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DEPARTMENT OF ENERGY, MINES AND RESOURCES, OTTAWA

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CANADIAN GEOSCIENCE COUNCIL

CURRENT RESEARCH IN THE GEOLOGICAL SCIENCES IN CANADA 1974-75

COMPILED BY
THOMAS E. BOLTON

1975

Energy, Mines and Resources Canada
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Since the introduction of this annual survey of Current Research in the Geological Sciences in Canada in 1946, the Secretary of the National Advisory Committee on Research in the Geological Sciences has been responsible for its compilation. The reports for the years 1946-70 were produced by J.F. (Fen) Henderson, and from 1971 to the present by Thomas E. Bolton. From the 1950 survey on, the Geological Survey of Canada has published the data within its Paper Series either in association with the annual report of the NACRGS or as separate editions. In 1974, the Canadian Geoscience Council accepted an advisory role in the production of this survey; the present publication accordingly is published by the Geological Survey of Canada under their auspices.

The research projects listed in this compilation have been obtained mainly from universities, federal and provincial department of mines, and non-industrial institutions carrying on research in the geological sciences. Data on industrial research is limited. The hope of subsequent surveys is to produce an annual registry of earth science research projects underway in all sectors.

The survey was made between November, 1974 and January, 1975 and records research in progress from about June, 1974 to May, 1975. It indicates lines of research receiving the greatest attention, and conversely the least, and also records the large number of research projects undertaken as graduate theses in the universities.

Readers carrying on research projects in geology and in allied fields of interest to earth scientists, which they consider should be included in the annual report, should notify Thomas E. Bolton, Geological Survey of Canada, 601 Booth Street, Ottawa, Canada, K1A 0E8. The 1975-1976 survey will be conducted between October 15th and November 30th, 1975.

Use of the Compilation

As in previous publications, projects are grouped under main headings that cover the different branches of the geological and allied sciences. These groupings are only slightly broader than the disciplines reported upon in the recently published Canadian Geoscience Council status report "The Geosciences in Canada – 1974" (Geological Survey of Canada, Paper 75-6, 1975). Readers of both publications can readily relate the research in progress in the fields in which they are interested. Short statements on the subject under investigation and references to the researcher's most recent publication(s) on the project are included only if not published in the previous report of Current Research in the Geological Sciences in Canada, 1973-74, Geological Survey of Canada, Paper 74-5, 1974.

A complete list of organizations contributing to the present survey is provided (p. 93). An alphabetically arranged index (p. 97) lists each investigator and the number(s) of his project(s).

AREAL GEOLOGY

Alberta

1. Bayrock, L. A., Alberta Research Council:
   Wapiti area (NTS Sheet 83L), 1972-76.

2. Bayrock, L. A., Boydell, A. N., Alberta Research Council, Geol. Surv. Can:
   Rocky Mountain House area (NTS Sheet 83B), 1969-74.

3. Bayrock, L. A., Reimchen, T. H., Alberta Research Council:
   Waterways area (NTS Sheet 74D), 1973-.

4. Godfrey, J. D., Alberta Research Council:
   Precambrian mapping, Fort Chipewyan district, Alberta, 1970-1975.

   Precambrian mapping, Wylie Lake district, Alberta, 1971-1975.

   Precambrian mapping, Alexander Lake district, Alberta, 1971-1975.

   Precambrian mapping, Ryan-Fletcher Lakes district, Alberta, 1972-.

   Precambrian mapping, Bocquene-Disappointment Lakes district, Alberta, 1973-.

   Precambrian mapping, Tulip-Mercredi-Myers-Hooker Lakes district, Alberta, 1974-.

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

British Columbia

6. Church, B. N., British Columbia Dep. Mines Petrol. Resources:
   Geology of the Sustut area, British Columbia, 1973-75.

   A detailed study of a Triassic volcanic section in vicinity of the Sustut copper deposit in north-central British Columbia.

7. Gabrielse, H., Geol. Surv. Can.:
   Operation Finlay, British Columbia, 1970-.

8. Garnett, J. A., British Columbia Dep. Mines Petrol. Resources:
   Geology of Hogem Batholith, north-central British Columbia, 1971-75.

   See Geology and copper-molybdenum mineralization in the southern Hogem Batholith, north-central British Columbia; CIM Bull., v. 67, no. 749, p. 101-106, 1974.

9. Muller, J. E., Geol. Surv. Can.:
   Geology of Victoria map-area, British Columbia, 1973-.

   See Victoria map-area, British Columbia (92B); Geol. Surv. Can., Paper 75-1, pt. A, p. 21-26, 1975.

   A Paleozoic zircon age of the Western Crystalline Complex of Vancouver Island, British Columbia; Can. J. Earth Sci., v. 11, no. 12, p. 1717-1722, 1974.

10. Panteleyev, A., British Columbia Dep. Mines Petrol. Resources:
    Galore Creek map-area, British Columbia, 1972-75.

11. Preto, V. A., British Columbia Dep. Mines Petrol. Resources:
    Nicola Project, Merritt to Princeton, British Columbia, 1972-75.

12. Richards, T. A., Geol. Surv. Can.:
    Hazelton map-area, British Columbia, 1972-.

    See A preliminary report on the Upper Jurassic Bowser assemblage in the Hazelton west half map-area, British Columbia (93M – W½); Geol. Surv. Can., Paper 75-1, pt. A, p. 31-36, 1975.

13. Roddick, J. A., Geol. Surv. Can.:
    Coast Mountains project, 1963-.

    See Coast Mountains project: Pemberton (92J west half) map area, British Columbia; Geol. Surv. Can., Paper 75-1, pt. A, p. 37-40, 1975.

14. Stott, D. F., Geol. Surv. Can.:
    Cretaceous stratigraphy, Peace River to 60°, British Columbia, 1961-.

15. Taylor, G. C., Geol. Surv. Can.:
    Operation Smoky, British Columbia, 1968-.

16. Tipper, H. W., Geol. Surv. Can.:
    Taseko Lakes map-area, British Columbia, 1961-.

    See Taseko Lakes (92c) and Smithers (93L) map-area, British Columbia; Geol. Surv. Can., Paper 75-1, pt. A, p. 49-50, 1975.

Manitoba

17. Bailes, A.H., Manitoba Mines Branch:
Guay-Wimapedi Lake area, Manitoba, 1968-75.

File-Morton-Woosey Lake area, Manitoba, 1968-75.

Stratigraphic, tectonic and metamorphic history of an area which contains strata of two major Precambrian lithologic belts, Flin Flon volcanic belt and the Kisseynew sedimentary gneiss belt.

18. Beakhouse, G., Univ. Manitoba:
Nature and subdivision of the English River gneissic belt, 1974-76.

19. Elbers, F.J., Gilbert, H.P., Hubregtse, J.J.M.W., Marten, B.E., Manitoba Mines Branch:
Greenstones project, Manitoba, 1971-75.

20. Ermanovics, I.F., Geol. Surv. Can.:
Geology of the Island Lake map-area (53E), Manitoba and Ontario, 1974-.

See Geol. Surv. Can., Paper 75-1, pt. A, p. 311-316, 1975.

21. Gilbert, H.P., Manitoba Mines Branch:
Karsakuwigamak Lake project, 1974-75.

Volcanic and stratigraphic studies in the Lynn Lake greenstone belt.

22. Lamb, C.F., Manitoba Mines Branch:
Southeastern Manitoba, 1974-77.

A study of the lithology, structure, metamorphism, and mineralization in the Precambrian of southeastern Manitoba, including the metavolcanic/metasedimentary rocks of the Wabigoon Belt and granitoid gneisses and intrusive rocks of the English River Belt.

23. Schledewitz, D., Manitoba Mines Branch:
Seal River area, Manitoba, 1974-76.

See Seal River and Churchill areas; Manitoba Mines Branch, Geol. Paper 2/74, 1974.

24. Weber, W., Manitoba Mines Branch:
Geology of the greenstone belt remnants in the northwestern portion of the Superior Province and the controlling factors for their present disposition, 1974-77.

25. Wilson, H.D.B., Morrice, M.G., Ziehlke, D.V., Beakhouse, G., Univ. Manitoba:
Archean greenstone belt stratigraphy, 1973-77.

26. Zwanzig, H.V., Manitoba Mines Branch:
Lynn Lake volcanic studies, 1974-.

See Lynn Lake volcanic studies; Manitoba Mines Branch, Geol. Paper 2/74, 1974.

Several stratigraphic sections across the Lynn Lake greenstone belt provide updated information on volcanic, sedimentary and plutonic rocks. Work on flanking granitic and gneissic rocks is aimed at a regional tectonic synthesis.

New Brunswick

27. Greiner, H.R., Univ. New Brunswick:
Biostratigraphy of northern New Brunswick, 1969-77.

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

29. Waugh, D.C.E., New Brunswick Dep. Natural Resources:
Remote sensing of salt domes, Sussex area, southern New Brunswick, 1973-75.

Newfoundland

30. Brueckner, W.D., Memorial Univ.:
Bedrock geology of the St. John's area, southeastern Newfoundland, 1972-.

Various aspects of bedrock geology of Avalon Peninsula, Newfoundland., 1960-.

See Outline of Avalon Peninsula geology; Geol. Assoc. Can./Min. Assoc Can., Field Trip B-6 Guidebook, p. 1-17, 1974.

31. DeGrace, J.R., Kean, B.F., Hsu, E., Newfoundland Dep. Mines and Energy:
Geological mapping of Nippers Harbour area, Newfoundland, 1974-75.

32. Fong, C.C.K., Newfoundland Dep. Mines and Energy:
Geological mapping – northern part of St. George's Bay Carboniferous basin, western Newfoundland, 1973-75.

See Geological mapping – St. George's Bay Carboniferous area; Newfoundland Dep. Mines and Energy, Rep. Activities, p. 66-69, 1974.

33. Greene, B.A., Newfoundland Dep. Mines and Energy:
Geology of Harbour Breton (1 M/5) and Gaultois (1 M/12) map areas, Newfoundland, 1974-77.

Mapping of the Harbour Breton sheet was completed in 1974; publication 1:50 000.

34. Jackson, G.D., Geol. Surv. Can.:
Opocopa map-area, Quebec-Labrador, 1963-.

35. Smyth, W.R., Marten, B.E., Newfoundland Dep. Mines and Energy:
Geological mapping in the central mineral belt, Labrador, 1973-76.

Regional 1:50 000 mapping and compilation program of the Central Mineral Belt. Mapping has shown that an angular unconformity exists within the Croteau Group, which is now redefined as two new groups. The Seal Lake Group unconformably overlies the upper parts of the former Croteau Group, and a significant uranium occurrence is located at the unconformity. The Grenville 'front' in the Seal Lake – Croteau Lake area is a 30 mile wide zone of decreasing deformation northwards.

Northwest Territories

36. Aitken, J.D., Balkwill, H.R., Cook, D.G., Klassen, R.W., Yorath, C.J., Geol. Surv. Can.:
Operation Norman, District of Mackenzie, 1967-.

See Effect of antecedent faults on "Laramide" structure, Mackenzie Arc; Geol. Surv. Can., Paper 74-1, pt. B, p. 259-264, 1974.

37. Blusson, S.L., Geol. Surv. Can.:
Operation Selwyn, British Columbia, Yukon, Northwest Territories, 1965.

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

See Report on the geology of the Kilohigok Basin, Goulburn Group, Bathurst Inlet, N.W.T.; Geol. Surv. Can., Paper 75-1, pt. A, p. 297-306, 1975.

39. Christie, R.L., Geol. Surv. Can.:
Operation Grant Land – northeastern Ellesmere Island and northwestern Greenland, 1963-.

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

See Preliminary report on the geology of the Arseno Lake map-area (86 B/12), District of Mackenzie; Geol. Surv. Can., Paper 75-1, pt. A, p. 317-321, 1975.

41. Henderson, J.B., Geol. Surv. Can.:
Yellowknife and Hearne Lake map-area, District of Mackenzie, 1970-.

42. Heywood, W.W., Geol. Surv. Can.:
Operation northern Melville Peninsula, District of Franklin, 1970-.

43. Hoffman, P.F., Geol. Surv. Can.:
Sloan River map-area, District of Mackenzie, 1973-.

See Volcanism and plutonism, Sloan River map-area (86K), Great Bear Lake, District of Mackenzie; Geol. Surv. Can., Paper 75-1, pt. A, p. 331-337, 1975.

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

45. Kerr, J.W., Geol. Surv. Can.:
Southwestern Ellesmere – western Devon Islands (Operation Grinnell), District of Franklin, 1967-.

See Grinnell Peninsula, Devon Island, District of Franklin (59 B,C; 69 A,D); Geol. Surv. Can., Paper 75-1, pt. A, p. 543, 1975.

46. Laporte, P., Dep. Indian Affairs Northern Development, Brock Univ.:
Geology of the Rankin Inlet greenstone belt, Northwest Territories, 1973-75.

47. McGlynn, J.C., Geol. Surv. Can.:
Calder River Map-area, District of Mackenzie, 1973-.

See Geology of the Calder River map-area (86 F), District of Mackenzie; Geol. Surv. Can., Paper 75-1, pt. A, p. 339-341, 1975.

48. Morgan, W.C., Geol. Surv. Can.:
Geology of the Foxe Fold belt, Baffin Island, District of Franklin, 1974-.

See Geol. Surv. Can., Paper 75-1, pt. A, p. 343-347, 1975.

49. Padgham, W.A., Dep. Indian Affairs and Northern Development:
Geological investigation of potentially mineralized belts in the Slave Province, Northwest Territories, 1973-.

Geological mapping of the more important greenstone belts in the Slave Province, concentrating on those belts which are known to contain mineral deposits of near economic grades and tonnages.

50. Sanford, B.V., Geol. Surv. Can.:
Paleozoic geology of the Hudson Bay region, 1971-.

See Paleozoic geology of the Hudson Bay region; Geol. Surv. Can., Paper 74-1, pt. B, p. 144-146, 1974-.

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

Ontario

52. Amukun, S., Ontario Division of Mines:
Gledhill Lake area, Thunder Bay District, Ontario, 1974-75.

Detailed mapping of a complex metavolcanic sequence in the Tashotta – Onaman Lake area.

53. Bennett, G., Ontario Division of Mines:
Jarvis Lake – Garden River area, District of Algoma, Ontario, 1974-76.

54. Blackburn, C.E., Ontario Division of Mines:
Kenora – Fort Frances sheet, Ontario, 1973-76.

Boyer Lake-Megissi Lake area, District of Kenora, Ontario 1974-76.

55. Bond, W.D., Ontario Division of Mines:
Houghton – Hough Lakes area, District of Thunder Bay, Ontario, 1973-75.

56. Breaks, F.W., Bond, W.D., Ontario Division of Mines:
Operation Kenora – Ear Falls, Ontario, 1974-76.

Helicopter supported areal reconnaissance of the English River Belt and adjacent belt margins to examine the psammatic-pelitic metasediments and migmatites of the Belt and their relationship to the Uchi and Wabigoon Subprovinces.

57. Bright, E.G., Ontario Division of Mines:
Anstruther – Cavendish Townships area, Peterborough County, Ontario, 1974-77.

58. Card, K.D., Ontario Division of Mines:
Benny area, District of Sudbury, Ontario, 1973-75.

59. Carter, M.W., Ontario Division of Mines:
Natal – Knight Townships, Districts of Sudbury and Timiskaming, Ontario, 1974-75.

Detailed mapping and petrogenetic study of the Keewatin and Timiskaming type metavolcanics in the Shinningtree area.

60. Clifford, P.M., Gower, C.F., McMaster University:
Petrogenesis, tectonic evolution of Archaean gneisses and associated plutons, near Kenora in the English River Gneiss belt, northwestern Ontario, 1974-77; Ph.D. thesis (Gower).

61. Clifford, P.M., Westerman, C.J., McMaster Univ.:
Tectonic evolution of the English River gneiss belt at Cedar Lake, Northwestern Ontario, 1973-77; Ph.D. thesis (Westerman).

62. Edwards, G., Ontario Division of Mines:
Pipestone Lake (North) area, District of Kenora, Ontario, 1974-75.

Detailed mapping of the southeasterly extension of the Lake of the Woods – Kakegi Lake metavolcanic-metasedimentary belt.

63. Frarey, M.J., Geol. Surv. Can.:
Huronian rocks north of Lake Huron, 1961-.

Lake Panache and Collins Inlet areas, Ontario, 1964-.

64. Giblin, P.E., Leahy, E.J., Robertson, J.A., Sage, R.P., Siragusa, G.M., Thurston, P.C., Ontario Division of Mines:
Sault Ste. Marie – Elliot Lake sheet, Ontario, 1973-75.

65. Jensen, L.S., Ontario Division of Mines:
Ramore area, District of Cochrane and Timiskaming, Ontario, 1974-76.

66. Kaye, L., Ontario Division of Mines:
Rowan Lake area, District of Kenora, Ontario, 1972-75.

Crow Lake area, District of Kenora, Ontario, 1973-75.

67. Liberty, B.A., Brock Univ.:
Southwestern Ontario Paleozoic mapping, 1967-75.

68. Lovell, H., Ontario Division of Mines:
Gauthier Township map and miscellaneous paper, 1972-75.

69. Mackasey, W.O., Ontario Division of Mines:
Legault – Hipel Townships, District of Thunder Bay, Ontario, 1973-75.

Detailed mapping of the Beardmore – Geraldton metavolcanic-metasedimentary belt to elucidate stratigraphy and structure and the boundary relationships of the Quetico and Wabigoon belts.

70. McIlwaine, W.H., Ontario Division of Mines:
Geology of the Sapawe Lake area, District of Rainy River, Ontario, 1973-75,

71. Meyn, H.D., Ontario Division of Mines:
Afton – Clement area, Ontario, 1972-75.

72. Norris, A.W., Geol. Surv. Can.:
Operation Winisk, 1967-.

73. Palonen, P.A., Ontario Division of Mines:
Sandybeach Lake area, District of Kenora, Ontario, 1974-77.

Detailed mapping of metavolcanic-metasedimentary sequence southwest of Minnitaki Lake.

74. Pryslak, A.P., Ontario Division of Mines:
Narrows Lake-Shabumeni River area, District of Kenora, (Patricia Portion), Ontario, 1971-.

Corless, Dent, Knott and Mitchell Townships, District of Kenora (Patricia Portion), Ontario, 1969.

Detailed mapping in the South Bay Mine area.

75. Pyke, D.R., Ontario Division of Mines:
Wetabeeg Lake area, Districts of Cochrane and Timiskaming, Ontario, 1974-75.

A regional stratigraphic and structural synthesis of the Abitibi Belt between Timmins and Kirkland Lake.

76. Robertson, J.A., Ontario Division of Mines:
Geology of the Flack Lake – Mount Lake area, Ontario, 1969-76.

Geology of the Massey area, District of Sudbury, Ontario, 1966-75.

Geology of the Cutler area, Ontario, 1964-75.

Stratigraphy, structural geology, and economic geology of part of the Blind River area including greater part of the Cutler Batholith.

77. Sage, R.P., Ontario Division of Mines:
Slate Islands, Thunder Bay District, Ontario, 1974-75.

Detailed mapping of the little known Slate Islands in Lake Superior, at the Southern and Superior Province boundary and in close proximity to the Port Caldwell alkalic complex.

78. Sage, R.P., Breaks, F.W., Ontario Division of Mines:
Operation Ignace-Armstrong, Ontario, 1973-75.

79. Siemiatkowska, K.M., Ontario Division of Mines:
Endikai Lake area, District of Algoma, Ontario, 1974-75.

Detailed mapping of the Haronian stratigraphy between Flack Lake and Wakomata Lake.

80. Siemiatkowska, K.M., Robertson, J.A., Ontario Division of Mines:
Massey-Webbwood area, District of Sudbury, Ontario, 1971-76.

The area consists of four townships: May, Hallam, Harrow and McKinnon, and is underlain by the Early Precambrian granitic basement to the north and Middle Precambrian sedimentary rocks of the Huronian Supergroup.

81. Siragusa, G.M., Ontario Division of Mines:
Batchewan-Pangis area, District of Algoma, 1974-76.

82. Thurston, P.C., Ontario Division of Mines:
Earngey-Costello Townships, District of Kenora, Ontario, 1973-76.

Detailed areal mapping to provide complete coverage of the Confederation Lake area as a basis for stratigraphic, structural and volcanological interpretation of the Dent Township base metal deposit.

83. Trowell, N.F., Ontario Division of Mines:
Squaw Lake – Sturgeon Lake area, District of Thunder Bay, Ontario, 1972-75.

Sturgeon Lake – Chevrier Township, District of Thunder Bay, Ontario, 1974-76.

84. Trusler, J., Ontario Division of Mines:
Farrington Lake area, District of Kenora, Ontario, 1974-75.

Detailed mapping of volcanic sequence – west of Savant Lake.

85. Wallace, H., Ontario Division of Mines:
Miminiska Lake area, Kenora District (Patricia Portion), Ontario, 1974-76.

Detailed mapping of a metasedimentary-metavolcanic belt west of Fort Hope to examine stratigraphy and volcanic petrochemistry of the belt.

Quebec

86. Allard, G.O., Baker, D., Ministère des Richesses Naturelles du Québec et Univ. Georgia:
Stratigraphie et métamorphisme dans une partie des cantons de Vimont, Lemoine, Dollier et Rinferet, 1974-76; thèse de doctorat (Baker).

87. Biron, S., Ministère des Richesses Naturelles du Québec:
Géologie de la région des Méchins, comté de Matane, 1974-75.

88. Cary, J-L., Guha, J., Univ. Québec à Chicoutimi:
Stratigraphie et Sédimentologie du bassin Mistassini, 1972-76.

Stratigraphie détaillée et étude sédimentologique des formations dolomitiques du Groupe Mistassini. Etude géochimique de la zone d'altétation entre des dolomies et le socle granitique. Délimitation des zones minéralisées de Cu, Pb, Zn et leurs relations avec la stratigraphie et la structure.

89. Charbonneau, J.M., Ministère des Richesses Naturelles du Québec:
Géologie de la région de Frelighsburg, comté de Missisquoi, 1974-75.

90. De Römer, H.S., Ministère des Richesses Naturelles du Québec:
Région du Lac Massawippi, 1974-76.

91. Dimroth, E., Côte, R., Trudel, P., Tassé, N., Rocheleau, M., Provost, G., Goulet, N., Ministère des Richesses Naturelles du Québec:
Stratigraphie, volcanologie, sédimentologie et tectonique de la région de Rouyn-Noranda, Temiscamingue et Abitibi-Ouest, 1974-75; thèses.

92. Dressler, B.D., Ministère des Richesses Naturalles du Québec:
Géologie de la région de Lacs Nachicapau, Marcel, Buteux et Horseshoe, Nouveau-Québec, 1974-75.

Continuation de l'étude systématique des formations de la Fosse du Labrador.

93. Dubé, C., Ministère des Richesses Naturelles du Québec:
Géologie de la région du Lac Champlain, territoire de Mistassini, 1974-75.

94. Durocher, M., Ministère des Richesses Naturelles du Québec:
Quart Sud-Ouest du canton d'Opémisca, 1974-75.

95. Eakins, P.R., Ministère des Richesses Naturelles du Québec:
Canton de Languedoc, 1974-75.

96. Franconi, A., Ministère des Richesses Naturelles du Québec:
Géologie de la région des Riviéres Assinica et Broadback, territoires de l'Abitibi et de Mistassini, 1974-75.

97. Germain, M., Ministère des Richesses Naturelles du Québec:
Quart Sud-Est du canton de Pershing, 1974-75.

98. Globensky, Y., Ministère des Richesses Naturelles du Québec:
Géologie des régions de St-Gabriel de Brandon et d'Aston, comtés de Maskinongé, Arthabaska et Nicolet, 1974-75.

Etude des formations sédimentaires des Basses Terres du St-Laurent.

99. Hébert, C., Ministère des Richesses Naturelles du Québec:
S.W. La Dauversière, 1974-75.

Etude des environs de la mine Chibex.

100. Hocq, M., Ministère des Richesses Naturelles du Québec:
Géologie des régions de Vienne et du lac Mesgouez, territoire d'Abitibi, 1974-75.

101. Lachance, S., Ministère des Richesses Naturelles du Québec:
Région de Patapédia, 1974-75.

102. Maybin, A., Ministère des Richesses Naturelles du Québec:
Nord du canton de La Ronde, 1974-75.

103. Remick, J.H., Ahmedali, S.T., Ministère des Richesses Naturelles du Québec:
Géologie de la région de Fort Rupert, territories d'Abitibi et de Mistassini, 1974-75.

Etude géologique d'une vaste région située le long de la rivère Rupert entre les latitudes 51° 00 et 52° 00 et à l'est de la frontière Ontarienne jusqu'à la longitude 77° 00.

104. Rive, M., Ministère des Richesses Naturelles du Québec:
Géologie de la région de Belleterre et du Lac Bay, comté de Témiscamingue, 1974-75.

105. Sharma, K.N.M., Ministère des Richesses Naturelles du Québec:
Géologie de la région de la Grande Rivière, Nouveau-Québec, 1974-75.

Cette étude géologique couvre la région comprise entre les latitudes 53° 00 et 54° 00 et les longitudes 75° 00 et 77° 00.

106. Taylor, F.C., Geol. Surv. Can.:
Operation Torngat, Quebec and Newfoundland, 1966-.

107. Van de Walle, M., Ministère de Richesses Naturelles du Québec:
Quart Sud-East du canton de Montbeillard, 1974-75.

Saskatchewan

108. Chandler, F.W., Geol. Surv. Can:
Bedrock geology, Wollaston Lake belt, Saskatchewan, 1974-.

See Bedrock geology (the Daly Lake Group), North Wollaston Lake, Saskatchewan; Geol. Surv. Can., Paper 75-1, pt. A, p. 307-309, 1975.

109. Forsythe, L.H., Saskatchewan Geological Surv.:
Geological mapping of the La Ronge (east half)-Hunter Bay (west half), Saskatchewan, 1974-75.

110. Johnston, W.G., Saskatchewan Geological Surv.:
Geological mapping of the Royal and Steephill Lakes (East) area, Saskatchewan, 1974-75.

111. Kirkland, S.J.T., Saskatchewan Geological Surv.:
Reconnaissance geological mapping of the Marchel-Wintego-Sandy Bay area, Saskatchewan, 1974-75.

112. Macdonald, R., Saskatchewan Geological Surv.:
Reconnaissance geological mapping of the Pelican Narrows (west) area, Saskatchewan, 1974.

113. Munday, R.J., Saskatchewan Geological Surv.:
Reconnaissance geological mapping of Mudjatik (east) and Ile-a-La-Crosse (east), Saskatchewan, 1973-75.

114. Ray, G.E., Saskatchewan Geological Surv.:
Geological mapping of the Foster Lake (South) and La Ronge (Northwest) area, Saskatchewan, 1974-75.

115. Scott, B.P., Saskatchewan Geological Surv.:
Geological mapping of the Dipper Lake area, Saskatchewan, 1974-75.

116. Sibbald, T.I.I., Saskatchewan Geological Surv.:
Reconnaissance geological mapping of La Loche (North) area, Saskatchewan, 1974-75.

Yukon Territory

117. Blusson, S.L., Geol. Surv. Can.:
Operation Stewart, District of Mackenzie and Yukon, 1968-.

118. Campbell, R.B., Geol. Surv. Can.:
Operation Mount St. Elias, Yukon and British Columbia, 1973-.

See Operation Saint Elias, Yukon Territory; Geol. Surv. Can., Paper 75-1, pt. A, p. 51-53, 1975.

119. Souther, J.G., Geol. Surv. Can.:
Cordilleran volcanic project, 1970-.

See Operation Saint Elias, Yukon Territory: Tertiary volcanic rocks; Geol. Surv. Can., Paper 75-1, pt. A, p. 63-70, 1975.

120. Tempelman-Kluit, D., Geol. Surv. Can.:
Operation Snag, Yukon, 1970-.

See Carmacks map-area, Yukon Territory; Geol. Surv. Can., Paper 75-1, pt. A, p. 41-44, 1975.

DATA STORAGE AND RETRIEVAL

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

122. Bibby, R., Alberta Research Council:
Report on shot-hole data file, 1974.

123. Bidgood, D.E.T., Prentiss, D.D., Smith, L., Nova Scotia Research Foundation:
Digital plotting and annotating of high density bathymetric and seismic data in the field from automatically generated 8 level paper tape containing range, range ship positions (meters) water depth and event count, 1974.

124. Bowman, A.F., Grove, E.W., Carter, N.C., British Columbia Dep. Mines Petrol Resources:
Babine Lake rock geochemical survey, 1974-75.
Involves the statistical analysis (partly by computer) of essentially unaltered host rock geochemistry from what is viewed as a small preliminary sample survey. Known ore deposits in the Babine Lake area are primarily prophyry copper. Elements analyzed include Cu, Co, Ni, Pb, and Zn (to date).

125. Cockburn, G.H., Ministère des Richesses Naturelles du Québec:
BADGEQ – La Banque de Données Géochimiques du Québec, 1973-75.

Le premier objectif de BADGEQ est de rendre disponible aux chercheurs qui s'intéressent à l'exploration minière ou à la recherche académique, tout information géochimique pertinente à leur champ d'intérêt particulier.

Jusqu'à maintenant environ 120 000 records analytiques de sédiments de ruisseau, sols, roches, carottes de forage, minéraux lourds, eau naturels et minéraux ont été incorporés au systéme.

La récupération de l'information pourra être formulée en utilisant n'importe quelle combinaison des variables emmagasinées (i.e. coordonnées géographiques, élément chimique, intervalle de teneur, etc...) et même des rapports entre variables chimiques.

126. Favini, G., Laval Univ.:
Multilevel massive sulphide exploration, 1973-75.

See Statistical aeromagnetic and gravimetric criteria for sulphide districts in greenstone areas of Quebec and Ontario; CIM Bull., Dec. 1974.

127. Fuh, Tsu-Min, Saskatchewan Geological Surv.:
Computerized geological mapping in the Saskatchewan Precambrian area, 1974.

Application of constituent analysis: Classification of common volcanic rocks based on the chemical composition of rocks in a high dimensional space, 1974-.

128. Gold, C.M., Westgate, J.A., Univ. Alberta:
Quaternary subsurface stratigraphy within bedrock channels in the Sand River area, Alberta with special emphasis on computing techniques, 1972-76.

129. Gregory, D.J., Nova Scotia Dep. Mines:
Canadian index to Geoscience data, 1974-77.

130. Grice, R.H., McGill Univ.:
Urban geological and geotechnical data management, 1973-74.

Includes the entry, not only of standard drill hole data, but non-standard observational data, the use of a computer terminal with the Time Sharing Option and development of methods for graphical representation of precision of data and interpretations.

131. Grove, G., Gora, G., Environment Canada:
GOWN – A groundwater data storage retrieval and processing system, 1967-.

See Some principles of data storage and information retrieval and their implications for information exchange; J. Inter. Assoc. Math Geol., v. 5, p. 1-10, 1973.

Emphasis has been placed on the development of the computer-oriented system for storing, processing and retrieving of groundwater data rather than the maintenance of a large data base.

132. Harper, J.D., Liskiw, K., Shell Canada Ltd.:
Biostratigraphy – computer applications.

To analyse the applicability of multivariate techniques to subsurface data.

133. Holroyd, M.T., Geol. Surv. Can.:
Pattern recognition, 1968-.

134. McMillan, W.J., Bowman, A.F., British Columbia Dep. Mines Petrol. Resources:
Highland valley project, British Columbia, 1974-76.

