESIDE, R., Univ. Calgary, (Geology):

Petrologic and geochemical studies in the Cordillera and electron microprobe study of minerals, 1976-81; M.Sc. thesis (Knitter), Ph. D. thesis (Raeside).

See:

Chloritoid-bearing pelitic rocks of the Horsetheif Creek Group, southeastern British Columbia; Contrib. Mineral Petrol., vol. 65, p. 333-339, 1978.

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A study of regional metamorphism in the Mica Creek area and near Revelstoke, British Columbia, is in progress. Ghent and Stout are making a comparative study of geothermometry, geobarometry, and fluid compositions in pelitic rocks and calc-silicates. A paper with D. Robbins on staurolite-kyanite zone rocks has been submitted for publication. Knitter's M.Sc. thesis is a study of the kyanite-sillimanite isograd. The emphasis is on reactions in metabasaltic rocks but includes a study on geothermometry and geobarometry in associated pelitic rocks. Raeside is beginning a study of the petrogenesis of migmatites in the Mica Creek area.

916. GITTINS, J. and CURRIE, K.L., Univ. Toronto (Geology), Geol. Surv. Can.:

Petrology of sapphirine-bearing granulites from the vicinity of Wilson Lake, Labrador, 1975-80.

See:

Petrologic studies of sapphirine-bearing granulites around Wilson Lake, Labrador; Geol. Surv. Can., Paper 79-1A, p. 77-82, 1979.

A polymetamorphic region of approximately 350 sq. km around Wilson Lake has been mapped and sampled for petrological study. The original mineral assemblage appears to have been orthoclase-antiperthite-andesine-orthopyroxene-quartz in the more siliceous terrane, and plagioclase-orthopyroxene-clinopyroxene in the more mafic rocks. The present rocks are gneisses characterized by dark bands of sillimanite, orthopyroxene, oxide, sapphirine and biotite. The overall composition of the rocks is gabbroic but granitic intrusion appears to have occurred prior to regional metamorphism. Despite the ubiquitous presence of sillimanite and sapphirine, the rocks are not peraluminous and so the source of MgO and Al₂O₃ must lie in the breakdown of original minerals (anorthite?) rather than in the bulk chemistry of the rocks. The rocks are not metasedimentary as has been suggested by other authors. The most abundant gneiss (the Hypersthene Gneiss unit) shows evidence in its folding style of plastic behaviour and of localized melting. Abundant mafic boudins are present. Sapphirine is commonest in oxide-rich parts of the gneiss but is not restricted to it. These oxide zones cut the gneissosity but are themselves completely folded and cut by quartz veins. The region appears to have been deformed at least three times and metamorphosed at least once prior to the intrusions of basic dikes. It was then deformed again prior to the emplacement of oxide-rich zones and these zones deformed twice. The development of the rocks seems to require at least 5 periods of deformation and 3 periods of regional metamorphism. It is very possible that the rocks are very old Archean, perhaps now within the Grenville province.

917. GODFREY, J.D., LANGENBERG, C.W. and NIELSON, P.A., Alberta Research Council (Geology Div.), Geol. Surv. Can.:

Metamorphism in Alberta Precambrian Shield, 1976-79.

See:

Metamorphism in the Canadian Shield of northeastern Alberta; Geol. Surv. Can., Paper 78-10, p. 129-138, 1978.

Continuing microprobe analytical studies.

918. GREENWOOD, H.J., BARTHOLOMEW, P. and MCTAGGART, K.C., Univ. British Columbia (Geological Sciences):
 Metamorphic phase equilibria, 1968-; Ph.D. thesis (Bartholomew).
 Preliminary equilibrium data have been collected on the equilibrium albite + tremolite = edenite + quartz. The objective is to use this displaced equilibrium as a geobarometer. Preliminary exchange data in the system $MgO-FeO-SiO_2-H_2O-HCl$ have been obtained. Field work and analysis of the metamorphosed pelites of Yale Creek, near Hope, British Columbia, has been completed.
919. HOGARTH, D.D. and GRIFFIN, W.L., Univ. Ottawa (Geology), Mineralogisk Mus., Oslo:
 Origin of Lapis Lazuli, 1974-82.
 See:
 Afghanite: new occurrences and chemical composition; Can. Mineral., vol. 17, pt. 1, p. 47-52, 1979.
 Extension of previous studies to include Italian Mountain, Colorado, a classic metasomatic occurrence and Edwards, New York, a possible meta-evaporite.
920. LENTERS, M., and ANDERSON, G.M., Univ. Toronto (Geology):
 Petrogenesis of Bancroft nepheline gneisses, Ontario, 1975-79; M.Sc. thesis (Lenters).
 Diamond drill core has been obtained through a syenite body which intrudes nepheline syenite gneiss and through a granite-syenite-nepheline syenite transition. Rock and mineral compositions are being determined to try to define the metasomatic reactions involved.
921. PIGAGE, L.C. and GREENWOOD, H.J., Univ. British Columbia (Geological Sciences):
 Metamorphism and deformation on the northeast margin of the Shuswap Metamorphic complex, Azure Lake, British Columbia, 1973-78; Ph.D. thesis (Pigage).
 Four phases of deformation have been recognized in the Shuswap Complex and the adjacent lower grade metasediments of the cover sequence. The complex is separated from the cover sequence by a first phase tectonic slide. Structural and metamorphic discontinuities across this slide probably resulted from reactivation of the slide surface during the second phase of deformation. Mineral assemblages range from garnet-biotite through sillimanite zones of the Barrovian facies series. Metamorphic grade increases toward the southwest. Regional metamorphism is associated with the first phase of deformation. Metamorphic conditions in the complex are estimated from the mutual intersection of experimentally studied mineral equilibria. These conditions are: $P = 7600 \pm 400$ bars, $T = 705 \pm 40^\circ C$, $A_{H_2O} = 0.5^{+0.5}$. Whole rock Rb-Sr dates of 138 ± 12 Ma (all five samples) and 163 ± 7 Ma were obtained for granodiorite stocks in the Azure Lake area. Regional metamorphism and deformation were completed by Late Jurassic time.

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922. SABAG, C. and ANDERSON, G.M., Univ. Toronto (Geology):
Petrogenesis of the Megissi Lake Pluton, 1979-; M.Sc. thesis (Sabag).
Petrographic, structural and chemical study of the composite Megissi Lake granitic pluton near the Superior Geotraverse area.
923. SUTCLIFFE, R.H. and FAWCETT, J.J., Univ. Toronto (Geology):
Petrological and geochronological studies on the Rainy Lake Granitoid Complex, northwestern Ontario, 1976-79; M.Sc. thesis (Sutcliffe).
The Rainy Lake granitoid complex situated in northwestern Ontario is being studied as an example of the large Archean granitoid complexes which dominate the Superior Province. Mapping of the complex at a scale of 1:63,360 was completed in 1978 and forms a basis for petrological and geochronological studies-to determine the magma sources of the distinct suites of granitoids present within the complex. Analytical work has involved major element, trace element (XRF) and REE (neutron activation) analyses and mineral analyses (microprobe). U-Pb zircon dates are currently in preparation with T.E. Krogh at the Royal Ontario Museum that will help to establish the timing of Archean granitoid plutonism in the Rainy Lake Complex with respect to volcanism in the adjacent greenstone belts and other granitoids in the region.

SEDIMENTARY/ROCHES SEDIMENTAIRES

924. BAILES, A.H. and BRISBIN, W.C., Univ. Manitoba (Earth Sciences):
Sedimentology and regional metamorphism of Amisk Group sedimentary rocks, south margin of the Kiseynew Belt, File Lake, Manitoba, 1973-79; Ph.D. thesis (Bailes).
925. DAVIS, P.M. and HISCOTT, R.N., Memorial Univ. (Geology):
Provenance of Paleocene and Eocene sand intervals, Labrador Sea, 1978-80; M.Sc. thesis (Davis).
926. GRAVENOR, C.P., Univ. Windsor (Geology):
Study of the surface textures of heavy minerals from ancient glacial deposits, 1977-80.

See:

Chattermark trails on heavy minerals in glacial sediments; Geology, vol. 6, p. 61-63, 1978.

The heavy mineral suites of the Pleistocene are dominated by amphiboles, the Upper Paleozoic by garnets and the Late Precambrian by zircon and tourmaline (South Africa, Australia). It is suggested that the amphiboles, pyroxenes and epidote, which were present in the original Upper Paleozoic heavy mineral suites, were lost by the action of sorting and mechanical abrasion in beach environments prior to, and during, interglacial periods. The absence of garnet and the etching of zircon and tourmaline in the Late Precambrian Tillites is attributed to the action of alkaline intrastratal solutions. The heavy mineral suites from the Late Paleozoic sediments from South Africa, Australia and Antarctica are dominated by "chattermarked" garnets.

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It is concluded that these garnets were transported over long distances and recycled many times. From this information it is evident that much of Gondwanaland was covered for a long period of time by glaciers of continental dimensions and that much of the early part of the Upper Paleozoic glaciation is missing due to glacial erosion.

927. HESSE, R.F. and ANDERSON, T., McGill Univ. (Geological Sciences):
Diagenetic features of geopressure zones, in wells in Louisiana and offshore Texas, 1978-79; M.Sc. thesis (Anderson).

Abnormally high fluid pressures (or geopressures) are commonly encountered in deep drill-holes for hydrocarbons in the Gulf Coast region of the United States. The geopressure zones are presently being explored to locate potential petroleum reservoirs and source beds. The quality of a reservoir is determined to a large degree by the effects of diagenesis on the original sedimentary deposits. To examine the role of geopressuring in diagenesis in relation to additional parameters such as age, depth of burial and pore fluid salinities of the deposits. Drill-cores from two holes in Louisiana and off-shore Texas are being studied.

928. HESSE, R.F., OGUNYOMI, O., FONG, C., ISLAM, S. and RUPPEL, S., McGill Univ. (Geological Sciences):
Diagenesis and depositional environments of Cambro-Ordovician deep-water sediments in Québec Appalachians, 1977-81; Ph.D. theses (Ogunyomi, Fong), M.Sc. thesis (Islam).

See:

Thermal maturation of Lower Paleozoic shales in northern Appalachian nappe structures around Québec City, Canada; Geol. Soc. Amer. Northeastern Sec., Ann. Mtg. Abstracts with Program, 1979.

Organic matter and clay mineral diagenesis of Lower Paleozoic shales in northern Appalachian nappe structures around Québec City, Canada; Geol. Assoc. Can., Ann. Mtg. Abstracts with Program, 1979.

929. HISCOTT, R.N. and KELLER, F.B., Memorial Univ. (Geology):
Petrography and provenance of Ordovician orogenic sandstones, Appalachians, 1978-80.

See:

Provenance of Ordovician deep-water sandstones, Tourelle Formation, Québec and implications for initiation of the Taconic orogeny; Can. J. Earth Sci., vol. 15, p. 1579-1597, 1978.

About 350 hand samples of Ordovician sandstones have been collected from Georgia to Newfoundland. Thin sections are being prepared for study.

GENERAL/GENERALITES

930. ARNDT, N.T. and BINNS, R.A., Univ. Saskatchewan (Geological Sciences):
Definition and nomenclature of komatiites, 1976-79.