Involves a general statistical approach to examining and correlating a large volume of geological data from a computerized data base. Various geologic parameters with spatial distributions will be subject to trend surface analysis or 'trend' contouring. Multivariate analysis of large numbers of variables may aid interpretation of geologic processes in the area.

135. Nichol, I., Queen's Univ.:
The interpretation of exploration oriented geochemical data in computer processable data files, 1971-75.

136. Ozoray, G., Alberta Research Council:
Alberta hydrogeological information map series, 1968-.

137. Smith, F.G., Univ. Toronto:
Maintenance of the ALKHAL file of information on anhydrous salt systems containing one or more of the alkali halides as formal components, 1963-80.

See ALKHAL, a file of information on salt systems with an alkali halide component; Can. J. Earth Sci., v. 11, no. 5, p. 719-721, 1974.

About 8000 records are completed and stored on magnetic disk and tape; about 2000 records await complete processing.

Development of computer programs for statistical analysis of published data on composition of minerals and rocks, 1969-79.

Most of the compilations of chemical composition of minerals and rocks must be reprocessed, keeping in mind the errors of analyses and the fact that the components are not free variables, but in each analysis are in closed sets.

Tests of LEMCAT, a system of logical evaluation methods of computer-aided teaching, 1973-76.

See A hybrid man-machine teaching method: progress and some statistical tests; J. Geol. Education, v. 21, no. 2, p. 65-67, 1973.

APL files of statements on concepts in two courses are in on-line storage at the University of Toronto Computer Centre. These files can be accessed by the supervisors to prepare typewritten tests for logical evaluation. Tests of efficiency of the two methods of teaching a course in introductory geology is in progress (1974-75 session).

138. Smith, F. G., Onasick, E. P., Univ. Toronto:
Development of computer programs for generation of moving pictures of the effect of changing the subjective bias on the final contour map of any kind of x, y, z data plotted in the x-y plane, 1968-75.

139. Smith, F. G., Watson, D. F., Univ. Toronto:
Information storage, retrieval and manipulation of all information in a selected field of physical geochemistry, 1963-75.

This information storage and retrieval system (GESTAR) uses free (i.e., uncoded) text of author(s), title, source, and descriptors of the subject matter. The information is stored on a disk pack and is accessed by an IBM 370/165 computer. Optimal procedures and cost of gathering and processing relevant information are being assessed for publication. Initial file management and search jobs are composed of modular steps in SPITBOL, PL/1, FORTRAN IV, all linked by JCL for HASP/MVT control. The design of the jobs optimized the ease of implementation by users with other machines. A sample retrospective bibliographic file (ALKHAL) with about 7000 records in disk storage has been used to test the system of jobs. The results have been excellent: complicated boolean searches take 3-15 seconds of computer time, and further optimizing can be done.

140. Stein, R., Alberta Research Council:
Central data file, 1968-.

141. Sutterlin, P. G., Univ. Western Ontario:
The investigation of geological data structures and their effect in determining the potential of geological data files to generate information, 1972-.

See Some considerations in management of computer-processable files of geological data; Mathematical Geol., v. 6, no. 4, 1974.

142. Sutterlin, P. G., Dreimanis, A., Cooper, M. A., Univ. Western Ontario:
Development of a file and analysis of Pleistocene data from Ontario using SAFRAS system.

143. Umar, P., McGill Univ.:
Assessment of mineral resource potential in an East-West Belt north of Noranda, Quebec, 1973-76; Ph. D. Thesis.

144. Wynne-Edwards, H. R., Montgomery, J. H., Groux, G., Symons, D., Fox, A. C. L., Mullen, J., Stark, J., Univ. British Columbia:
MINDEP – a system of computer processable mineral deposits file for western Canada, 1973-.

A research project to design, construct, and utilize comprehensive geological and economic mineral deposit data files suitable for mineral resource inventory and for mineral exploration research. The project assured responsibility for an existing hand-copy bibliographic file (MacDonald file) and has enlarged, revised, corrected, updated it within a new format in computer-processable form. This is MINDEP ABC file. At a project level, tests are underway to enter and utilize a whole range of geological paraneters so as to construct exploration models for particular types of deposit in British Columbia.

ENGINEERING GEOLOGY

145. Babcock, E. A., Schwartz, F. W., Cruden, D. M., Univ. Alberta:
Areal variations in the mechanical and hydrologic properties of tills, 1974-75.

To quantify regional features of till in the Edmont area; to correlate these attributes to mechanical properties as determined from laboratory testing and to patterns of groundwater flow; to define the nature of permeability and its variability in glacial tills indirectly using groundwater flow models and field and laboratory measured parameters: and to correlate these new data on the geotechnical

properties of tills with existing information in the Edmonton Urban Geologic Data Bank in order to extend the utility of the data bank.

146. Barnett, D.M., Geol. Surv. Can.:
Terrain performance, Melville Island, District of Franklin, 1971-.

See Integrated landscape mapping of eastern Melville Island, District of Franklin; Geol. Surv. Can., Paper 75-1, pt. A, p. 381-382, 1975.

147. Barron, K., Bielenstein, H.U., Grant, F., Mines Branch, E.M.R.:
Roof stability in coal mines, 1970-.

148. Bayrock, L.A. Reimchen, T.H., Alberta Research Council:
Surfical deposits and erosion susceptibility, Alberta Foothills, 1974-76.

Mapping and evaluation of erosion susceptibility of the surficial deposits of the Alberta Foothills.

149. Bérad, J., Roux, R., Durand, M., Université du Québec à Montréal:
Réactions chimiques entre certains types de shale et le ciment Portland dans les bétons, 1972-75.

Certains types de shale sont beaucoup plus réactifs dans les bétons que d'autres et le seul moyen de les identifier est par l'étude pétrographique.

150. Bozozuk, M., Burn, K.N., Eden, W.J., National Research Council:
Geotechnical properties of eastern marine clay, 1951-.

Field studies are concerned with landslide occurrences, settlement observations of buildings and highway embankments. Attempts are being made to measure the loading of piles due to negative skin friction caused by subsiding clay layers. Laboratory investigations are being continued on stress-deformation characteristics of the "Champlain Sea" clay.

See Bearing capacity of clays for tower silos; Can. Agricultural Eng., v. 16, no. 1, p. 13-17, 1974.

151. Carr, P.A., Geol. Surv. Can.:
Hydrodynamics of slopes in Champlain Sea deposits, Ontario, 1974-.

152. Carson, M.A., Musuronchan, M., Donovan, J., Lajoie, G., McGill Univ. (Geography):
Spatial pattern of slope instability in basins of Champlain clay, 1974-77; Ph.D. thesis (Musuronchan); M.Sc. theses (Donovan and Lajoie).

Previous studies of slope instability in Champlain Clay deposits have usually focussed on individual failures. Exceptions are the work of LaRochelle *et al.* in the Desbiens and Yamaska areas, and, from a strictly morphological standpoint, Karrow's study of the Trois Riviéres area. Our work will closely follow the pattern of LaRochelle's study but, in addition, emphasize the spatial pattern of different types of slope instability. Tentative field areas are the Ruis, des Vases basin, west of Lachute, and the Maskinongé valley, south west of Trois Riviéres.

153. Chagnon, J.-Y., Lefebvre, G., Lafleur, J., Quebec Dep. Natural Resources, Sherbrooke Univ.:
Slope stability studies – influence and control of water in the ground, 1974-76; Ph.D. thesis (Lafleur).

Investigation of the influence of the water table on slope stabiltiy and an evaluation of various control measures on the movement of water in the ground.

154. Cruden, D.M., Bruce, I., McCann, A., Univ. Alberta:
Stability of natural slopes in rock, 1972-.; M.Sc. theses (Bruce, McCann).

See Major rock slides in the Rockies; Proc. 27th Can. Geotech. Conf., p. 59-67, 1974.

155. Denis, R., Université du Québec à Montréal (Geographie):
Les glissements de terrain au Québec – zones dangereuses, 1974-77.

156. Dion, D.-J., Quebec Dep. Natural Resources:
Geotechnical map, Riviére-du-Loup – Trois-Pistoles, Québec, 1973-75.

157. Frederking, R., National Research Council:
Deformation and failure of ice, 1960-.

To establish the dependence of the deformation and failure of ice on stress, temperature and time.

158. Gadd, N.R., Geol. Surv. Can.:
Geological variability of marine deposits, Ontario, 1974-.

To evaluate the stratigraphic, geomorphic and historical factors affecting the natural and enginneering behaviour of marine clays, with special reference to landslides.

159. Gélinas, P.J., Univ. Ottawa:
Stability of slopes along Lake Erie north shore, 1970-75.

160. Gélinas, P.J., Deschamps, G., Univ. Ottawa:
Cementation bonds in sensitive clays, 1973-76; M.Sc. thesis (Deschamps).

161. Gélinas, P.J., Lafond, J.-M., Univ. Ottawa:
Permeability ratio in thick-banded clays, Ottawa Valley, 1974-76; MSc thesis (Lafond).

162. Harrison, J.E., Geol. Surv. Can.:
Environmental geology – Athabasca tar sands development, 1974-.

163. Heginbottom, J.A., Geol. Surv. Can.:
Erosion in a permafrost environment, 1969-.

Terrain sensitivity evaluation and mapping, Mackenzie Valley Transportation Corridor, 1971-.

See Terrain performance, Pointed Mountain gas pipeline; Geol. Surv. Can., Paper 74-1, pt. B, p. 201-202, 1974.

164. Herget, G., Mines Branch, E.M.R.:
Strength of rock and stresses in rock masses, 1970-.

See Ground stress determinations in Canada; Rock Mechanics, v. 6, no. 1, p. 53-64, 1974.

Stress measurements were made in 1974 in a mine near Sudbury, Ontario, at depths between 4000 and 7000 ft, in a cooperative program with the Federal Geological Survey of West Germany. Preliminary results indicate a nearly constant maximum principal compressive stress direction, ENE-WSW horizontal, and a slight decrease in stress gradient compared to that reported in the literature for depths less than 4000 ft.

165. Hodgson, D.A., Geol. Surv. Can.:
Terrain performance, central Ellesmere Island, District of Franklin, 1972-.

166. Hudec, P.P., Univ. Windsor:
Amount and rates of sorption and de-sorption of water on aggregates and the effect of de-icing salts on these rates and on the properties and durability of concrete aggregate, 1974-76.

167. Johnston, G.H., National Research Council:
Structures in permafrost, 1950-.

See An experimental field study of the use of two-phase thermosiphons for the preservation of permafrost; Engineering J., p. 33-37, 1974.

Anchorage in permafrost, 1965-.

See Field tests of deep, power installed screw anchors in permafrost; Can. Geotechnical J., v. 11, no. 3, p. 348-358, 1974.

Behaviour of circular footings and plate anchors embedded in permafrost; Can. Geotechnical J., v. 11, no. 4, p. 531-553, 1974.

168. Johnston, G.H., Baker, T.H.W., National Research Council:
Deformation and strength of frozen and thawing soil, 1971-.

To increase knowledge concerning the deformation characteristics and strength properties of frozen and thawing soils and to develop in-situ methods for determining the strength of frozen ground in the field.

169. Johnston, G.H., Penner, E., National Research Council:
Insulated emabnkments in permafrost areas, 1971-78.

To investigate the use and performance of insulation in road construction in permafrost areas. Test sections have been installed on the Mackenzie Highway near Inuvik, Northwest Territories.

170. Kay, B.D., Univ. Guelph:
Instrumentation development for in situ measurement of unfrozen water and ice content of frozen soils, 1973-76.

See Specific heats of components of frozen soil; Geol. Surv. Can., Paper 74-1, pt. B, p. 203, 1974.

171. King, M.S., Pandit, B.I., Univ. Saskatchewan:
Mechanical properties of rocks, 1967-78.

See Ultrasonic velocity measurements on frozen rocks; Earth Research, v. 1, p. 43-49, 1974.

The elastic properties of rocks are being measured experimentally by static and dynamic techniques. The static stress-strain relations and ultrasonic-wave velocities are measured simultaneously on each rock sample as it is subjected to changes in triaxial loading conditions with different pore saturants. These tests are performed in a controlled-environment chamber at temperatures in the range -6°F to +75°F.

172. Locat, J., Quebec Dep. Natural Resources:
Etude des argiles de la mer de Goldthwait, entre Trois-Pistoles et Matane, Québec, 1973-75.

Chemical, mineralogical and geotechnical study of the marine clay along the south shore of the St. Lawrence River.

173. Maranda, R., Quebec Dep. Natural Resources:
Geotechnical map, Becancour area, Quebec, 1973-75.

Geotechnical mapping of the Becancour Industrial Park and adjacent area. A data bank is being developed for this project which will eventually be extended to other similar work.

174. Maranda, R., Morin, J.-P., Quebec Dep. Natural Resources, Sherbrook Univ.:
Landslide probability map, St-Thuribe area, Quebec, 1974-75.

Study of slope stability along the Blanche River in Portneuf county. An attempt is made to define a parameter which could be easily and cheaply measured and which would relate to those properties of the clay that are important in slope stability studies. A conventional geotechnical investigation is being supplemented by resistivity measurements and a study of seismic wave propogation.

175. Massiéra, M., Université de Moncton:
Inventory of environmental geology of Moncton area, New Brunswick, 1971-76.

176. Matyas, E.L., Lelievre, B., White, O.L., Univ. Waterloo (Civil Engineering):
Shoreline erosion on the Great Lakes, 1972-75.

See A study of shoreline erosion in western Lake Ontario; Geol. Surv. Can., Paper 74-1, pt. B, p. 204-205, 1974.

177. May, R., Nowak, R., Alberta Research Council:
Urban geology of the Calgary-Bow Valley area, Alberta, 1974-78.

Mapping at a scale of 1:50 000 will start in 1975, to cover roughly a 20-mile square around the City of Calgary. In 1974, Nowak mapped a 107 square mile area adjacent to the west and north boundaries of the City of Calgary. A surficial geology map at a scale of 1:25 000 is in preparation. Eighty-six holes were drilled in Nowak's area and sampled on a five foot interval. Data from this will be utilized to produce cross-sections isopach and structure maps of the glacial deposits of the area.

178. McPherson, R.A., Alberta Research Council:
Surfical deposits, Athabasca Oil Sands area, 1974-.

Three-dimensional study of surfical deposits of the potential mining area of the Athabasca Oil Sands deposit; intention is to determine lithologies, engineering characteristics, aquifer distribution, sources of construction materials, and other parameters of importance to development in the area.

179. McPherson, R.A., Kathol, C.P., Alberta Research Council:
Urban geology of the greater Edmonton area, 1971-75.

Surfical mapping and erosion potential, part of Slave Lake area (NTS 830), 1973-74.

See Susceptibility of geologic deposits to erosion in the House Mountain area, Alberta; Alberta Research Rep. 74-5, 1974.

180. Moore, D., Univ. British Columbia:
Rubble Creek landslide, British Columbia, 1973-75; M.Sc. thesis.

181. Penner, E., Eden, W.J., National Research Council:
Expansion of pyritic shale in Ottawa area, 1969-.

See Microstructure of Billings shale and biochemical alteration products, Ottawa, Canada; Can. Geot. J., v. 11, p. 482-489, 1974.

182. Penner, E., Johnston, G.H., Goodrich, L.E., National Research Council:
Thermal conductivity of some Mackenzie Highway soils, 1973-74.

Laboratory studies to determine the thermal conductivity of some fine grained soils that might be used for the construction of the Mackenzie Highway were carried out.

183. Riglin, L., Univ. British Columbia:
'Perpetual Landslide', West Summerland, British Columbia, 1974-76.

A slow-moving landslide initiated before 1938 and still moving, causing aggradation at the mouth of Trout Creek and associated environmental problems.

184. Root, J.D., Alberta Research Council:
Strip mine revegetation study, Cadomin area, 1971-75.

185. Russell, G.A., Whitehead, M.B., Univ. Manitoba:
Differential thermal analysis of the geology and chemistry of Portland cement concrete, 1975-.

In general, the concrete industry is almost totally dissatisfied with current analytical methods for determining the amount of Portland cement used in producing concrete – especially where poor quality, low strength concrete. DTA records an endothermal reaction that occurs when hydrated compounds, of non-hydrated Portland cement components, are dehydroxylated (inter-lattice H_2O) at 450°C to 500°C. Preliminary tests indicate that the dimensions of this reaction (total time, area of peak etc.) are a quite valid implication of the amount of cement used.

186. Scott, J.S., Geol. Surv. Can.:
Stability of natural slopes, 1971-.

187. Skinner, R.G., Geol. Surv. Can.:
Terrain studies, James Bay Power Development area, 1973-.

188. Soles, J.A., Mines Branch, E.M.R.:
Rock as an engineering material: its stability in changing environments, 1973-.

The long-term effect of different chemical environments on rock used as a construction material may be deleterious and result in destruction of engineering structures incorporating them. Information on the stability of rock in such environments is required.

GEOCHEMISTRY

Analytical Methods and Analysis

189. Abbey, S., Bouvier, J.L., Champ, W.H., Church, K.A., Courville, S., Lachance, G.R., Sen Gupta, J.G., Geol. Surv. Can.:
Analysis of international reference samples, 1969-.

Available information on 48 samples "standard samples", originating in 10 different countries has been updated and compiled into a sequel to G.S.C. Paper 73-36. Analytical data on 2 Canadian syenites from the Bancroft area (containing unusually high concentrations of uranium, thorium, and the rare earths) and on an unusual gabbro from Mount Royal, have been received from over 50 collaborating laboratories in 20 countries. The data are evaluated and some recommended values assigned in a report to be published by the Canada Centre for Mineral and Energy Technology, on behalf of the Canadian Certified Reference Materials Project.

Development of methods for the analysis of geological materials, 1969-.

(1) X-ray fluorescence analysis for major, minor and some trace elements in rocks: A new "automated-hardware programmed" sequential wavelength-dispersive X-ray fluorescence spectrometer has been installed and adapted for this purpose. Samples are fused with a lithium borate mixture and cast into discs, which are exposed to primary X-rays in a rotating holder in vacuo. The secondary radiations are recorded on a punched tape, which is processed in an off-line computer to provide analytical data for Si, Al, Fe, Mg, Ca, Na, K, Ti, Mn, P, S, Cr and 6 additional "trace" elements which can be selected from a larger group. The system is programmed to correct for background, inter-element effects and instrumental drift. The program is now being extended to include iron ores.

(2) Use of a mini-computer to process the raw data produced by an ion-selective electrode meter for fluroine determination and for the output of an atomic absorption spectrometer for the determination of many other elements.

(3) Use of the Govindaraju "screw-rod" method for the determination of Rb, Li, Cs, K and possible Zn by atomic absorption: The solid sample, mixed with a suitable buffer salt, is introduced into the flame impregnated in the thread of a short length of screw rod.

(4) Use of a mini-computer to perform all data reduction involved in converting densitometer readings to per cent or parts per million concentrations in photographic spectrographic analysis.

(5) Determination of the rare earths: after chemical pre-treatment, where required, a number of the lanthanide elements can be determined in an acetylene-nitrous oxide flame, by flame emission or atomic absorption, depending on the element.

(6) Installation of additional channels and interfacing with a computer to enlarge the scope of and expedite analysis by photo-electric direct-reading emission spectrometry.

190. Boyd, M. L., Mines Branch, E. M. R.:
Thermal volatilization analyses of oil shales and similar naturally occurring organic materials, 1972-.

Involves the application of the Carle Thermal Analysis system in which the materials are pyrolyzed and the products are swept directly into a flame ionization detector. This method determines the rate of organic carbon evolution as a function of temperature and/or time.

191. Dagbert, M., Webber, G. R., McGill Univ.:
Statistical methods applied to exploration geochemistry, 1974-75; M. Sc. thesis (Dagbert).

192. Mason, G. L., Palombo, D. P., Mines Branch, E. M. R.:
Comprehensive spectrographic analysis of sulphide ore specimens from the Sturgeon Lake deposits, Northwestern Ontario, 1973-75.

193. Maynes, A. D., Univ. Waterloo (Chemistry):
Analysis of geological material, 1974-.

Application of X-ray fluorescence to rock analysis; determination of iron II, iron III ratio in sulphide-bearing rocks.

194. Parslow, G. R., Univ. Regina:
Trace metals in Flin Flon volcanics and certain diorites near Pelican Narrows, 1972-76.

195. Plant, A. G., Lachance, G. R., Geol. Surv. Can.:
Electron probe microanalysis, 1962-.

196. Sawatzky, H., George, A. E., Mines Branch, E. M. R.:
Study of types of sulphur, nitrogen and hydrocarbon in some Cretaceous crude oils of western Canada, 1971-.

197. Smith, D. G. W., Schimann, K., Univ. Alberta:
Whole-rock silicate analysis using the electron microprobe, 1974-75.

198. Smith, R. A., Univ. Alberta:
An investigation of spurious reflectivity spikes in a series of monochromator crystals used in X-ray fluorescence analysis, 1974.

An attempt to correlate the height of "reflectivity spikes" with the contribution of the scattering from O atoms and O^- ions to the total intensity of the (002) reflection in the acid phthalates.

199. Traill, R. J., Bonardi, M., Delabio, R. N., Pringle, G. J., Geol. Surv. Can.:
X-ray diffraction and laser microprobe analyses, and mineralogical studies, 1968-.

200. Webber, G. R., McGill Univ.:
Application of instrumental methods of analysis to geological materials, 1959-.

Chemical Oceanography and Limnology

201. Frape, S., Queen's Univ.:
Geolimnology and geochemistry, Rideau Lakes, Eastern Ontario, 1974-76; Ph. D. thesis.

Water analysis, and physical and chemical analyses of grab samples and cores are being carried out to determine the present quality of the lake, the impact of man on lake sediments and the changes in various physical and chemical parameters that have occurred in Recent times.

202. Gorman, W. A., Underhill, J., Steibel, W., Kewen, T., Walker, M., Queen's Univ.:
Geochemistry of natural waters and recent sediments in the Kingston area, Ontario, 1974-75; theses.

The field subjects include a study of the quality of ground water in the area of the old City of Kingston dump, the geolimnology of Mica Lake near Sydenham and Leland Lake near Battersea. A laboratory study comparing the losses of trace elements by recent sediments using different methods of drying is being carried out on sediments from Collins Lake.

203. Jackson, R., Nichol, I., Queen's Univ.:
Lake sediment geochemistry in the Yellowknife area, Northwest Territories, 1972-75; M. Sc. thesis (Jackson).

204. Johnston, L. M., Queen's Univ.:
Geochemistry and geochronology of sediments of the upper St. Lawrence River, 1973-76; Ph. D. thesis.

Cores and grab samples have been taken in the section of the St. Lawrence River above Morrisburg, Ontario, from most of the deep basins present. The detailed shape of some of these basins has been investigated by acoustic profiling. Changes in the physical and chemical parameters of the sediments with time are being investigated, and it is hoped that a study of the cores will resolve some of the problems concerning the deglaciation of Southeastern Ontario.

205. Nichol, I., Queen's Univ.:
Lake sediment geochemistry as a source of information for mineral exploration and environmental studies, 1973-75.

206. Sonnenfeld, P., Hudec, P.P., Univ. Windsor:
Density stratified brines as heliothermal energy collectors, 1972-76.

Exploration Geochemistry

207. Allan, R.J., Geol. Surv. Can.:
Interpretation of surface geochemical anomalies in terms of blind ore deposits, 1974-.

See Bedrock geochemistry in the immediate vicinity of ore deposits: Eldorado; Pine Point; Faro; Geol. Surv. Can., Paper 75-1, pt. A, p. 71-72, 1975.

208. Appleyard, E.C., Univ. Waterloo:
A study of halide and sulphate mineral occurrences in the rocks of the Grenville Supergroup, 1975-76.

209. Armbrust, G.A., McQuade, B.N., Univ. Ottawa:
Rubidium as a guide in exploration for volcanogenic massive sulphide deposits, 1974-75; M.Sc. thesis (McQuade).

To study the distribution of Rb in rocks associated with volcanogenic massive sulphide deposits. Previous work in Chile detected broad Rb anomalies around porphyry copper deposits, thereby enlarging the target for mineral exploration. Four hundred duplicate samples from the volcanic complex near Bachelor Lake, Quebec, are now being analysed for Rb and several other trace elements to see if trace elements can be used as indicators for the specific types of hydrothermal alteration commonly associated with volcanogenic massive sulphide deposits.

210. Armstrong, R.C., Nichol, I., Queen's Univ.:
The geochemistry of mercury and its role in geochemical exploration in British Columbia, 1971-75; Ph.D. thesis (Armstrong).

To establish the nature of mercury dispersion associated with a variety of mineral deposits in British Columbia. Involves a comparative study of the dispersion patterns of other elements with a view to evaluating the usefulness of mercury as a pathfinder element in the search for different types of mineralization. Attention has been focussed on investigating the mineral form of the mercury in the material.

211. Azzaria, L.M., Laval Univ.:
Mercury in soil and rocks as a guide to mineralization in Gaspé, Quebec, 1972-77.

212. Bingley, J.M., Nova Scotia Dep. Mines:
Pictou-Antigonish highlands project, 1974-75.

A geochemistry base with silt samples being collected at 1000-foot intervals. Lithostratigraphic control is being done concurrently. Selective tectonic and petrologic work is planned for 1975. Analyses is being done for the following elements: copper, lead, zinc, nickel, cobalt, cadmium, manganese, silver, mercury, uranium, molybdenum, germanium, barium, strontium.

213. Bogle, E.W., Nichol, I., Queen's Univ.:
Bedrock geochemistry associated with massive sulphide mineralization, Lessard property, Quebec, 1974-76; M.Sc. thesis (Bogle).

To establish the nature and factors of the host rock associated with the mineralization as a basis for establishing the potential of bedrock composition as an aid in both reconnaissance and detailed level exploration.

214. Boyle, R.W., Geol. Surv. Can.:
Primary halos as an aid in the location of orebodies, 1973-.

215. Bristow, Q., Geol. Surv. Can.:
Airborne geochemistry, 1970-.

216. Closs, L.G., Ontario Division of Mines.:
Geochemical orientation survey in the Elliot Lake area, District of Algoma, Ontario, 1974-75.

See Ontario Division of Mines, Misc. Paper 59, p. 165, 1974.

217. Closs, L.G., Sado, E.V., Ontario Division of Mines:
Reconnaissance exploration geochemistry – Quaternary geology research within felsic centres of the Abitibi greenstone belt, Ontario, 1973-75.

See Ontario Division of Mines, Prel. Maps P 935 – P939, 1974.

Exploration geochemistry – Quaternary geology research within the Beardmore – Geraldton Gold Belt, District of Thunder Bay, Ontario, 1974-76.

See Ontario Division of Mines, Misc. Paper 59, p. 160-164, 1974.

Orientation exploration geochemistry – Quaternary geology investigations of carbonatite alkalic complexes at Prairie Lake and Killala Lake, District of Thunder Bay, Ontario, 1974-76.

See Ontario Division of Mines, Misc. Paper 59, p. 154-159, 1974.

218. Coleman, L. C., Univ. Saskatchewan:
Geochemistry and petrology of Tertiary igneous rocks of the Sweet Grass Hills, Montana, 1970-76.

219. Crosby, K. S., New Brunswick Dep. Natural Resources:
Geochemical investigation and correlation of Sussex salt springs deposits, 1974-75.

Through the detailed chemical analysis of bromine and strontium from the salt core of the Sussex area, the project will study for possible potash horizons throughout the rock salt sequence. Also, environmental and depositional conditions will be compared through any profiles.

220. Darling, R., Ecole Polytechnique:
La géochimie des roches autour du gisement cuprifère de Louvem, Val d'Or, Québec, 1969-75.

To document the petrography and geochemistry of the host rocks enclosing this volcanogenic deposit and to measure the size and chemistry of the wall rock alteration halo around it.

The petrography and geochemistry of the volcanic host rocks around the Manitou-Barvue Ag-Zn-Cu deposit, Val d'Or, Quebec, 1972-76.

The geochemistry of the marble host rocks surrounding the Lynx Canada Zn deposit, Frontenac County, Ontario, 1973-75.

To search for trace element haloes around the ore.

221. Davenport, P. H., Butler, A. J., Hornbrook, E. H. W., Newfoundland Dep. Mines and Energy, Geol. Surv. Can.:
A geochemical reconnaissance survey of the Burlington Peninsula, Newfoundland, 1974-76.

Lake sediment samples were collected from an area of 500 sq. mi. in the eastern part of the Burlington Peninsula to assess the mineral potential of the area. In addition, stream sediment samples were collected from an area of 160 sq. mi. within the area of the lake sediment survey in order that the relative potential of the two sample media in exploration might be compared.

222. Davenport, P. H., Butler, A. J., McArthur, J. G., Newfoundland Dep. Mines and Energy:
Stream sediment survey for zinc and lead mineralization, Port au Port area, western Newfoundland, 1973-75.

The survey was carried out to define the location and extent of Pb and Zn mineralization in the Palaeozoic carbonate rocks of the Port au Port area, and to demonstrate the application of stream sediment as a medium for semi-regional geochemical exploration in this terrain.

223. Davenport, P. H., Hornbrook, E. H. W., Butler, A. J., Newfoundland Dep. Mines and Energy, Geol. Surv. Can.:
The use of lake sediments in a reconnaissance geochemical survey for zinc mineralization in western Newfoundland, 1973-75.

224. Ferguson, S. A., Freeman, E. B., Ontario Division of Mines:
Ontario occurrences of float, placer gold, indicator minerals for kimberlite, etc., 1973-75.

225. Fletcher, K., Univ. British Columbia:
Role of organic matter in the development of hydromorphic geochemical anomalies related to buried mineral deposits, 1972-75.

226. Foster, J. R., Nichol, I., Queen's Univ.:
The application of partical extraction techniques in geochemical exploration, 1969-75.

227. Healing, D. W., Appleyard, E. C., Univ. Waterloo:
Geochemistry of the wall rock alteration zone at Gullbridge Mine, Gull Pond, central Newfoundland, 1974-76; M. Sc. thesis (Healing).

228. Hoffman, S., Fletcher, K., Univ. British Columbia:
Regional geochemical reconnaissance by lake sediment sampling, 1971-75; Ph. D. thesis (Hoffman).

229. Klassen, R. A., Nichol, I., Queen's Univ.:
Lake sediment geochemistry as a source of information for mineral exploration and environmental studies in the Kaminak Lake area, Northwest Territories, 1973-75.

230. Lalonde, J-P., Quebec Dep. Natural Resources:
Groundwater geochemical reconnaissance of the western Abitibi Region of Quebec, 1974-76.

231. Laurent, R., Laval Univ.:
Etude géochronométrique et géochimique des complexes ophiolitiques des Cantons de l'Est et de Gaspésie, Québec, 1971-76.

232. Lett, R. E., Fletcher, K., Univ. British Columbia:
Role of organic matter in dispersion of trace elements around mineralization, 1972-75; Ph. D. thesis (Lett).

233. Levinson, A. A., Univ. Calgary:
Exploration and environmental geochemistry, 1972-.

See Introduction to exploration geochemistry; Applied Publishing Ltd., Calgary, 1974.

234. McArthur, J. G., Davenport, P. H., Newfoundland Dep. Mines and Energy:
A geochemical reconnaissance survey of the Codroy-Bay St. George Carboniferous basin Project 6-5, Canada-Newfoundland exploration and evaluation program, 1974-75.