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A questionnaire on the problems of komatiite nomenclature and definition, based on the responses to an earlier questionnaire distributed by R.A. Binns, was circulated in June, 1978. Responses to this second questionnaire have now been compiled and a summary has been circulated for further comment. Following this comment a proposed scheme of nomenclature and definition will be circulated, and then discussed at a Penrose Conference on Komatiites to be held at Montebello, Québec, in August, 1979.

931. CATY, J-L., Québec Min. Richesses Naturelles:
Géologie de la demie ouest du canton de Bignell, Québec, 1978-79.
932. CHEVE, S., Québec Min. Richesses Naturelles:
Région de Lac Mégantic - Chèrtierville, Québec, 1974-79; thèse de doctorat.
Travaux de terrain terminés.
933. FYSON, W.K., BAER, A.J. and HABIB, M.K., Univ. Ottawa (Geology):
Structural fabric and uranium distribution in shear zones near Cardiff, Ontario, 1978-80; M.Sc. thesis (Habib).
934. GITTINS, J., Univ. Toronto (Geology):
Miscellaneous problems in the mineralogy and petrology of alkalic rocks and carbonates, 1967-.
- Diverse aspects of the petrology of alkalic rocks and carbonate complexes such as magnetite-orthopyroxene relations, olivine-clinopyroxene relations in carbonatites and nepheline syenites, the evolution of the Obedjiwan nepheline rocks, the stability fields of certain new minerals, studies of amphibole-biotite-clinohumite relations in carbonatites, alkali amphiboles in peralkaline granites, and studies of Tanzanian carbonatite lavas and carbonate compositions in carbonatites.
935. GODWIN, C.I. and MCARTHUR, M., Univ. British Columbia (Geological Sciences):
Geology of the Mountain Diatrema, Northwest Territories, 1976-79.
Publication will follow completion of trace element data reduction. Maps have been produced and K-Ar analyses have been completed. Conodonts have been identified from fragments within the diatrema.
936. HEBERT, C., Québec Min. Richesses Naturelles:
Géologie de la demie sud du canton d'Hauy, Québec, 1974-79.
Cartographie régionale, travaux de terrain terminés.
937. IMREH, L. and LECLERC, A., Québec Min. Richesses Naturelles:
Evaluation des ultramafites, 1972-81.
Le travail s'est poursuivi au nord dans les cantons de Landrienne et Figuery, dans la région d'Amos.

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938. LACHANCE, S., Québec Min. Richesses Naturelles:
Région de la rivière Restigouche, Québec, 1974-79.
Travaux de terrain terminés.
939. SIMARD, A., Québec Min. Richesses Naturelles:
Géologie du sud-ouest du canton de Clairry, Québec, 1978-80.
Cartographie, étude de la minéralisation dans le cadre géologique.
940. STEVENSON, J.S., McGill Univ. (Geological Sciences):
Environment of nickel deposits, Thompson, Manitoba, 1969-80.
941. THOMPSON, J.F.H. and NALDRETT, A.S., Univ. Toronto (Geology):
The intrusion and crystallization of gabbros, central Maine, and
genesis of their associated nickel sulfides, 1978-81; Ph.D.
thesis (Thompson).

A series of gabbros have intruded Devonian and Silurian sediments
in central Maine. These intrusions show many similarities with
syntectonic mafic intrusions found throughout the Appalachian/
Caledonian orogenic belt. The Maine intrusions contain variable
amounts of presumed magmatic sulfides. The largely unaltered
igneous state of preservation provides the opportunity to investigate
some of the fundamental problems associated with this type of mafic
intrusion and their localized nickel sulfide occurrences. In
particular, the aim is to relate intrusion and crystallization of the
central Maine gabbros to the orogenic environment of the area and
to determine the origin of the sulfides. The role that assimilation
of country rock sulfur may have played and the imprint that
assimilation may have left on the gabbros themselves will be
investigated.
942. TRZCIENSKI, W.E., Jr., BIRKETT, T., Ecole Polytechnique (Génie
Minéral):
Petrology and tectonics of the Cambro-Ordovician sequence in the
Québec Appalachians, 1976-79, Ph.D. thesis (Birkett).

To relate the igneous and metamorphic petrology of Cambro-Ordovician
age to the tectonics found in this area of Québec.
943. TRZCIENSKI, W.E., Jr., BIRKETT, T., and CHEVE, S., Ecole Polytechnique
(Génie Minéral):
Mineralogical and petrological problems in the Canadian Appalachians,
1973-.

An attempt to understand and describe the geologic evolution of
various parts of the Appalachian chain.
944. USSELMAN, T.M., HODGE, D.S., NALDRETT, A.J. and CAMPBELL, I.H., Univ.
Toronto (Geology):
Thermal modelling of nickel sulfide ore in ultramafic lavas, 1977-78.

The localisation of nickel sulfide ores at the base of ultramafic-
komatiitic lava flows is generally attributed to gravitational
settling. The ore occurs in two distinct zones, a lower massive
ore immediately overlain by a net-textured ore. The nature of the
ore can be explained by a dynamic situation of freezing the sulfide
liquid upwards due to heat loss through the bottom of the flow resulting

in massive ore, while olivine accumulates on the sulfide liquid due to heat loss through the top of the lava flow. The ever-growing olivine cumulus pile forces some of the olivine crystals into the sulfide liquid to produce the net-textured ore (the "billiard-ball" model).

The relative thickness of these two ore units are dependent on the rates of the massive ore solidification and the olivine accumulation. The relative thicknesses of these two ore units may also indicate the amount of intratelluric olivine phenocrysts associated with the erupted komatiite, if certain assumptions are made about the country rock thermal conductivity. Reasonable estimates indicate that for a 60 m thick komatiite flow with associated massive and net-textured ores, less than about 10% of intratelluric olivine phenocrysts were present in the komatiite flow.

945. VALIQUETTE, G., Québec Min. Richesses Naturelles:

Etude pétrologique et géochimique des roches acides de la région de Normétal, Québec, 1977-79.

Travaux d'analyses à compléter.

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946. AALTONEN, R.A. and DREIMANIS, A., Univ. Western Ontario (Geology):
Geology of the city of London, Ontario, 1970-79; Ph.D. thesis
(Aaltonen).
947. ALLEY, D.W. and KUPSCH, W.O., Univ. Saskatchewan (Geological
Sciences):
The Quaternary geology of the Reindeer Lake South (64-D) map-area,
1975-79; Ph.D. thesis (Alley).

The Quaternary deposits overlying the Saskatchewan portion of the
Canadian Shield reflect a complex interaction of glacial, glaciofluvial
and gaciolacustrine processes. Using a combination of geochemical,
geophysical, sedimentological and glacial geological techniques, a
glacial history for the Reindeer Lake South region has been ascertained.
Evidence of post glacial permafrost affects are widespread in the
region. Implications for Drift Prospecting surveys are discussed.
948. ANDERSON, T.W., Geol. Surv. Can.:
Quaternary geology, Great Lakes, 1968-.
949. ANDERSON, T.W., Geol. Surv. Can.:
Quaternary paleoecology, Great Lakes, 1978-.
950. ANDRIASHEK, L.D., Alberta Research Council (Geology Div.):
Surficial geology and Quaternary stratigraphy of Edmonton, NTS
Sheet 83H, Alberta, 1978-80.

To gather information on the geology of the region beyond the limits
of the Edmonton urban study for use in making land planning decisions.
In the month of August, 1978, thirteen exploration testholes were
drilled with a power auger to a depth of 50 m or bedrock, whichever
was reached first. Samples were collected and logged every meter.
The objectives were to define some of the deeper sections of
Quaternary deposits and to become familiar with the regional
stratigraphy. For 1979, it is intended that the program will establish
guidelines for surficial mapping, utilizing the land classification
guidelines of the Edmonton Regional Planning Commission. This will
be achieved by mapping and drilling a "test area" using the proposed
guidelines. The information gathered from this project will further
update and geographically expand the data file prepared for the
Edmonton urban project (in cooperation with the continuing urban
centres studies).
951. ANDRIASHEK, L.D. and FENTON, M.M., Alberta Research Council (Geology
Div.):
Surficial geology Wabamun map sheet, Alberta, 1973-79.
952. ANDRIASHEK, L.D., RUTTER, N.W. and FENTON, M.M., Univ. Alberta
(Geology):
Surficial geology and glacial stratigraphy in the Cold Lake area,
north-central Alberta, 1976-79; M.Sc. thesis (Andriashek).

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953. BAKER, C.L., Ontario Geol. Surv.:
Quaternary geology Larder Lake area, District of Timiskaming (32D/4), Ontario, 1978-83.
The emphasis of the work completed in 1978 was on outlining the major areas of till exposure and determining its characteristics as an aid to a planned program of over-burden drilling in the area. Additional goals of mapping included the assessment and delineation of existing and potential aggregate resources as well as determining any engineering or geological hazards.
954. BARNETT, P.J., Ontario Geol. Surv.:
Quaternary geology of the Tillsonburg area, Ontario, 1976-79.
See:
Glacial Lake Whittlesey: the probable ice frontal position in the eastern end of the Erie basin; Can. J. Earth Sci., vol. 16, no. 3, pt. 1, p. 568-574, 1979.
Field mapping is complete and report is scheduled to be completed by April, 1979.
955. BARNETT, P.J., Ontario Geol. Surv.:
Quaternary geology of Fort Coulonge, Cobden, Renfrew, Brudenell, Golden Lake, and Pembroke areas of Renfrew County, Ontario, 1977-81.
Quaternary geological mapping continued into the Brudenell and Golden Lake (NTS) map sheets this past summer. In the coming summer mapping will continue in the Pembroke area.
956. BARNETT, P.J., Ontario Geol. Surv.:
Quaternary geology of the Bancroft NTS map area (1:50,000), Ontario, 1978-80.
Particular attention is being paid to glacial ice directional indicators in order to aid exploration and environmental studies in this area.
957. BLAKE, W., Jr., Geol. Surv. Can.:
Quaternary geochronology, Arctic Islands, 1975-.
See:
New data on an interglacial peat deposit near Makinson Inlet, Ellesmere Island, District of Franklin; Geol. Surv. Can., Paper 79-1A, p. 157-164, 1979.
958. BLASCO, S.M., Geol. Surv. Can.:
Surficial geology and geomorphology, Mackenzie Bay - Continental Shelf, 1970-.
959. BODE, A. and RUTTER, N.W., Univ. Alberta (Geology):
Surficial geology parts of central Alberta, 1979-81; M.Sc. thesis (Bode).

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960. BROSTER, B.E. and DREIMANIS, A., Univ. Western Ontario (Geology):
Huron lobe tills west of Wyoming moraine, Ontario, 1976-79;
Ph.D. thesis (Broster).
961. BROSTER, B.E. and DREIMANIS, A., Univ. Western Ontario (Geology):
A sequence of glacial deformation, erosion and deposition, at
the ice-rock interface during the last glaciation, Cranbrook,
British Columbia, 1978.
- See:
- A sequence of glacial deformation, erosion and deposition at the
ice-rock interface during the last glaciation, Cranbrook, British
Columbia; National Res. Council Subcommittee on Glaciers, Royal
Soc. Can., Carleton Univ., Symp. Abstracts, p. 24, 24, 1978.
962. BURWASSER, G.J., Ontario Geol. Surv.:
Quaternary geology of the Sudbury area, Ontario, 1971-79.

Published mapping at 1:50 000 shows the Quaternary geology of
much of the Sudbury Basin structure.
963. BURWASSER, G.J., Ontario Geol. Surv.:
Quaternary geology of the Nottawasaga Bay area, Ontario, 1972-79.

To date surficial geology, bedrock topography and drift thickness
maps have been published in preliminary form for the entire study
area.
964. BURWASSER, G.J., Ontario Geol. Surv.:
Quaternary geology of the Onion Lake - Sunshine area, Ontario,
1976-79.

A detailed map in preliminary form with an expanded set of
marginal notes is to be completed by mid - 1979 for publication
in the Fall.
965. CATTO, N.R., RUTTER, N.W., BYRNE, W. and SCHWEGER, C.E., Univ.
Alberta (Geology):
The Late Quaternary geology and palaeoecology of the western
Cypress Hills, southeastern Alberta, 1979-80; M.Sc. thesis
(Catto).

To delineate the Quaternary stratigraphy, sedimentology and
palaeoecology of the deposits in the vicinity of archeological
site Di-26, south of Elkwater, Alberta; to ascertain the age
of these sediments through correlation and radiocarbon dating
of organic horizons; and to describe this site in reference
to the Quaternary events affecting the surrounding Cypress Hills
region, through correlation of sediments and palaeoenvironmental
associations with adjacent areas.
966. CLAGUE, J.J., Geol. Surv. Can.:
Quaternary geology, northern Strait of Georgia, British Columbia,
1974-.

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See:

Mid-Wisconsinan climates of the Pacific Northwest; Geol. Surv. Can., Paper 78-1B, p. 95-100, 1978.

967. CLAGUE, J.J., Geol. Surv. Can.:
Quaternary geology, terrain inventory, Prince Rupert-Terrace-Smithers area, British Columbia, 1975.
968. CLARK, P. and KARROW, P.F., Univ. Waterloo (Earth Sciences):
Lake Iroquois - Champlain Sea relationships near Canton, New York, 1978-80; M.Sc. thesis (Clark).

To shed light on presently controversial relationships between Lake Iroquois of the Ontario basin and the Champlain Sea of the St. Lawrence valley. Presently available dates on wood from Lake Iroquois and shells from the Champlain Sea overlap by about 1000 years. Areal mapping and palynology (with C^{14} dating if possible) will be used to establish relationships in time and space on the south side of the St. Lawrence River, in an area where both water levels are believed to have existed.
969. CLARKE, G.K.C., MAY, R.W. and COLLINS, S.G., Univ. British Columbia (Geophysics and Astronomy), Univ. Alberta (Geology):
History of recent Lake Alsek, St. Elias Mountains, southern Yukon Territory, 1978-80.

Precise levelling surveys of the beaches of Recent Lake Alsek were undertaken and the data is currently being analysed. Aerial photography of large scale bedforms is currently being processed to provide data for the analysis of the large scale bedforms developed during lake drainage.
970. COOPER, A.J., Ontario Geol. Surv.:
Quaternary geology of the Goderich-Seaforth area, Ontario, 1970-80.

See:

Bedrock topography of the Goderich-Seaforth area;
Ontario Geol. Surv., Prel. map P 1974, 1978.
971. COOPER, A.J., Ontario Geol. Surv.:
Quaternary geology of the Strathroy-Ridgetown area, Ontario, 1976-.

See:

Quaternary geology of the Strathroy area; Ontario Geol. Surv., Prel. map P 1972, 1978.

Quaternary geology of the Bothwell-Ridgetown area, Ontario Geol. Surv., Prel. map P 1973, 1978.
972. COWAN, W.R., Ontario Geol. Surv.:
Quaternary geology of the Wingham-Lucknow area, Ontario, 1973-79.

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973. COWAN, W.R., Ontario Geol. Surv.:
Lithostratigraphy of recent borings in Pleistocene sediments in the James Bay Lowland, Ontario, 1975-80.
974. COWAN, W.R., Ontario Geol. Surv.:
Quaternary geology of the Walkerton-Kincardine area, Ontario, 1975-81.
975. COWAN, W.R., Ontario Geol. Surv.:
Quaternary geology of the Sault Ste. Marie area, Ontario, 1976-80.
See:
Radiocarbon dates of Nipissing Great Lakes events near Sault Ste. Marie, Ontario; Can. J. Earth Sci., vol. 15, no. 12, p. 2026-2030, 1978.
976. COWAN, W.R., Ontario Geol. Surv.:
Quaternary geology of the Kitchener area (compilation map), 1977-79.
977. COWAN, W.R., Ontario Geol. Surv.:
Geological compilation of Ontario portions of U.S.G.S. Quaternary map of USA on international map of the world series, 1978-.
978. DREDGE, L.A., Geol. Surv. Can.:
Surficial geology, Sept-Isles-Cap Chat, Québec, 1971-.
979. DREDGE, L.A., Geol. Surv. Can.:
Quaternary geology, northeastern Manitoba, 1975-.
980. DREIMANIS, A., BROSTER, B.E., GIBBARD, P. and HICOCK, R.P., Univ. Western Ontario (Geology):
Tills, their genesis and classification, 1970-82.
See:
Till and tillite; The encyclopedia of sedimentology, p. 805-816, 1978.
Terminology and genetic classifications of tills or moraines currently used in Europe and North America; Ground moraines of continental glaciations, p. 12-37, Moscow (in Russian), 1978.
Methods of till investigation in Europe and North America; J. Sed. Petrology, v. 48, p. 285-294, 1978.
981. DREIMANIS, A. and PINCH, J.J., Univ. Western Ontario (Geology):
Last glaciation in the eastern North America, 1958-; M.Sc. thesis (Pinch).
982. DUBOIS, J.M.M., ST-ONGE, D.A. and FULTON, R.J., Univ. Ottawa (Géographie), Geol. Surv. Can.:
Géologie du Quaternaire de la Côte-Nord de l'estuaire maritime du Saint-Laurent, 1974-79; thèse de doctorat (Dubois).

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Voir:

Géomorphologie du littoral de la Côte-Nord du Saint-Laurent: analyse sommaire; The Coastline of Canada, Halifax, Program and abstracts, p. 14, 1978.

Les unités physiographiques des côtes de sable de la Côte-Nord de l'estuaire et de golfe du Saint-Laurent, Québec; Session Spéc. de l'U.G.I., 4e Rencontre annuelle de la Coastal Society of America, Burlington, 1978.

La rédaction finale du rapport a été entreprise en avril 1978 et devrait se terminer en mai, 1979.

983. DYKE, A.S., Geol. Surv. Can.:
Quaternary geology - terrain inventory, Boothia Peninsula, northeast Keewatin and Somerset and Prince of Wales Island, 1975-.

See:

Indications of neoglaciation on Somerset Island, District of Franklin; Geol. Surv. Can., Paper 78-1B, p. 215-217, 1978.

Glacial history of and marine limits on southern Somerset Island, District of Franklin; *ibid.*, p. 218-223, 1978.

984. DYKE, A.S., Geol. Surv. Can.:
Surficial and Quaternary geology of Cumberland Peninsula, Baffin Island, District of Franklin, 1977-.

985. FEENSTRA, B.H., Ontario Geol. Surv.:
Quaternary geology of the Markdale-Owen Sound area, southern Ontario, 1975-79.

Solution of the dolostone bedrock has resulted in immature Karst topography. Till covering the Beaver Valley slopes varies in texture from gravelly clayey-sandy silt to fine grained clay and silt. Till covering the upland portion is generally coarse, gravelly and has a sand-silt matrix. A few exposures exhibit finer - over coarser textured till (Port Huron/Port Bruce Stadial?). Kame and outwash sand and gravel deposits cover large tracts of the area. The Singhampton, Gibraltar and Banks Moraines, other Kame complexes and small morainic ridges feature a sublobate pattern of the retreating ice margin in the area during Port Bruce-Port Huron Stadial times. The main alluvial deposits include those underlying the Beaver River flood plain and fans at the mouths of gullies dissecting the Valley slopes. Numerous bog deposits occur on the upland.

986. FENTON, M.M., Alberta Research Council (Geology Div.):
Quaternary stratigraphy and surficial geology of the Vermilion map sheet 73E, Alberta, 1978-81.

The study of the Quaternary deposits to define and trace lithostratigraphic units from the Sand River to Edmonton area, determine the engineering properties of the sediment and map the surficial geology.

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987. FENTON, M.M. and ANDRIASHEK, L.D., Alberta Research Council (Geology Div.):
 Quaternary stratigraphy and surficial geology Sand River Map Sheet, Alberta, 1976-79; M.Sc. thesis (Andriashek).
 Field investigations completed. Preliminary map ready by February 1979. Laboratory analyses 90% complete. Stratigraphic synthesis in progress.
988. FENTON, M.M., MORAN, S.R., ANDRIASHEK, L.D. and RUTTER, N.W., Alberta Research Council (Geology Div.):
 Quaternary geology map of southern Alberta, 1978-83.
 A synthesis of the existing knowledge of the Quaternary geology of the southern half of Alberta. It will consist of a compilation of existing mapping and a review of small scale aerial photos in order to provide a summary of present knowledge and a source of direction for future research needs.
989. FILLON, R.H., Geol. Surv. Can.:
 Late Cenozoic paleo-oceanography of the Labrador Sea, 1975-.
990. FITZGERALD, W.D. and KARROW, P.F., Univ. Waterloo (Earth Sciences):
 Glacial lakes and palynology of Minesing swamp area, Ontario, 1978-80; M.Sc. thesis (Fitzgerald).
 Mapping of glacial lake shorelines will be combined with palynological study of organic deposits in glacial lake sediments and in bogs on various glacial lake terraces. Two deep cores (108 feet and 36 feet) have been obtained from Minesing swamp. The aim: to clarify glacial lake levels, date them by C^{14} and palynology, and construct a geological history for Minesing swamp and the nearby area.
991. FULTON, R.J., Geol. Surv. Can.:
 Quaternary geology inventory, southern Labrador, 1969-.
992. FULTON, R.J., Geol. Surv. Can.:
 Quaternary geology of the Canadian Cordillera, 1975-.
993. GADD, N.R., Geol. Surv. Can.:
 Correlation of Quaternary geology; Great Lakes - St. Lawrence Valley region, 1978-.
994. GAUTHIER, C. and DREIMANIS, A., Univ. Western Ontario (Geology):
 Genetic and maturity distinctions of tills on the basis of micro-textural and mineralogical characteristics, northern New Brunswick, 1978-80; Ph.D. thesis (Gauthier).
995. GEDDES, R.S. and DREIMANIS, A., Univ. Western Ontario (Geology):
 Uranium exploration in glaciated terrain in northern Saskatchewan, 1977-79; M.Sc. thesis (Geddes).
996. GIBBARD, P.L. and DREIMANIS, A., Univ. Western Ontario (Geology):
 Trace fossils in late Pleistocene glacial lake sediments, 1978.

QUATERNARY GEOLOGY/GEOLOGIE DU QUATERNAIRE

See:

Trace fossils from late Pleistocene glacial lake sediments in southwestern Ontario, Canada; Can. J. Earth Sci., vol. 15, p. 1967-1976, 1978.