Both stream and lake sediment samples were collected to evaluate the mineral potential of the Carboniferous rocks between St. George's and Codroy in southwestern Newfoundland (includes all or parts of N. T. S. sheets 12 B/1, 12 B/2, 12 B/3, 12 B/7, 12 B/8, 11 0/11, 11 0/14, and 11 0/15). 391 lake sediment samples were collected from the central basins of lakes where the sediment is organic-rich. The samples were dried, sieved to minus 80 mesh (<177μ) and are being analyzed for Cu, Pb, Zn, Fe, Mn, Ba, Sr, U and loss on ignition. 2410 stream sediment samples were collected at 1000 foot intervals along streams and rivers. These samples were prepared and analyzed in the same manner as the lake sediments. An open file release of the results is planned for early in 1975.

235. Miller, J., Fletcher, K., Univ. British Columbia:
Geochemical exploration techniques in permafrost: Bathurst Norsemines, 1974-76; M. Sc. thesis (Miller).

236. Morse, R. H., Consultant, Toronto:
Development of techniques of geochemical prospecting for uranium, 1968-.

237. Nichol, I., Lavin, O. P., McConnell, J. W., Sopuck, V. J., Queen's Univ.:
Bedrock composition as a guide to areas of base metal potential in the greenstone belts of the Canadian Shield, 1973-76; theses.

238. Northcote, K., Bowman, A. F., British Columbia Dep. Mines Petrol. Resources:
Rupert inlet whole rock geochemistry.
Rupert inlet silt geochemistry.
Tsitika – Schofn Lake silt geochemistry, 1974-.

Includes a statistical study of the distribution of 17 elements analyzed for each sample. Stream profiles indicating anomalous trace element concentrations related to known mineralization are emphasized in the silt sampling projects.

239. Olade, M., Fletcher, K., Univ. British Columbia:
Bedrock geochemistry around porphyry coppers, Highland Valley, British Columbia, 1972-74; Ph. D. thesis (Olade).

See Potassium chlorate – hydrochloric acid: a sulphide selective leach for bedrock geochemistry; J. Geochem. Expl., v. 3, p. 337-44, 1974.

Barium-strontium relationships at the Highland Valley porphyry copper deposit, B. C.; Western Miner, v. 48, no. 3, p. 24-28, 1975.

240. Slatt, R. M., Memorial Univ.:
Sedimentology/sedimentary geochemistry of sediments in Newfoundland coastal inlets, 1972-.

See Geochemistry of bottom sediments, Conception Bay, southeastern Newfoundland; Can. J. Earth Sci., v. 11, p. 768-784, 1974.

To evaluate sedimentary processes and establish a model of sedimentation for formerly-glaciated inlets, to evaluate sedimentary geochemical variability, and to gather base-line geochemical data.

241. Spitz, G., Webber, G. R., McGill Univ.:
Rock geochemistry of the Bell Allard mineral deposit, Matagami area, Quebec, 1973-76; Ph. D. thesis (Spitz).

242. Stephenson, J. F., Manitoba Mines Branch:
Geochemistry of mineral springs as a guide to base metal exploration in west central Manitoba, 1973-75.

Brines, silts and salt percipitates gathered from 50 saline mineral spring localities discharging from the Devonian outcrop belt along the west shore of Lake Winnipegosis, west-central Manitoba, are being analyzed for Pb, Zn, Cu, Ni, Ag, Ba, Sr, Na, K, Ca, Mg, Mn, Fe, Cl, F and C. These data will be used to assess the base metal potential of the reef forming Middle Devonian, Winnipegosis and Dawson Bay Formations.

243. Tremblay, R. L., Ministère des Richesses Naturelles du Québec:
Levé géochimiques des sédiments de ruisseau de la région de Causapscal, Gaspésie, Province de Québec, 1974-76.

244. Turek, A., Univ. Windsor:
Primary metal dispersion around the Fox orebody, 1973-75.

245. Warren, B., Ministère des Richesses Naturelles du Québec:
Etude des dépôts de surface et échantillonnage de Moraines dans la région de Baie du Poste, territoire de Mistassini, 1974-75.

Isotope Geochemistry

246. Armstrong, R. L., Russell, R. D., Slawson, W. F., Yamaguchi, M., Univ. British Columbia (Geophysics and Astronomy):
Sr and Pb isotopic analyses of material obtained from the Joides leg 37 cruise, 1974-75.

247. Baadsgaard, H., Lambert, R. St J., Folinsbee, R. E., Kuo, S. L., Day, L. W., Williams, G. D., MacQuarrie, R., Kesmarky, S., Lerbekmo, J. F., Gray, J., Koster, F., Godfrey, J. D., Univ. Alberta:
Isotope geology of North American geologic events with special reference to western Canada; theses.

See Rb-Sr age of late kinematic phase of the Hudsonian orogeny in the Beaverlodge area, Saskatchewan; Can. J. Earth Sci., v. 11, no. 5, p. 643-649, 1974.

Zircon dating in the ancient Precambrian of Greenland (HB, RStJL); sulphur and lead isotope systematics of sulphide mineralization along the Tintina Arc (HB, REF, SLK); zircon Th-U-Pb systematics in NE Albertan Shield (HB, LWD); K-Ar dating of bentonites in eastern Saskatchewan – biostratigraphy and time-scale (GDW, HB), K-Ar dating of sanidines to correlate a Cretaceous magnetic reversal (JFL, HB); the kinetics of Rb, Sr, Ca, K and Na thermal diffusion in an adamellite (RK, HB); a redetermination of the half-life of Rb^{87} (JG, HB); Rb-Sr and U-Pb dating of plutonic rocks in eastern Saskatchewan (HB, RMacQ); Rb-Sr and U-Pb and K-Ar dating of the ancient granulite rocks north of Tazin Lake, Saskatchewan (FK, HB, JG); ancient zircons in sediments entrapped in the Yellowknife volcanics (REF, HB); Th-U-Pb, Rb-Sr, K-Ar studies in the Precambrian shield in Northeastern Alberta (HB, JDG).

248. Coomer, P., Schwarcz, H. P., McMaster Univ.:
Sulfur isotope studies of massive, volcanogenic sulfide ore deposits of the Canadian Archean, 1973-75.

See Sulfur isotopic study of a massive, volcanogenic Archaean sulfide ore deposit; Geol. Soc. Amer. (Abstracts), v. 6, no. 7, p. 693-694, 1974.

249. Crocket, J. H., McMaster Univ.:
Gold mineralization in Archean greenstone belts: a study of genetic relationships using neutron activation analysis, 1974-77.

250. Dyck, W., Geol. Surv. Can.:
The use of simple volatile compounds and their isotope ratios in natural emanations for evaluating mineral potential, 1972-.

See Simple gases and their relevance in mineral exploration; Geol. Surv. Can., Paper 74-1, pt. B, p. 57-59, 1974.
Surface lake water uranium – radon survey of the Lineament Lake area, District of Mackenzie; Geol. Surv. Can., Paper 75-1, pt. A, p. 209-212, 1975.

251. Folinsbee, R. E., Haverslew, R., Univ. Alberta:
Isotopic and geochemical study of the Ruttan Lake deposit, Manitoba; M. Sc. thesis (Haverslew).

252. Folinsbee, R. E., Heal, G., Univ. Alberta:
Isotopic and geochemical study of the Bankeno Pb-Zn deposit, Cornwallis Island, Northwest Territories; M. Sc. thesis (Heal).

253. Folinsbee, R. E., Hoiles, H., Univ. Alberta:
Isotopic and geochemical study of the Afton copper deposit, British Columbia; M. Sc. thesis (Hoiles).

254. Folinsbee, R. E., Kuo, Say Lee, Univ. Alberta:
Isotopic and geochemical study of Pb deposits in the Yukon; Ph. D. thesis (Kuo).

255. Forester, R. W., Univ. Saskatchewan:
Oxygen and carbon isotopic studies of igneous and metamorphic rocks, 1974-76.

256. Huang, Y.-F., Farquhar, R. M., Univ. Toronto (Physics):
Measurement of uranium in rocks and minerals, 1972-.

Samples of quartz (jasper, agate, crystalline quartz) and opal were mixed with cellulose, compressed into tablets and exposed to a thermal neutron flux in the SLOWPOKE nuclear reactor. Tracks from the fission of ^{235}U were recorded in 10 μmeter thick polycarbonate foil adjacent to the samples. Tracks were enlarged by differential solution in NaOH solution, and counted using a spark counting technique. To provide necessary checks on sample and track recorder foil homogeneity, measurements were repeated at several dilution levels. The quartz samples were found to contain 30 to 300 p. p. b. Uranium while the opal contained about 10^5 p. p. b. The internal accuracy of the method is about ±8% (1σ) in the 10 to 100 p. p. b. uranium concentration range.

257. Longstaffe, F., McNutt, R.H., Schwarcz, H.P., McMaster Univ.:
Oxygen and strontium isotopic studies of Archaean crust, 1973-77; Ph.D. thesis (Longstaffe).

Correlated isotopic studies of Sr and 0 in igneous and metamorphic rocks of two terranes are being done: Wabigoon greenstone belt and adjacent English River gneiss belt, to test whether shifts in initial isotope ratios can be attributed to interaction between crust and mantle.

258. Muehlenbachs, K., Univ. Alberta:
Stable isotope exchange experiments and their application to geologic problems, 1974-77.

Oxygen diffusion coefficients will be determined in a variety of silicates of geologic interest.

259. Olson, E., Schwarcz, H.P., McMaster Univ.:
Sulfur and oxygen isotope variations in evaporitic sulfates, 1971-76; Ph.D. thesis (Olson).

Brines and evaporite gypsum anhydrite from Abu Dhabi sabkha show large variation in δ 0-18, comparable to secular variation observed in some Phanerozoic evaporites. Gypsum-dissolved sulphate fractionation is being studied at 25°C.

260. Schindler, J., Schwarcz, H.P., Crocket, J.H., McMaster Univ.:
Re and Os in molybdenite and other sulfides, 1969-75; Ph.D. thesis (Schindler).

261. Slawson, W.F., LeCouteur, P., Sato, K., Univ. British Columbia (Geophysics and Astronomy):
Isotopic analysis of lead and sulfur from Kuroko-type deposits existing in western British Columbia, California and Japan, 1973-76.

262. Thode, H.G., Monster, J., McMaster Univ.:
Sulphur isotope ratios in petroleum and sediments, 1960-.

263. Thode, H.G., Rees, C.E., McMaster Univ.:
Sulphur isotope ratios in lunar materials, 1970-.

Mineralogical Phase Chemistry

264. Ahmed, S.M., Bartels, K., Mines Branch, E.M.R.:
Electrochemical studies of the sulphide-solution interface, 1973-.

265. Dostal, J., Fratta, M., Aumento, F., Dalhousie Univ.:
Geochemistry of a diabase dike, 1974-75.

See 'Residence' contamination of K, Rb, Si and Tl in diabase dikes; Can. J. Earth Sci., v. 11, p. 422-429, 1974.

The degree of mobility of the so-called incompatible elements is being investigated in a granite country rock – diabase system.

266. Duncan, I.J., Univ. British Columbia:
Total pressure and water pressure in metamorphism: an experimental and theoretical study, 1974-76; Ph.D. thesis.

A study of the thermodynamic properties of water in cordierite and an experimental reinvestigation of Fe, Mg partitioning between garnet and cordierite should provide a viable geobarometer/geothermometer for pelitic rocks.

267. Fratta, M., Dostal, J., DeAlbuquerque, C.R., Ermanovics, I.F., Dalhousie Univ., St. Mary's Univ., Geol. Surv. Can.:
Geochemistry of the Perth Road Pluton, 1974-75.

The trace element distribution will be used to understand the origin of this pluton, with REE, Rb, Sr, Ba, Y, Zr, Hf some of the elements to be investigated.

268. Fratta, M., Shaw, D.M., McMaster Univ.:
Thallium in basaltic rocks, 1971-75; Ph.D. thesis (Fratta).

269. Fung, P.C., Shaw, D.M., McMaster Univ.:
Partitioning of Tl-Rb-K in major rock-forming minerals, 1972-76; Ph.D. thesis (Fung).

270. Fyfe, W.S., Abdali, O., Univ. Western Ontario:
Red Sea and ophiolite geochemistry, 1974-77; Ph.D. thesis (Abdali).

See 0^{18} enriched ophiolitic metabasic rocks from Ead Liguria (Italy), Pindos (Greece), and Troodos (Cyprus); Contr. Mineral. Petrol., v. 47, p. 41-62, 1974.

The alteration of basalts in the Saudi shield and a comparison with some Canadian examples.

271. Fyfe, W.S., Brown, J.R., Univ. Western Ontario:
Cation adsorption on carbonate surfaces, 1974-75; M.Sc. thesis (Brown).

Investigation of specific surface adsorption of cation on calcite argonite surfaces using atomic absorption and E.S.C.A.

272. Fyfe, W.S., Brule, D., Univ. Western Ontario:
Cation adsorption on Fe-Mn oxide surfaces, 1974-75; M.Sc. thesis (Brule).

Investigation of copper adsorption on Fe-Mn oxides by means of A.A. and E.S.C.A.

273. Garrett, R.G., Geol. Surv. Can.:
Bear granites, District of Mackenzie, 1973-.

274. Grove, E.W., McMillian, W.J., Johnson, W., Bowman, A.F., British Columbia Dep. Mines Petrol. Resources:
Petrochemistry of the Guichon Creek Batholith, British Columbia, 1970-76.

275. Harmon, K.A., Shaw, D.M., McMaster Univ.:
Tungsten in Precambrian iron formations and carbonaceous shales, 1972-75; M.Sc. thesis (Harmon).

276. Helsen, J.N., Shaw, D.M., McMaster Univ.:
The geochemistry of tungsten in basalts and andesites and its behaviour in relation to some other trace elements, 1971-75; Ph.D. Thesis (Helsen).

Tungsten is being determined by NAA in a worldwide range of basaltic and andesitic rocks, to investigate its behaviour as a trace element in relation to the origin of those rocks.

277. Hubregtse, J.J.M.W., Manitoba Mines Branch:
Geochemistry of Precambrian volcanic rocks, 1974-78.

Involves major and trace element chemistry of the volcanic belts in northern Manitoba. Comparative studies are aimed at problems concerning:
1) Processes of Magma formation;
2) Chemical affinities to tectonic environments; and
3) Chemical parameters to distinguish between mineralized and barren rocks.

278. Jongejan, A., Rolko, V.H.E., Wilkins, A.L., Mines Branch, E.M.R.:
A study of the weathering of mill tailings in connection with water pollution, 1971-.

See Field observations concerning drainage from tailing disposal areas; Mines Branch Invest. Rep. Ir-74-52, 1974.

279. Kretz, R., Univ. Ottawa:
Study of granite plutons near Yellowknife, Northwest Territories, 1971-75.

280. Kuo, H.Y., Crocket, J.H., McMaster Univ.:
A rare earth study of rock from the Sudbury Nickel Irruptive, 1968-75; Ph.D. thesis (Kuo).

Rare earth abundance patterns were determined for norites, granophyres, sublayer whole rocks, sublayer basic and ultrabasic xenoliths and offset quartz diorites. All of these rocks have rare earth abundance patterns compatible with their derivation by fractional crystallisation from a single parental magma. In particular, the sublayer norite and its included ultramafic xenoliths appear to be genetically related to the main nickel irruptive.

281. Kwong, J., Crocket, J.H., McMaster Univ.:
Gold abundances in rocks from an Archaean greenstone belt, Kakagi Lake area, Ontario, 1973-75; M.Sc. thesis (Kwong).

A study of gold abundance in rocks from the vicinity of Kakagi Lake, northwestern Ontario is progressing very well. Data on 100 samples representing all the major rock types of this Archaean terrain have been completed. Basalt and acidic volcanics, the most abundant rock types of the district, both average about 1 ppb gold with a range of 0.5 to 5 ppb. Despite many small gold showings no rock units systematically enriched in gold have yet been indicated.

282. Shaw, D.M., McMaster Univ.:
Tl in Precambrian and other sedimentary rocks, 1972-.

The behaviour of Tl in sedimentary rocks is poorly known. Abundances have been measured in a variety of shales and banded iron formations, and indicate ways in which the usual coherence with K, Rb, may be destroyed in sulphur-rich environments.

283. Shaw, D.M., Vatin-Pérignon, N., McMaster Univ., Inst. Alpine Geol., Grenoble:
Li in spilites, 1972-.

A geochemical study of European spilites, testing trace element behaviour in spilitisation.

284. Steger, H.F., Mines Branch, E.M.R.:
Stability of comminuted sulphide minerals and ores during storage, 1973-.

Chemical analysis of rocks and ores for mineral phases, 1974-.

An attempt will be made to determine elemental sulphur in sulphide ores by a sublimation technique.

285. Teruta, Y., Crocket, J.H., McMaster Univ.:
Abundances of Pt, Pd, Ir and Au in chromites, sulfides and whole rocks from the Merensky Reef at Lonrho, South Africa, 1972-74; M.Sc. thesis (Teruta).

Platinoids in the Merensky Reef: neutron activation measurements of Pt, Pd, Ir and Au in sulphides, chrome spinels and whole rock samples from Western Platinum Limited's Lonrho property indicate that both sulphides and discrete platinoid minerals are the important sources of these metals in this region of the Merensky Reef. Chromite does not appear to be an important metal carrier.

286. Tihor, L.A., Crocket, J.H., McMaster Univ.:
The exhalite concept as a model for understanding gold distribution in the Larder-Kirkland Lake district, Ontario, 1973-77; Ph.D. thesis (Tihor).

287. Tihor, S., Grundy, H.D., Crocket, J.H., McMaster Univ.:
A fluid inclusion study of gangue minerals from the Kerr-Addison Mine, Ontario, 1974-76; M.Sc. thesis (Tihor).

An examination of quartz and carbonates from the Kerr-Addison mine will be undertaken to search for fluid inclusions. If suitable examples are found filling temperatures will be measured by standard heating stage method. The study will be extended to certain carbonate horizons in the Kirkland-Larder Lake area if suitable inclusions occur in these rocks.

General

288. Ayres, L.D., Univ. Manitoba:
Stratigraphy and geochemistry of Early Precambrian metavolcanic sequence, Setting Net Lake, Ontario, 1965-.

289. Azzaria, L.M., Laval Univ.:
Geochemical aspects of a study on the restoration of the biological quality of the Rouyn-Noranda mining area, Quebec, 1974-78.

290. Boorman, R.S., Madeley, W.D., New Brunswick Research and Productivity Council:
Evaluation of sulphation roasting techniques on New Brunswick base metal ores, 1975-76.

291. Bowman, A.F., Grove, E.W., Carter, N.C., British Columbia Dep. Mines Petrol. Resources:
Babine Lake rock geochemical survey, 1974-75.

292. Chesworth, W., Univ. Guelph:
Studies of granite, 1970-.
Studies of basalt, 1972-.

293. Christiansen, E.A., Haughton, D.H., Alley, D.W., Schreiner, B.T., Saskatchewan Research Council:
Quaternary geology and geochemistry of the unconsolidated deposits of the Canadian Shield in Saskatchewan south of 58° North Latitude, 1974-78.

294. Doyle, P., Fletcher, K., Univ. British Columbia:
Regional geochemistry of Prairies in relation to agricultural productivity, 1972-75; Ph.D. thesis (Doyle).

Major study in 1974 of blood copper status of cattle in relation to regional geochemistry.

295. Fyfe, W.S., Andrews, A.J., Univ. Western Ontario:
Basalt – sea water interactions, 1974-77; Ph.D. thesis (Andrews).

Problem is concerned with sulphur – basalt interactions and the kinetics of processes.

296. Fyfe, W.S., Kronberg, B., Univ. Western Ontario:
Laterite geochemistry, 1974-76; Ph.D. thesis (Kronberg).

Investigation of the total chemistry of laterites from the Amazon basin with particular reference to soil fertility.

297. Gosselin, J.R., Tremblay, R.J., Townsend, M.G., Mines Branch, E.M.R.:
Electrical properties of sulphide minerals, 1970-.

Mössbauer investigation of sulphide minerals, 1970-.

298. Hitchon, B., Alberta Research Council:
Geochemistry of formation waters, crude oils and natural gases in western Canada sedimentary basin. Study of kerogen from sedimentary rocks in the western Canada sedimentary basin.

See Petroleum indicators in formation waters from Alberta, Canada; Bull. Am. Assoc. Petrol. Geol., v. 58, p. 464-473, 1974.

Occurrence of natural gas hydrates in sedimentary basins; Natural Gases in Marine Sediments, p. 195-225, Plenum Publishing, New York, 1974.

Special studies are underway on inorganic, organic and stable isotope characteristics of (1) Devonian fluids, (2) Lower Cretaceous heavy oil deposits, and (3) Alberta crude oils and condensates. In addition, a special investigation of formation waters is being carried out with respect to their use in geochemical exploration for crude oil and natural gas.

299. Hoag, R.B., Jr., Webber, G.R., McGill Univ.:
A hydrogeochemical study of spring and drill hole waters near the Eustis Mine, Quebec, 1971-75; Ph.D. thesis (Hoag).

300. Hornbrook, E.H.W., Davenport, P.H., Grant, D.R., Newfoundland Dep. Mines and Energy, Geol. Surv. Can.:
Regional and detailed geochemical exploration studies in glaciated terrain in Newfoundland, 1972-75.

301. Horwood, J.L., Townsend, M.G., Mines Branch, E.M.R.:
Magnetic properties of sulphide minerals, 1970-.

302. Liberty, B.A., Brock Univ.:
Trace element study of carbonates (Palaeozoic) of southwestern Ontario, 1967-77.

303. Malpas, J., Memorial Univ.:
Geochemical study of ophiolite suites in Newfoundland. Proposed study of ocean floor rocks from Trans-Atlantic Geotraverse, 1972-75.

304. Mitchell, W.S., Aumento, F., Dalhousie Univ.:
Fission track determinations of uranium, 1973-74.

See A geochemical comparison of minerals of oceanic and continental ultramafic origin; J. Geoph. Res., v. 79, no. 35, p. 5529-5532, 1974.

Uranium concentrations within individual mineral phases in ultramafic rocks from oceanic, stable cratonic and known ophiolite environments are compared in an attempt to distinguish between ancient oceanic crust now exposed on the continents and similar rocks of truc continental origin.

Fission track studies of D.S.D.P. Leg 37 natural glasses and basalts, 1974-75.

Fission track dating of natural glasses and the distribution of uranium in zones of alteration are the two main topics of investigation.

305. Moore, T.R., Granberg, H., McGill Univ., (Geography):
Organic matter accumulation and decomposition and pedological processes in a southern Quebec forest soil, 1974-76.

The movement of nutrients and other soil components is being examined in a beech-maple soil (an Orthic Melanic Brunisol) at Mont St. Hilaire, Québec. Nutrient inputs are measured in throughfall, and zero-tension lysimeters collect leachates at 5 depths in the soil profile. Measurements are made at weekly intervals, along with environmental parameters and carbon dioxide evolution rates. Decomposition of litter is being traced in 1 mm mesh bags. The study is being extended to other sites in a small (0.4 km^2) drainage basin, and nutrient and mineral output through streamflow is being measured. The study will give an insight into the processes operating in deciduous forest soils and how these processes affect discharge/dissolved solid relationships.

306. Parslow, G.R. Univ. Regina:
Graphical methods of characterising the elemental distributions in crystalline rocks, 1974-75.

307. Ridler, R.H., Geol. Surv. Can.:
Geochemistry of gold within the exhalites of the Superior Provinces, 1974-.

308. Scott, S.D., Hutchison, M., Farkas, A., Univ. Toronto:
Experimental studies on refractory sulfide systems, 1969-; theses.

Trace element partitioning among sphalerite, pyrite and pyrrhotite.

309. Shegelski, R.J., Scott, S.D., Univ. Toronto:
Archean iron formation, 1973-76.

Investigating the geology and geochemistry of Archean iron formations in the Savant Lake and Sturgeon Lake region of Northwestern Ontario.

310. Smith, T.E., Jackson, T.A., Univ. Windsor, Univ. West Indies:
Tertiary spilites and quartz keratophyres in the Wagwater belt, Jamaica, West Indies; 1973-76.

311. Stauffer, M.R., Mulcherjee, A.C., Koo, J., Univ. Saskatchewan:
Origin of Amisk Group of meta-volcanic rocks near Flin Flon, Manitoba, 1968-75.

Involves a study of the lithology, structures and chemistry of the Amisk Group.

312. Townsend, M.G. Mines Branch, E.M.R.:
Neutron investigation of sulphide minerals, 1973-.

313. Archibald, D. A., Queen's Univ.:
The age and thermal history of the Bay of Islands Complex western Newfoundland, 1972-75; M. Sc. thesis.

314. Armstrong, R. L., Green, N., Univ. British Columbia:
Sr isotope survey of Cordilleran igneous rocks, 1975-80.

Rb/Sr and high precision Sr^{87}/Sr^{86} analyses of Cenozoic volcanic rocks and Mesozoic plutonic rocks will be obtained for samples from localities throughout British Columbia starting with the Mount Garibaldi and Meagher Creek areas north of Vancouver and expanding coverage as samples become available. This data will provide clues to petrogenesis and a crude indication of the age of deep crustal rocks throughout the province. The results may enable us to map the western boundary of the Precambrian craton, and distinguish areas of predominantly sialic or simatic basement.

315. Armstrong, R. L., Nelson, J., Univ. British Columbia:
Geochronometry of Cordilleran batholiths and blueschists, 1974-75.

K-Ar, Rb-Sr, U-Pb, and fission track dating in coordination with petrologic estimates of temperature-pressure history will be applied to obtain detailed T-P chronologies of selected areas. Initial work will be concentrated near 51°30'N latitude to produce a profile across the Coast Range batholith. At the same time, a study of high pressure metamorphic terrains Washington, Britich Columbia, and Alaska will be carried out, to further test the hypothesis that the separate parts of paired metamorphic belts were formed simultaneously.

316. Berger, A. R., Jayasinghe, N. L., Memorial Univ.:
Gneisses and granites of the Wesleyville area, Bonavista Bay, Newfoundland, 1975-77.

The study will concentrate on the structural style and chronology of the several varieties of variably deformed granites in this area and their country rocks. Previous work suggests that all are of Precambrian age but recent isotopic work indicates a late Cambrain to Silurian age for two of the granites, and this study aims to resolve this conflict.

317. Cimon, J., Ministère des Richesses Naturelles du Québec:
Datation de roches de la Région de Chibougamau, 1974-75.

Le but de l'étude est de dater les gisements, déterminer s'il y a eu une ou plusieurs période de minéralisation et définir le rôle des structures majeures de la région par rapport à la minéralisation.

318. Clark, G. S., Gilbert, H. P., Univ. Manitoba, Manitoba Mines Branch:
Rubidium – strontium isotopic age study in the Oxford Lake – Gods Lake region, northern Manitoba, 1975-76.

319. Cormier, R. F., St. Francis Xavier Univ.:
Rubidium-strontium dating of rocks and minerals from the northern Appalachians, 1962-.

See Radiometric age of the Keppoch Formation, Browns Mountain Group, northern mainland of Nova Scotia; Can. J. Earth Sci., v. 9, p. 1325-1329, 1974.

320. Farrar, E., Mortimer, C., Noble, D. C., Queen's Univ.; Shiraz Univ., Iran; Mackay School Mines, Nevada:
The timing of Cenozoic volcanism in Peru and northern Chile, 1973-75.

See Episodic Cenozoic volcanism and tectonism in the Andes of Peru; Earth Planet. Sci. Letters, v. 21, p. 213-220, 1974.
K-Ar ages from Tertiary lavas of the northernmost Chilean Andes; Geol. Rundsehau, v. 63, p. 484-490, 1974.

321. Fletcher, I. R., Farquhar, R. M., Univ. Toronto (Physics):
Lead isotope variations in sulphide minerals, 1972-.

Samples from seven locations were analysed using a 90°, 30 cm radius mass spectrometer; with a single tungsten filament and silica gel loading. Isotope ratios were determined with internal reproducibility of 0.1%. The data show variations which are consistent with a history involving additions to 2.5 b.y. old lead of radiogenic lead generated between 1.4 b.y. and 0.95 b.y. Two of the samples are from Paleozoic rocks and further work on samples of this kind is planned.

322. Ford, D. C., Schwarcz, H. P., McMaster Univ. (Geography):
Radiometric geochronology and geothermometry of Pleistocene Cave deposits, Canadian Rockies and Mackenzie Mountains, 1973-76.

See Radiometric age studies of speleothem; Geol. Surv. Can., Paper 74-1, pt. B, p. 223, 1974.

323. Grove, E. W., British Columbia Dep. Mines Petrol. Resources:
Recent volcanism in northwestern British Columbia, 1972-74.

The youngest known volcanic rocks in the western Canadian Cordillera are localized in the Lava Fork area. Radio-carbon dates from material in the oldest part of these flows are less than 140(±) years old, and the youngest cinder cones are thought to have erupted about 1904.

324. Lambert, R. St J., Hogarth, D., Univ. Alberta:
Rb-Sr geochronology of the Wakefiled Syenite and related rocks, Ontario, 1968-75.

325. Lambert, R. St J., Holland, J. G., Univ. Alberta:
Geochemistry and geochronology of the Lewisian, Scotland and shield composition and structure in general, 1962-.

Petrochemistry and age of the Malvernian, England, 1966-76.

Petrochemistry of the Leven Schists and related rocks, Scotland, 1970-75.

326. Lerbekmo, J. F., Evans, M. E., Baadsgaard, H., Univ. Alberta:
Correlation of continental Upper Cretaceous and Paleocene sediments in central and western Alberta.

To document paleomagnetic reversals and date them using radiometric ages of volcanic ashes.

327. Lowdon, J. A., Geol. Surv. Can.:
Radiocarbon laboratory development and operation, 1959-.

328. Marchand, M., Crocket, J. H., McMaster Univ.:
An Rb/Sr study of the Mistastin Lake Pluton and meteorite crater, northern Labrador, 1969-75.

An Rb/Sr isochron for the Mistastin Lake pluton, Northern Labrador, gave an age of 1346 ± 15 m.y. with an initial ratio of 0.7082 ± 0.0003 (1 sigma, $\lambda = 1.39$). Knowing the age of the Mistastin Lake pluton, the behaviour of Rb/Sr parameters in melt rocks of the Mistastin Lake meteorite crater which lies wholly within the pluton can be evaluated. The age of the melt rocks is found to be identical with that of the country rock suggesting closed system behaviour for the Rb/Sr system in an impact event.

An Rb/Sr investigation of melt rocks and breccias from the Onaping formation, Sudbury area, 1969-75; Ph. D. thesis (Marchand).

Two projects involving the Sudbury Nickel Irruptive are nearly completed. A neutron activation study of rare earth elements in various rock units of the Irruptive clearly points to a comagmatic origin for all rocks. In particular, the ore-bearing sublayer rocks appear to be genetically related to the main irruptive. An Rb/Sr isotopic study of melt rocks in the Onaping Fm., the presumed impact-generated fall-back rock overlying the Irruptive, indicates that these glasses were formed about 1800 m.y. ago. The age of the Irruptive itself as established by another member of the group, Dr. R. H. McNutt, is about 1950 m.y. The melt glass age when considered in terms of the Irruptive age suggests that the Sudbury impact glasses have behaved as nearly closed systems which closely date the time of impact.

329. Mathews, W. H., Univ. British Columbia:
Eocene thermal history of Shuswap metamorphic rocks of the Trinity Hills, British Columbia, 1973-76.

330. McBride, S. L., Queen's Univ.:
A geochronological investigation of the relationships between granitic intrusion and mineralization in the Andes of Bolivia, 1973-76, Ph. D. thesis.