997. GRANT, D.R., Geol. Surv. Can.:
Surficial geology St. Anthony - Blanc Sablon, Newfoundland, 1979-.
998. GRANT, D.R., Geol. Surv. Can.:
Surficial geology, Cape Breton Island, Nova Scotia, 1970-.
999. GRANT, D.R., Geol. Surv. Can.:
Surficial geology of Newfoundland, 1974-.
1000. GREENHOUSE, J.P., KARROW, P.F., and HILTON, S., Univ. Waterloo (Earth Sciences):
Extent and stratigraphy of Quaternary filling of Elora buried valley Ontario, 1977-79; M.Sc. thesis (Hilton).

Well records indicated the presence of a buried valley 200 feet deep in Silurian dolomite. Geophysical methods have been used to refine knowledge of the extent of the valley. Test holes in the valley were electrologged to explore the stratigraphy of the fill. Most recently a continuous core was obtained to a depth of 135 feet to calibrate the electrologs with lithologies. The fill consists of several Late Wisconsinan tills over a thick sand sequence (containing pollen) over a basal coarse gravel. The valley may extend to near Kitchener and is of interest as a potential aquifer.
1001. HAWES, R. and RUTTER, N.W., Univ. Alberta (Geology):
Surficial geology of parts of Jasper National Park, Alberta, 1978-81; Ph.D. thesis (Hawes).
1002. HICOCK, S.R. and DREIMANIS, A., Univ. Western Ontario (Geology):
Pre-Fraser Pleistocene stratigraphy, geochronology and paleoecology of the Georgia Depression, British Columbia, 1978-80; Ph.D. thesis (Hicock).
1003. HODGSON, D.A., Geol. Surv. Can.:
Surficial geology and geomorphology of central Ellesmere Island, District of Franklin, 1972-.
1004. HUGHES, O.L., Geol. Surv. Can.:
Quaternary geology, Aishihik Lake, Yukon, 1965-.
1005. HUGHES, O.L., Geol. Surv. Can.:
Quaternary stratigraphy of Old Crow Basin and Porcupine River Valley, Yukon, 1968-.
1006. JACKSON, L.E., Jr., Geol. Surv. Can.:
Quaternary geology, terrain inventory, Kananaskis Lakes, Alberta, 1974-.

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See:

New evidence for the existence of an ice free corridor in the Rocky Mountain Foothills near Calgary, Alberta during Late Wisconsinan time; Geol. Surv. Can., Paper 79-1A, p. 107-111, 1979.

1007. KARROW, P.F., Univ. Waterloo (Earth Sciences):
Urban geology, Kitchener-Waterloo, Ontario, 1959-.
Indexing of existing soil report files carried out.
1008. KARROW, P.F., Univ. Waterloo (Earth Sciences):
Revision of report on Hamilton-Galt area, Ontario, 1978-79.
1009. KARROW, P.F. and MILLER, B.B., Univ. Waterloo (Earth Sciences),
Kent State Univ. (Geology):
Glacial Lake history, Huron Basin, Ontario, 1968-80.
Surveys of terraces along streams east of Lake Huron have yielded additional sites for the recovery of molluscs and ostracods and for C¹⁴ dating. An attempt is being made to evaluate long-term rates of shore erosion and clarify relationships between valley terraces and glacial lakes.
1010. KARROW, P.F., MORGAN, A., HANN, B., POPLAWSKI, S., and KALAS, L.,
Univ. Waterloo (Earth Sciences), Fisheries - Environment Canada (CCIW):
Paleontology of the Toronto interglacial, 1963-.
1011. KARROW, P.F., PRESANT, E., and HEBDA, R.J., Univ. Waterloo (Earth Sciences),
Univ. Guelph (Land Resource Science), Univ. Western Ontario (Biology):
Victoria Street interstadial and paleosol, Guelph, Ontario, 1975-79.
Further sampling is planned to get additional data on paleosol, already analysed from borehole samples for chemical and mineralogical changes. Palynological study of borehole and excavation samples completed.
1012. KLASSEN, R.A., Geol. Surv. Can.:
Quaternary geology inventory, lower Nelson River Basin, Manitoba, 1971-.
1013. KLASSEN, R.A., Geol. Surv. Can.:
Surficial geology and Quaternary stratigraphy of north Baffin-Bylot Islands, District of Franklin, 1978-.
1014. MACNEILL, R.H., Nova Scotia REsearch Foundation Corp. (Geophysics):
Pleistocene geology of Nova Scotia, 1951-79.
Most of the (50,000 scale) maps are completed; expect to complete the few remaining map sheets during 1979.

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1015. MAY, R.W., Univ. Alberta (Geology):
Scanning electron microscope (SEM) study of Quaternary sediments.

To date some 300 SEM photos have been undertaken. A report detailing aspects of an occurrence of Streptomyces in a till sample is being prepared.
1016. MAY, R.W., LIVERMAN, D., THOMSON, S. and PARKER, G., Univ. Alberta (Geology, Civil Engineering):
Lithology and genesis of Quaternary deposits, Alberta, British Columbia, Yukon Territory, 1976-.
- See:
- The geology and geotechnical properties of till and related deposits in the Edmonton area, Alberta; Can. Geotech. J., vol. 15, p. 362-370, 1978.
- In the next year we will concentrate in three areas: 1) study of fabric variation in tills; 2) field study of sedimentation in an active ice-dammed lake; and 3) laboratory study of fine grained turbidity flows.
1017. MCCOURT, G., MAY, R.W. and SCHWEGER, C.E., Univ. Alberta (Geology):
Palynology and macrobotanical analyses of a Quaternary section, Bluefish River, northern Yukon, 1977-79; M.Sc. thesis (McCourt).
- A 40 meter alluvial section, located in the Bluefish Basin about 20 miles southwest of the town of Old Crow, has been sampled for pollen and macrobotanical analysis. The section may be divided into three major units: 1) upper glaciolacustrine unit (Classical Winconsin); 2) middle sand and gravel unit which is fluvial in origin; and 3) lower glaciolacustrine unit. The base of the section may extend back to the Pliocene-Pleistocene boundary. The section is underlain by a Tertiary coal seam (lignite).
- The upper and lower glaciolacustrine units were sampled for pollen analysis. Several organic debris units were collected from throughout the entire section and these will be analysed for macrobotanical remains. Organic debris layers from a modern point bar were also collected and the macrobotanical remains from these samples will be compared with both the modern vegetation and with the organic units taken from the alluvial section.
- The lower glaciolacustrine unit has been completely processed for pollen. The samples are presently being counted. Initial results show abundant pollen present as well as a wide variety of taxa.
1018. MCNAMARA, S. and KUPSCH, W.O., Univ. Saskatchewan (Geological Sciences):
Surficial mapping of area 64-M, northern Saskatchewan, 1978-80; M.Sc. thesis (McNamara).
1019. NELSON, A.R., ANDREWS, V.T. and MILLER, G.H., Univ. Colorado (Geological Sciences), INSTAAR:
Quaternary marine and glaciomarine stratigraphy of the Qivitu Peninsula, northern Cumberland Peninsula, Baffin Island, 1975-78; Ph.D. thesis (Nelson).

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Regional glacio-isostatic movements and fluctuating eustatic sea level during the last glaciation (Foxe Glaciation) have left a series of marine terraces at 15, 25, 40, 70 and 85 masl on the Qivitu Peninsula, northern Cumberland Peninsula, Baffin Island. Moraines and glacio-marine deltas contemporaneous with the higher terraces are found along the fiords on either side of the peninsula, but the relative age of these features cannot be determined using surface weathering and soil profile data. All sediments exposed in coastal cliffs along the peninsula are of marine or glaciomarine origin, suggesting that high relative sea levels coincide with extensive advances of the glaciers in the fiords. Amino acid ratios on shell material in both marine and glaciomarine units provide detailed stratigraphic control and allow correlations with fossiliferous glaciomarine deltas. Although many shell fragments are reworked, the frequency distribution of free and combined allo/iso ratios can be used to define 8 local "amino-zones" which mark periods of high relative sea level. Estimated maximum rates for isoleucine epimerization, C^{14} and U-series dates, and biostratigraphic evidence suggest the 3 younger aminozones are of Foxe age.

1020. PEARCE, G.W. and WESTGATE, J.A., Univ. Toronto (Geology):
Magnetostratigraphy of Quaternary sediments in the Yukon
Territory and Interior Plains, 1976-.

We have begun studies of the natural magnetic remanence of Pleistocene deposits in order to refine the magnetostratigraphy and thence stratigraphy of Pleistocene deposits of Canada. The first project within this field concerns the lacustrine clays and silts and fluvial deposits that accumulated along the Porcupine and Old Crow rivers in northwestern Yukon during the advance of the Laurentide ice sheet. A single widespread tephra layer crops out in several of these sections and provides a valuable stratigraphic horizon. It defines only one marker bed, however, and it was hoped the paleomagnetic record of secular variation in the sediments might extend the stratigraphic correlation of these beds which contain possible Pleistocene bone artifacts. Some doubt as to the reliability of these sediments is however caused by their history of permafrost and associated disruption. Preliminary results of fluvial sediments were encouraging. The NRMs are strong and very stable to AFD. Their directions are significantly different from the present geomagnetic field direction and appear to be serially correlated. Also they are not sympathetic to lithologic breaks. A paleomagnetic excursion is suggested about 2m below the tephra. The results thus far encourage us to examine these sequences more extensively by paleomagnetism.

1021. PELLETIER, B.R., Geol. Surv. Can.:
Quaternary paleo-sealevel map of Canada, 1978-.

1022. PROUDFOOT, D.N. and RUTTER, N.W., Univ. Alberta (Geology):
The subsurface stratigraphy of the Pleistocene deposits of parts
of southern Alberta, 1976-80; Ph.D. thesis (Proudfoot).

QUATERNARY GEOLOGY/GEOLOGIE DU QUATERNAIRE

1023. RICHARD, S.H., Geol. Surv. Can.:
 Surficial geology, Tawatinaw area, Alberta, 1968-.
1024. RICHARD, S.H., Geol. Surv. Can.:
 Surficial geology, Ottawa Valley lowlands, Ontario-Québec, 1974-.
- See:
 Surficial geology: Lachute-Montebello area, Québec; Geol. Surv. Can., Paper 78-1B, p. 115-119, 1978.
 Age of Champlain Sea and "Lampsilis Lake" episode in the Ottawa-St. Lawrence lowlands; Geol. Surv. Can., Paper 78-1C, p. 23-28, 1978.
1025. RUTTER, N.W., Univ. Alberta (Geology):
 Paleosols of the Prairie Provinces, 1976-79.
1026. RUTTER, N.W., Univ. Alberta (Geology):
 Quaternary history of parts of Alberta, British Columbia and Yukon, 1976-.
1027. RUTTER, N.W., CRAWFORD, R.J. and HAMILTON, R., Univ. Alberta (Geology):
 Development of amino acid racemization dating techniques, 1976-.
1028. SADO, E.V. and KARROW, P.F., Univ. Waterloo (Earth Sciences):
 Till stratigraphy of the Lucan area, Ontario, 1978-79; M.Sc. thesis (Sado).
 Most field mapping completed and only a few sites remain for more detailed work. Laboratory analyses of till samples are underway.
1029. SCHREINER, B.T. and ARNOLD, R.G., Saskatchewan Research Council (Geology Div.):
 Quaternary geology of northern Saskatchewan, 1974-80.
 Final report, maps at 1:¼M and 1:1M for Shield area south of 58° Saskatchewan, now in preparation. Field work for northwest part of Shield north of 58° completed in 1978. Field work for north-east part of Shield north of 58° scheduled for completion in 1979.
1030. SCHREINER, B.T. and KUPSCH, W.O., Univ. Saskatchewan (Geological Sciences):
 Quaternary geology at the Upper Foster Lake area (74-A), Saskatchewan, 1975-79; M.Sc. thesis (Schreiner).
 A study of the surface deposits and landforms of glacial and postglacial age, granulometric analysis and X-ray diffraction study of the sediments and relation of bedrock geology to topography and resultant glacial deposits. Final result is a map of Quaternary deposits with a report. The deglaciation history of the area is compiled from the information gathered.