A regional study of the temporal relationships between granitic intrusion and mineralization in the Andes of Bolivia has revealed a discordance between the K-Ar ages of cogenetic biotite-muscovite pairs. This discordance is being further investigated using $^{40}Ar - ^{39}Ar$ incremetal heating techniques.

331. Mitchell, W. S., Aumento, F., Dalhousie Univ.:
Fission track dating and uranium content of D. S. D. P. Leg 34 basalts, 1974.

Natural basaltic glasses from the D. S. D. P. Leg 34 project have been dated successfully using fission track techniques. Results obtained agree well with those obtained by other workers using different dating techniques.

Fission track studies of D. S. D. P. Leg 37 natural glasses and basalts, 1974-75.

Fission track dating of natural glasses and the distribution of uranium in zones of alteration are the two main topics of investigation.

332. Slawson, W. F., LeCouteur, P., Sato, K., Univ. British Columbia (Geophysics and Astronomy):
Isotopic analysis of lead and sulfur from Kuroko-type deposits existing in western British Columbia, California and Japan, 1973-76.

333. Stauffer, M. R., MacQuarrie, R., Univ. Saskatchewan:
Ages of volcanism, intrusion, and metamorphism of the Precambrian rocks near Flin Flon, Manitoba, 1970-77; M. Sc. thesis (MacQuarrie).

334. Turek, A., Univ. Windsor:
Rb-Sr geochronology of the Manitoba nickle belt, 1973-75.

335. Van Schmus, W. R., Card, K. D., Harrower, K. L., Ontario Division of Mines, Univ. Kansas:
Geology and ages of buried Precambrian basement rocks, Manitoulin Island, Ontario, 1972-75.

The geology of the buried Precambrian basement beneath the Phanerozoic cover of Manitoulin Island has been evaluated on the basis of aeromagnetic data, well cuttings, core samples, and Rb-Sr and U-Pb geochronologic data on some of the subsurface samples.

336. Wanless, R. K., Geol. Surv. Can.:
Isotopic study of mica-bearing rocks yielding anomalous K-Ar 'ages', 1965-.

See Geochronology of Archean and Proterozoic rocks in the southern District of Keewatin; Can. J. Earth Sci., v. 12, no. 1, p. 95-114, 1975.

337. Westgate, J. A., Univ. Alberta:
Fission-track ages of Quaternary pyroclastics in western Canada, 1974-75.

GEOMORPHOLOGY AND GLACIOLOGY

338. Barnett, D. M., Geol. Surv. Can.:
Proglacial geomorphology, Generator Lake, Baffin Island, District of Franklin, 1968-.

Surficial geology and geomorphology of Melville Island, District of Franklin, 1971-.

339. Brown, R. J. E., National Research Council:
Permafrost distribution in Canada, 1953-.

See Some aspects of air photo interpretation of permafrost in Canada; Div. Bldg. Res. Tech. Paper No. 409, National Research Council of Canada, 1974.

340. Brueckner, W. D., Memorial Univ.:
Various aspects of Newfoundland geomorphology, 1959-.

Emphasis has been placed on those features that have developed subsequent to deglaciation.

341. Clarke, G. K. C., Univ. British Columbia, (Geophysics and Astronomy):
Surging glacier research, 1968-78.

See Thermal effects of crevassing in Steele Glacier; J. Glaciology, v. 13, no. 68, p. 243-53, 1974.

To undertake geophysical studies of surge-type glaciers and to devise theoretical models of glacier surge mechanisms.

342. Clarke, G. K. C., Narod, B. B., Goodman, R. H., Univ. British Columbia (Geophysics and Astronomy):
Radioglaciology, 1972-78; Ph. D. thesis (Goodman).

See Radio echo soundings and ice temperature measurements in a surge-type glacier; J. Glaciology, v. 14, no. 70, 1975.

To construct an airborne radar sounder suitable for remote sensing of glacier ice thickness as well as detection of englacial and basal water.

343. Dionne, J. C., Environement Canada:
Fossil periglacial features in Québec, 1964-.

See Paleoclimatic significance of Late Pleistocene ice-wedge casts in southern Quebec, Canada; Palaeogeogr. Palaeoclim. Paleaoecol., v. 17, no. 1, 1975.

344. Grove, E.W., British Columbia Dep. Mines Petrol. Resources:
Glaciological studies in the Northern Boundary Ranges of British Columbia, 1964-.

345. Hodgson, D.A., Geol. Surv. Can.:
Surficial geology and geomorphology of central Ellesmere Island, District of Franklin, 1972-.

346. McCann, S.B., McMaster Univ.:
Beach and nearshore environments in the Canadian Arctic Archipelago, 1970-76.

See Depth of the "Frost table" on beaches in the Canadian Arctic Archipelago; J. Glaciol., v. 13, p. 321-322, 1974.

Investigations of open coastal situations in the southern part of the archipelago, taking into account beach form, sediment type, ice conditions, wave energy and tidal characteristics. Future work will be at Vendom Fiord where the effort will be extended to an examination of submarine morphology and sediments.

347. McCann, S.B., Armon, J.W., McMaster Univ.:
Barrier Islands in the southern Gulf of St. Lawrence, 1972-75; Ph.D. thesis (Armon).

See Long and short term changes in the barrier island of Kouchibouguac Bay, southern Gulf of St. Lawrence; Can. J. Earth Sci., v. 10, p. 1582-1590, 1973.

Attention is presently directed to the Malpeque barrier island system, Prince Edward Island.

348. McCann, S.B., Cogley, J.G., McMaster Univ., Trent Univ.:
Properties of surface runoff in the High Arctic, 1971-75.

See The geomorphic significance of fluvial activity at high latitudes; Proc. 3rd Guelph Symp. Geomorphology, p. 118-136, 1974.

349. McCann, S.B., Woo, M-K, Ballantyne, C.K., Blachut, S.P., Cogley, J.G., McMaster Univ., Trent Univ.:
Hydrological and glaciological studies, Vendom Fiord area, Ellesmere Island, Northwest Territories, 1973-76; M.Sc. theses (Ballantyne and Blachut).

To study the present and past hydrologic regime of the major streams that reach the head of Vendom Fiord, with particular emphasis on extreme events such as those caused by sudden draining of ice dammed lakes. To investigate soil moisture conditions in the active layer and their dependence on time of year, slope and meteorological conditions.

350. Parry, J.T., Grey, B., Zonneveld, J., Granberg, H., McGill Univ. (Geography):
Terrain analysis project, 1974-; Ph.D. thesis (Granberg).

351. Rogerson, R.J., Memorial Univ. (Geography):
Geomorphological research in the Porcupine Strand area, southern Labrador, 1974-75.

352. Schaerer, P.A., National Research Council:
Snow and avalanches, 1966-.

353. Schroeder, J., Université de Moncton:
Cartographie géomorphologique et spéléogenèse des grottes du 1er canyon de la Nahanni Sud, N.W.T., 1974-77.

Etudes de la morphologie souterraine dans les calcaires bioclastiques de la formation de Nahanni du devonien moyen.

354. Shearer, J.M., Geol. Surv. Can.:
Surficial geology and geomorphology Mackenzie Bay-Continental Shelf, 1970-.

See Further observations on the scouring phenomena in the Beaufort Sea; Geol. Surv. Can., Paper 75-1, pt. A, p. 483-493, 1975.

355. Shilts, W.W., Geol. Surv. Can.:
Quaternary geology inventory – geomorphic process studies Maguse River, 1973-.

356. Slaymaker, O., Hart, S., Univ. British Columbia:
River sedimentation and erosional processes in southwestern British Columbia; M.Sc. thesis (Hart).

357. Slaymaker, O., Schreier, H., Hockin, B., Univ. British Columbia:
Land use, geomorphic units and water quality in the Lower Fraser Valley; Ph.D. thesis (Schreier), M.Sc. thesis (Hockin).

358. Young, H.R., Welsted, J.E., Brandon Univ.:
Glacial geology and geomorphology of the eastern end of the Brandon Hills, Manitoba, 1972-75.

Electrical

359. Anderson, C. D., Hanneson, J., Univ. Manitoba:
E. M. ellipse measurements using a large fixed source, 1972-75.

360. Babcock, E. A., Univ. Alberta:
The relationship between borehole shape and resistivity anisotropy and lithology, 1974-76.

To describe the phenomena of borehole ellipticity and directional resistivity anistropy and to relate this to geologic parameters. To determine the causes of hole ellipticity and resistivity anisotropy. To use the phenomena studied to develop new ways of utilizing 4-Arm Dipmeter logs.

361. Becker, A., Bazinet, R., Ecole Polytechnique:
Electrical conductivity measurements, 1973-75.

362. Becker, A., Bolduc, P. M., Ecole Polytechnique:
Electromagnetic reflectometer, 1971-75;
D. Sc. A. thesis (Bolduc).

363. Becker, A., Faessler, C. W., Van Ngoc, Pham, Bertin-Mahieux, J. M., Ecole Polytechnique:
Geophysical prospecting in diamond drill holes, 1970-.

Application of surface methods of geophysical prospecting such as potential gradient, resistivity, IP, EM, etc., in diamond drill holes which do not intersect any mineralization in order to outline any conductive bodies in the vicinity of the borehole.

364. Becker, A., St-Hilaire, C. W., Faessler, C. W., Hubert, J. M., Ecole Polytechnique:
Multi-frequency EM mapping, 1973-75; theses.

365. Duckworth, K., Univ. Calgary:
Development of electromagnetic induced polarization and radiometric methods in mineral exploration, 1969-.

366. Katsube, T. J., Geol. Surv. Can.:
Electrical rock properties, 1963-.

See Depth of penetration study of high frequency EM soundings; Geol. Surv. Can., Paper 64-1, pt. B, p. 97-102, 1974.

Automation in electrical rock property measurements; Geol. Surv. Can., Paper 75-1, pt. A, p. 83-86, 1975.

Frequency range for mineral differentiation by IP methods; ibid, p. 95-98, 1975.

The critical frequency and its effect on EM propagation; ibid, p. 101-105, 1975.

367. Lazreg, H., Environment Canada:
Geophysical methods applied to the study of salt water intrusion, 1968-75.

See Reconnaissance resistivity survey around a brine pond, Esterhazy, Saskatchewan; Inland Waters Directorate, Environment Canada, Sci. Ser. 42, 1974.

An investigation primarily of the application of surface resistivity and induced polarization techniques primarily in areas affected by salt water intrusion in the Maritime Provinces.

368. Scott, W. J., Geol. Surv. Can.:
VLF mapping, 1967-75.

See Preliminary experiments in marine resistivity near Tuktoyaktuk, District of Mackenzie; Geol. Surv. Can., Paper 75-1, pt. A, p. 141-145, 1975.

VLF resistivity (Radiohm) survey, Agricola Lake area, District of Mackenzie; *ibid.*, p. 223-225, 1975.

369. Sinha, A. K., Geol. Surv. Can.:
Applied EM problems, 1973-.

See Electromagnetic sounding in permafrost regions; Geol. Surv. Can., Paper 74-1, pt. B, p. 109-110, 1974.

Determination of sea-ice thickness by electromagnetic means; Geol. Surv. Can., *ibid.*, p. 111-112, 1974.

Altitude dependence on plane wave EM fields; Geol. Surv. Can., Paper 75-1, pt. A, p. 147-148, 1975.

Electromagnetic sounding over layered permafrost terrain; Geol. Surv. Can., *ibid.*, p. 149-151, 1975.

370. Strangway, D. W., Univ. Toronto:
Geophysical applications of artificial electromagnetic fields in the audio frequency range, 1970-78.

Audio-frequency magneto-telluric measurements is a useful tool for mapping the electrical conductivity of large geological blocks.

371. Strangway, D.W., Annan, A.P., Rossiter, J.R., Olhoeft, G.R., Univ. Toronto:
Radio frequency interferometry as applied to ice and permafrost, 1973-76; Ph.D. theses (Rossiter, Olhoeft).

Radio interferometry was developed as a technique to study the upper layers of the moon, and was included as an experiment of Apollo 17. The current project is to apply the technique to terrestrial environments, specifically ice and permafrost.
This has several aspects:

(1) Collection and interpretation of data over ice and permafrost. Data have already been collected from the Athabasca and Juneau Glaciers, and the MacKenzie Delta region of the N.W.T., and are being analysed.

(2) Theoretical and scale-model studies of the interferometry technique. Layered geometries have been studied in detail, and work has begun on scattering geometries.

(3) Measurement of dielectric properties of frozen material over a wide range of controlled conditions and *in situ*. is work will illucidate the dielectric mechanisms of various types of frozen material over a wide range of temperatures and frequencies.

372. Strangway, D.W., Koziar, A., Redman, J.D., Univ. Toronto:
Geophysical applications of natural and artificial electromagnetic fields in the audi frequency range; Ph.D. thesis (Koziar).

This is a continuing investigation of the application of magnetotellurics to geologic problems. Instrumentation used for field studies is conventional narrow band equipment developed by Kennecott Copper. Applications have included i) massive sulphide exploration at Cavendish Township and the Texas Gulf Sulphur Mine, ii) crustal sounding in Northwestern Ontario where the lack of surface conductors has permitted us to sound to several kilometers where there is a sharp rise in conductivity, iii) permafrost sounding where accurate depth determinations were feasible in spite of the presence of an active layer. A monitoring station for natural and artificial sources is under construction and in the near future we will be able to collect field data digitally.

373. Strangway, D.W., Nowina, S., Univ. Toronto:
Electrical properties of rocks and minerals; M.Sc. thesis (Nowina).

See Magnetic relaxation and the electromagnetic response parameter; Geophysics, v. 39, p. 302-311, 1974.

A number of studies of the electrical properties of rocks and minerals are under way. In one project we have looked at the temperature dependence of the electrical conductivity of natural sulphides. At low temperatures, the conductivity decreases with temperature like a metal and at high temperatures they behave like semiconductors. These characteristics are dominated by extrinsic semiconduction associated with imperfections and impurities reflecting samples histories.

In a second study dielectric anisotropy is being studied on rocks from the Muskoka region and from northwestern Ontario. This utilizes high vacuum measurements to examine the properties of the main rock forming minerals. The D.C. conductivity of rocks from the northwestern Ontario as a function of temperature and pressure will be examined to correlate with magnetotelluric sounding in that area.

374. Strangway, D.W., Pearce, G.W., Olhoeft, G.R., Univ. Toronto:
Electrical and magnetic properties of lunar samples.

We are examining a number of problems of relevance to the history of the moon as principal investigators in the lunar sample program. Projects under way include i) distribution of metallic and ferrous iron among soils, breccias and igneous lunar samples of various types, ii) the determination of the ancient lunar magnetic field by studies on lunar samples, iii) interpretation of magnetic anomalies found on the moon, iv) models of lunar evolution, v) dielectric properties of lunar samples as a function of temperature, frequency and environment to assist in interpretation of lunar electromagnetic sounding, vi) a study of surface properties of lunar samples by dielectric and BET studies using monolayers of water.

See Lunar Magnetism and an early cold moon; Naure, v. 249, p. 227-230, 1974.

Electrical Properties of lunar soil sample 15301, 38; J.G.R., v. 79, p. 1599-1604, 1974.

Electrical Properties of the Surface Layers of Mars; Geophysical Research Letters, v. 1, p. 141-143, 1974.

Geomagnetic and Paleomagnetic

375. Ade-Hall, J.M., Johnson, H.D., Ryall, P.J.C., Rice, P., Abdel-Aal, O., Dalhousie Univ.:
The nature and evolution of the oceanic crust, 1970-.

Studies have included the median valley of the mid Atlantic Ridge at 45°N, volcanic basement of Bermuda and San Miguel in the Azores Nazca Plate-American Plate close to the Mid Atlantic Ridge Crest at 36°N.

376. Anderson, C. D., Univ. Manitoba:
Continuous magnetic measurements along profiles, 1973-74.

Preliminary test work indicates that magnetic anomalies having narrow widths (less than 50 ft.), large amplitudes, and long strike length may serve as an aid in mapping geological contacts and the extension of mineralized zones. This project consists of field tests to verify the above hypothesis and instrument development to improve data acquisition.

377. Barlow, R. B., Ontario Division of Mines:
A magnetic survey of the northern part of the Sturgeon Lake area (east part), District of Thunder Bay, Ontario, 1974-75.

A relative, vertical field, ground magnetic map covering an area of approximately 60 square miles (155 km^2) has been constructed. Magnetic susceptibility values, which include every major rock type in the map-area, were obtained at 109 locations utilizing a Bison Bizo susceptibility meter equipped with an *in situ* coil.

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

379. Dunlop, D. J., Buchan, K. L., McWilliams, M. O., Univ. Toronto (Physics):
Paleomagnetic studies of Precambrian rocks of Grenvillian and Archean age, 1971-; theses.

We are investigating the paleomagnetic evidence for and against a plate tectonic model of the Grenville, in which a proto-Atlantic Ocean is hypothesized to have opened between the Grenville and Superior Provinces and subsequently closed between about 1300 and 1000 m. y. BP. We have completed two successful paleomagnetic studies, one of mafic intrusions in Haliburton Co., Ontario showing superimposed magnetizations of different ages, the other a folded iron formation in Parry Sound District, Ontario showing a single stable magnetization. Dating of the various magnetic components is crucial to tectonic interpretations. As well as structural and mineralogical criteria of relative ages, Ar^{40}/Ar^{39} dating is being undertaken (from June 1975).

Reconnaissance paleomagnetic work in Archean terrain west of Lake Superior has revealed consistently magnetized greenstone, gneiss and gabbro units spanning almost 100 miles. The associated pole may be pre-Kenoran or may reflect remagnetization about 1400 m. y. BP.

380. Dunlop, D. J., Hale, C. J., Univ. Toronto, (Physics):
Magnetic properties of the deep oceanic crust, 1974-75.

See Thermal enhancement of magnetic susceptibility; J. Geophys; v. 40, p. 439-451, 1974.

We are investigating the time stability of remanent magnetization in basalts from Project Deep Drill 1974 (DSDP Leg 37) and the paleointensity of the geomagnetic field at the time these rocks were formed. By conducting experiments at temperatures of 150 to 200°C we simulate the effect of fields applied at room termperature over the 1 m. y. or so duration of a polarity epoch. High-temperature experiments also test whether induced magnetization is hot basalt at spreading centres can account for the anomalously intense axial anomalies over some mid-ocean ridges.

381. Fahrig, W. E., Geol. Surv. Can.:
Paleomagnetism of the Lac St. Jean anorthosite, Quebec, 1972-.

Paleomagnetism of the diabase dykes of West Greenland, 1972-.

382. Foster, J. H., Geol. Surv. Can.:
Paleomagnetic reversals in Paleozoic of the St. Lawrence Platform, Ontario and Quebec, 1972-.

383. Gravenor, C. P., Stupavsky M., Univ. Windsor:
Deposition of till from base of glaciers, 1971-77.

See Water release from the base of active glaciers; Bull. Geol. Soc. Amer., v. 85, p. 433-436, 1974.

Current investigation relates to the magnetic fabric in till around boulders and obstacles at the site of actively moving glaciers. Preliminary results of this study have now been submitted for publication. The next stage will be to measure other parameters around obstacles and to study vertical variation in tills.

384. Gravenor, C. P., Stupavsky, M., Symons, D. T. A., Univ. Windsor:
Paleomagnetism of the tills exposed along the east shore of Lake Huron, 1974-75.

See Paleomagnetism and magnetic fabric of the Leaside and Sunnybrook tills near Toronto, Ontario; Bull. Geol. Soc. Amer., v. 85, p. 1233-1236, 1974.

Part of an ongoing study of the paleomagnetic characteristics of tills of southern Ontario. The purpose of the study is to determine if paleomagnetic methods will provide a more accurate technique for correlation purposes than those available to glacial geologists at the present time.

385. Halls, H.C., Univ. Toronto:
Paleomagnetism of Keweenawan rocks from the Slate Islands, northern Lake Superior, 1973-75.

See A Keweenawan volcanic sequence from the Slate Islands, northern Lake Superior (abstract); 20th Ann. Inst. Lake Superior Geology, Sault Ste. Marie, Ontario, p. 14, 1974.

A Keweenawan mafic volcanic sequence, about 400 feet thick outcrops on the western side of the Slate Islands. The flows are strongly sheared in a manner reminiscent of shatter coning. They are also cut by a red breccia carrying fragments of underlying Archean and Animikean rocks. Two components of remanent magnetization are present in the volcanics and associated dikes: a primary one ($D = 135^{o}$, $I = 58^{o}$) similar to that found in the Osler volcanics to the west, and a secondary one ($D = 85^{o}$, $I = 48^{o}$) which can be found by using the intersection point of remagnetization circles. This direction is also found in the red breccia which suggests that the area was subject to a violent shock event of presently unknown origin which caused both the shatter coning and the secondary remanence. The remagnetization direction yields a "Grenville" pole position which suggests that the Grenville Province was always part of the North American continent. Further work is planned on the Slate Islands to examine the nature of the apparent shock event. Numerous breccias occur on the eastern side of the island and paleomagnetic sampling of these will be undertaken. The unusually complex geology of the island, together with the occurrence of many types of breccias suggest a major explosive event which was felt at least as far as Nipigon Strait, 50 miles to the west where a smaller secondary magnetization component with a direction possibly similar to that found on the Slate Islands is present.

386. Heine, T., Gravenor, C.P., Stupavsky, M., Symons, D.T.A., Univ. Windsor:
Paleomagnetism of the Catfish Creek till, Ontario, 1974-75; M.Sc thesis (Heine).

387. Holroyd, M.T., Geol. Surv. Can.:
High-resolution aeromagnetic data, 1968-.

See An experimental high resolution aeromagnetic survey in the Kamloops area, British Columbia; Geol. Surv. Can., Paper 74-1, pt. B, p. 103-106, 1974.
The extension of the ADAM (Aeromagnetic Data Automatic Mapping) system to include the application of two dimension digital filters to grid data; Geol. Surv. Can., Paper 75-1, pt. A, p. 109-110, 1975.

388. Hood, P.J., Geol. Surv. Can.:
Magnetic gradient techniques, 1963-.

Queen Air high resolution aeromagnetics, 1968-.

See An experimental high resolution aeromagnetic survey in the Kamloops area, British Columbia; Geol. Surv. Can., Paper 74-1, pt. B, p. 103-106, 1974.

389. Kornik, L.J., Geol. Surv. Can.:
Interpretation of high resolution aeromagnetic surveys, 1972-.

See Evaluation of derived vertical gradient results in the Timmins area, Ontario; Geol. Surv. Can., Paper 75-1, pt. A, p. 111-115, 1975.

390. Lerbekmo, J., Univ. Alberta:
Paleomagnetic correlation in continental Upper Cretaceous and Paleocene sediments of Alberta, 1973-76.

391. McGlynn, J.C., Geol. Surv. Can.:
Paleomagnetic study of Proterozoic red beds of the Western Canadian Shield, 1968-.

392. McGrath, P.H., Geol. Surv. Can.:
Aeromagnetic interpretation-Appalachia, 1968-.

See Ground magnetic survey, Roberts Arm, Newfoundland; Geol. Surv. Can., Paper 75-1, pt. A, p. 117-119, 1975.

393. Pearce, G.W., Univ. Toronto (Erindale College):
Correlation of magnetic properties with petrogenesis of lunar and meteorite samples, 1973-.

The chief processes that crater the surface of the Moon are impacts of meteorites of widely varying sizes. Such events tend to reduce iron from silicate minerals into the metallic state. I am examining this process by magnetic means in order to understand the impacting process with regard to the temperatures and durations of heating they produce in the surface material of the Moon. This certain lunar breccia samples show that major impacts produce conditions of heating to over 600°C in some material and to over 900°C in other, more severely heated material. There is evidence that the different Apollo sites have undergone much different quantities of impacts since their basic material was formed early in the Moon's history.

394. Schwarz, E.J., Geol. Surv. Can.:
Paleomagnetism of the Circum-Ungava Belt, 1973-.

395. Seguin, M.K., Laval Univ.:
Paléomagnétisme des roches volcaniques et intrusifs basiques de la fosse du Labrador, 1972-75.

Le projet de recherche consiste à déterminer la nature des propriétés magnétiques des roches intrusives et extrusives basiques de la fosse du Labrador (partie centrale); ceci inclut la susceptibilité magnétique, l'intensité et l'orientation du MRN, les points de Curie, la force coercitive, etc...

396. Seguin, M.K., Senechal, J.N., Laval Univ.:
Interprétation spectrale des données aeromagnétiques des Appalaches nord de la province de Québec, 1972-74; thèse (Sénéchal).

On utilise des méthodes de filtrage spectral sophistiqué pour déterminer la profondeur d'un bassin sédimentaire. Application aux découvertes pétrolifères éventuelles.

397. Srivastava, S., Geol. Surv. Can.:
Sea floor spreading history of the Labrador Sea, 1974-.

See Geol. Surv. Can., Paper 75-1, pt. A, p. 185, 1975.

398. Strangway, D.W., Univ. Toronto:
Paleomagnetism of Lower Paleozoic sediments.

See Paleomagnetism and the origin of Mississippi Valley-type ore deposits; Can. J. Earth Sci., v. 11, p. 211-223, 1974.

Examination of the paleomagnetism of lower Paleozoic carbonates in southwestern Ontario – these units are often weakly magnetized and hard to measure but we have achieved good results to date. It is essential to do thermal demagnetization and because of the weak intensities we expect to use the cryogenic magnetometer quite extensively. In conjunction with this project we are working with F.W. Beales to examine the paleomagnetism of stratiform lead-zinc deposits and to provide evidence as to whether they are syngenetic.

399. Symons, D.T.A., Univ. Windsor:
Paleomagnetism of Cordilleran rock units near Kitimat, British Columbia, 1974-75.

Paleomagnetism of carbonatites in northern Ontario, 1970-75.

Other units under investigation include the Seabrooke Lake and Lackner Lake carbonatites, Thessalon volcanics, Gowganda sediments, and Mongowing pluton.

400. Symons, D.T.A., Londry, J.E., Univ. Windsor:
Paleomagnetism of rock units in the Noranda area, Quebec, 1974-75; M.Sc. thesis (Londry).

Specific units involved include basic and acidic volcanics, granites, gabbros, and mineralized zones.

401. Tiffin, D.L., Geol. Surv. Can.:
Geological and geophysical studies in the Beaufort Sea, 1971-.

See Preliminary results of a shipborne magnetic survey in Amundsen Gulf, District of Franklin; Geol. Surv. Can., Paper 74-1, pt. B, p. 65-67, 1974.

402. Watanabe, T., Univ. British Columbia (Geophysics and Astronomy):
Prediction of geomagnetic micropulsation activities, 1971-76.

There is strong evidence that micropulsations with a period of 15 – 120 sec occupy a great portion of Pc3-4 activities and originate from hydromagnetic waves in interplanetary space. Aspects to be investigated 1) relations between transverse hm waves in space and Pc3-4; and 2) relations between longitudinal hm waves in space and auroral zone Pc4.

Geothermal

403. Chiasson, T.C., New Brunswick Dep. Natural Resources:
Geothermal survey over proven salt structures near Sussex, New Brunswick, 1974.

Temperature measurements are being made at a depth of 5 feet with a UGF-GT2 geophysical thermometer. An area of approximately 10 square miles has been covered with about 80 stations to date.

404. Goodrich, L.E., National Research Council:
Ground thermal regime, 1970-.

To develop, evaluate and apply numerical models for the prediction of ground thermal regimes under natural and disturbed conditions. To devise and test apparatus for measuring thermal properties of soils in the laboratory and in the field. To establish the information required for design purposes concerning the thermal properties of soil and the ground thermal regime.

405. Silvester, P., Telford, W.M., Univ. Montréal (Electrical Engineering):
Multiple-frequency telluric and magnetotelluric response over resistivity anomalies and topographic effects, 1972-75.

Gravity

406. Ager, C.A., Univ. British Columbia (Geophysics and Astronomy):
The three dimensional structure of batholiths as deduced from gravity data, 1970-74; Ph.D. thesis.

407. Barlow, R.B., Ontario Division of Mines:
A gravity survey of the Sturgeon Lake metavolcanic-metasedimentary belt, Districts of Kenora and Thunder Bay, Ontario, 1974-75.

A total of 1274 new gravity stations were established between June 1st and September 1st, 1974, with a distribution of one station per 1.41 square miles (3.65 km^2). The gravity survey was tied to the National Gravity Network by occupying previously established control stations at Ignace and Sioux Lookout.

408. Brisbin, W.C., Brown, B., Univ. Manitoba:
Gravity and structural studies in Manitoba and northwestern Ontario, 1974-; Ph.D. thesis (Brown).

409. Haworth, R.T., Geol. Surv. Can.:
Tectonic analyses of the Bay of Fundy – Gulf of Maine region, 1974-.

To correct and complete the gravity and magnetic coverage as a basis for structural analysis of the region.

410. Keen, M.J., O'Reilly, C., Ferguson, C., Dalhousie Univ.:
Re-interpretation of gravity over the Nova Scotia granite batholith, 1974-75.

The Nova Scotia granite batholith has been shown recently to be a complex of different granitic bodies. The density of these different granites varies systematically. A different model of the shape of the batholith in the light of new density and petrological information may be possible.

411. Macnab, R.F., Geol. Surv. Can.:
East coast offshore surveys, 1973-.

See A regional geophysical survey of the Labrador Sea; Geol. Surv. Can., Paper 75-1, pt. A, p. 177-179, 1975.

412. West, G.F., Univ. Toronto:
Midwest Superior Geotraverse: gravity, magnetics, seismics, 1972-77.

Seismic

413. Annan, P., Geol. Surv. Can.:
AFMAG surveys, Saskatchewan, Manitoba, Quebec and Nova Scotia, 1968-.

414. Barrett, D.L., Geol. Surv. Can.:
Elastic and physical properties of mafic rocks, 1973-.

See Elastic properties of Bermuda basalts; Geol. Surv. Can., Paper 74-1, pt. B, p. 152, 1974.

415. Burke, K.B.S., Univ. New Brunswick:
The development of seismic reflection techniques for shallow investigations, 1974-77.

416. Clowes, R.M., Ellis, R.M., Spence, G.D., Cumming, W.B., Univ. British Columbia (Geophysics and Astronomy):
Seismic refraction studies in southern British Columbia, 1972-76; M.Sc. theses (Spence, Cumming).

The final interpretation of P-wave arrivals recorded at 44 stations along a profile extending from 80 to 540 km along the Rocky Mountain Trench has been completed and a paper accepted for publication. A prominent travel-time delay in the data is interpreted in two possible ways. One explanation is the existence of a low velocity zone in the upper crust; the other proposes a high-angle crustal fault oblique to the Trench. In either interpretation a velocity gradient is present in the lower crustal section and the thickness

of the crust is in excess of 50 km. A gravity survey has been run to help distinguish between the two interpretations. The 400 data values are currently being reduced to provide a terrain corrected Bougues anomaly map.

During 1974, the southern trans-British Columbia seismic profile was run as planned. The westward profile using Kaiser Resources open pit coasl mine in southeastern British Columbia as the source nearly has been completed. Approximately 28 seismograms from 60 to 350 km have been recorded. To complete the first half of the reversed profile, about 6 additional seismograms are necessary. The eastward profile using open pit copper mines in the Highland Valley was started. To determine upper crustal structure in the region immediately east of the mine sites, 12 seismic stations at distances from 5 to 50 km were used and good recordings obtained. The profile will be extended east as far as useful energy is recorded. Interpretation will utilize both traveltime and amplitude information on the seismograms.

417. Clowes, R.M., Knize, S., Malecek, S.J., Univ. British Columbia (Geophysics and Astronomy):
Marine deep seismic sounding off Canada's west coast, 1971-.

A marine seismic system for recording near-vertical incidence to wide-angle reflected waves and refracted waves with penetration from the ocean bottom to the upper mantle (deep seismic sounding or DSS) has been developed. Operations require two ships one the receiving vessel, the other the shooting ship. During 1973, 22 km DSS profiles were recorded in three regions off the West Coast-the Hudson '70 survey area near 51°N, 133°W; west of Queen Charlotte Sound and west of central Vancouver Is. Record sections of the data have been compiled. Prominent and consistent phases due to refractions and/or wide-angle reflections from within the crust are observed on all sections at distances beyond 8 km. Near-vertical indicence reflections from the base of the sediments and below have been identified on Vancouver Is. profiles consisting of some expanding spread data and 5 km of vertical incidence profiling. These data are in a region where the sediments were too thick for total penetration by the CSP method. Deconvolution, two-dimensional filtering and other procedures currently are being attempted to improve the quality of the seismograms.

During 1974, two 70-km reversed DSS profiles were recorded in the region of the Explorer Ridge which forms part of the western margin of the Juan de Fuca plate and is suspected spreading centre. One reversed profile was run parallel to the ridge and east of it, the other was directed across the ridge. Good quality seismograms were recorded over shot-to-receiver distances from 1 km to 75 km. The numerous data recorded in digital form have been edited and recompiled on new tapes. We are in the process of additional editing, demultiplexing, computer plotting and other preliminary processing.

418. Duberger, R., Université du Québec à Chicoutimi:

Seismic studies in the Haut-Saguenay and Chibougamau areas, Quebec, 1972-.

A seismic crustal study has been started in the Haut-Saguenay area using quarry blasts and a network of portable microearthquake systems. The results should prove useful in determining a crustal model to be used subsequently for locating microearthquakes. A few measurements of P velocities have been made and they show great variations over quite a small area. Some sites used in the crustal model study will also be occupied for monitoring microearthquakes in order to investigate the microseismicity of the area.

419. Gendzwill, D.J., Univ. Saskatchewan:
Study of solution – collapse structures in the Prairie Evaporite, 1970-.

A number of sinkholes are related to solution of the Prairie Evaporite formation and collapse of overlying strata. Surficial drilling seismic reflection and gravity studies have been applied to some of these. A recording seismic system which should detect any microseisms caused by slumping of the sediments over active salt solution areas, currently is being designed.

420. Geophysical Sciences Dep., Mobil Oil Canada, Ltd.:
Application of computer graphics in petroleum exploration, 1960-.

Investigation of man-machine interactive interpretation techniques in seismic and potential field exploration.

Application of mini-computers in seismic data processing, 1973-.

Investigation of feasibility of "step-by-step" seismic data processing on mini-computers in a production environment.

Elastic properties of porous sedimentary rocks, 1970-.

421. Green, A. G., Univ. Manitoba:
Investigation of the crustal structure of northwestern Ontario (Sioux Narrows and region) using seismic reflection techniques. Investigation of the crustal structure of Manitoba using seismic refraction and reflection techniques, 1974-76.

422. Hajnal, Z., Paulson, K., Univ. Saskatchewan:
Magnetatelluric studies in the Bengough region, Saskatchewan, 1974-77.

423. Hajnal, Z., Sereda, I., Univ. Saskatchewan:
Seismic investigations of deep seated structures in Saskatchewan, 1970-76.

424. Hajnal, Z., Stauffer, M. R., Univ. Saskatchewan:
Seismic investigations of Precambrian contact zones, 1971-76.

425. Hall, D. H., Brown, R. J., Stephenson, O. G., Univ. Manitoba:
Crustal reflection and refraction survey in Manitoba and northwestern Ontario.

426. Hall, D. H., Brown, R. J., Stephenson, O. G., Hasselfield, C., Univ. Manitoba:
Seismic crustal surveys, 1973-75.
Regional magnetic anomalies, rock magnetism, 1973-75,
Correlation of ERTS (remote sensing) data with geophysical mapping, 1973-75.

See Deep seismic crustal studies in Manitoba; Bull. Seis. Soc. Am., v. 63, p. 885-910, 1973.

427. Hobson, G. D., Geol. Surv. Can.:
Seismic refraction – Sverdrup Basin, District of Franklin, 1972-.

See Geol. Surv. Can., Paper 75-1, pt. A, p. 88, 1975.

428. Hunter, J. A., Geol. Surv. Can.:
Seismic properties of earth materials in the permafrost environment, 1973-.

See Marine seismic refraction survey Pokiak Lake, Tuktoyaktuk, District of Mackenzie; Geol. Surv. Can., Paper 74-1, pt. B, p. 68, 1974.

Seismic up-hole wavefront experiments in permafrost, Schefferville, Quebec; Geol. Surv. Can., *ibid*, p. 83-86, 1974.

Mapping the occurrence of sub-seabottom permafrost in the Beaufort Sea by shallow refraction techniques; Geol. Suv. Can., *ibid*, p. 91-94, 1974.

Computer model studies of seismic reflection coefficients for the base of the permafrost layer; Geol. Surv. Can., *ibid*, p. 95-96, 1974.

429. King, M. S., Univ. Saskatchewan:
Field studies of microseismic energy emission, 1970-77.

Preliminary research indicates that the microseismic energy emission may also be employed to determine the distribution of stress in potash mine pillars.

430. Lines, L. R., Univ. British Columbia (Geophysics and Astronomy):
Applications of deconvolution and wavelet estimation to explore seismology, 1973-76; Ph. D. thesis.

A comparative study of techniques used for seismic wavelet estimation and deconvolution. Deconvolutions of seismic reflection data are compared to reflectivity function estimates which are obtained from well logs.

431. Seguin, M. K., Laval Univ.:
Etude du pergélisol du nord du Québec, 1973-76.

General

432. Earth Physics Branch, E. M. R.:
Research carried out by the Earth Physics Branch of the Department of Energy, Mines and Resource during 1974 is reported in Volume 27 of the Canadian Geophysical Bulletin, under preparation by the Canadian National Committee for the International Union of Geodesy and Geophysics. A current bibliography is included in that Volume.

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

See Uranium stripping determination au naturel for airborne gamma-ray spectrometry; Geol. Surv. Can., Paper 75-1, pt. A, p. 87, 1975.

434. Haworth, R. T., Geol. Surv. Can.:
Geophysical investigation of the Laurentian Channel and southern Grand Banks of Newfoundland, 1972-.

435. Keen, C. E., Geol. Surv. Can.:
Geophysical studies of the continental slope and rise off the Canadian eastern seabord, 1972-.

436. King, M. S., Univ. Saskatchewan:
Underground acoustic measurements, 1970-76.

To develop acoustic-wave techniques for use underground to locate and delineate geologic discontinuties adjacent to mine workings and to determine the stability of mine pillars.

437. Klemes, V., Environment Canada:
Effects of model heterogeneity on the modelling process, 1973-76.

See The Hurst phenomenon – A puzzle?; Water Resources Res., v. 10, no. 4, p. 675-688; 1974.

The clustering of extreme values in geophysical time series has been investigated and some plausible physical mechanisms responsible for it have been discussed.

438. McKay, A. G., Nova Scotia Research Foundation:
Sediment acoustics and sound source characteristics studied by radio-transmitting sono-buoys, 1974-76.

Frequency characteristics of sound sources such as sparkers and air guns are better studied from records taken in the far field. A radio transmitting sono-buoy is useful for this. Such have been successfully used for a number of years to give acoustic velocities in layered deep-sea sediments. Our hope is to use a similar rig to get sediment velocities in nearer-shore environments, where the difficulty is the lack of extensive areas having parallel upper and lower layer boundaries.

439. Osler, J. C., McGill Univ.:
Thaw stability of permafrost, 1973-77.

Study of the factors which affect the stability of surfaces underlain by permafrost when thawed, particularly when such thaw exceeds the normal depth of the active layer, thus penetrating virgin permafrost for the first time.

440. Ostry, R. C., Ontario Ministry of the Environment:
Remote sensing in Ontario for hydrology and hydrogeology, 1970-.

441. Richardson, K. A., Geol. Surv. Can.:
Gamma-ray spectrometry (experimental surveys), 1972-.

See Results of a reconnaissance type airborne gamma-ray spectrometer survey of the Blind River – Elliot Lake area, Ontario, 41 J; Geol. Surv. Can., Paper 75-1, p. 133-135, 1975.

442. Schwarcz, H. P., Scott, S. D., Kissin, S. A., McMaster Univ., Univ. Toronto, Mines Branch, E. M. R.:
Pressures of formation of iron meteorites, 1972-76.

Fe-content of sphalerite coexisting with troilite and metallic iron is used to estimate pressure of formation or iron meteorites and thus, size of parent objects.

443. Tanguay, M. G., Ally-Grégoire, R., Dufresne, R., Faucher, G., Ecole Polytechnique:
Etude de la réflectance spectrale des matériaux terrestres, 1969-76.
Optical processing of aerial photo patterns by choherent light, 1969-76.
Utilisation des images infrarouges dans les problèmes que les Forces Armées peuvent rencontrer dans les régions nordiques, 1970-75.

444. Tiffin, D. L., Geol. Surv. Can.:
Geological and geophysical studies of the Pacific Continental Margin, 1971-.

445. Wong, J., Ontario Ministry of the Environment:
Geophysical surveys and investigations and well-logging for hydrogeologic studies, 1965-.

446. Bibby, R., Alberta Research Council:
Development of methods and techniques of aquifer evaluation in lenticular, continental sediments, 1972-75.

Innisfail water supply, 1974.

447. Borneuf, D., Alberta Research Council:
Alberta hydrogeological reconnaissance map series NTS 84C and 83N, Peace River and Winagami, 1973-75.

448. Borneuf, D., Stevenson, D.R., Alberta Research Council:
Alberta hydrogeological reconnaissance map series NTS 72L, Medicine Hat, 1970-74.

449. Charron, J.E., Environment Canada:
Hydrochemical contouring – A pictorial hydrogeological study of the interstream area of the Ottawa and St. Lawrence Rivers, 1968-74.

Hydrogeological applications of ERTS satellite imagery, 1973-74.

450. Drake, J.J., Freund, I., McGill Univ. (Geography):
Water quality investigations in sub-Arctic Quebec, 1974-.

A hydrochemical study in the Schefferville area will be begun to define a characteristic water quality for each of the various hydrologic components (supra-permafrost water, groundwater, surface waters, meltwater and precipitation) in the various lithologies in the area. This study will have two focii: 1) an intensive analysis of waters around a small lake, and 2) an areally larger analysis of the Howells river catchment.

451. Flint, J.J., Brock Univ.:
Stream gradient variability in relation to the downstream hydraulic geometry, 1973-76.

See Stream gradient as a function of order, magnitude, and discharge; Water Resources Research, v. 10, no. 5, p. 969-973, 1974.

452. Foweraker, J.C., British Columbia Water Resources Service:
Gulf Island groundwater study, 1971-.

453. Freeze, R.A., Smith, L., Bourne, R., Univ. British Columbia:
Influence of stochastic parameter distributions on the analysis of subsurface flow, 1974-76; Ph.D. thesis (Smith), M.Sc. thesis (Bourne).

To develop Monte Carlo simulation models to analyse one- and two-dimensional saturated and unsaturated subsurface flow. The models will utilize the recognized deterministic equations of flow but will invoke statistical parameter distributions for porosity, permeability and compressibility. The models will thus allow probabilistic interpretations of deterministic solutions. To apply the models to problems in consolidation, land subsidence, well hydraulics and regional groundwater flow.

454. Gabert, G.M., Alberta Research Council:
Provincial observation-well network, 1956-.

Investigation of crude oil occurrence in a shallow aquifer, Krabben Farm, Rocky Mountain House, Alberta, 1974-75.

455. Gale, J.E., Environment Canada:
Hydrogeology of fractured media in the Halifax area, Nova Scotia, 1970-75.

See Flow in rocks with deformable fractures; Proc. Inter. Symp. Finite Element Methods in Flow Problems, p. 583-598, 1974.

A field investigation of fracture deformation induced by pumping or injection from or into fractured rocks; this was backed up by the development of a model to describe the time variation of the deformation.

456. Hackbarth, D.A., Alberta Research Council:
Alberta hydrogeological reconnaissance map seris NTS 83M, Grande Prairie, 1973-74.

Aquifer testing; Petrofina Site, Oil Sands area, 1974.

Hydrogeological evaluation of the Athabasca Oil Sands area, 1974-79.

457. Halstead, E.C., Dep. Environment:
Hydrogeology of Fraser Lowland, British Columbia, 1971-76.

Involves a thorough investigation into the Quaternary geology of the area as well as the hydrology and geochemistry of the groundwater. Fence diagrams are constructed by compilation of drill records to produce an accurate definition of the geologic framework through which the groundwater is recharged, transmitted and discharged.

458. Harlan, R.L., Environment Canada:
Snowmelt infiltration and associated groundwater recharge, 1969-74.

Combined observations at a field plot of infiltration from snow melt with the development of a model to simulate flow through porous media subjected to alternate freezing and thawing.

Hydrogeology, Mackenzie Valley, Northwest Territories, 1971-74.

A reconnaissance survey involving the evaluation of existing information and interpretation of aerial photographs for surficial and bedrock hydrogeology. Test drilling was conducted at Inuvik and Norman Wells and an instrumental section installed at Norman Wells.

459. Herr, R. L., Environment Canada:
Hydrogeology of the National Capital Region, 1975-77.

To examine the effects of urbanization and other aspects of changing land use on groundwater systems in NRC.

460. Hore, R. C., Hughes, G., Funk, G., Goff, K., Viirland, J., Mellary, A., Holland, C., Jackman, W., Small, E., Ontario Ministry of the Environment:
Investigations of groundwater pollution and quality protection, 1957-.

461. Hore, R. C., Sibul, U., Vallery, D., Goff, K., Viirland, J., Mellary, A., Holland, C., Jackman, W., Small, E., Ontario Ministry of the Environment:
Investigation of well-interference problems caused by ground-water takings.

462. Hughes, G., Funk, G., Wilkins, D., Goff, K., Viirland, J., Mellary, A., Holland, C., Jackman, W., Small, E., Ontario Ministry of the Environment:
Environmental assessment.

Assessments are made of the anticipated effect of proposed projects, such as pits and quarries, road construction, etc., on surface and groundwater supplies.

463. Jeffs, D. N., Fleischer, F. C., Logan, L. A., Singer, S., Coward, J., Ontario Ministry of the Environment:
Application of hydrologic and hydrogeologic modelling routines to Ministry projects, 1972-.

464. Jeffs, D. N., Fleischer, F. C., Logan, L. A., Singer, S., Hore, R. C., Funk, G., Ontario Ministry of the Environment:
IHD representative basin studies, 1965-76.

See Venison Creek Representative Basin: A Preliminary Report on Precipitation Data, 1968-1971; O. M. E., Water Resources Bull. 4-2, 1974.

To study the hydrogeologic conditions of five basins in southern Ontario which are considered to be representative of five major physiographic regions in order to provide input for water-balance studies, and mathematical models of the hydrologic processes; and to apply the models to other areas in similar physiographic regions.

465. Jeffs, D. N., Ralston, J. G., Wood, M. G., Hore, R. C., Ostry, R. C., O'Neill, J. E., Onn, D., Ullah, W., Westerby, G., Coward, J., Weatherbe, D., Ficzere, L., Black, S., Fielding, M., Chan, T., King, D., Ontario Ministry of the Environment:
Investigation of Great Lakes pollution from land use activities – contributions to International Joint Commission Reference Group Study, 1972-78.

Detailed investigations in selected areas are designed to evaluate the nature and amounts of pollutants being carried to the Great Lakes from a wide variety of land uses, including agricultural, forestry, transportation and utility corridors, urban and industrial land development and use, sanitary land fill sites, septic tank systems, sewage sludge disposal, and recreation. The study will present recommendations for the control of pollution from those sources contributing or likely to contribute significant loads to the Great Lakes, now or in the future. Many Canadian and U. S. agencies and universities are participating in the study.

466. Jeffs, D. N., Salbach, S. E., Pearce, G., Fleischer, F. C., Ostry, R. C., Ralston, J., Merritt, J., Gowda, H., Coward, J., Ullah, W., Mason, P., Ontario Ministry of the Environment:
Grand River Basin water management study, 1974-78.

To develop guidelines for water management planning in the Grand River basin. As part of the project, hydrologic and hydrogeologic studies are being conducted, to provide information concerning water quality evaluations and modelling, water supply, and reservoir operating procedures.

467. Lalonde, J-P., Quebec Dep. Natural Resources:
Groundwater geochemical reconnaissance of the western Abitibi region of Quebec, 1974-76.

To obtain geochemical information directly related to the basement rock which is covered by the thick sediments of glacial lake Barlow-Ojibway. The groundwaters will be analysed

for 22 elements in an effort to detect geochemical dispersion haloes related to economic mineralization.

468. Lammers, W., Wang, K.T., Roy, A.C., Hore, R.C., Ontario Ministry of the Environment:
Northern Ontario water resources studies, 1966-75.

469. Lawson, D.W., Environment Canada:
Impact of nitriloacetic acid on groundwater, 1971-74.

Investigation of the occurrence of nitriloacetic acid (NTA) in groundwater and part of co-operative departmental study of the impact on the environment of the Canadian shift from phosphate-based to NTA-based detergents. Selected Canadian areas were sampled and NTA was found in some groundwater samples from areas where septic tanks also tended to produce nitrate problems.

470. Lazreg, H., Environment Canada:
Hydrogeological reconnaissance study, Newcastle-Chatham area, New Brunswick, 1970-75.

Application geophysical methods and test drilling to determine hydrostratigraphy and identify sites of salt-water intrusion.

471. LeBreton, E.G., British Columbia Water Resources Service:
A hydrogeological study of the Salmon River basin, Shuswap Lake system, British Columbia, 1973-75.

To determine the groundwater component of flow and groundwater return flow from irrigation.

472. Mellary, A.A., Ontario Ministry of the Environment:
Evaluation of characteristics of selected overburden and bedrock aquifers in southern Ontario, 1966-75.

473. Mellary, A.A., Aaltonen, R.A., Ontario Ministry of the Environment:
Groundwater probability, County of Haldimand, 1967-74.

474. Mellary, A.A., Jackman, W., Sibul, U., Hickinbotham, A., Ontario Ministry of the Environment:
Groundwater probability, County of Middlesex, 1972-75.

475. Mellary, A.A., Novakovic, B., Sibul, U., Hickinbotham, A., Ontario Ministry of the Environment:
Groundwater probability, County of Brant, 1972-75.

476. Nicholson, F.H., Granberg, H., Lewis, J., Cossette, R., Stewart, D., Ross, S., Bird, J., Hermann, B., McGill Univ. (Geography):
Permafrost studies in the Schefferville area, Quebec, 1973-; Ph.D. thesis (Granberg); M.Sc. thesis (Lewis).

A permafrost amelioration study, thawing the ground by semi-natural means by increasing the winter snow cover and removing the vegetation. Test of variations of summer treatment using small plots. Detailed instrumentation, including deep ground thermocables, to monitor the changes in the heat balance.

Study of the insulating effects of snow by monitoring the energy movement within, above and below the snowpack, for 3 sites with varying snow depth.

An investigation of supra permafrost groundwater in two small watersheds on the Timmins 4 Permafrost Experimental Site.

NRC Special Project concurrently "Prediction of Permafrost for Sub-Arctic Mining Operations" using data from exploration drill holes, in an attempt to predict permafrost distribution by relation to the variables controlling the local heat flux (snow, groundwater movement, relief, vegetation, etc.). Sequence aerial photographs taken during the snowmelt season used together with large snow courses to quantify snowcover.

477. Ostry, R.C., Singer, S., Ontario Minsitry of the Environment:
International field year for the Great Lakes (IFYGL) groundwater inflow into Lake Ontario, 1968-75.

Ground-truth information on soil moistures, snow covers, ground temperatures and ground and surface water temperatures to assess groundwater recharge and discharge areas and direct groundwater inflows to Lake Ontario are being collected in conjuction with remote-sensing flights undertaken by other agencies.

478. Ozoray, G., Alberta Research Council:
Alberta hydrogeological reconnaissance map series NTS 82N and O, Golden and Calgary, 1972-74.

Alberta hydrogeologial reconnaissance map series NTS 73L, Sand River, 1974-75.

Alberta hydrogeological reconnaissance map series NTS 74E and 84 H, Bitumount and Namur Lake, 1973-74.

See Hydrogeology of the Waterways-Winefred Lake area, Alberta; Alberta Research Rep. 74-2, 1974.

479. Parry, J.T., Grey, B., Zonneveld, J., Granberg, H., McGill Univ. (Geography): Terrain analysis project, 1974-; Ph.D. thesis (Granberg).

480. Prosser, D., Univ. Alberta: Quaternary stratigraphy and hydrogeology of bedrock channels in the Wabamun area, Alberta, 1974-76.

481. Salbach, S.E., Pearce, G., Dennis, P., Osmond, D., Weatherbe, D., Goff, K., Choo-Ying, A.V., Singer, S., Creighton, W., Pirie, D., Ontario Ministry of the Environment: Thames River basin study, 1972-75.

482. Schwartz, F.W., Univ. Alberta: Investigation of regional water quality, 1974-75.

Groundwater inflow to shallow, recreational lakes in the Edmonton area plays an important role in controlling water quality and water levels. Piezometers and watertable wells to be installed within the watersheds and existing domestic wells will provide the instrumentation required to determine the quantity and location of groundwater inflow and to facilitate the collection of groundwater samples for chemical analysis. The significance of the proposed research lies not only in providing a comprehensive data base to more clearly understand the physical and chemical interactions between groundwaters and lakes, but also in giving quantitative information required to more fully understand problems of nutrient cycling and to guide the future development and management of western Canadian lakes.

Chemical and physical interactions between groundwaters and lakes, 1974-75.

The pattern of migration and chemical evolution of dissolved species in a combined groundwater-surface water system can be described mathematically as a solution to the transient form of the dispersion-convection equation, one equation for each species of interest. A complete description of mass transfer requires the simultaneous evaluation of the natural (physical, chemical, biological) and man-made processes operating within the system. The resulting array of differential equations is solved using the method of characteristics and yields a spatial and temporal description of ion concentrations. A detailed, theoretical evaluation of the model through the development and sensitivity analysis of a series of hypothetical cases can asses the relative influence of the physical and chemical parameters on the behaviour of the system. A practical demonstration of the descriptive and predictive ability of the model is provided by field studies of a combined groundwater and surface water system in east-central Alberta. Field studies are underway to describe the hydrology and hydrogeochemistry of the Lake Wabamun system and to provide parameters necessary to apply the water quality model. The ability of a properly calibrated model to predict water quality patterns provides a planning tool for assessing future human impact on the system and for evaluating proposed remedial strategies to achieve desired water quality standards.

483. Sibul, U., Choo-Ying, A.V., Goff, K., Ontario Ministry of the Environment: Water resources of the Moira River drainage basin, Ontario, 1969-75.

484. Stein, R., Bibby, R., Alberta Research Council: Alberta hydrogeological reconnaissance map series NTS 83H, Edmonton, 1972-75.

"Project Edmonton": A regional and detailed hydrogeological study of the Edmonton map area NTS 83H, 1972-75.

See Regional chemistry and water level distribution of the near-surface groundwaters of the Edmonton area (northwest segment), Alberta; Alberta Research Rep. 74-6, 1974.

485. Stevenson, D.R., Green, R., Alberta Research Council: Hydrogeological investigations near Hyderabad, Andhra Pradesh, India, 1971-75.

486. Stevenson, D.R., Vogwill, R., Alberta Research Council: An evaluation of the groundwater budget and its significance within the hyrdologic balance for the Marmot Creek, Streeter, and Deer Creek basins, 1964-75.

An evaluation of the groundwater budget of the Cache-Percotte and Whiskeyjack basins near Hinton, Alberta, 1965-75.

487. Toth, J., Alberta Research Council: Relation between groundwater and hydrocarbon accumulation, 1973-75.

488. Vanden Berg, A., Charron, J.E., Lawson, D.W., Environment Canada: Subsurface waste disposal in Lambton County, Ontario, 1973-75.

Mapping of hydrostatic head in the Dundee-Lucas formations; hydrochemical mapping of groundwater in the unconsolidated overburden. To assess the risk of industrial wastes, disposed in the Dundee-Lucas formation, contaminating the shallow groundwater.

489. van der Kamp, G., Environment Canada:
Use of well hydrographs in the evaluation of groundwater resources, 1974-75.

490. van Everdingen, R.O., Environment Canada:
Northern groundwater and engineering problems related to groundwater, 1972-.

Included: investigation of springs (thermal, mineral and fresh water) and icings, in northern Yukon and District of Mackenzie; development of instrumentation for measurement of pore-water pressures in materials subject to freezing and thawing; instrumentation for measurement of frost penetration; recording systems for such instrumentation; evaluation of ERTS-I imagery for monitoring growth and dissipation of major icings in northern Yukon.

491. Vogwill, R., Alberta Research Council:
Alberta hydrogeological reconnaissance map series (NTS 83), Lesser Slave Lake, 1974-75.

492. Vonhof, J.A., Environment Canada:
The effect of brine ponds on the groundwater regime, 1967-76.

Investigation of an underground gasoline spill, Flin Flon, Manitoba, 1974-75.

493. Vonhof, J.A., Davison, C.C., Environment Canada:
Daily variation in groundwater chemistry, 1972-76.

494. Wallick, E.I., Alberta Research Council:
Quality of groundwater in Alberta, 1973-78.

Currently under investigation are: the preservation of the field chemical state of groundwater; the hydrochemistry of the Sand River map sheet (73L); techniques for processing hydrochemical data.

Hydrogeology of mineral deposits, 1974-77.

Currently under investigation is the relation between groundwater movement and chemistry and the accumulation of an economic sodium sulfate deposit at Horseshoe Lake, Czar, Alberta. Methods employed thus far consist of detailed field mapping of groundwater features, i.e. sloughs, seeps, springs, wells, slumping, saline soils; chemical analyses of ground and surface waters; auger drilling; soil leaching experiments; size frequency analysis; tritium analysis of groundwaters; cable tool drilling to arrive at vertical distribution of fluid potential in the recharge area and discharge area; rotary drilling to install piezometer nests along a hydraulic cross section, analytic construction of hydraulic cross sections.

495. Wong, J., Ontario Ministry of the Environment:
Geophysical surveys and investigations and well-logging for hydrogeologic studies, 1965-.

496. Yakutchik, T.J., Andrijiw, D.J., McKenna, P.F., Steltner, I., Ontario Ministry of the Environment:
Groundwater surveys, test drilling and well construction for municipal supplies.

Base Metals

497. Asbury, B., Scott, S.D., Schwerdtner, W.M., Univ. Toronto:
Deformation and metamorphism of massive sulfide orebodies, 1973-75; M.Sc. thesis (Asbury).

498. Beales, F., Lozez, G.P., Manns, F., Coron, C., Univ. Toronto:
Limestone research; Ph.D. theses (Manns, Coron).

Involves lead-zinc mineralization in Middle Devonian carbonate rocks at Robb Lake, Northern British Columbia, and Middle Silurian carbonate rocks of the Niagara Escarpment, southern Ontario.

499. Boorman, R.S., Watson, D., Abbott, D., Sutherland, J.K., New Brunswick Research and Productivity Council:
Ore mineralogy of New Brunswick base metal sulphide deposits.

500. Bouley, B., Univ. Western Ontario:
Significance of sulfide bodies at Balmat, New York to Grenville metallogeny 1975-77; Ph.D. thesis.

501. Bristol, C.C., Brandon Univ.:
Structural relations, alteration and history of the Ruttan Lake orebody, Manitoba, 1975-78.

To establish the age of the orebody relative to that of the metamorphism of the enclosing rocks, and whether this orebody is volcanogenic or hydrothermal.

Ore mineralogy, orebody zoning and sphalerite geobarometry of the Ruttan Lake orebody, Manitoba, 1975-77.

See Sphalerite geobarometry of some metamorphosed orebodies in the Flin Flon and Snow Lake Districts, Manitoba; Can. Mineral, v. 12, p. 308-315, 1974.

Investigation of mineral compositions, metal ratios and distributions, relations of coexisting minerals.

502. Brown, A.C., Ecole Polytechnique:
Simulation of base metal zoning in sediments using chromatographic columns, 1970-.

Zonation of strictly conformable base metal concentrations may be explained in part by pulsations of ore solutions through suitable sediments.

Stratiform copper deposits in Carboniferous strata of New Brunswick, Nova Scotia and Prince Edward Island, 1974-76.

See Geol. Surv. Can., Paper 75-1, pt. A, p. 598-600, 1975.

503. Carignan, J., Ministère des Richesses Naturelles du Québec:
Etude des rhyolites minéralisées, région de Noranda, 1974-76.

504. Chown, E.H., Caty, J.L., Concordia Univ. (Loyola Campus), Université du Québec à Chicoutimi:
Stratigraphy and ore deposits of the Mistassini Basin, 1972-.

To relate Pb-Zn occurrences with stratigraphy and structure in the Lower Albanel Formation.

505. Christopher, P.A., Berg, N., British Columbia Dep. Mines and Petrol. Resources:
Giant Mascot ultrabasic project, 1974.

A study of the ultramafite at the Giant Mascot Mine, Hope, British Columbia, is presently being carried out to consolidate geologic data, define geologic units and recommend a genetic model for formation of the nickel-copper mineral deposits.

506. Clark, R., Webber, G.R., McGill Univ.:
Selenium-tellurium studies in the Orchan massive sulfide ore bodies, 1974-77; Ph.D. thesis (Clark).

507. Cluff, R.G., Mossman, D.J., Univ. Saskatchewan:
Geological investigation of the porphyry copper breccias, Mount Washington, British Columbia, 1974-76; M.Sc. thesis (Cluff).

Special attention is being given to the distribution and rate of occurrence of the various breccias known to occur on Mount Washington and their relationship with base metal mineralization in the area. Hydrothermal alteration phenomena seem likely to provide important clues as to the distribution of the potential ore deposits. However, the alteration is complex, and like the mineralization, evidently occurred at several discrete times.

508. Colvine, A.C., Ontario Division of Mines:
The geology of copper, zinc, lead and silver deposits in Ontario, 1974-.

509. Colvine, A. C., Hutchinson, R. W., Ontario Division of Mines, Univ. Western Ontario:
The geology and genesis of the sulphide deposits at the Temagami Mine, Ontario, 1969-.

510. Crawford, W. J., Dep. Indian Affairs and Northern Development-Tacoma Community College:
Lead-zinc mineralization in the central dolomite belt of the Lower Cambrian Sekwi Formation, Northwest Territories, 1974-75.

511. Darling, R., Ecole Polytechnique:
The geochemistry of the marble host rocks surrounding the Lynx Canada Zn deposit, Frontenac County, Ontario, 1973-75.

512. Folinsbee, R. E., Heal, G., Univ. Alberta:
Isotopic and geochemical study of the Bankeno Pb-Zn deposit, Cornwallis Island, Northwest Territories; M. Sc. thesis (Heal).

513. Folinsbee, R. E., Hoiles, H., Univ. Alberta:
Isotopic and geochemical study of the Afton copper deposit, British Columbia; M. Sc. thesis (Hoiles).