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1031. SHARPE, D.R. and COWAN, W.R., Ontario Geol. Surv.:
Quaternary geology of the Merrickville area, southern Ontario,
1974-79.
1032. SHARPE, D.R., Ontario Geol. Surv.:
Quaternary geology of the Durham area, southern Ontario, 1975-79.

The area has a record of four late Wisconsinan tills. These represent an initial major movement of ice through the area, followed by an oscillatory retreat which deposited three thin till sheets. The texture and nature of these till sheets are strongly influenced by local substrate, either glaciofluvial gravels or glaciolacustrine clays or silts. Coarse-grained tills result from good drainage conditions while fine-grained tills are produced from blocked drainage ways resulting from limited ice retreat.

Very large outwash deposits were laid down in front of two large moraine deposited in the area. These large outwash systems are important economically and they also proved to be a good tool for correlation of moraines. The area demonstrated well the type of ice-marginal deposition (gerrace and deltas) one can expect from a glacier retreating down the regional slope.

1033. SHARPE, D.R., Ontario Geol. Surv.:
Quaternary geology of Chesley-Tiverton areas, southern Ontario,
1976-80.

The area provides good supporting evidence for changes in the correlation of the Port Huron Moraine System. The till associated with this moraine (the St-Joseph Till) undergoes a significant facies changes where the substrate changes from glaciolacustrine clays to outwash gravels or bedrock. Locally the till shows two other facies changes. Within the lacustrine substrate environment the till takes on different characteristics depending upon the mode of deposition; for example waterlain, flowtill or reworked by ice. Within the Saugeen River basin this till exhibits facies changes within one depositional unit as the ice ran out of local lacustrine sediments and started deposition more distant coarse sediments.

Impressive features of glacial Lake Algonquin are present in the area, most notably the thirty metre high former shore-bluff and the well preserved bay-mouth gravel bar at Port Elgin.

1034. SHARPE, D.R., Ontario Geol. Surv.:
Quaternary geology of the Warton and Bruce Peninsula areas,
southern Ontario, 1977-81.
1035. SHARPE, D.R., Ontario Geol. Surv.:
Geology of the Toronto Region, Ontario, 1977-.

QUATERNARY GEOLOGY/GEOLOGIE DU QUATERNAIRE

1036. SHARPE, D.R., Ontario Geol. Surv.:
Quaternary geology of the Gravenhurst, Bracebridge and Huntsville areas, Muskoka, Ontario, 1978-.
1037. SHILTS, W.W., Geol. Surv. Can.:
Properties and provenance of till, 1969-.
1038. SHILTS, W.W., Geol. Surv. Can.:
Quaternary geology inventory - southern Keewatin, 1973-.
1039. SHILTS, W.W., Geol. Surv. Can.:
Glacial erosion of the Canadian Shield, 1978-.

See:

Rates of movement associated with mudboils, central District of Keewatin; Geol. Surv. Can., Paper 78-1B, p. 203-206, 1978.

1040. STALKER, A.MacS., Geol. Surv. Can.:
Quaternary of southern Alberta, 1965-.
1041. STALKER, A.MacS., Geol. Surv. Can.:
Synthesis of Quaternary geology, Great Plains of Canada, 1975-.
1042. STEWART, R.A. and DREIMANIS, A., Univ. Western Ontario (Geology):
Ice marginal deposition in Lake Maumee east of Port Stanley, Ontario, 1978-81; Ph.D. thesis (Stewart).
1043. TELLER, J.T. and LAST, W., Univ. Manitoba (Earth Sciences):
Late Wisconsinan and Holocene sedimentary history of the Lake Manitoba Basin, 1977-79; Ph.D. thesis (Last).

A total of 83.65 m of core from 42 sites were taken from the ice of Lake Manitoba during February and March of 1978 - an average of 1 core per 50km². Four of these are 6-14 metre-long (7 cm diameter) Shelby cores, 38 are 1-3 metre-long (5 cm diameter) Livingstone cores. All cores were described in the field and, in detail, upon returning to university lab.

To date, the following analyses have been completed: grain size (265 samples), bulk mineralogy by x-ray diffraction (236), quantitative clay mineralogy by x-ray (143), total carbonate by ignition (952), total organic matter by ignition (952), pH (1311), Eh (1311), moisture content (1311), and major and trace elements (140 samples, 1320 analyses for Ca, Mg, Mn, Na, K, Fe, P, Pb, Cd, Cu, and Zn). Eight samples have been radio carbon dated.

Pollen analysis began in the late summer of 1978. To date, 135 samples from three cores have been prepared; 60 of these have been analyzed.

A number of new maps have been prepared: lake-floor bathymetry, "drying-zone" bathymetry, lake-floor dynamics (ETA), and lake-floor sediment composition (including grain size, clay mineralogy, organic content, pH, Eh, and various mineralogical components).

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Core-length profiles of all analyzed components have been prepared to show their variation through time. These maps and profiles are continuously updated as more analyses are completed, and they help determine which are the most important points in the core for new analyses.

Evaluation and interpretation of these data are underway. At least one, and perhaps two cores appear to contain a complete record of the entire 13,000 year history of Lake Agassiz-Lake Manitoba sedimentation in this area. Several incipient soils ("drying zones") are present in the lacustrine muds, and there are numerous fluctuations in the physical, chemical, mineralogical, and biological parameters. These fluctuations (or the absence of fluctuations for some constituents) and core-length trends in calcite, dolomite, grain size, clay mineralogy and total organic content are being evaluated and the late Pleistocene and Holocene history of the lake is being deduced.

1044. TERASMAE, J., Brock Univ. (Geological Sciences):

Notes on the geochronology of the Champlain Sea episode in the Pembroke area, Ontario, 1977-79.

New radiocarbon dates and palynological information from sites (lake sediments) above and below the Champlain Sea limit will be used to re-evaluate the chronological position of the marine submergence in the Late-Wisconsin stratigraphic sequence in the Pembroke-Chalk River area, Ontario.

1045. TERASMAE, J., Brock Univ. (Geological Sciences):

Chronology of Glacial Lake Barlow shorelines in the Englehart - New Liskeard area, Ontario, 1978-79.

Radiocarbon dating and palynological studies of lake sediments and peat deposits related to Glacial Lake Barlow shorelines will be used to establish a chronological sequence of these shorelines and investigate the history of this glacial lake in relation to Late-Wisconsin geological events.

1046. TERASMAE, J., Brock Univ. (Geological Sciences):

Late-Wisconsin deglaciation of the Walkerton-Kincardine area, Ontario, 1978-79.

Radiocarbon dating and palynological studies will be used to provide a framework for Late-Wisconsin chronology of deglaciation, relating to the Port Huron age morainic system and history of proglacial lakes. This project will be correlated with mapping of surficial deposits in the area by Ontario Geological Survey.

1047. UNKAUF, J.C. and RUTTER, N.W., Univ. Alberta (Geology):

The surficial geology and Quaternary stratigraphy of the Grande Prairie area, northwestern Alberta, 1976-79; Ph.D. thesis (Unkauf).

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1048. VANDERVEER, D.G. and SFARKES, B.G., Newfoundland Dep. Mines Energy (Mineral Develop. Div.):
Surficial and glacial mapping Lake Ambrose, Noel Paul's Brook area, Newfoundland, an aid to mineral exploration, 1978-79.
To elucidate the directions of glacial transport, distance of transport, relative age of glacial movements and to define techniques of use to mineral exploration companies exploring in areas of extensive glacial overburden.
1049. VILKS, G., Geol. Surv. Can.:
Pleistocene-Holocene basin sedimentation, 1975-.
1050. VINCENT, J-S., Geol. Surv. Can.:
Surficial geology inventory, Banks Island, District of Franklin, 1974-.
- See:
Limits of ice advance, glacial lakes, and marine transgressions on Banks Island, District of Franklin; a preliminary interpretation; Geol. Surv. Can., Paper 78-1C, p. 53-62, 1978.
1051. WATERS, P.L. and RUTTER, N.W., Univ. Alberta (Geology):
Post-glacial landscape of southern Alberta as interpreted from paleosols, 1976-79; M.Sc. thesis (Waters).
1052. WESTGATE, J.A., Univ. Toronto (Geology), Ontario Geol. Surv.:
Quaternary geology of the Markham area (30M/14), York and Durham regional municipalities, Ontario, 1978-81.
Involves delineation of surficial sediments and landforms in the Markham area (NTS Sheet 30M/14), construction of the topography on the Palaeozoic bedrock, and, elucidation of the Quaternary stratigraphy.
1053. WESTGATE, J.A., BRIGGS, N.D., PEARCE, G.W., MATTHEWS, J.V., Jr., HUGHES, O.L. and PEWE, T., Univ. Toronto (Geology), Geol. Surv. Can.:
Quaternary tephrochronological studies in Western Canada, Yukon Territory and Alaska, 1967-.
- See:
Compositional variability of Glacier Peak tephra and its stratigraphic significance; Can. J. Earth Sci., vol. 15, p. 1554-1567, 1978.
Fission-track age of glass from tephra beds associated with Quaternary vertebrate assemblages in the southern Canadian plains; Geol. Soc. Am., Abstracts with Programs, vol. 10, p. 514-515, 1978.
Widespread and distinctive pyroclastic deposits constitute important time-parallel stratigraphic markers, and their potential contribution to the solution of Quaternary stratigraphic problems in western Canada is great. Several investigations are presently being conducted.

1054. WESTGATE, J.A. and KALAS, L., Univ. Toronto (Geology):
Quaternary geological studies in central and southern Alberta,
1973-81.

A report on the environmental conditions immediately prior to glaciation in the Edmonton region of Alberta is near completion. A comprehensive palaeoenvironmental study of fossiliferous mid-Wisconsin interstadial sediments at Watins, in the Peace River region, is in progress as is synthesis of the Quaternary lithostratigraphy of southeastern Alberta.

1055. WIGHTMAN, D.M. and COOKE, H.B.S., Dalhousie Univ. (Geology):
Late Pleistocene-Holocene sea level changes in the northern Bay
of Fundy, Nova Scotia, 1976-79; Ph.D. thesis (Wightman).

See:

Postglacial emergence in Atlantic Canada; Geoscience Can., vol. 5,
no. 2, p. 61-65, 1978.