514. Folinsbee, R. E., Kuo, Say Lee, Univ. Alberta:
Isotopic and geochemical study of Pb deposits in the Yukon; Ph. D. thesis (Kuo).

515. Grove, E. W., British Columbia Dep. Mines Petrol. Resources:
Massive sulfide deposits in the western Canadian Cordillera, 1964-.

516. Grove, E. W., Richards, B., British Columbia Dep. Mines Petrol. Resources:
Geology and mineral deposits of the Shaff Creek area, British Columbia, 1974-75.

The Liard-Paramount mineral deposit at Shaff Creek represents one of the largest unexploited Cu-Mo porphyry bodies in northwestern British Columbia. Copper and molybdenum mineralization have been localized in mechanically deformed andesite/basalt volcanic, voncaniclastic and sedimentary rocks at the margin of the Late Triassic (182 m. y. ±) Hichman batholith. This deposit has characteristics comparable to certain porphyry copper bodies in the northwest U. S. A.

517. Guha, J., Université du Québec à Chicoutimi:
Etude de l'indice de la minéralisation dans la région du Haut-Saguenay, 1972-.

518. Guha, J., Koo, J., Leroy, J., Université du Québec à Chicoutimi:
Les caractères de la minéralisation et la mise en place du corps minéralisé des Mines Henderson et Portage, Chibougamau, Québec, 1972-.

L'étude comprend l'analyse de la minéralogie et des textures du minerai, les relations entre le minerai et les roches encaissantes, la chronologie relative de la mise en place du gisement et des déformations.

519. Guthrie, A., Univ. Western Ontario:
Base metal mineralization in the Espanola Formation, Ontario, 1975-76; M. Sc. thesis.

520. Haughton, D. R., Saskatchewan Research Council:
Applied geochemical studies over the George Lake Pb-Zn deposit and the associate boulder train, Saskatchewan, 1974-75.

521. Hill, P. A., Buser, L. J., Carleton Univ.:
Palaeomagnetic determination of ages of host rock, mineralization, deformation in bedded sulphides, 1973-76; M. Sc. thesis (Buser).

522. Hodder, R. W., Kerswill, J. A., MacIntyre, D. G., Meade, H. D., Winfield, W. D. B., Univ. Western Ontario:
Determination of economic potential in copper occurrences using volcanic-plutonic relationships of host rocks, 1973-76; M. Sc. theses (Kerswill, Winfield), Ph. D. theses (MacIntyre, Meade).

See Types of porphyry copper deposits at destructive plate margins and their metallogenic implications (Abstract): Program abstracts, Geol. Assoc. Can./Mineral. Assoc. Can., Joint Annual Meeting, p. 42, 1974.

523. Höy, T., British Columbia Dep. Mines Petrol. Resources:
Study of lead-zinc deposits in southeastern British Columbia, 1974.

Involves a study of lead-zinc deposits in the Kootenay Arc and Shuswap Complex in southeastern British Columbia. The tectonic and stratigraphic setting of these deposits will be assessed as well as the controls of mineralization.

524. Hutchinson, R. W., Univ. Western Ontario:
Metallogenic relationships amongst massive sulfide deposits, 1971-.

525. James, R. S., Robertson, D., Hawke, D., Laurentian Univ.:
Petrology, geochemistry and mineralization of mafic to ultramafic intrusions, Temagami greenstone belt, 1973-76; M. Sc. theses (Robertson, Hawke).

Two of the largest of mafic to ultramafic intrusions are currently being studied. A zoned periodotite-pyroxenite-gabbro complex hosting Ni-Cu sulphides at the Kanichee Mine

constitutes one such study; a second one is the meta-diorite sill which stratigraphically overlies a very continuous pyrite zone along the south shoreline of the northeastern arm of Lake Temagami. The pyrite zone is considered to be an exhalative product of under acid volcanism which host Cu-rich ores at the Temagami Copper Mine.

526. Johnson, A.E., Mines Branch, E.M.R.:
Investigation of the massive sulphide deposits of the Sturgeon Lake area, northwestern Ontario, 1972-75.

Involves a detailed study of the mineralogy and textural relationships of the massive sulphide deposits of the Sturgeon Lake area, northwestern Ontario (e.g., Mattabi Mine, N.B.U. Mine, Lyon Lake – Creek deposit), with particular attention to problems, e.g., grain size zoning, which relate to mineral processing.

527. Kyle, J.R., Univ. Western Ontario:
A metallogenic approach to orebodies in the Pine Point District, Northwest Territories, 1973-76; Ph.D. thesis.

528. McBride, D.E., Univ. New Brunswick:
Structure and stratigraphy of the B-Zone Heath Steele Mines, New Brunswick, 1970-75.

529. Petruk, W., Mines Branch, E.M.R.:
Mineralogy and geochemistry of the porphyry copper-molybdenite deposits in the Highland Valley area in British Columbia, 1969-75.

The mineralogical properties that affect mineral beneficiation will be investigated for the Valley copper, Bethlehem, Lornex and Highmount deposits.

530. Randall, J.A., Mossman, D.J., Univ. Saskatchewan:
Metallization in the Anglo-Rouyn and sulphide Lake belts, Lac La Ronge, Saskatchewan, 1971-75; Ph.D. thesis (Randall).

531. Roberts, R.G., Troup, W.R., Ali-Muji, Y., Univ. Waterloo:
Alteration of vitroclastic tuffs associated with Zn-Cu massive sulphide deposits of the Canadian Precambrian Shield, 1972-75; theses.

532. Robinson, P., Univ. Western Ontario:
Regional geology and genetic history of ores in the Manitouwadge district, Ontario, 1971-75; Ph.D. thesis.

533. Sangster, D.F., Geol. Surv. Can.:
Geology of lead and zinc deposits in Canada, 1965-.

See Geology of Canadian lead and zinc deposits; Geol. Surv. Can. Paper 75-1, pt. A, p. 235-237, 1975.

A study of certain accessory elements in Canadian sulphide assemblages and minerals, 1973-.

534. Stephenson, J.F., Haskins, R.A., Manitoba Mines Branch:
Investigations of Archean porphyry copper mineralization in the westtern Oxford Lake area, Manitoba, 1974-75; M.Sc. thesis (Haskins).

See Geology and mineralization of Western Oxford Lake and Carrot River; Manitoba Mines Branch, Geol. Paper 2/74, 1974.

Bedrock sampling and mapping conducted on two altered porphyritic trondhjemite stocks has revealed subeconomic disseminated copper-molybdenum sulphide mineralization. The petrology, petrography and geochemistry of these bodies is being studied to assess their mineral potential and characterize their geological setting.

535. Taylor, F.C., Geol. Surv. Can.:
Porphyry copper in the Canadian Shield, 1974-.

To determine whether porphyry copper type mineralization occurs in Archean strata and if so to delineate those known occurrences by establishing the geological environment and their relationship to other types of mineralization.

536. Troup, W.R., Roberts, R.G., Univ. Waterloo:
Metasomatic alteration in the volcanic host rocks of the Mattagami Lake Mine, 1973-75; M.Sc. thesis (Troup).

537. Wilson, H.D.B., Univ. Manitoba:
Vertical zoning in Canadian massive sulphide deposits, 1974-75.

A study of vertical zoning in copper-zinc deposits using ore reserve blocks as the data source.

538. Wynne-Edwards, H.R., Soregaroli, A.E., Morganti, J., Univ. British Columbia:
Sulphide mineralization in the easter Selwyn Basin and its relationship to the origin of sulphides in black shales, 1972-75; Ph.D. thesis (Morganti).

A field, mineralogical, isotopic and structural study of the Howards Pass, with emphasis on an investigation of the environment deposition of the black shales and their associated lead-zinc mineralization. Extensive use is being made of mapping and data conducted by Canex Placer Limited.

Coal and Peat

539. Broughton, P.L., Whitaker, S., Irvine, J., Saskatchewan Dep. Mineral Resources, Saskatchewan Research Council, Geol. Surv. Can.:
Resource evaluation of the Tertiary coalfields of southern Saskatchewan, 1971-75.

The estimated lignite resources of the southern Saskatchewan Tertiary coalfields have been evaluated by a two year borehole drilling program. Approximately 700 boreholes were drilled in the program, and information from another 500 boreholes of a related provincial coal evaluation program are utilized in this study. The coal basins are estimated to contain approximately 5.7 billion tons of lignite to a strippable depth of 150 feet: Estevan coalfield, 1.1 billion tons; Willowbunch coalfield, 2.9 billion tons; Wood Mountain coalfield, 1.0 billion tons; Cypress coalfield, 0.7 billion tons. Included in the resource calculation are all coal seams that are at least 5 feet thick and within 150 feet of the surface or 3 to 5 feet thick provided that the overburden/seam ratio is less than or equal to 15/1.

540. Cameron, A.R., Geol. Surv. Can.:
Petrographic examination of coking coals from the Crowsnest coalfield, Alberta and British Columbia, 1961-.

See Relation of predicted to experimentally determined coke stabilities for western Canadian coals; Geol. Surv. Can., Paper 74-1, pt. B, p. 19-20, 1974.

Petrographic analysis of Saskatchewan lignites, 1972-.

541. Campbell, J.D., Bosman, A., Alberta Research Council:
Strip coal co-op survey, 1961-75.

See Coal resources, Taber-Manyberries area, Alberta; Alberta Research Rep. 74-3, 1974.

542. Gunther, P.R., Geol. Surv. Can.:
Correlation of hydrocarbon occurrences and the nature of dispersed organic material in the Mackenzie Delta area, Yukon and Northwest Territories, 1974-.

See Lithostratigraphy and coal reflectance of a Lower Cretaceous deltaic succession in the Gulf-Mobil Parsons F-09 borehole, N.W.T.; Geol. Surv. Can., Paper 74-1, pt. B., p. 24-28, 1974.

543. Hacquebard, P.A., Geol. Surv. Can.:
Rank studies of coal and organic matter dispersed in sediments, 1968-.

See A composite coalification curve of the Maritime region and its value for petroleum exploration; Geol. Surv. Can., Paper 74-1, pt. B, p. 21-23, 1974.

Petrography of coal seams in the Rocky Mountain Foothills belt north of the Panther area, Alberta, 1968-.

See Relation of predicted to experimentally determined coke stabilities for western Canadian coals; Geol. Surv. Can., Paper 74-1, pt. B, p. 19-20, 1974.

Correlation of coal rank with petroleum occurrences in Alberta, 1968-.

544. Holter, M.E., Chu, M., Yurko, J.R., Bosman, A., Alberta Research Council:
Alberta plains coal resources, 1974-78.

545. Irvine, J.A., Whitaker, S.H., Broughton, P.L., Tibbets, T.E., Geol. Surv. Can., Saskatchewan Research Council, Saskatchewan Dep. Mineral Resources, E.M.R.:
Evaluation of shallow subsurface borehole sampling methods applicable to lignite resource exploration, 1971-74.

The reliability of borehole sampling methods was tested for application to lignite seam evaluation in the shallow subsurface in southern Saskatchewan. Normal rotary drilling, reverse-circulation with dual-wall pipe, continuous rotary core drilling and side-wall coring methods were used to obtain lignite samples for proximate and ultimate analyses. The results were compared to samples obtained from adjacent open pit mine faces. Results of this experimental program indicate that reverse-circulation drilling employing top drive and drag drill bits would be the favoured technique when accurate chemical analyses of the samples are required or when lost circulation conditions prevail.

546. Wright, J.D., Gillis, K.S., Nova Scotia Dep. Mines:
Coal inventory survey, 1974-78.

547. Yurko, J.R., Kramers, J.W., Alberta Research Council:
Deep coal survey, 1973-74.

Ferrous Metals

548. Anderson, D.T., Univ. Manitoba:
Neepawa iron deposit study – Geological and economical significance, 1974-76.
Remote sensing study – Bird River-English River area, 1974-76.
Photointerpretation compilation study – eastern Manitoba, 1970-76.

549. Gross, G.A., Geol. Surv. Can.:
Geology of iron and manganese deposits of Canada, 1957-.

550. Hamilton, W.N., Alberta Research Council:
Clear Hills iron studies, 1973-.

A mapping project to bring together all existing surface and subsurface data on the Clear Hills iron deposit for display on a suite of maps, depicting the geologic setting, distribution, thickness, grade, and overburden conditions of the deposit. Petrologic studies also are planned.

551. Kimberley, M.M., Univ. Toronto (Erindale College):
Diagenesis and the origins of sedimentary ores, 1973-77.

552. Meyn, H.D., Ontario Division of Mines:
Iron deposits of Ontario, 1972-.

Iron formations of the Little Long Lac – Sturgeon River area, District of Thunder Bay, Ontario, 1975-76.

553. Schwarcz, H.P., Kissin, S.A., McMaster Univ.:
Experimental study of sulfur isotope fractionation between sulfide minerals, 1973-75.

Equilibrium isotopic fractionation between pyrite and galena at elevated temperatures using hydrothermal, temperature-gradient synthesis of coexisting minerals.

554. Scott, S.D., Univ. Toronto:
Midwest Superior Geotraverse: characterization and geochemistry of Archean iron formations in the Savant Lake – Sturgeon Lake greenstone belt, Ontario, 1974-76.

Industrial Minerals

555. Brady, J.G., Bell, K.E., Zemgals, L.K., Mines Branch, E.M.R.:
Composition and properties of ceramic clays and shales of Canada, 1956-77.

Related to the study of processing typical Canadian clays and shales into ceramics and the relationship of composition to properties of these materials.

556. Butler, A.J., Green, B.A., Newfoundland Dep. Mines and Energy:
Silica resources of Newfoundland, 1972-75.

557. Felderhof, W., Nova Scotia Dep. Mines:
Barite-celesite-fluorite in Nova Scotia, 1974-75.

558. Fowler, J.H., Nova Scotia Dep. Mines:
Sand and gravel project, 1973-.

An inventory of sand and gravel deposits in Cumberland, Colchester and western Pictou Counties.

559. Godfrey, J.D., Alberta Research Council:
Fort Chipewyan red granite buildingstone project, 1971-.

560. Guillet, G.R., Ontario Division of Mines:
Clay and shale resources of southern Ontario, 1975.

561. Hamilton, W.N., Alberta Research Council:
Clay and shale resources of Alberta, 1970-74.

See Alberta clays and shales: summary of ceramic properties; Alberta Research Econ. Geol. Rep. no. 3, 1974.

562. Holter, M.E., Alberta Research Council:
Limestones of Alberta, 1970-75.

Gravel resources of the Red Deer area, 1973-75.

Marl resources of Alberta, 1973-75.

563. Jacob, H.-J., Ministère des Richesses Naturelles du Québec:
Inventaire des calcaires de la Gaspésie, 1972-76.

564. McLaws, I.J., Alberta Research Council:
Silica sand in the Fort McMurray area, 1973-.

565. Ringrose, S., Manitoba Mines Branch:
Sand and gravel resources, northern Manitoba (63J-63G), 1971-75.

Sand and gravel resources, Winnipeg region, north half (62I), 1975.

566. Ringrose, S., Large, P., Manitoba Mines Branch:
Surficial geology and sand and gravel resources of the Leaf Rapids local government district, 1974-75.

567. Scafe, D.W., Alberta Research Council:
Alberta bentonite studies, 1968-74.

Suspension properties of bentonites from the nine areas in Alberta where deposits are thicker than 1 foot indicate that production of high-swelling bentonite probably will remain limited to deposits presently being mined. Low yield, high grit content, or thick overburden reduce the desirability of other deposits.

The paucity of glass shards and the mineralogy of the sand and silt fractions suggest rhyodacite as the composition of the parent volcanic ash for each deposit. Absence of allogenic material indicates that differences in in the amount of clastic constituents within and between deposits are the result of differences of original mineralogy and diagenetic alteration. Clay content can be related to the amount of sand- and silt-sized volcanic glass altering to montmorillonite. Evidence suggests no preference for diagenesis or adsorption from groundwater to explain the origin and distribution of Na, Ca + Mg, and Fe.

Multiple regression analysis of seven compositional properties shows that 81 percent of the variation in yield (bbl/T) of 15-centipoise mud can be attributed to their concomitant variation; however, 72 percent of the variation in yield can be attributed to one property (clay content). The remaining variables (<0.2μm clay, exchangeable Na, exchangeable Ca + Mg, Fe^{+2} and Fe^{+3} contents and CEC) contribute little additional precision to the regression analysis when clay content is in the equation.

568. Scafe, D.W., Hamilton, W.N., Alberta Research Council:
Potential industrial clays of Alberta, 1973-.

Samples of potential ceramic clays in the Fort McMurray area were collected from the Waterways, McMurray and Clearwater Formations. Processing is started. Sampling of the Edmonton-Hinton corridor is planned for next year.

569. Tremblay, G., Ministère des Richesses Naturelles du Québec:
Dépôt meubles dans la région de Sept-Iles, 1974-75.

570. Vanderveer, D.G., Harvey, R., Newfoundland Dep. Mines and Energy:
A reconnaissance survey of clay deposits on the Island of Newfoundland, 1974-75.

A total of 23 occurrances were samples and tests are presently being conducted to evaluate these deposits.

571. Vos, M.A., Ontario Division of Mines:
Kaolin, fireclay, silica sand and lignite deposits (Cretaceous) of the Moose River Basin, northern Ontario, 1972-.

Silica in Ontario, 1974-75.

Other Metals

572. Aumento, F., Dalhousie Univ.:
Ferro-manganese exploitation of the ocean floor, 1973-76.

573. Averill, S.A., Ayres, L.D., Univ. Manitoba:
The Setting Net Lake prophyry molybdenum deposit, northwestern Ontario, 1970-76.

See The Early Precambrian Setting Net Lake porphyry molybdenum deposit (abstract); CIM Bull., p. 48, 1973.

574. Bannatyne, B.B., Manitoba Mines Branch:
Rare-element pegmatites in Manitoba, 1972-77.

575. Boorman, R.S., Sutherland, J.K., New Brunswick Research and Productivity Council:
Indium and bismuth distribution at Mount Pleasant, New Brunswick, 1975-76.

576. Boorman, R.S., Watson, D., New Brunswick Research and Productivity Council:
Remote sensing exploration for bog manganese deposits, 1974-76.

Evaluation of infrared and thermographic techniques by observation over known deposits and extension to exploration for new ores.

577. Breakey, A., McGill Univ.:
Variation of fold distribution with mineral zoning, Con Gold Mine, Yellowknife, 1974-76; M.Sc. thesis.

578. Cabri, L.J., Laflamme, J.H.G., Mines Branch, E.M.R.:
The mineralogy of the Tulameen River sands, British Columbia, 1971-75.

See Platiniridium – confirmation as a valid mineral species; Can. Mineral., v. 12, pt. 5, p. 299-303, 1974.

579. Chevé, S., Ministère des Richesses Naturelles du Québec:
Etude des volcanites de la region de mégantic, 1974-75.

Controle de la minéralisation dans la région de la mine Clinton. Etude pétrochimique.

580. Danner, W.R., Univ. British Columbia:
Rhodonite deposits of Saltspring Island and Vancouver Island, British Columbia, 1972-.

581. Dawson, K.R., Geol. Surv. Can.:
Geology of barium, fluorine and strontium deposits in Canada, 1972-.

See Barite, fluorite and celestite deposits and occurrences in Canada; Geol. Surv. Can., Paper 75-1, pt. A, p. 257-259, 1975.

582. Eckstrand, O.R., Geol. Surv. Can.:
Geology of Canadian nickel and platinum group deposits, 1963-.

See Nickel potential of the Prince Albert Group, N.W.T.; Geol. Surv. Can., Paper 75-1, pt. A, p. 253-255, 1975.

583. Fripp, R.E.P., Univ. Western Ontario:
Geology and origin of gold deposits at East Malartic, Quebec, 1975-77; Ph.D. thesis.

584. Gibbins, W.A., Dep. Indian Affairs and Northern Development:
Gold deposits related to iron formation, 1974-76.

Comparative study of deposits at Contwoyto Lake, Cullaton Lake, Homestake, Long Lac and Pickle Crow.

585. Gordon, J.B., Ontario Division of Mines:
Geological appraisal of potential for porphyry type deposits of Cu, Mo and Au in Ontario, 1974-75.

586. Gordon, J.B., Davie, R.F., Ontario Division of Mines:
Gold deposits of Ontario – distribution map, 1974-75.

587. Gordon, J.B., Lovell, H., Ontario Division of Mines:
Gold deposits of Ontario, 1973-75.

588. Harris, D.C., Cabri, L.J., Mines Branch E.M.R.:
Mineralogical examination of low-grade nickel deposits of Canada, 1970-.

589. Imreh, L., Ministère des Richesses Naturelles du Québec:
Evaluation des roches mafiques et ultramafiques, 1972-78.

Lithochimie, stratigraphie, structure et contrôle de la minéralisation de nickel-cuivre dans les amas ultrabasiques, N.O. Québec.

590. Jost, M., Ontario Division of Mines:
Nickel deposits associated with ultrmafics of the Abitibi-Wawa Belt, Ontario, 1975-76.

Nickel deposits of Ontario, 1975-.

The study, evaluation, and classification of Ontario's nickel deposits and their geological environments through field and laboratory research to asses the Province's nickel potential and provide exploration guidelines.

591. Kirkham, R.V., Geol. Surv. Can.:
Geology of copper and molybdenum deposits of Canada, 1970-.

See A study of copper mineralization in Mississippian rocks of the Atlantic Provinces; Geol. Surv. Can., Paper, 75-1, pt. A, p. 245-248, 1975.

Preliminary assessment of porphyry deposits in the Canadian Appalachians; *ibid.*, p. 249-252, 1975.

592. LaSalle, P., Ministère des Richesses Naturelles du Québec:
Dépôts meubles et placers aurifères de la Beauce, 1974-75.

Le travail comprend des études géochimiques sur les roches de fond afin de déterminer, si possible, la source de l'or des placers.

593. McArthur, J.G., Newfoundland Dep. Mines and Energy:
Barite-celestite evaluation, Project 4-4, Canada-Newfoundland exploration and evaluation Program, 1972-75.

594. Mercer, W., Crocket, J.H., McMaster Univ.:
Gold and palladium in stratiform sulfide deposits from the Bathurst-Newcastle district, New Brunswick, 1968-75; Ph.D. thesis (Mercer).

Gold and palladium in stratiform sulfide deposits: studies on gold and palladium distribution in mines (Heath Steele, Brunswick No. 6, Anaconda Caribou) from the Bathurst district, New Brunswick, indicate that average gold contents up to 1 ppm are characteristic of these deposits and that the metal is strongly zoned. In the latter two deposits gold values at a factor 10 above the average are found over thicknesses of 5 to 10 feet in the lead-zinc rich parts of these deposits. Palladium levels are low and in the range 0.1-1 ppb.

595. Meyn, H.D., Ontario Division of Mines:
Molybdenum deposits of Ontario, 1975.

596. Morton, R.D., Badham, J.P.N., Bale, W., Univ. Alberta, Univ. Southampton:
Studies on the Ag – Ni, Co arsenide-Bi-(U) mineralization of the Bear Province, 1968-76; M.Sc. thesis (Bale).

Work is now in progress concerning the deposit at Silver Bay (Northrim Mines Ltd.).

597. Mulligan, R., Geol. Surv. Can.:
Geology of Canadian lithophile metals (Li, Be, Sn, W), 1953-.

See Geology of Canadian ton occurrences; Geol. Surv. Can., Econ. Geol. Rep. no. 28, 1975.

Metallogenic study of the beryllium-tin province of Cassair batholith, Yukon-British Columbia, 1965-.

598. Pearson, D.E., British Columbia Dep. Mines and Petrol. Resources:
A study of the setting of mineral deposits of the Bridge River area, British Columbia, 1974-.

A study of the mineral zoning pattern of cinnabar and stibnite, and their significance, if any, with respect to the gold deposits of the area.

599. Roberts, R.G., Morris, J.H., Carnavari, J., Univ. Waterloo:
A study of the volcanic setting of gold-bearing quartz-carbonate veins and their associated deposits, 1971-77; theses.

600. Rose, E.R., Geol. Surv. Can.:
Geology of titanium and titaniferous deposits of Canada, 1958-.

Geology of vanadium deposits in Canada 1963-.

Geology of rare earth deposits of Canada, 1967-.

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

See Geology of gold deposits in Canada; Geol. Surv. Can., Paper 75-1, pt. A, p. 256, 1975.

602. Tihor, L.A., Crocket, J.H., McMaster Univ.:
The exhalite concept as a model for understanding gold distribution in the Larder-Kirkland Lake district, Ontario, 1973-77; Ph.D. thesis (Tihor).

See Gold distribution and gamma-ray spectrometry in the Kirkland Lake-Larder Lake gold camp; Geol. Surv. Can., Paper 75-1, pt. A, p. 355-357, 1975.

The major rock units will be characterized with respect to gold content (by neutron activation) and the radioactive elements K, U and Th (by field gamma spectrometry). These parameters will be studied in areas devoid of major gold mines and in the vicinity of the major gold mine in Canada, the Kerr Addison.

603. Vos, M.A., Ontario Division of Mines:
Amethyst deposits of Ontario, 1974.

Petroleum

604. Charbonnier, R.P., Draper, R.G., Harper, W.H., Yates, A., Mines Branch, E.M.R.:
Directory of reservoir data and analyses of typical canadian crude oils, 1964-.

605. Hodgson, G.W., Univ. Calgary:
The potential of Arctic sediments – Part II. Interaction of organic matter, water and mineral matrix in petroleum, 1973-75.

606. Kramers, J.W., Alberta Research Council:
Potential metallic mineral byproducts of the Athabasca deposit, 1972-75.

Seven wells in the mineable area (150 ft of overburden) of the Athabasca Oil Sands were sampled. The analysis of the samples will give an indication of the potential metallic mineral (rutile, zircon) byproducts from oil sands extraction plants.

607. McCrossan, R.G., Geol. Surv. Can.:
Origin and migration of petroleum in western Canada, 1971-.

Evaluation of Canada's petroleum potential, 1972-.

608. North, F.K., Carleton Univ.:
Petroleum potential of sedimentary basins, especially those of Canada, 1970-.

609. Potter, W., Nova Scotia Dep. Mines:
Oil Shale project, 1974-75.

Evaluation of the economic potential of the Oil shale occurrences in Nova Scotia.

610. Powell, T.G., Geol. Surv. Can.:
The organic content of sediments from the Beaufort Sea, 1971-.

611. Snowdon, L.R., Geol. Surv. Can.:
Regional distribution of gaseous hydrocarbons in the Northwest Territories and western Canada, 1968-.

612. Sonnenfeld, P., Univ. Windsor:
Petroleum reservoirs in offshore Greece, 1973-74.

Radioactive Deposits

613. Laifa, E., Brown, A.C., Ecole Polytechnique:
Geology and genesis of Precambrian fissure-vein uranium deposits of Algeria, 1974-; M.Sc. thesis (Laifa).

614. Little, H.W., Geol. Surv. Can.:
Geology of uranium and thorium deposits of Canada, 1967-.

See An overview of uranium developments in Canada; Nuclear Engineering Intern., v. 19, no. 217, p. 493-496, 1974.

615. Morton, R.D., Schimann, M., Kenyon, M., Univ. Alberta:
Uranium deposits in Northwest Territories, Saskatchewan and southern British Columbia, 1968-; Ph.D. thesis (Schimann), M.Sc. thesis (Kenyon).

To date studies have been performed on sandstone-type deposits in the East Arm of Great Slave Lake, syn-metamorphic, 'remobilized' stratabound deposits in the Beaverlodge district of northern Saskatchewan and magmatic segregation types associated with Mo mineralization near Carmi, British Columbia.

616. Muehlenbachs, K., Morton, R.D., Univ. Alberta:
Oxygen isotope fractionations and geothermometers among minerals of uranium deposits, 1975-77.

To investigate isotopic equilibria in those assemblages which characterize uranium deposits of both epigenetic and syngenetic character.

617. Robertson, J.A, Ontario Division of Mines:
Uranium deposits of Ontario, 1973-75.

618. Sassamo, G.P., Concordia Univ. (Loyola Campus):
Studies on the uraniferous deposits of the Charlebois Lake area, northern Saskatchewan, 1975-78.

Study of at least six large low-grade uranium deposits containing a minimum of 1000 tons/P.V.F., the U-mineralization occurring in form of euhedral cubes of uraninite contained as inclusions in biotite.

619. Wynne-Edwards, H.R., Herring, B., Univ. British Columbia:
Petrology of the Precambrian basement rocks of the Carswell Lake area, Saskatchewan, 1973-75; M.Sc. thesis (Herring).

General

620. Allard, G.O., Henry, R., Ministère des Richesses Naturelles du Québec et Univ. Georgia:
Complexe du lac Doré, Chibougamau, Province de Québec, 1970-76; thèse M.Sc. (Henry).

Pour cette année, étude de la zone de contact nord entre le complexe du lac Doré et la formation de Gilman.

621. Bainey, S.J., Hamilton, W.N., Alberta Research Council:
Economic minerals map of Alberta, 1970-.

This project entails displaying on a modified geologic map all significant deposits of economic minerals in Alberta other than petroleum and natural gas. The mineral resources are classified into categories based on industrial use, relative size of the deposit, and potential areas for future exploration and development.

622. Blusson, S.L., Geol. Surv. Can.:
Metallogeny of Selwyn Basin, 1973-.

623. Burwash, R.A., Univ. Alberta:
Relationship of metamorphic to metallogenic belts in Precambrian rocks of western Canada, 1971-75.

624. Chatterjee, A.K., Nova Scotia Dep. Mines:
Metallogenic studies, 1974-79.

A regional overview of the mineral deposits in the province to bring out with demonstrations based on appropriate examples, certain leading ideas on mineralization belt, metalloid, mineralization gradient and metallogenic province; criteria would be developed so that similar deposits elsewhere in the province may be located.

625. Chevé, S., Brown, A.C., Ecole Polytechnique:
District mapping and metallogeny of Clinton mine area, Lake Mégantic, Quebec, 1974-76; M.Sc. thesis (Chevé).

626. Fox, J.S., Saskatchewan Research Council:
Volcanism and ore deposits between Amisk and Hanson Lakes, northeastern Saskatchewan, 1974-77.

Objectives are the economic re-evaluation of the Amisk Group meta-volcanics themselves and the development of petrological/petrochemical exploration techniques for use in less well known greenstone belts in Saskatchewan

with emphasis on geochemically-aided detailed mapping, volcanic stratigraphy, structural interpretation and fragment-size distributions in the coarse pyroclastics.

627. Franklin, J.M., Lakehead Univ.:
Midwest Superior Geotraverse: Metallogeny of the South Sturgeon Lake volcanic belt, Ontario, 1972-75.

628. Gaucher, E., St-Amant, M., SOQUEM:
Stratégie d'exploration, 1969-74.

Recherche opérationnelle pour optimiser l'exploration minère.

629. Gregory, D.J., Nova Scotia Dep. Mines:
Mineral resources inventory for Nova Scotia, 1974-76.

630. Hutchinson, R.W., Univ. Western Ontario:
Precambrian metallogeny, 1971-.

631. Jones, B.E., Nova Scotia Dep. Mines:
Eastern shore project, Nova Scotia, 1973-.

To provide an up-to-date assessment of the mineral resource potential.

632. Laznicka, R., Mathews, R., Univ. Manitoba:
Study of the worldwide metallogenesis of base and precious metals and its application to selected mineralized areas in Canada, 1973-.

A comparison in metallogeny and geological features (petrochemistry, lithology, stratigraphy, tectonics) is made between the Paleozoic mobile belt of eastern Australia (New England) and corresponding portions of Maritime Appalachians and the Cordillera.