Raised fluviomarine sediments occur at Advocate Harbour in the northern Bay of Fundy and along the north side of the Minas Basin. The study concentrates on a raised fluviomarine/glaciofluvial outwash terrace, the Five Islands Formation of Swift and Borns. The lower or Advocate Harbour Member includes beaches at Advocate Harbour and marine deltas from Spencer's Island to Saint's Rest. The upper, non-marine, Saint's Rest Member in part forms the topset beds of the deltas and in part an outwash plain. The largest delta complex is at Parrsboro, where the deposits fan out from a valley through the Cobequid Hills, the valley being flanked by kame terraces and blocked by a terminal moraine complex that indicate retreat stages and stagnation of a residual ice mass. Coring of lakes and kettles is providing some radiocarbon dates that will assist in the interpretation of the late glacial and Holocene history.

REMOTE SENSING/TELEDETECTION

1056. BELANGER, J.R., Geol. Surv. Can.:
Remote sensing applied to Quaternary Geology and mineral tracing, 1978-.
1057. HOWARTH, P.J. and LUCAS, A.E., McMaster Univ. (Geography):
Biophysical sequences on barrier coastlines within the southern Gulf of St. Lawrence, 1977-79; M.Sc. thesis (Lucas).

A study of the relations between vegetation and geomorphology and their influence on the development of barrier island systems. In addition to field work, hand-held colour infrared photography and regular panchromatic photography are the main data sources used in the analysis.
1058. HOWARTH, P.J., STEWART, T.A. and ALFOLDI, T.T., McMaster Univ. (Geography), Can. Center Remote Sensing (EMR):
Suspended sediment patterns in the Minas Basin/Cobequid Bay System, 1976-79; M.Sc. thesis (Stewart).

Chromaticity analysis using digital Landsat data to study suspended solid concentrations on 15 dates representing different tidal and seasonal conditions.
1059. WICKWARE, G.M. and HOWARTH, P.J., McMaster Univ (Geography):
Habitat classification and environmental monitoring in the Peace-Athabasca Delta using digital Landsat data, 1977-79; M.Sc. thesis (Wickware).

The development of a monitoring procedure for the analysis of environmental change in part of the Peace-Athabasca delta using digital Landsat data from two different years.

ANCIENT SEDIMENTS/SEDIMENTS ANCIENS

1060. ALLEY, D.W., Saskatchewan Research Council (Geology Div.):
The drift prospecting application of heavy mineral analyses, 1978-.
- As a service to the Mining Industry in Saskatchewan, the Council has undertaken to develop a quick, reliable method of heavy mineral separation and analysis. Field samples collected by industry personnel by means of till sampling, esker sampling and overburden drilling programs are routinely sieved, separated in heavy liquids and analyzed geochemically in our laboratories.
1061. BAILES, A.H., BRISBIN, W.C., AYRES, L.D., FROESE, E., and TURNOCK, A.C., Univ. Manitoba (Earth Sciences), Geol. Surv. Can.:
Sedimentology and regional metamorphism of a Proterozoic volcanisclastic turbidite suite which crosses the boundary between the Flin Flon and Kisseynew belts of the Churchill Province at File Lake, Manitoba, Canada, 1972-79; Ph.D. thesis (Bailes).
- See:
- The transition from low to high grade metamorphism in the Kisseynew sedimentary gneiss belt, Manitoba; Geol. Surv. Can., Paper 78-10, p. 155-177, 1978.
- In the File Lake area, well preserved, weakly recrystallized pebbly greywacke, greywacke, siltstone and mudstone of the Apebian Amisk Group of the Flin Flon volcanic-sedimentary belt have been traced across a steep metamorphic gradient directly into migmatitic paragneisses of the Kisseynew sedimentary gneiss belt.
- The sedimentary rocks are mainly turbidites, with minor debris and fluidized sediment flow deposits. They are 1 km thick, consist almost entirely of felsic volcanic detritus, and overlie a thick accumulation of Amisk Group mafic subaqueous flows. The debris flow deposits are small and are confined to the Flin Flon belt, whereas the turbidites and fluidized flows are widespread and part of a subaqueous fan system which has been traced from the Flin Flon belt into the Kisseynew sedimentary basin.
- The sedimentary rocks are interpreted to be part of a sediment dispersal system developed around major stratovolcanoes of the Flin Flon belt.
- Metamorphic isograd reactions in the sedimentary rocks define a steep metamorphic gradient of 22°/km on the erosion surface between Flin Flon and Kisseynew belts. The metamorphism took place at moderate pressures (3.5 to 4 kb).
1062. BAKER, D.F. and LERAND, M.M., Gulf Canada (Geological Serv.):
Hydrocarbon reservoir characterization, 1978-.
1063. BURROWES, O.G., Gulf Canada (Geological Serv.):
Stratigraphy and depositional history of Nisku Formation, Pembina area, Alberta, 1978-79.

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1064. CASS, J.I. and RUST, B.R., Univ. Ottawa (Geology):
Paleoenvironments of the Beekmantown Group, Ottawa Basin, 1975-79;
M.Sc. thesis (Cass).
The pre-Chazyan Beekmantown Group of the Ottawa Basin is a marine transgressive sequence deposited in a shallow restricted embayment generally sheltered from extreme water agitation. The stratigraphic sequence ranges from Tremadoc (Demington) to Llanvirn (Whiterock) stages. Preliminary conodont studies show no detectable hiatus within the Beekmantown Group. Low energy wave and tidal action controlled deposition within the basin.
1065. CHANDLER, F.W., Geol. Surv. Can.:
Redbed sequence in Canada, 1976-.
1066. CHANDLER, F.W., Geol. Surv. Can.:
Proterozoic redbeds of Richmond Gulf, Québec, 1977-.
1067. CHEEL, R.J., RUST, B.R. and FRENCH, H.M., Univ. Ottawa (Geology):
Late quaternary glacial-marine and marine environments in the Ottawa area, 1977-79; M.Sc. thesis (Cheel).
Sedimentological investigation of sand and gravel pits along a ridge of Late Quaternary sediments 15 km west of Ottawa has yielded the following results:
1) The sediments accumulated as a subaqueous where a subglacial stream entered a standing body of water. Both fluid gravity flows and sediment gravity flows were active. The presence of an inlet in the retreating ice front exerted significant control on the nature and distribution of the sediments.
2) A common upward sequence of soft-sediment deformation structures within the ridge is: convolute bedding, ball and pillow structures, dish structure. This sequence can be explained by successive events occurring during rapid sediment dewatering.
1068. CHRISTOPHER, J.E., Saskatchewan Geol. Surv.:
The Mannville Group (Lower Cretaceous) of Saskatchewan, 1976-79.
Reconciliation of existing nomenclatures across the province, mapping of sedimentation patterns, working out the tectonic history.
1069. DOUGLAS, T.R., CAPELING, R.R. and PEGGS, J.K., BP Exploration Canada Ltd. (Heavy Oil Project):
Marquerite Lake phase a pilot project, 1977-84.
Overall project is an experiment to produce bitumen from the Cold Lake Oil Sands by a combination of cyclic steam stimulation and in-situ combustion. Geological participation includes description of deposition environment, definition of the quality and quantity of the resource, very detailed mechanical log analysis, effects of geology on recovery processes, and investigations into source and disposal water zones.

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1070. DUNN, C.E., Saskatchewan Geol. Surv.:
The Dawson Bay Formation in south-central Saskatchewan, 1974-79.
1071. FLACH, P.D. and MOSSOP, G.D., Alberta Research Council (Geology Div.):
Regional inventory of the Athabasca oil sands, Alberta, 1977-81.
Computer based file contains data on wells in north Athabasca area consisting of a lithology log and tops of the McMurray Formation and pre-Cretaceous unconformity. Structural, isopach, and sand/shale ratio maps have been generated. Area covered is now being expanded.
1072. FRASER, J.Z. and JOPLING, A.V., Univ. Toronto (Geography):
Facies relationships in Pleistocene braided outwash deposits, 1976-78.
To characterize the grain size distribution of braided outwash deposits according to the four textural parameters mean, sorting skewness and kurtosis; to identify and define facies of the braided stream environment on the basis of textural parameters and field relationships; to compare facies relationships in the study area to those outlined for theoretical depositional environment models; and to describe the local Pleistocene geology of a braided outwash system near Orangeville in Southern Ontario.
1073. FUZESY, L.M., Saskatchewan Geol. Surv.:
Geology of the area between La Loche and La Ronge, Saskatchewan, 1977-.
1074. HARRIS, I.M., Geol. Surv. Can.:
Sedimentologic study and basin analysis of the eugeoclinal sedimentary rocks (Cambrian to early Devonian) of southern Nova Scotia, 1976-.
1075. HENDRY, H.E., Univ. Saskatchewan (Geological Sciences);
Paleozoic sediments, 1967-.
- See:
- Cap des Rosiers Formation at Grosses Roches, Québec - deposits of the mid-fan region on an Ordovician submarine fan; Can. J. Earth Sci., vol. 15, p. 1472-1488, 1978.
- Recent activities were in the Miocene deposits of the Italian Appennines, where the conglomeratic fill of an ancient submarine channel was investigated.
1076. HENDRY, H.E., MISKO, R.M., SUTHERLAND, G.N. and WING, S.J.C., Univ. Saskatchewan (Geological Sciences):
Sedimentology of Cretaceous-Tertiary deposits in southern Alberta, and the northern states of the Interior Plains, 1973-; M.Sc. theses (Misko, Sutherland, Wing).
Work has been concentrated mainly in southern Saskatchewan on the Frenchman Formation (Maastrichtian) and, to a lesser extent, on the Ravenscrag Formation (Palaeocene). A study of depositional environments of the Frenchman has been completed, work is continuing on the

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Ravenscrag. The next step is to extend the palaeoenvironmental and petrological study of the Frenchman to correlatives in Alberta and Montana. A study of cements in the Frenchman Formation is under way to clarify and explain the relationship between cement distribution and sedimentary facies.

1077. HESSE, R.F. and TASSE, N., McGill Univ. (Geological Sciences):
The tectonic setting of the Cretaceous Flysch à Helminthoids Basin, Embrunais, French West Alps, 1977-80; Ph.D. thesis (Tassé).
1078. JOPLING, A.V. and IRVING, W.N., Univ. Toronto (Geography):
Northern Yukon research project (Quaternary stratigraphy and fluvial geomorphology of the Old Crow Basin, Yukon Territory), 1975-82; Ph.D. thesis (Harvey).

A study of river morphology, terrace chronology and Quaternary stratigraphy.
1079. KOSTER, E.H., Univ. Saskatchewan (Geological Sciences):
Sedimentology of the Potsdam Formation, southwestern Québec, 1978-80.

Prompted by the inconclusive nature of previous work, this study is aimed at identifying the three-dimensional distribution of sandstone facies that are being differentiated using a well-exposed and diverse suite of sedimentary structures. This study extends the region covered by a colleague in Ottawa, who for eastern Ontario has concluded an intertidal origin; further east in the present study area, cyclicity is also apparent but it appears presently that a sub-tidal origin more accurately describes the paleoenvironment. A previously inferred syn-depositional upwarp will also be evaluated for its relevance to the study area.
1080. KRAMERS, J.W., Alberta Research Council (Geology):
Wabasca oil sand deposit, Grand Rapids Formation study, Alberta, 1972-80.