633. MacNabb, B.E., Nova Scotia Dep. Mines:
Cape Breton mineral resource project, 1973-80.

634. Mossman, D.J., Hefferman, K., Univ. Saskatchewan:
Geological investigation of a core of metal-rich Red Sea sediments before and after their experimental recrystallization, 1973-75; M.Sc. thesis (Hefferman).

A core of metal-rich sediment from the bottom of the Red Sea is being investigated using mineralogical, chemical and x-ray techniques in an effort to learn more about the geology of those unusual deposits. Experimental recrystallization of this sediment is also being carried out in order to determine the response of base metal deposits in sediments to metamorphism. The project has special relevance to certain sulphide deposits which have been subjected to low grade metamorphism.

635. Padgham, W.A., Dep. Indian Affairs and Northern Development:
Geological investigation of potential mineralized belts in the Slave Province, Northwest Territories, 1973-.

636. Robertson, J.A., Ontario Division of Mines:
Mineral potential studies, mineral map of Ontario, 1972-.

See Mineral map of Ontario; Ontario Division of Mines, Map 2310, 1974.

Includes examination and classification of geological environments leading to determination of mineral reserves and estimation of potential.

637. St-Amant, M., SOQUEM:
Effets non-linéaires de conductivité dans les roches, 1972-75.

Construction d'un prototype-terrain d'un instrument pour mesurer les effets non-linéaires de conductivité des roches, dans l'espoir de différencier éventuellement les causes des conducteurs masqués par le mort-terrain, c'est-à-dire les lits de graphite stérile des mines de sulfures de métaux courants.

638. St-Amant, M., Gaucher, E., Vallée, J., SOQUEM:
Récepteur de polarisation provoquée à haut sensibilité, 1974-76.

Construction d'un instrument de mesure des effets de polarisation provoquée, sur la base d'un principe digital.

639. Smith T.E., Turek, A., Univ. Windsor:
Ore bearing potential of the granitic rocks of southwestern Nova Scotia, 1972-75.

640. Strong, D.F., Memorial Univ.:
Geochemical, petrological and metallogenic studies of the Appalachian/Caledonian Orogen, 1971-; theses.

Involves continuing study of Newfoundland mineral deposits in their total geochemical/pathological/tectonic context, and comparison and correlation of them with ones found elsewhere in the orogen.

641. Thode, H.G., Monster, J., McMaster Univ.:
Sulphur isotope studies of ores, 1956-.

642. Thorpe, R.I., Geol. Surv. Can.:
Geology of mineral deposits of Bear-Slave Provinces, Northwest Territories, 1971-.

643. Zentilli, M., Dalhousie Univ.:
Regional metallogenic analyses of Nova Scotia: a multidisciplinary approach, 1973-76.

Specific Minerals

644. Bayliss, P., Stout, M. Z., Univ. Calgary:
Geothermonitory by order-disorder relationships, 1973-76; M. Sc. thesis (Stout).

See Crystal structure of a natural titanomagnetite; Can. Mineral., v. 13, no. 1, p. 86-88, 1975.

The cation distribution of titanomagnetites are being investigated to determine the occupancies of the tetrahedral and octahedral sites. It is considered that ferous iron, feric iron and titanium may have different site preferences at different temperatures. Spinels are selected from basalts, where the two iron-titanium oxide geothermometer of Buddington and Lindsley (J. Petrol. 5 310) may be applied. A graph will be drawn of temperature versus site preference. Site preferences will be related to certain x-ray powder diffraction reflections, since some reflections only effect tetrahedral sites and other reflections only octahedral sites (Azaroff, X-ray Crystallography, N.Y. 1968). Therefore one iron-titanium oxide may be used as a geothermometer in basalts.

645. Berry, L. G., Queen's Univ.:
Mineralogical study of uranium-bearing minerals from Elliot Lake – Blind River area, Ontario, 1974-76.

646. Boorman, R. S., Watson, D., New Brunswick Research and Productivity Council:
Chemistry of sulphide tailings waste, 1973-76.

647. Boorman, R. S., Watson, D., Sutherland, J. K., New Brunswick Research and Productivity Council:
Examination of flotation properties of copper-rich pyrites, 1975-76.

Effect of lattice-bound trace elements on the flotation of galena, 1972-75.

Minor quantities of copper in the galena lattice have been demonstrated to influence the flotation characteristics of galena. Other substituent elements are also being investigated, notably arsenic, antimony, silver and bismuth.

648. Cabri, L. J., Mines Branch, E. M. R.:
Mineralogical study of platinum-group elements, 1971-76.

See Sudburyite, a new palladium-antimony mineral from Sudbury, Ontario; Can. Mineral., v. 12, pt. 4, p. 275-279, 1974.

Rhodium, platinum, and gold alloys from the Stillwater Complex; Can. Mineral., v. 12, pt. 6, p. 399-403, 1974.

649. Corlett, M. I., Queen's Univ.:
Chemical variations in sulphosalts, 1969-75.

See Quantitative analysis of sulphides and sulphosalts using an energy-dispersive spectrometer; Proc. 9th Conf., Microbeam Analysis Soc., Carleton Univ., p. 23A-23J, 1974.

A related program to develop computer processing methods for energy-dispersive analysis of sulphosalts has been completed.

650. Farrell, D. M., Mines Branch, E. M. R.:
Calculation of the force constants of marcasite and cubanite from their infrared and raman spectra, 1973-75.

651. Fleet, M. E., Univ. Western Ontario:
Crystal chemical studies on ferromagnesian silicates, 1973-.

See Distortions in the coordination polyhedra of M site atoms in olivines, clinopyroxenes and amphiboles; Am. Mineral., v. 59, p. 1083-1093, 1974.

652. Hall, S. R., Stewart, J. M., Szymanski, J. T., Mines Branch, E. M. R.:
The X-ray study of stannite-like crystal structures, 1973-76.

The crystal structure studies of three members of the stannite family have been initiated – stannite, kesterite and mawsonite. Investigations of stannoidite, isostannite and rhodostannite are underway, preliminary to structure studies.

653. Harvey, Y., Perrault, G., Ecole Polytechnique:
La structure cristalline du néphéline hydrate I, 1973-75; thèse M. Sc. A (Harvey).

654. Hawthorne, F. C., Univ. Manitoba:
Crystal chemistry of chain silicates, 1973-.

A crystallographic investigation of pyroxenes and amphiboles is being conducted in order to assess the effect of innate structural constraint on bulk chemistry and cation ordering. This should allow a more realistic evaluation of changes in phase chemistry in response to conditions of crystallization and/or equilibration.

655. Jambor, J. L., Geol. Surv. Can.:
Mineralogy of prophyry deposits of Cu and Mo in Canada, 1970-.

See Studies of basic copper and zinc carbonates: Part 2 – aurichalcite; Geol. Surv. Can., Paper 74-1, pt. B., p. 172-174, 1974.

Secondary minerals in an ultramafic intrusion, Amos area, Quebec; Geol. Surv. Can., Paper 75-1, pt. A, p. 261-263, 1975.

656. Johnson, A.E., Mines Branch, E.M.R.:
Mineralogical studies of select copper-molybdenum stockwork and copper skarn deposits in south-central British Columbia, 1969-74.

See Mineralogical and textural study of the Phoenix Copper ores, south-central British Columbia; Mines Branch Inf. Circular 311, 1974.
Mineralogy and textural study of ores from the Copper Mountain area, south-central British Columbia; Mines Branch Inf. Circular 317, 1974.

The systematic determination of minor elements in pyrite from Canadian ores, 1972-.

Investigation is underway to determine the minor element (particularly Co, Ni, As, and Se) content of pyrites from a variety of Canadian ore deposits. It includes detailed descriptions of the morphology and textural characteristics of the pyrites and mineral assemblage with which they occur. An overall view to the genesis of the pyrites is being prepared.

Mineralogical investigation of the Caribou massive sulphide lead-zinc deposit, New Brunswick, 1974-75.

Investigation is largely in support of pilot plant and bench-scale test work being carried out on complex, polymetallic, fine-grained, lead-zinc ores. The stress is on the variation in grain size of different ore minerals and the varying textural relationships which they exhibit.

657. Kaiman, S., Mines Branch, E.M.R.:
X-ray diffraction analysis of synthetic jarosite compounds, 1973-74.

The application of Alpha Track counting in the investigation of radioactive minerals, 1973-75.

The application of microscope image analysis for alpha track counting is being investigated.

Thucholite from Elliot Lake conglomerate, 1975.

A study of the distribution of radioactivity in the rare hydrocarbon materal.

658. Kendall, A.C., Broughton, P.L., Saskatchewan Dep. Mineral Resources:
Crystal fabrics in stalactitic carbonates, 1972-75.

Investigations into the crystal fabrics of vadose precipitated stalactitic carbonate: coalescence of multicrystalline precursors into radial fabrics; variability of internal fabrics, including micrite, split crystals, lattice-work, scale-like structures, curved prismatic growths; relationships between the soda straw and the radial fabrics with internal and external flow characteristics.

659. Kissin, S.A., Mines Branch, E.M.R.:
The mineralogy, stoichiometry and stability relations of the "stannite family", 1974-75.

660. Mandziuk, Z., Scott, S.D., Univ. Toronto:
Synthesis and stability of argentian pentlandite, $(Fe, Ni)_8AgS_8$, 1973-75; M.Sc. thesis (Mandziuk).

661. Nuffield, E.W., Univ. Toronto:
Crystal chemistry of the ore minerals, 1942-.

See The crystal structure of antimonian hauchecornite from Westphalia; Can. Mineral., v. 12, p. 269-274, 1974.

662. Papezik, V.S., Memorial Univ.:
Borate minerals in Carboniferous evaporites of western Newfoundland, 1973-74.

Initial investigation of Carboniferous gypsum deposits in western Newfoundland resulted in the discovery of small quantities of borate minerals (howlite, $Ca_2B_5SiO_9(HO)_5$ and ulexite, $NaCaB_5O_9 \cdot 8\ H_2O$). The borates are present as small nodules up to 2 cm in diameter, enclosed in gypsum and anhydrite. Although the presence of borates in the gypsum deposits of Nova Scotia has been known for a long time, this is the first reported occurrence of similar mineral assemblages in Newfoundland. During a brief reconnaissance in Nova Scotia, borates were found at several localities not previously reported; the minerals are apparently common throughout the Carboniferous evaporite basin of the Atlantic provinces.

663. Perrault, G., Ecole Polytechnique:
Recherche sur la cristallochimie du niobium, 1973-78.

Nous travaillons actuellement sur:

(1) un affinement de la structure cristalline de la niocalite, $(Ca, Nb)_{16} Si_8 O_{36}$;
(2) une définition de la structure atomique de $Ca_3Nb_2O_8$;
(3) un affinement de NbO_2F;
et
(4) la synthèses et la définition du groupe d'espace et de la structure de NbO_2 C1.

664. Rimsaite, J. Y. H., Geol. Surv. Can.:
Mica group minerals and related silicates in Canadian mineral deposits, 1970-.

665. Roberts, A. C., Berry, L. G., Queen's Univ.:
Crystallographic, chemical and optical study of alstonite, 1972-75; M. Sc. thesis (Roberts).

Variations in this mineral have been noted in specimens from Cumberland, England, and Rasiclare, Illinois. Specimens from both localities are being compared crystallographically and by microprobe analysis.

666. Robinson, G., Berry, L. G., Queen's Univ.:
Analysis and crystallographic study of zircon from a wide variety of occurrence by microprobe and x-ray diffraction, 1975-77; M. Sc. thesis (Robinson).

To relate variations in chemistry to lattice dimensions and point out composition for which crystal structure refinement might profitably be performed.

667. Rowland, J. F., Hall, S. R., Mines Branch, E. M. R.:
The X-ray study of two cobalt-antimony sulphides, 1969-75.

The relationship between the costibite and paracostibite structures is analogous to that between rammelsbergite and pararammelsbergite.

668. Rowland, J. F., Szymanski, J. T., Stewart, J, M, Mines Branch, E. M. R.:
The X-ray study of precious-metal-bearing minerals associated with nickel-copper ores, 1975.

X. R. investigations have begun on a number of paladium-antimony-arsenic-bearing minerals. Crystal structure studies have started for mertieite – II ($Pdg(Sb, As)_3$).

669. Rush, P. J., McGill Univ.:
A study of the variation in composition of olvine from the ultramafic rocks of the Thompson mine and a comparison with ultramafics from the Birchtree mine, 1972-76; M. Sc. thesis.

670. Schwarcz, H. P., Scott, S. D., Kissin, S. A., McMaster Univ., Univ. Toronto:
Sulfide mineralogy of meteorites, 1973-75.

Estimating the diameter of paren asteroids from the iron content of sphalerite in troilite nodules of iron meteorites.

671. Scott, S. D., Univ. Toronto:
Stoichiometry and defect chemistry of sulfide minerals, 1969-.

Effects of nonstoichiometry on polymorphic phase changes on electrical and physical properties of sulfides.

672. Smith, D. G. W., Cameron-Schimann, M., Univ. Alberta:
Chemical composition of some Canadian uranium and thorium bearing minerals, 1974-76.

Attempts are being made to overcome the extreme difficulties associated with the quantitative analysis of U and Th-bearing minerals, using the electron microprobe. When satisfactory methods have been developed it is intended to apply the techniques to a range of U- & Th-bearing minerals to document their compositions and ranges of chemical variation to a degree that has hitherto not proved possible. The techniques will be applied in the study of uranium mineralisation at certain localities in the Northwest Territories.

673. Smith, R. A., Univ. Alberta:
X-ray structure determination of series of secondary uranium minerals, 1974-.

One new structure is now being refined and a new mineral species has been identified, but the crystals available are almost metamict and only unit cell data and crystal system have been elucidated to date.

674. Stevenson, L. S., Stevenson, J. S., Redpath Museum, McGill Univ.:
Dawsonite-Fluorite relationships from Montreal area locations, 1974-75.

675. Theis, N. J., Berry, L. G., Queen's Univ.:
Mineralogical study of uranium-bearing minerals from Elliot Lake-Blind River area, Ontario, 1970-76; Ph. D. thesis (Theis).

676. Turnock, A. C., Univ. Manitoba:
Stability of pyroxenes – especially the liquidus and solidus surfaces for the system Di-Hd-Fs-En at 1 atm total pressure, 1965-74.

See Synthesis and unit cell parameters of Ca-Mg-Fe pyroxenes; Am. Mineral., v. 58, p. 50-59, 1973.

Subsolidus experiments at 15 kb pressure have been done on one join across the two-phase region. Data for 3 other joins have been produced by Lindsley.

General

677. Ahmed, S.M., Bartels, K., Mines Branch, E.M.R.:
Studies of the double layer at oxide and sulphide surfaces, 1968-.

The electrical double layers at oxide – and sulphide – aqueous solution interfaces are being studied, with particular reference to the flotation behaviour of minerals.

678. Cerny, P., Univ. Manitoba:
Mineralogy, petrology, and geochemistry of pegmatites, 1971-.

See The fluorine content and some physical properties of the amblygonite – montebrasite minerals; Am. Mineral, v. 58, p. 291-301, 1973.

The project is aimed at (1) study of the general mineralogical, petrological and geochemical characteristics of different types of granite pegmatites; (2) classification, genetic affiliation, and economic potential of pegmatites in the western margins of the Canadian Shield; and (3) detailed investigation of rock-forming and accessory minerals from granitic pegmatites.

679. Coleman, L.C., Univ. Saskatchewan:
Mineralogy, petrology and geochemistry of Catherwood and Kinley, Saskatchewan, 1971-76.

The mineralogy and petrography of the Kinley Meteorite, an olvine-hypersthene chondrite found at Kinley, Saskatchewan during 1965-66, and the Catherwood Meteorite, another olivine-hypersthene chondrite found about 10 miles southwest of Kinley in 1966, are being studied. Results to date indicate that these meteorites represent quite separate falls. The minerals ringwoodite and majorite have been identified in Catherwood; this is only their third reported occurrence.

680. Dean, R.S., Mines Branch, E.M.R.:
Mineralogy of clays and shales of Canada, 1958-.

681. Ferguson, R.B., Univ. Manitoba:
Crystal-structural and crystal-chemical investigations of rock-forming and ore minerals.

See Crystal structure refinement of millerite (β-Nis); Can. Mineral., v. 12, pt. 4, p. 248-252, 1974.

682. Fleet, M.E., Univ. Western Ontario:
Sturctural chemistry and stability of ore minerals, 1968-.

See Chemical composition and stability of violarite; Econ. Geol., v. 69, p. 391-403, 1974.

683. Hall, S.R., Stewart, J.M., Mines Branch, E.M.R.:
Interactive X-ray powder analysis, 1975-76.

Techniques are being developed for automatic identification of minerals from X.R.D. powder data using computer-based JCPBS data files. Methods are being developed for analysing X.R.D. powder data to obtain crystal cell data and structure.

684. Hung, W.S., McGill Univ.:
Mineralogical studies of the Onaping Formation, Sudbury, Ontario, 1973-75; M.Sc. thesis.

685. Kaiman, S., Hughson, M.R., Mines Branch, E.M.R.:
Mineralogical investigation of ores and process products.

686. Kelly, R., McMaster Univ.:
Studies on metamictization in minerals, 1972-75.

687. Mitchell, R.H., Lakehead Univ.:
Petrology and geochemistry of kimberlites and alkaline rocks, 1971-.

Project involves:
1) geochemistry of magnesian ilmenite;
2) mineralogy of kimberlites from Somerset Island (Northwest Territories) and Lesstho; and
3) geology of the Poohbah Lake complex, a potassic miascite complex in northwestern Ontario.

688. Perrault, G., Harvey, Y., Pertsowsky, R., Ecole Polytechnique:
Minéralogie et pétrologie du Mont St-Hilaire, P.Q., Canada, 1964-79.

689. Perrault, G., Trczienski, W., Hébert, P., Kubat, V., Ecole Polytechnique:
Préparation de standards minéraux pour l'analyse instrumentale, 1968-78.

See MRG-1, un nouveau matériel de référence de gabbro à olivine et pyroxène du Mont Royal, P.Q., Canada; Can. J. Spectroscopy, v. 19, p. 63-67, 1974.

Les recherches sur les matériaux de référence utiles en géochimie analytique sont une activité constante chez nous, tant pour la

microsonde électronique que pour une foule de mesures instrumentales (Fluo. X, absorption atomique, diffraction X, etc.). Nous développerons bientôt de nouveaux matériaux de référance pour l'analyse des minerais de niobium, et pour les carbonatites.

690. Petruck, W., Mines Branch, E.M.R.:
To quantitatively define the mineralogical characteristics of base metal ore deposits, 1974-75.

The quantities of ore minerals in a base metal ore will be determined with a Quantimet image analyser and compared to chemical analyses to evaluate accuracy of measurement; the size distribution of ore minerals will be determined to evaluate grind required to liberate them; and the proportion of free and locked grains in a ground fraction of the ore will be measured to evaluate the xize analyses data.

Mineralogical characteristics that affect beneficiation of the ore from Mattagami Lake Mines Limited, 1975-76.

An ore that is undergoing a variety of grinding and flotation tests will be studied to determine the minerals present, quantity of each mineral, and size distribution of the minerals to evaluate their liberation characteristics.

691. Petruk, W., Harris, D.C., Pinard, R.G., Owens, D.R., Mines Branch, E.M.R.:
Mineralogical characteristics that affect beneficiation of the Peace River ore, 1974-75.

The minerals and phases in the ore will be identified, their composition and physical properties (i.e. S.G., Magnetic, DTA, etc.) will be determined, and the quantities and size distribution of each mineral and phase from different horizons of the orebody will be established.

692. Plant, A.G., Lachance, G.R., Geol. Surv. Can.:
Electron probe microanalysis, 1962-.

693. Ripley, L.G., Webster, A.H., Mines Branch, E.M.R.:
Preparation of single crystals of base-metal sulphides and related compounds, 1964-.

694. Robin, P-Y.F., Univ. Toronto:
Physical properties and phase changes in rocks and minerals under high pressure and nonhydrostatic stress, 1973-.

See Stress and strain in cryptoperthite lamellae and the coherent solvus of alkali feldspars; Am. Mineral., v. 59, no. 11-12, p. 1299-1318, 1974.

Includes:
1) study of compressibility, elastic constants, and electrical conductivity in rocks and minerals, including lunar material; and
2) study of displacive phase changes brought about by pressure alone (e.g. calcite I-II) or by nonhydrostatic stress (e.g. ortho – to clinoenstatite).

695. Rucklidge, J.C., Patterson, G., Lyons, E., Rajamani, V., Univ. Toronto:
Geological studies by x-ray spectroscopy and diffraction, 1965; theses.

See The crystal structure of vesuvianite; Can. Mineral., v. 13, no. 1, p. 15-21, 1975.

696. Scarfe, C.M., Smith, D.G.W., Univ. Alberta:
Mineralogy and chemistry of hydrous phases from DSDP Leg 37, 1974-75.

A combination of petrographic, X-ray, microprobe and other chemical techniques.

697. Smith, D.G.W., Univ. Alberta:
Stability of carbonate minerals beneath the electron beam, 1972-74.

Applications of soft X-ray spectroscopy in mineralogy, 1970-.

See Interpretation and measurement of oxygen $K\alpha$ emission spectra; Spectrochimica Acta, v. 29B, p. 63-71, 1974.

698. Smith, D.G.W., Gold, C.M., Univ. Alberta:
The energy and atomic number dependence of X-ray continuum intensity, 1974-76; Ph.D. thesis (Gold).

The intensity of the X-ray continuum is dependent upon the average atomic number of the target, the impinging electron accelerating potential and the continuum energy. The classical expressions of Kramers (1923) does not predict this dependence with sufficient accuracy for many purposes. Experiments are being carried out to elucidate the nature of this dependence more completely, using an ARL "EMX" electron microprobe fitted with an ortec energy dispersive spectrometer.

699. Smith, D.G.W., Jones, J.B., Univ. Alberta, Univ. Adelaide:
Mineralogy of the Moorabie (Australia) meteorite, 1972-74.

700. Starkey, J., Peterson, R., Univ. Western Ontario:
The automatic recognition and measurement of X-ray diffraction spectra, 1974-75.

X-ray diffraction powder films are read by means of an X-Y recording microdensitometer. Computer programs are being developed which enable peaks to be identified and their positions obtained with high precision automatically. The results of this work are being applied to some of the published determinative curves relating mineral composition to lattice parameters.

701. Traill, R.J., Bonardi, M., Delabio, R.N., Pringle, G.J., Geol. Surv. Can.:
X-ray diffraction and laser microprobe analyses, and mineralogical studies, 1968-.

See X-ray powder diffraction pattern recognition by minicomputer; Geol. Surv. Can., Paper 74-1, pt. B, p. 171, 1974.

X-ray determination of pyrrhotite compositions; *ibid*, p. 4-5, 1974.

702. Woussen, G., Nagy, A., Université du Québec à Chicoutimi:
Etude de l'altération des épontes dans les mines Henderson et Portage à Chibougamau, 1973-.

L'altération des épontes est étudiée en vue la détermination de la nature des fluides minéralisateurs. L'étude minéralogique et pétrographique est reliée à l'étude de l'évolution de la composition chimique des différentes zones avec celle de la distribution des éléments tracés et des minérelisateurs.

PALEONTOLOGY

Invertebrate

703. Barnes, C.R., Sass, D.B., Long, G.L., Univ. Waterloo, Alfred Univ., U.S. Geol. Surv.:
Conodont ultrastructure, 1967-.

704. Bolton, T.E., Geol. Surv. Can.:
Stromatoporoid, coral, echinoderm and trilobite faunas of the Ordovician and Silurian rocks of Anticosti Island, Quebec, 1957-.

705. Brice, D., Geol. Surv. Can.:
Middle Devonian brachiopods of Arctic Islands, 1971-.

706. Chatterton, B.D.E., Univ. Alberta:
Paleoecology, biostratigraphy and systematics of Devonian conodonts in western Canada, 1970-.

Middle Devonian conodont faunas of the southern Northwest Territories and Late Devonian conodonts of the Palliser Formation, Alberta and British Columbia.

Systematics and biostratigraphy of western Canadian trilobite faunas, 1971-.

Includes:
1) the description of a rich silicified Ordovician trilobite fauna from the southern Northwest Territories;
2) Middle Devonian trilobites from the Mackenzie Mountains; and
3) a lower Devonian trilobite from the Mackenzie Mountains.

707. Collins, D.H., Royal Ontario Museum:
Ultrastructure and buoyancy mechanisms of coleoid Cephalopoda, 1970-75.

Early Ordovician chitons from western Queensland, Australia, 1975.

708. Copeland, M.J., Geol. Surv. Can.:
Paleozoic micropaleontology of eastern Canada, 1972-.

See Silurian Ostracoda from Anticosti Island, Quebec; Geol. Surv. Can., Bull. 241, 1974.

Middle Ordovician Ostracoda from southwestern District of Mackenzie; Geol. Surv. Can., Bull. 244, 1974.

709. Danner, W.R., Sada, K., Nestell, M., Univ. British Columbia, Univ. Hiroshima, Univ. Texas:
Late Paleozoic faunas of the western Cordillera, 1954-.

See Early and Middle Pennsylvanian fusulinids from southern British Columbia, Canada and northwestern Washington, U.S.A.; Trans. Proc. Palaeont. Soc. Japan, n. ser., no. 93, 1974.

710. Dixon, O.A., Univ. Ottawa:
Tabulate and rugose corals from the Silurian Read Bay Formation of Somerset Island, Northwest Territories, and the Ordovician-Silurian rocks of Anticosti Island, Quebec, 1969-.

See Late Ordovician *Propora* (Coelenterata: Heliolitadae) from Anticosti Island, Quebec, Canada; J. Paleontol., v. 48, p. 568-585, 1974.

711. Fahraeus, L.E., Memorial Univ.:
Studies of Paleozoic conodonts and depositional environments of sedimentary rocks, 1971-.

See Taxonomy and evolution of *Ozarkodina steinhornensis* and *Ozarkodina optima* (Conodontophorida); Geologica et Palaeontologica, v. 5, no. 8, p. 29-37, 1974.

712. Ferguson, L., Mount Allison Univ.:
A biometrical study of the Scottish Carboniferous Ostracod genera *Bairdia* and *Paraparchites*, 1969-76.

See The paleoecological and taxonomic significance of growth series of the Ostracod genera *Bairdia* and *Paraparchites* from a Scottish Lower Carboniferous shale; Geol. Soc. Amer. (Abstracts), v. 6, no. 7, p. 732, 1974.

713. Gishler, C.D., Univ. Western Ontario:
Chitinozoa of the Upper Ordovician of southwestern Ontario, 1972-75; M.Sc. thesis.

714. Greiner, H.R., Univ. New Brunswick:
Cyrtospirifer, Cyrtiopsis and related genera: their taxonomy and evolution in the Upper Devonian – Lower Carboniferous, 1974-76.

715. Jeletzky, J.A., Geol. Surv. Can.:
Monograph of the Canadian belemnites, 1959-.

716. Letendre, J., Univ. Montréal:
Phacopidae du Silurien (Trilobites), 1972-75.

717. Logan, A., Univ. New Brunswick (St. John):
Ecology of modern Caribbean reef-dwelling brachiopods, 1973-76.

A study of reef-dwelling brachiopods from the whole Caribbean faunal province is presently beginning that encompasses distribution, life habits, density, limiting factors, population dynamics and biostratinomy.

718. Logan, A., Noble, J.P.A., Univ. New Brunswick (St. John):
Benthic community studies, Bay of Fundy, Canada (*Terebratulina septentrionalis* community), 1971-76.

719. Logan, A., Dryer, S., Univ. New Brunswick (St. John):
Zonation, species composition and sedimentation of pinnacle reefs, Castle Harbour, Bermuda 1974-76; M.Sc. thesis (Dryer).

Part of a larger programme on the geomorphology and species composition of Caribbean coral reefs, particularly those associated with Lesser Antillean islands.

720. Mamet, B., Univ. Montréal:
Foraminifères du Paléozoique Supérieur, 1960-.

Voir Une zonation par Foraminifères du Carbonifère de la Téthys Occidentale; Septième Congrès International Stratigraphie du Carbonifère, Krefelds, p. 391-408, 1974.

721. McGugan, A., Gallagher, M., Univ. Calgary:
Cretaceous Foraminifera.
Upper Paleozoic conodonts.
Cambrian Problematica.
Recent Foraminifera, 1975-77.

See Cretaceous Foraminifera from the San Juan diatreme; Utah Geol., vol. 1, 1974.

722. Poulton, T.P., Geol. Surv. Can.:
Jurassic Trigoniidae of western British Columbia, 1971-.

723. Riva, J., Laval Univ.:
Study of Ordovician graptolites, 1966-.

See Graptolites with multiple genicular spines from the Upper Ordovician of western North America; Can. J. Earth Sci., v. 11, no. 10, p. 1455-1460, 1974.

724. Sheehan, P.M., Univ. Montréal:
Late Ordovician-Silurian brachiopod taxonomy and ecology in eastern Canada, 1973-.

725. Smith, R.E., Geol. Surv. Can.:
Lower Devonian brachiopods Prince of Wales and Bathurst Islands, 1973-.

726. Stearn, C.W., McGill Univ.:
Paleoecology of Canadian stromatoporoids, 1954-.

Nature of stromatoporoids and the diagenesis of stromatoporoid hard tissue.

Investigations with the Scanning Electron Microscope on the microstructure of fossil stromatoporoids and the changes in modern corals and sponges in diagenetic environments.

727. Tipper, H.W., Geol. Surv. Can.:
Investigation of Lower Jurassic genus *Weyla* as a guide fossil in the Lower Jurassic successions of British Columbia, 1969-.

728. Tozer, E.T., Geol. Surv. Can.:
Canadian Triassic Ammonoidea and Bivalvia, 1967-.

729. Vilks, G., Geol. Surv. Can.:
Foraminiferal, molluscan and lithologic study of sediment cores from the Beaufort Sea and Northwest Passage, 1972-.

See Foraminiferal, molluscan and lithologic study of sediment cores from the Beaufort Sea and Northwest Passage; Geol. Surv. Can., Paper 74-1, pt. B, p. 127-128, 1974.

Micropalcontology of unconsolidated sediments on the Labrador Continental Shelf and Slope, 1973 .

See Geol. Surv. Can., Paper 74-1, pt. B, p. 128 130, 1974.

730. Wagner, F.J.E., Geol. Surv. Can.:
Recent benthonic Foraminiferida and Mollusca from the Continental Shelf, southeastern Beaufort Sea, 1972-.

See Benthomic Foraminiferida and Mollusca in the Beaufort Sea; Geol. Surv. Can., Paper 74-1, pt. B, p. 130, 1974.

Mollusca and Foraminiferida of Pleistocene marine sediments in Canada, 1974-.

See Mollusca and Foraminiferida of Pleistocene and Holocene sediments in eastern Canada; Geol. Surv. Can., Paper 75-1, pt. A, p. 164, 1975.

731. Walker, D.A., Geol. Surv. Can.:
Test surface ultrastructure of Foraminifera, and applications of scanning electron microscopy, 1973-.

See Sudan Black B: a stain for quantitative determination of living Foraminifera; Geol. Surv. Can., Paper 74-1, pt. B, p. 131, 1974.