Continuing study of the sedimentology, facies relationships, petrology and diagenesis of the bitumen saturated Grand Rapids Formation in northeastern Alberta (Twps 75-90, RGS 15W4-5W5).
1081. LERAND, M.M., Gulf Canada (Geological Serv.):
Sedimentology, petrology and trapping mechanisms in sandstone reservoirs in Alberta, 1978-.
1082. LOWEY, G. and HILLS, L.V., Univ. Calgary (Geology):
Markov analysis of turbidite sequence, Dezadeash Formation, Yukon Territory, 1978-80; M.Sc. thesis (LoweY).

To 1) characterize the Dezadeash Formation turbidites; 2) develop a technique of data recording for computer application; 3) attempt to subdivide the formation; and 4) characterize the depositional environment.
1083. MACQUEEN, R.W., BAMBER, E.W. and MAMET, B.L., Univ. Waterloo (Earth Sciences), Geol. Surv. Can., Univ. Montréal (Géologie):
Carboniferous and Permian stratigraphy and sedimentology, Rocky Mountains of Alberta and British Columbia, 1965-80.

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Field work is complete. Current emphasis is on Lower Carboniferous stratigraphy, sedimentology and biostratigraphy of the Monkman Pass - Pine Pass areas, and lower Carboniferous stratigraphy, sedimentology and biostratigraphy of the Banff-Jasper area.

1084. MACQUEEN, R.W., LEGAULT, J.A. and POWELL, T.G., Univ. Waterloo (Earth Sciences), Geol. Surv. Can.:
Nature, origin, and lateral relationships of Paleozoic basinal shale suites, western Canada, 1976-82.

See:

Carbonate-hosted lead-zinc occurrences in northeastern British Columbia with emphasis on the Robb Lake deposit; Can. J. Earth Sci., vol. 15, no. 11, p. 1737-1762, 1978.

Base metal deposits in sedimentary rocks: some approaches; Geoscience Canada, vol. 6, p. 3-9, 1979.

Project seeks to understand: a) the conditions of deposition, lateral relationships, subsequent diagenesis of minerals and hydrocarbons, and the role of basinal shales (particularly organic-rich basinal shales) in basin evolution; b) the significance of organic-rich basinal shales to zinc-lead mineralization in proximal platform carbonates; c) details of the microfauna and microflora of Road River and Besa River Formation, and of the relative time relations and accumulation rates between platform carbonates and basinal shales, for both Road River and Besa River suites.

1085. MOSSOP, G.D., Alberta Research Council (Geology Div.):
Sedimentology and petrology of the Athabasca oil sands, Alberta, 1975-82.

Facies distribution, depositional environments, paleocurrent patterns, paleohydrology, basin development, provenance, paleogeography oil migration and maturation history and diagenesis of the McMurray Formation; petrographic and mineralogic analysis of the oil sands, plus SEM microtextural analysis.

1086. NOBLE, J.P.A., Univ. New Brunswick (Geology):
Lower Paleozoic paleoenvironments and the sed-tectonic history of the northern Appalachians, 1975-84.

A considerable amount of paleontologic and sedimentologic data have been collected for several areas in New Brunswick and Gaspé as part of the program to unravel the Silurian-Devonian sed-tectonic history of the basins in the northern Appalachians. Biostratigraphic zonation is being worked out by detailed collecting of shelly faunas, and preliminarily paleoenvironmental and paleogeographic conclusions have been drawn for the Petit Rocher, Charlo and Upsalquitch area of New Brunswick and the Port Daniel area of Gaspé. In addition, it has been possible to draw conclusions concerning some of the fundamental principles of paleoenvironmental analysis, and to begin to relate diagenetic facies to depositional facies.

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1087. PEARSON, E.M. and MACQUEEN, R.W., Univ. Waterloo (Earth Sciences):
Sedimentology and diagenesis of the Warwick reef (middle Silurian),
southwestern Ontario, 1977-79; M.Sc. thesis (Pearson).
1088. ROTTENFUSSER, B.A., Alberta Research Council (Geology Div.):
Peace River oils sands study, Alberta, 1978-80.
1089. RUST, B.R., Univ. Ottawa (Geology):
Alluvial deposits ancient and modern, 1975-79.

See:

A classification of alluvial channel systems; Can. Soc. Petrol.
Geol., Mem. 5, p. 187-198, 1978.

Depositional models for braided alluvium; Can. Soc. Petrol. Geol.,
Mem. 5, p. 605-626, 1978.

Comparative studies of ancient alluvial deposits in Gaspé and recent
alluvium indicate the following environments for the ancient rocks:

- 1) Malbaie Formation (Middle Devonian): two distinct types of
proximal braided alluvium (gravel and sand dominated).
- 2) Cannes de Roche Formation (Carboniferous): alluvial fan
and floodplain.

Related studies in Australia comprise:

- 1) Cambrian tidal flat-alluvial fan transition (Kangaroo Island).
- 2) Quaternary alluvial fans (Flinders Ranges).
- 3) Recent sediments and channel patterns of Cooper's Creek
(Central Australia).
- 4) Triassic Hawkesbury Sandstone (New South Wales): large-scale
sandy braided system.

1090. SHILTS, W.W., Geol. Surv. Can.:
Mineral indicator tracing southern Keewatin, 1970-.

1091. SMITH, S.R., Saskatchewan Geol. Surv.:
Reservoir studies of Mississippian carbonates from southeastern
Saskatchewan, 1977-.

See:

Structure, stratigraphy and sedimentation of the Middle Beds, Benson
Field; Sask. Geol. Surv., Summ. Investig., Misc. Rept. 78-10, p. 147-
152, 1978.

Study of the Benson Field is nearing completion.

1092. TAYLOR, G.C., Geol. Surv. Can.:
Comparative studies of ancient and modern sedimentology environments,
1970-.

1093. WOOD, J., Ontario Geol. Surv.:
Stratigraphy and sedimentology of Huronian rocks in the Cobalt
Embayment, 1978-82.

To elucidate the stratigraphy and sedimentation of Huronian rocks
in the Cobalt Embayment with a view to assessing their mineral
potential. Particular attention is being devoted to silver, base
metals and uranium.

RECENT AND UNCONSOLIDATED SEDIMENTS/SEDIMENTS RECENTS ET NON CONSOLIDES

1094. ADSHEAD, J.D., Geol. Surv. Can.:
Mineralogy and geochemistry of the unconsolidated cover, central Arctic, 1976-.
1095. ADSHEAD, J.D., Geol. Surv. Can.:
Geological characterization of Arctic lakes: sediment properties and sedimentary processes, 1977-.
1096. AMOS, C.L., Geol. Surv. Can.:
Sediment dynamics at the head of the Bay of Fundy, 1978-.
- See:
The Post Glacial evolution of the Minas Basin, Nova Scotia, a sedimentological interpretation; J. Sed. Pet., vol. 48, no. 3, p. 965-982, 1978.
1097. BORNHOLD, B.D., Geol. Surv. Can.:
Marinesurfacial geology and sedimentation, British Columbia, 1975-.
- See:
Carbonate/nitrogen (C/N) ratios in surficial marine sediments of British Columbia; Geol. Surv. Can., Paper 78-1C, p. 108-112, 1978.
1098. BORNHOLD, B.D., Geol. Surv. Can.:
Coastal geology - British Columbia, 1978-.
1099. BUCKLEY, D.E., Geol. Surv. Can.:
Multidisciplinary environmental marinegeological analysis of the Miramichi Estuary and Bay, New Brunswick, 1975-79.
1100. DALRYMPLE, R.W., Brock Univ. (Geological Sciences):
Tidal sand bar sedimentation in the Bay of Fundy, and comparison to ancient sediments, 1971-80; Ph.D. thesis.
- See:
Bedforms and their hydraulic stability relationships in a tidal environment, Bay of Fundy, Canada; Nature, no. 275, p. 100-104, 1978.
- An extensive complex of intertidal to subtidal sand bars in the Minas Basin and Cobequid Bay, Bay of Fundy, has been examined in order to understand the mechanics of sediment transport and deposition in the macrotidal environment (maximum tidal range = 16.3m). This work included detailed measurements of tidal currents, observations of bedform morphology and internal structures, analysis of grain size distributions, and analysis of numerous fluorescent tracer experiments. A considerable portion of these results, particularly those relating to the interpretation of the size distributions and the tracer experiments remains to be published. Further investigations along these lines will be conducted in the Bay of Fundy and in other modern environments to compliment and extend the results already obtained.
- Two ancient sandstones of presumed shallow marine, tidal origin (the Lower Greensand, southern England, and the Sanfjord Fm., north Norway) have also been examined, in collaboration with B.K. Levell of

Shell International Exploration and Research Co. Comparison of structures with examples from the Bay of Fundy is in progress in order to better understand sedimentation processes operating in a current-dominated shelf environment.

1101. DAY, T.J., Geol. Surv. Can.:
Gravel stream beds, 1975-.
1102. EDWARDS, T.W.D., Geol. Surv. Can.:
A study of siltation within lakes in the District of Keewatin, Northwest Territories, 1977-.
1103. FILLON, R.H., Geol. Surv. Can.:
Surficial geology and paleoglaciology of Saglek Bank, Labrador Shelf, 1976-.
1104. GREENWOOD, B., Univ. Toronto (Scarborough College - Geography):
Sediment parameters and their use in the reconstruction of paleoenvironments of deposition, 1967-.
- See:
Spatial variability of texture over a beach-dune complex, North Devon, England; *Sedimentary Geol.* Vol. 21, no. 1, p. 21-44, 1978.
1105. GREENWOOD, B., Univ. Toronto (Scarborough College - Geography):
Barrier island sedimentation, 1977-80.
1106. GREENWOOD, B. and MITTLER, P.R., Univ. Toronto (Scarborough College-Geography):
Coastal sedimentation - rates of transport in the nearshore zone of a storm-dominated microtidal environment, 1977-80; Ph.D. thesis (Mittler).
- See:
Sedimentation and equilibrium in wave-formed bars: a review and case study; *Can. J. Earth Sci.*, vol. 16, no. 2, p. 312-332, 1979.
1107. HARRISON, R.S. and HALLEY, R.B., Univ. Manitoba (Earth Sciences):
Sedimentology and stratigraphy of Pleistocene reef-sand complex, Key Largo, Florida, 1978-79.
- The current program is based on 10 cored boreholes on Key Largo. The stratigraphy, sedimentary facies, and subsequent diagenetic history of these late Pleistocene reef and sand complex deposits is being documented. The project will expand to include a comparative companion subsurface study of the Miami Oolite facies which lies to the southeast in the lower Florida Keys. A better understanding of the history of Keys deposition will result, and important contrast in vadose and fresh water phreatic diagenesis - and their implications on porosity evolution - will be documented. The stratigraphic breakdown is based on major, but variably complex subaerial breaks within the sequence, supported by radiometric dates.

1108. JANSA, L.F., Geol. Surv. Can.:
Stratigraphy and sedimentology of the Mesozoic and Tertiary rocks of the Atlantic Continental margin, 1971-.
1109. JOPLING, A.V. and WEIRICH, F.A., Univ. Toronto (Geography):
Continuous monitoring of density underflows in a lacustrine environment, 1975-80; Ph.D. thesis (Weirich).
Changes in sediment concentration, velocity and temperature were monitored continuously in a small glacial lake in the Purcell Ranges, British Columbia. Basic data were also collected on a meso-scale, glacio-hydrologic system for which the lake was but one component part. The purpose of the sedimentological part of the study was to elucidate the relationship between the mechanics of density and turbidity flows and the nature of the depositing sediment on the lake floor. Over 20 million observations were collected using sophisticated electronic instrumentation and a data logging system.
1110. KOSTER, E.H., RUST, B.R. and DAY, T.J., Univ. Saskatchewan (Geological Sciences):
Flume and field study of fluvial gravels, 1976-.

See:

Transverse ribs: their characteristics, origin and paleohydraulic significance; Can. Soc. Petrol. Geol., Mem. 5, p. 161-186, 1978.

For numerous practical reasons, research into the transport and deposition of gravel in proximal fluvial environments has been largely neglected. This situation ought to be rectified in view of the recent rise in descriptive work on conglomerates. The project combines flume, field and theoretical research with the aim of 1) elucidating different fabric configurations, 2) developing guidelines for detailed paleohydrological analysis in ancient rocks, and 3) proposing criteria that could be used to recognise the attainment of equilibrium at ancient flow-bed boundaries.

1111. KOSTER, E.H., WALKER, E.R. and SCHROEDL, A.R., Univ. Saskatchewan (Geological Sciences, Anthropology and Archaeology):
Post-Wisconsinan development and prehistoric habitation of the South Saskatchewan River valley, near Saskatoon, Saskatchewan, 1977-80.

See:

Procedures and results of geoarchaeological studies at the Gowen site, Saskatoon, Saskatchewan; Geol. Assoc. Can. (Geol. Soc. Am.), Program with Abstracts, vol. 10, no. 7, p. 438, 1978.

Over recent years, investigations of archaeological sites have become increasingly multi-disciplinary in their approach. Located beneath the City Landfill section of the Saskatoon Terrace alongside the South Saskatchewan River's left bank, the Gowen site (#Fa, Nq-25) is a bison-processing site occupied 6,100 years B.P. In terms of Plains archaeology, this site holds particular significance and therefore it was decided to investigate fully its geological setting. To deduce the exact character of the paleoenvironment, published data of a paleoclimatic, paleobotanic and radiometric nature are being integrated with the results of on-site sedimentological and stratigraphic studies. It appears that the Gowen site was occupied following the final stages of valley incision and prior to the onset of widespread aeolian activity.

SEDIMENTOLOGY/SEDIMENTOLOGIE

1112. LUTERNAUER, J.L., Geol. Surv. Can.:
Fraser Delta sedimentation, British Columbia, 1974-.
- See:
Applications of side-scan sonar to geoenvironmental research in the coastal waters of British Columbia; Geol. Surv. Can. Paper 78-1B, p. 181-186, 1978.
1113. MCCANN, S.B., Geol. Surv. Can.:
Morphology and dynamics of the Barrier Island systems in the southern Gulf of St. Lawrence, 1977-.
1114. MCLAREN, P., Geol. Surv. Can.:
Geological zonation of central Arctic coasts, 1976-.
- See:
An approach to the recording, positioning and manipulation of coastal and marine data; Geol. Surv. Can., Paper 78-1B, p. 191-194, 1978.
1115. PELLETIER, B.R., Geol. Surv. Can.:
Bottom studies of the Beaufort Sea, 1972-.
1116. RASHID, M.A., Geol. Surv. Can.:
Geochemical transformations and reactions of organic compounds in Recent marine sediments, 1975-.
1117. REISON, G.E., Geol. Surv. Can.:
Sediment transport and dispersal patterns in the vicinity of tidal inlets, Northeast New Brunswick, 1977-.
1118. SONNENFELD, P. and HUDEC, P.P., Univ. Windsor (Geology):
Solar ponds in British Columbia, 1977-79.
- See:
Geochemistry of a meromictic lake; Geologie en Mijnbouw, vol. 57, no. 2, p. 333-337, 1978.
Additional field data are wanted for behaviour of density stratified brine under ice cover to write up final paper.
1119. VILKS, G., Geol. Surv. Can.:
Pleistocene - Holocene basin sedimentation, 1975-.

SOIL SCIENCE/PEDOLOGIE

(An inventory of Agricultural Science research projects in Canada is maintained by the Canadian Agricultural Research Council. Many of these projects would be earth science oriented).

1120. BUNTING, B.T., McMaster Univ. (Geography):

Effect of fire on soil development in central Ontario, 1977-82.

The effect of forest fires on soil development is regarded as one which prevents the development of acidified organic matter and retarding iron mobilisation. Continued burning or repeated forest burning is thus to be associated with Brunisolic soil forms. The nature and character of soil organic matter in burned and unburned (protected) sites is being examined through techniques of soil micromorphology, experimental pyrolysis and soil chemical analysis both in the field and in vitro experimentation.

1121. FRANSHAM, P.B., Geol. Surv. Can.:

Geotechnical investigation of soils in the Ottawa Valley, Ontario-Québec, 1974-.

1122. RUTHERFORD, G.K. and DEBENHAM, P.L., Queen's Univ. (Geography):

The mineralogy of the clay- and silt-sized fractions in soils on the Faeroe Islands, 1977-79.

The soils of the Faeroe Islands have been developed from basaltic lava flows under humic cool marine conditions in the North Atlantic. It was found that the clay mineralogy of the soils had unusually high cation exchange capacities and preliminary XRD analyses showed the dominance of complex mixed layer minerals with a montmorillonite component. Further investigation in considerable detail indicated that virtually all samples from a wide variation of pedological environments contained major amounts of this mineral which is interlayered with chlorite. As neither minerals were known to be components of basalts, further investigation showed that rocks and pebbles collected from various parts of the archipelago contained significant amounts of minerals of this general nature. A review of recent literature produced three references indicating the presence of similar minerals in basalts which were assumed to be altered by phreatic waters. It is assumed that the lava flows constituting the parent materials of the Faeroe Island soils have been significantly metamorphosed by marine waters during long periods of submergence. Zeolites reported in the petrographical descriptions of the rocks occur in significant quantities. Bytownite is a major constituent of sand-silt- and clay-sized fractions whilst olivenes, common in the parent rocks do not occur in fractions finer than coarse silt.

STRATIGRAPHY/STRATIGRAPHIE

PRECAMBRIAN/PRECAMBRIEN

1123. AITKEN, J.D., Geol. Surv. Can.:
Helikian and Hadrynian stratigraphy Eastern Cordillera and Interior Platform, 1973-.
- See;
Dispersion of cross-stratification as a potential tool in the interpretation of Proterozoic arenities; J. Sed. Pet., vol. 48, no. 3, p. 857-862, 1978.
1124. BLACKBURN, C.E. and TROWELL, N.F., Ontario Geol. Surv.:
Savant-Crow Lakes volcanic/sedimentary belt, Kenora District, Ontario, 1976-80.
- See:
Savant-Crow Lake special project, Thunder Bay and Kenora Districts, Ontario; Ontario Geol. Surv., Misc. Paper 82, p. 28-44, 1978.
1125. CAMPBELL, F.H.A., Geol. Surv. Can.:
Geology of the Coronation Gulf area, District of Mackenzie, 1977-.
1126. CHRISTIE, R.L., Geol. Surv. Can.:
Stratigraphy and age of Precambrian sedimentary rocks and contained sills and dykes, Thule Basin, 1967-.
1127. EISBACHER, G.H., Geol. Surv. Can.:
Stratigraphy and sedimentation of the Proterozoic Rapitan Group and related rocks, Mackenzie, Wernecke and Ogilvie Mountains, District of Mackenzie and Yukon Territory, 1975-.
1128. GOETZ, P.A., MOORE, J.M., Jr., and FROESE, E., Carleton Univ. (Geology), Geol. Surv. Can.:
Geology of the Sherridon Mine, Manitoba, 1974-79; Ph.D. thesis (Goetz).
A detailed re-study of the Sherridon deposit and its environs involved mapping, petrographic and chemical study of the sulphide bodies and their enclosing rocks, metamorphosed in upper amphibolite facies. Bulk chemical criteria have permitted identification of volcanic and sedimentary protoliths and the characterization of the Cu-Zn sulphide deposit as being a distal volcanogenic type. Cordierite-anthophyllite rocks associated with sulphide-bearing horizons were derived by metamorphism of hydrothermally -altered rocks.
1129. HILLS, L.V. and SANGSTER, E., Univ. Calgary (Geology):
Lexicon of formations, western District of Mackenzie and Yukon Territory, 1978-79.
1130. HOFFMAN, P.F., Geol. Surv. Can.:
Hepburn batholith, Hepburn Lake map-area, District of Mackenzie, 1977-.
1131. JACKSON, G.D., Geol. Surv. Can.:
Operation Borden, District of Franklin, 1977-.

STRATIGRAPHY/STRATIGRAPHIE

1132. MASON, J. and SHEGELSKI, R.J., Lakehead Univ. (Geology):
Stratigraphy of the Kaministiquia - Mokomon Archean terrain,
Ontario, 1978-81; M.Sc. thesis (Mason).
- Geological study of a portion of the Shebandowan Belt of the Superior Structural Province, 16 km west of Thunder Bay is in progress. The geographical boundaries of the study are the following: the Kaministiquia River east to Auto Road along Highway #102 and north and south of Highway #102 for approximately 4.5 km. 40% of field mapping was completed in 1978, with petrologic work in progress.
- Initial field work suggests a synform is present with the nose of the structure representing the west boundary of the study area. Three metavolcanic-metasedimentary cycles may occur. Further field mapping, structural and stratigraphic study, supplemented by geochemical analysis, will follow.
1133. MCGLYNN, J.C., Geol. Surv. Can.:
Stratigraphy, sedimentology and correlation of the Nonacho Group,
District of Mackenzie, 1965-.
1134. MCGLYNN, J.C., Geol. Surv. Can.:
A study of Bear Batholith rocks and basement to the Bear Batholith,
1978-.
- See:
Geology of the Precambrian rocks of the Rivere Grandin and in part of the Marian River map areas, District of Mackenzie; Geol. Surv. Can., Paper 79-1A, p. 127-131, 1979.
1135. MORGAN, W.C., Geol. Surv. Can.:
Study of the Ramah Group and of Proterozoic-Archean relationships in northern Labrador, 1971-.
1136. PIRIE, J., Ontario Geol. Surv.:
Geology of the Red Lake area, District of Kenora, Ontario, 1978-82.
- See:
Ontario Geol. Surv., Misc. Paper 82, p. 20-21, 1978.
- To provide a compilation of detailed mapping (completed in 1979) for the Archean metavolcanic-metasedimentary belt as a whole. From this, correlation of the stratigraphy throughout the belt will be carried out and the petrochemistry of the volcanic rocks will be investigated with the view to better understanding the geological setting and formation of the important gold deposits in the area.
1137. RAMAEKERS, P., Saskatchewan Geol. Surv.:
Reconnaissance geology of the Athabasca Formation (Helikian,
Saskatchewan), 1975-79.
- See:
Athabasca Formation southwestern edge: Part I - reconnaissance geology; Sask. Geol. Surv., Summ. Investg., Misc. Rept. 78-10, p. 124-128, 1978.
- Core analysis (chemical and petrological) with detailed sedimentological and stratigraphical studies of selected areas of the Athabasca Formation.