732. Wall, J.H., Alberta Research Council:
Bearpaw microfaunal studies, 1966-.

733. Wall, J.H., Singh, C., Alberta Research Council:
Buffalo Head Hills microfaunal-paleogeographic study, 1971-75.

Data have been sythesized from a wide variety of microfossils – Foraminifera, radiolarians, dinoflagellates, pollen and megaspores – to establish the presence of a marine connection between the Arctic and Western Interior regions through northern Alberta during the Campanian (Late Cretaceous).

734. Ward, P., Westermann, G.E.G., McMaster Univ.:
Paleoecology and functional morphology of Upper Cretaceous heteromorph ammonites, 1974-76; Ph.D. thesis (Ward).

The project involves community analysis of the Didymoceras (Bostrychoceras) elongatum Zone of Vancouver Island, British Columbia. Scale modelling of heteromorph ammonites is also included in the project.

735. Westermann, G.E.G., McMaster Univ.:
Structure and function of cephalopod shells, particularly phragmocones, 1972-.

In orthoconic to cyrtoconic simple phragmocones, apical angle, septal spacing and shell thickness are interdependent through buoyancy requirement; brevicones are restriced to shallow seas, while many longicones could inhabit deep sea. A model for origin and function of the fluted nautiloid and ammonoid septa is being developed.

736. Westermann, G.E.G., Riccardi, A.C., Stipanicic, P., McMaster Univ.:
The Indo-Pacific ammonite *Mayaites* in the Oxfordian of the Andes.

This new find of several new species changes the palaeobiogeographic record of the entire family *Mayaitidae*, which hitherto was exemplary for Indo-(West) Pacific distribution.

Paleobotany

737. Berti, A.A., Chevron Standard Ltd.:
Mesozoic palynology, 1974-.

738. Brideaux, W.W., Geol. Surv. Can.:
Taxonomy, biostratigraphy and paleoecology of Mesozoic miospore and microplankton assemblages from the District of Mackenzie, northwestern Canada; utilization of computer techniques, 1971-.

Monograph of miospore assemblages from the Lower Colorado Group, central Alberta, and comparative studies of assemblages from southwestern Alberta and adjacent British Columbia, 1972-.

739. Broughton, P.L., Saskatchewan Dep. Mineral Resources:
Silica preservation of Tertiary peats from southern Saskatchewan, 1973-75.

The discovery of silicified peat deposits in south-central Saskatchewan is being investigated, and compared with deposits in North Dakota. The age of the silicified peats is uncertain, but are presently associated with the Wood Mountain gravels (Miocene), but are believed reworked from the Paleocene. Plant tissues are poorly preserved and the silicification process has altered most of the cell walls. Nevertheless, the individual leaves, stems, roots, twigs, spores, and other components that comprise the bulk composition may be easily recognized.

740. Campbell, J.D., Alberta Research Council:
Upper Cretaceous megaspore studies, 1969-75.

741. Hills, L.V., McCaffery, B., Sangster, E., Klovan, J.E., Sweet, A.R., Univ. Calgary: Sedimentation, stratigraphy, palcobotany and palynology, Beaufort Formation, Arctic Canada, 1972-.

See *Juglans eocinerea* n. sp., Beaufort Formation (Tertiary), southwestern Banks Island, Arctic Canada; Can. J. Bot., v. 52, no. 1, p. 65-90, 1974.

About 50 pounds of peat from Meighen Island has been hand picked for plant macrofossils. These macrofossils include leaves of *Pinus* (5 needle), *Betula* (dwarf and tree), *Vaccinium*, *Ledum*, *Salix* and 12 identified species of mosses.
Detailed morphologic analysis has been conducted on Myrica, *Betula*, and *Pinus*. In addition measurements have been made on extant species of these genera for comparison purposes.
The tentative conclusions are that, although the fossils are similar to, they are not identical to their modern counterpart. The mosses are assignable to extant species.

742. Hopkins, W.S. Jr., Geol. Surv. Can.: A palynological study of the Shell Harlequin D-86 and Shell Murrelet L-15 wells, 1974-.

743. Kuc, M., Geol. Surv. Can.: Fossil mosses in the Arctic, 1969-.

See *Calliergon aftonianum* Steere in Late Tertiary and Pleistocene deposits in Canada; Geol. Surv. Can., Paper 74-24, 1974.

744. Legault, J.A., Caldwell, W.G.E., North, B.R., Univ. Saskatchwean: Stratigraphy, micropaleontology and palynology of the Turtle Mountain Formation, 1972-75.

745. McGregor, D.C., Geol. Surv. Can.: Devonian plant microfossils of eastern Canada, 1960-.

746. McIntyre, D.J., Union Oil Co. Canada Ltd.: Palynology of Cretaceous and Tertiary, District of Mackenzie, Northwest Territories, 1974-.

See Palynology of an Upper Cretaceous section, Horton River, District of Mackenzie, Northwest Territories; Geol. Surv. Can., Paper 74-14, 1974.

747. Norris, G., Univ. Toronto: Upper Jurassic-Cretaceous palynostratigraphy and floral provinces of Canada, 1973-76.

See Provincialism of Callovian-Neocomian dinoflagellate cysts in the northern and southern hemispheres; Am. Assoc. Strat. Palyn., Proc. Dinoflagellate Symp. p. 1-12, 1974.

Zonation of selected Jurassic-Cretaceous sections in the western plains, foothills, and Sverdrup Basin will be supplemented by correlation of these sections with selected European stratotypes.

748. Stelck, C.R., Anan-Yorke, R., Univ. Alberta: Palynology of the Sully Formation, northeastern British Columbia, 1974-75.

Calibration of the pollen and spore assemblages of the mid-Cretaceous of the western interior receive ammonite and foraminiferal control in northeastern British Columbia. The phytoplankton is cosmopoliton, the ammonites and foraminifers are endemic forms.

749. Sweet, A.R., Geol. Surv. Can.: Palynological study of the Tertiary coals and associated clastic rocks of the Ravenscrag and Frenchman Formations, Saskatchewan, 1973-.

Reconnaissance survey to determine the biostratigraphic value of megaspores in Mesozoic and Tertiary strata of northern Canada, 1973-.

750. Utting, J., Univ. Québec (INRS – Pétrole): Palynology of Palaeozoic rocks of Québec and eastern Canada, 1974-.

751. Van Helden, B.G.T., Chevron Standard Ltd.: Mesozoic palynology, 1971-.

752. Walton, H.S., Chevron Standard Ltd.: Paleozoic palynology, 1960-.

Vertebrate

753. Bernacsek, G.M., Univ. Bristol: New genera and species of acanthodians, dipnoans, and rhipidistians from the Devonian of northern Canada, 1972-75; Ph.D. thesis.

Research involves:
1) a new genus of primitive lungfish (endocranium preserved in 3 dimensions), exact locality and age unknown;
2) new fauna of lower Devonian articulated acanthodians (*Ischnacanthus*, *Uraniacanthus* (?), and two new genera), Lower Devonian Delorme Formation, Northwest Territories; and
3) a new species (?) of *Porolepis*, Peel Sound Formation, Lower Devonian, Prince of Wales Island, Northwest Territories.

754. Broughton, P. L., Simpson, F., Whitaker, S. H., Saskatchewan Dep. Mineral Resources, Univ. Windsor, Saskatchewan Research Council:
Coprolites from the Late Cretaceous of southern Saskatchewan, 1973-75.

Investigations into the first life traces of vertebrates recorded from the Whitemud-type facies in Saskatchewan. Abundant, oddly shaped, iron-rich bodies are interpreted to be petrified animal excrements, exhibiting remarkable preservation of fine structural detail. The coprolites display a limited number of extrusion forms, characteristic for Recent dung: segmented-elongate, spindle-shaped, spirally and helicoidally coiled, irregularly coiled and folded, and piled-lobate forms. Poorly preserved plant megafossils are incorporated.

755. Burnham, P. A., Univ. Alberta:
Fish evolution, 1974-77; M. Sc. thesis.

756. Dineley, D. L., Univ. Bristol:
Silurian and Devonian vertebrates, stratigraphy and palaeoecology, Northwest Territories, 1964-.

Further field work was carried out during 1974 on Boothia Peninsula and southern Prince of Wales Island.

757. Edmund, G., Univ. Toronto:
Osteology, evolutionary history and zoogeography of several genera of giant ground sloths and armadillos (Xenarthra, Mammalia), 1961-75.

Investigation of the genera *Eremotherium*, *Ecelidodon*, and *Chlamytherium*. Two preliminary reports on occurrences of *Eremotherium* and *Chlamytherium* in North American deposits (Texas and Kansas respectively) are now being prepared.

758. Elliott, D. K., Univ. Bristol:
Vertebrate fauna from bone beds in the Lower and Middle Palaeozoic of Canada and Great Britain, 1974-77; Ph. D. thesis.

Investigation of:
1) collections of pteraspids from the Baring Channel coast of Prince of Wales Island, Northwest Territories (Peel Sound Formation); and
2) collections of protopteraspids from various localities on Prince of Wales and Somerset Islands, Northwest Territories.

759. Forey, P. L., Univ. Alberta:
Evolution in primitive teleost fishes, 1969-.

760. Fox, R. C., Univ. Alberta:
Late Cretaceous and Early Tertiary vertebrates from western Canada, 1965-.

See *Deltatheroides* – like mammals from this Upper Cretaceous of North America; Nature, v. 249, no. 5455, p. 392, 1974.

A Middle Campanian, nonmarine occurrence of the Cretaceous toothed bird *Hesperornis* Marsh; Can. J. Earth Sci., v. 11, no. 9, p. 1335-1338, 1974.

Molar structure and functions in the Early Cretaceous mammal *Pappotherium*: Evolutionary implications of Mesozoic Theria; Can. J. Earth Sci., v. 12, no. 3, p. 412-442, 1975.

761. Fox, R. C., Kielan-Jaworowska, Z., Univ. Alberta, Nat. Acad. Sci. Poland:
Fossil vertebrates from the United Republic of Tanzania, 1975-.

762. Greiner, H. R., Univ. New Brunswick:
Paleozoic ichthyofauna of the North Atlantic realm, 1973-77.

763. Harington, C. R., Univ. Alberta:
Pleistocene mammals from the Yukon, 1963-75.

764. Krause, D. W., Univ. Alberta:
Late Paleocene mammals from Saskatchewan, 1972-76; M. Sc. thesis.

765. Loeffler, E. J., Univ. Bristol:
Ostracoderms from the Silurian and Devonian of western and Arctic Canada, 1971-75.

Ostracoderm faunas from a new formation of probable Ludlovian age, on Somerset and Prince of Wales Islands, the Leopold Formation (Pridolian or Gedinnian), Port Leopold, Somerset Island, the Delorme Formation (Upper Silurian and Lower Devonian), District of Mackenzie, and ? Silurian from Boothia Penninsula, Northwest Territories.

766. Naylor, B. G., Univ. Alberta:
Interrelationships of fossil and recent salamanders, 1972-77; Ph. D. thesis.

767. Nursall, J. R., Univ. Alberta:
Relationships of pycnodont fishes, 1963-.

768. Tyson, H., Univ. Alberta:
Evolution in ceratopsian dinosaurs, 1974-77; M. Sc. thesis.

General

769. Johnston, P. F., Chevron Standard Ltd.:
Micropaleontology – Tertiary and Mesozoic, 1971-.

Involves micropaleontology of the Sverdrup basin Jurassic section.

770. Lewis, W. J., Chevron Standard Ltd.:
Micropaleontology – Tertiary and Mesozoic, 1972-.

PETROLOGY AND PETROGRAPHY

British Columbia

771. Ghent, E. D., Cruickshank, D., Bradshaw, J., Univ. Calgary:
Petrologic and geochemical studies in the Cordillera and electron microprobe study of minerals, 1969-; theses.

See Zeolite and clay-carbonate assemblages in the Blairmore Group (Cretaceous), southern Alberta Foothills, Canada; Contr. Mineral. Petrol., v. 44, p. 313-329, 1974.

Cruickshank is investigating phase equilibria in chloritoid-bearing assemblages from eastern British Columbia. This work includes electron microprobe analysis as well as petrography and x-ray diffraction. The project on burial metamorphism in Mesozoic rocks of western Alberta and eastern British Columbia is continuing.
A study of phase equilibria in the metamorphism of basaltic rocks is in progress that includes comparison of Barrovian-facies series metamorphism in eastern British Columbia with different facies series elsewhere. A cooperative study of diagenesis of carbonates with members of the Geol. Surv. Can., Calgary is continuing. Two papers, one on O^{18}/O^{16} studies of metamorphic minerals in the Esplanade Range and one on phase equilibria in the staurolite-kyanite zone, have been prepared.

772. Hamilton, T. S., Scarfe, C. M., Univ. Alberta:
The geology of the Level Mountain Volcanics, British Columbia, 1974-77; Ph. D. thesis (Hamilton).

The Level Mountain Range is a late Tertiary to Recent shield volcano in northern British Columbia. Field mapping (Dease Lake Sheet, 1962) indicates a differentiated suite ranging in composition from olivine basalt through to trachyte and rhyolite. Level Mountain has been active since the last glaciation. The younger volcanic features include pillow lavas (presumably formed in glacial lakes), pahoehoe flows, collapsed lava tubes and undistrubed ash and bombs. The 1975 field season will be devoted to preliminary mapping and sampling. Feasibility studies will also be carried out on the use of gravimeter and magnetometer profiles to locate flows in areas of limited exposure. The volcanics of Mount Edziza (south of Level Mountain) have been studied by J. G. Souther. The Level Mountain volcanics will be compared to those of Edziza and to similar centres elsewhere in western Canada and the U. S. A. The relationships between volcanism and large scale tectonism in western Canada will be further examined.

773. Lambert, R. St. J., Campbell, A., Chamberlain, V. E., Univ. Alberta:
Petrology, structure and geochronology of the Malton Gneiss, British Columbia, 1973-75; M. Sc. thesis (Campbell).

774. Lambert, R. St. J., Hall-Beyer, B., Univ. Alberta:
Petrology and structure of Slide Mountain Group, British Columbia, 1972-76; M. Sc. thesis (Hall-Beyer).

Investigation of an area where Upper Paleozoic rocks are believed to be in thrust contact with the Precambrian near the west margin of the Shuswap Complex.

775. Lambert, R. St. J., Holland, J. G., Beddoe-Stephens, B., Univ. Alberta:
Petrochemistry of Rossland, Ymir and Fennell Groups, British Columbia, 1973-76; Ph. D. thesis (Beddoe-Stephens)

776. Morton, R. L., Moore, J. M., Carleton Univ.:
Petrology and mineral deposits in part of the Nicola Group, Quesnel Trough, British Columbia, 1970-75; Ph. D. thesis (Morton).

777. Nicholls, J., Fiesinger, D., Nicoll, L., Stout, M., Univ. Calgary:
Petrology of Recent volcanic rocks in the Cordillera, 1970-74; theses.

778. Smith, T. E., Jackson, T. A., Univ. Windsor, Univ. West Indies:
K_2O variation in the Coast Range Plutonic Complex of British Columbia between Latitudes 53^{o} and 54^{o} N, 1974-75.

779. Souther, J.G., Geol. Surv. Can.:
Geology of the Mt. Edziza volcano, British Columbia, 1965-.

A detailed investigation of the geology, petrology and petrochemistry to determine the history and processes of evolution and relationship to contemporaneous plutons in the Strikine region.

780. Wynne-Edwards, H.R., Green, N., Univ. British Columbia:
Quaternary and Recent volcanism in the Garibaldi Lake – Callaghan Lake area, British Columbia, 1973-76; Ph.D. thesis (Green).

Petrological, mineralogical, geochemical, and structural study of the Garibaldi Park volcanic area to determine the mineralogical and chemical variations within the sequence of flows and pyroclastic rocks so as to study possible mechanisms and environments of magma generation and source materials and their variation with time in relation to a plate tectonic model.

781. Wynne-Edwards, H.R., Nelson, J., Univ. British Columbia:
The structure and petrology of Hardwicke and West Thurlow Islands, British Columbia, in relation to the tectonic evolution and the Strait of Georgia Region, 1973-75; M.Sc. thesis (Nelson).

Hardwick and West Thurlow Islands lie in Johnstone Strait through which the boundary between the Insular Belt and the Coast Plutonic complex of the Canadian Cordillera is drawn – to investigate the tectonic relationships between the Karumtsen Formation and Island plutonic rocks and the Coast Range. Preliminary results reveal mainly intrusive relationships with few signs of the main tectonic break that has been postulated.

Manitoba

782. Bristol, C.C., Brandon Univ.:
Opaque mineralogy of the Garner Lake ultramafic body, Manitoba, 1973-75.

Relation of spinel compositions to compositions of coexisting silicate minerals.

783. Froese, F., Geol. Surv. Can.:
Petrological studies in the Sheridon area, Manitoba, 1974-.

To study the behaviour of sulphide – silicate assemblages at high-grade metamorphic conditions.

784. Goetz, P.E., Froese, E., Moore, J.M., Carleton Univ., Geol. Surv. Can.:
Metamorphism of sulphides, Sherridon, Manitoba, 1974-78; M.Sc. thesis (Goetz).

A study of the regional metamorphism around Sherridon, with special emphasis on the petrology of the sulphide bodies and wallrocks.

785. Springer, R.K., Brandon Univ.:
Ultramafic rocks in southeast Manitoba, 1973-75.

786. Wilson, H.D.B., Morrice, M.G., Ziehlke, D.V., Beakhouse, G., Univ. Manitoba:
Archean greenstone belt stratigraphy, 1973-77.

See Archean continents; Geoscience Canada, v. 1, no. 3, p. 12-20, 1974.

A standard section is recognized in Archean greenstone belts; sections are being measured and the chemical development of the section is being documented.

Newfoundland

787. Baragar, W.R.A., Geol. Surv. Can.:
Studies in the Seal Lake volcanic province, Newfoundland, 1968-.

788. Berger, A.R., Memorial Univ.:
The Lewis Hills Ophiolite Complex, Newfoundland. A study of deformation at the crust-mantle interface, 1973-76.

This study is focussed on the "critical zone" exposed at several crustal levels in the Lewis Hills. In places this is intensely deformed, yet overlain by undeformed cumulate rocks. The structures and petrology of these rocks should provide a clue to processes at the base of the oceanic crust.

789. Bostock, H.H., Geol. Surv. Can.:
Volcanic rocks of the Appalachian Orogen, 1973-.

See Volcanic rocks of the Appalachian Province: Roberts Arm Group, Newfoundland (2E); Geol. Surv. Can., Paper 75-1, pt. A, p. 1-3, 1975.

790. Emslie, R.E., Geol. Surv. Can.:
Anorthosite study, 1967-.

To examine three large anorthosite intrusions between Michikamau Lake and Nain, Coast of Labrador for purposes of comparison with Michikamau Intrusion (including mineral potential).

791. Gittins, J., Curtis, L.W., Hardy, J.L., Currie, K.L., Univ. Toronto, Geol. Surv. Can.: Petrogenesis of alkalic rocks and carbonatite complexes, 1970-.

See Petrology of the Red Wine alkaline complexes, central Labrador and a comparison with Ilimaussaq complex, southwest Greenland; Geol. Surv. Can., Paper 75-1, pt. A, p. 271-280, 1975.

792. Hughes, C.J., Memorial Univ.: Volcanic and intrusive rocks of eastern Newfoundland.

793. Papezik, V.S., Memorial Univ.: Petrology and metamorphism of the Late Precambrian Harbour Main Group, Avalon Peninsula, Newfoundland, 1973-76.

The volcanic rocks of the Avalon Peninsula belong to a weakly alkalic suite. The volcanic belt is ensialic, of the Basin and Range tectonic type. Both the Harbour Main Group and the overlying Late Precambrian sediments have been subjected to metamorphism of the prehnite-pumpellyite facies, increasing in intensity from east to west. The metamorphism may be related to the Late Precambrian Avalonian orogeny, or to Acadian tectonic events.

Northwest Territories

794. Cape, D.F., Univ. Alberta: Petrology of linear deformed zones in the Tazin terrane, Northwest Territories, 1974-76; M.Sc. thesis.

795. Donaghy, T.J., Univ. Alberta: Metamorphic petrology of the Thekulthili Lake area, Northwest Territories; M.Sc. thesis.

796. Frisch, T., Geol. Surv. Can.: Gneisses of the Prince Alberta belt, Districts of Franklin and Keewatin, 1972-.

See Geological studies in western Melville Peninsula, District of Franklin; Geol. Surv. Can., Paper 75-1, pt. A, p. 323-324, 1975.

797. Goff, S.P., Scarfe, C.M., Univ. Alberta: The magmatic and metamorphic history of the Athapuscow Aulacogen, Northwest Territories, 1974-77; Ph.D. thesis (Goff).

The volcanic and intrusive suites of the East Arm, Great Slave Lake, are being studied to test the theory that this tectonic feature represents a stranded arm of a Precambrian triple ocean-ridge system; to discover to what extent the rocks have been affected by regional metamorphism; and to determine whether the volcanics could have contributed to local uranium mineralization. A wet-chemical major, and trace-element study is, at present, being made of one of the five major volcanic suites (the Union Island Group). This study will be extended and complimented by gamma-ray spectrometric determinations of U and Th.

798. Hogarth, D.D., Univ. Ottawa: Petrology of soapstone from Northwest Territories, 1975-77.

799. Lambert, M.B., Geol. Surv. Can.: Archean volcanic studies in the Slave-Bear Province, District of Mackenzie, 1973-.

800. Lambert, R. St. J., Martineau, M.P., Hoffman, G., Univ. Alberta: Big Spruce Lake Complex, Northwest Territories, 1967-75; M.Sc. thesis (Hoffman).

801. Lambert, R. St. J., Nielsen, P., Univ. Alberta: Petrochemistry of Arseno Lake region, Northwest Territories, 1972-75; Ph.D. thesis (Nielsen).

802. Pearce, T.H., Lefebvre, D., Queen's Univ.: The application of the petrology of Archean volcanic rocks to the interpretation of geochemical methods of resource evaluation, 1974-77; M.Sc. thesis (Lefebvre).

See Geology of the Agricola Lake area, District of Mackenzie; Geol. Surv. Can., Paper 75-1, pt. A, p. 219-222, 1975.

Mapping of the Agricola Lake area was initiated in 1974 and will continue in 1975 and 1976. Special attention directed to variations in lithology, volcanic structures, textures, alteration patterns and the effects of pre-metamorphic alteration of the volcanic rocks in relation to geochemical anomalies.

The laboratory work emphasizes the petrography of the volcanic rocks, and the chemistry of the mineral phases (major, minor and trace elements) computer simulation will be used to model inferred igneous processes and the alteration accompanying mineralization, in an effort to assess the validity of petrogenetic hypotheses.

803. Reesor, J.E., Geol. Surv. Can.: Penrhyn Group metamorphic complex, Melville Peninsula, District of Franklin, 1971-.

See Geology of the Penrhyn Group metamorphic complex, Melville Peninsula, District of Franklin; Geol. Surv. Can., Paper 75-1, pt. A, p. 349-351, 1975.

804. Ridler, R.H., Geol. Surv. Can.:
Volcanic study in the Ennadai belt, Keewatin, 1970-.

See Shallow marine plateau basalts of the Aphebian Hurwitz Group at Last Lake, District of Keewatin; Geol. Surv. Can., Paper 74-1, pt. B, p. 195-199, 1974.

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

See Volcanogenic rocks of the Prince Albert Group, Melville Peninsula (47 A-D), District of Franklin; Geol. Surv. Can., Paper 75-1, pt. A, p. 359-361, 1975.

Komatiitic and other ultramafic rocks in the Prince Albert Group, Hayes River Region, N.W.T.; *ibid.*, p. 363-367, 1975.

806. Smith, T.E., Hudec, P.P., Univ. Windsor:
Syenitic and lamprophyric rocks in the Northwest Territories, 1974-75.

Nova Scotia

807. Coll, R., McGill Univ.:
Petrology and zeolite mineralization in the North Mountain Basalt, Nova Scotia, 1974-76; M.Sc. thesis.

808. Smith, T.E., Univ. Windsor:
Petrology and geochemistry of the granitic rocks of southwestern Nova Scotia, 1969-76.

See Layered granitic rocks at Chebucto Head, Halifax County, Nova Scotia; Can. J. Earth Sci., v. 12, no. 3, p. 456-463, 1975.

Ontario

809. Appleyard, E.C., Univ. Waterloo:
Alkaline gneisses and associated rocks of the Haliburton-Renfrew area, eastern Ontario, 1966-.

See Syn-orogenic igneous alkaline rocks of eastern Ontario and northern Norway; Lithos, v. 7, p. 147-169, 1974.

810. Ayres, L.D., Univ. Manitoba:
Petrology and petrogenesis of granitic batholiths, Setting Net Lake, Ontario, 1965-.

Fumarolic alteration of Early Precambrian basalt flows, Setting Net Lake, Ontario, 1971-75.

811. Clifford, P.M., Page, R.O., McMaster Univ.:
Archean volcanicity at Minnitaki Lake, northwestern Ontario, 1974-78; Ph.D. thesis (Page).

812. Edgar, A.D., Duke, N., Univ. Western Ontario:
Field and petrochemical studies of the Blue Mountain and Bigwood nepheline syenite geniss complexes in Ontario, 1971-75; M.Sc. thesis (Duke).

Field relations and geochemical studies on the major minerals of both complexes indicate that the felsic minerals are primarily magmatic whereas the mafic minerals probably represent metamorphosed or metasomatised remnants of preexisting rocks of the amphibolite facies.

813. Fyfe, W.S., LaTour, T., Univ. Western Ontario:
Depth of Grenville metamorphism, 1974-76; Ph.D. thesis (LaTour).

An attempt to use pyroxene-plagioclase geobarometers to ascertain depth of granulite metamorphism.

814. Goodwin, A.M., Univ. Toronto:
Midwest Superior Geoteaverse: study of migmatites in the English River and Quetico belts, Ontario, 1972-76.

815. James, R.S., Laurentian Univ.:
Gabbro-anorthosite bodies in the Sudbury area, Ontario, 1974-76.

816. Jolly, W.T., Brock Univ.:
Metamorphic and igneous petrology of the Archean Abitibi area, Ontario and Quebec with emphasis on metamorphic zonation, 1973-75.

817. Mitchell, S.L., Appleyard, E.C., Univ. Waterloo:
Structure and petrology of the Bentley-Sidden Lakes area, Bancroft, Ontario, Canada, with special reference to rocks of alkaline affinity, 1972-75; M.Sc. thesis (Mitchell).

Three periods of deformation are recognized in the rocks of the Bentley-Sidden Lakes area. The alkaline rocks, consisting of ijolite and nordmarkite, were emplaced during the later part of the first period of deformation.

818. Sage, R.P., Ontario Division of Mines:
Alkali complexes, 1974-76.

819. Stevenson, J.S., McGill, Univ.:
Strontium isotope abundances, electron probe and chemical studies bearing on the petrogenesis of the granophyre (micropegmatite) and the Onaping ash-flow sheet, Sudbury, Ontario, 1970-77.

820. Stott, G.M., Appleyard, E.C., Univ. Waterloo:
A structural and petrological study of the migmatite terrain near the margin of the Grenville Supergroup in the Radcliffe Township area, Renfrew County, Ontario, 1974-75; M.Sc. thesis (Stott).

821. Ziehlke, D.V., Univ. Manitoba:
Aulneau batholith, northwestern Ontario, 1972-75.

Detailed mapping, geochemical, and petrographic study.

Quebec

822. Baer, A.J., Univ. Ottawa:
Textures in the Lac St. Jean anorthosite, Quebec, 1974-76.

823. Baer, A.J., Bissonnette, R., Univ. Ottawa:
The Borgia anorthosite near La Tuque, Quebec, 1973-76; M.Sc. thesis (Bissonnette).

824. Baragar, W.R.A., Geol. Surv. Can.:
Volcanic stratigraphy and geochemistry of the Cape Smith belt, New Quebec, 1973-.

825. Barraud, C., Univ. Montréal:
Sur les possibilités d'un socle pré-Grenville dans le sud du Québec, 1972-75; thèse.

826. Cart, J-L., Ministère des Richesses Naturelles du Québec:
Stratigraphy, petrology and geochemistry of the Waconichi Formation, Chibougamau, Quebec, 1975-78.

827. Darling, R., Ecole Polytechnique:
The petrography and geochemistry of the volcanic host rocks around the Manitou-Barvue Ag-Zn-Cu deposit, Val D'Or, Quebec, 1972-76.

828. Dimroth, E., Goulet, N., Côté, R., Provost, G., Rocheleau, M., Tassé, N., Trudel, P., Université du Québec à Chicoutimi:
Stratigraphy, volcanology, sedimentology and tectonics of the Archean sequence in Rouyn-Noranda area, Quebec, 1972-77.

829. Durocher, W.M., Univ. Ottawa:
Petrology of the Gracefield Pluton, 1973-75; M.Sc. thesis.

830. Hauseux, M., Webber, G.R., McGill Univ.:
Uranium mineralization and petrology of associated granitic rocks, Baie Johan-Beetz, Quebec, 1974-76; M.Sc. thesis (Hauseux).

831. Herbert, Y., Laval Univ.:
Etude pétrologique du complexe ophiolitique de Thetford-Mines, Cantons de l'Est, Québec, 1974-77; thèse de doctorat.

Etude pétrographique et chimique détaillée des différentes unités (périodotites, gabbros et volcaniques) du corthège ophiolitque du complexe pluto-volcanique de Thetford Mines. Etude comparative entre ce complexe et ceux de Terre Neuve d'une part, et les roches océaniques d'autre part.

832. Hocq, M., Univ. Montréal:
Le complexe anorthositique du Réservoir Pipmuacan, 1970-74; thèse.

833. Lapointe, P., Univ. Ottawa:
Fenitization of gneisses in Hull and Templeton Townships, Quebec, 1973-75; M.Sc. thesis.

834. Martignole, J., Univ. Montréal:
Sur les possibilités d'un socle pré-Grenville dans le sud du Québec.
Les assemblages pélitiques dans le sud de la province de Grenville.
Le complexe anorthositique du Réservoir Pipmuacan, 1972-76.

835. Nantel, S., Univ. Montréal:
Les assemblages pélitiques dans le sud de la province de Grenville, 1974-76; thèse.

836. Nathan, R., Univ. Ottawa:
Petrology of marbles of the Lac Ste. Marie area, Quebec, 1974-76; M.Sc. thesis.

837. Schimann, K., Univ. Alberta:
Petrology of the Cape Smith – Wakeham Bay belt (eastern portion), 1971-76; Ph.D. thesis.

838. Trzcienski, W.E., Jr., Savard, R., Poulin, R., Ecole Polytechnique:
Etudes minéralogiques et pétrographiques à l'aide de la microsonde, 1972-; thèse M.Sc. A. (Savard, Poulin).

See A note on apatite from Huddersfield Township, Quebec; Can. Mineral., v. 12, pt. 4, p. 289-291, 1974.

Microprobe studies along with mineralogic and petrologic techniques are being used to gain better understanding of the formation of earth materials in several localities in Southern Quebec. These include the study of metamorphic processes and mineralization in the Eastern Townships, the igneous and ore petrology of the St. Honoré carbonatite and the general petrology and mineralogy associated with the Monteregian intrusives.

Saskatchewan

839. Forester, R.W., Syme, E.C., Univ. Saskatchewan:
Petrology of the Boundary Intrusions, Saskatchewan, 1973-75.

840. Fox, J. S., Saskatchewan Research Council:
Volcanism and ore deposits between Amisk and Hanson Lakes, northeastern Saskatchewan, 1974-77.

841. Wynne-Edwards, H. R., Herring, B., Univ. British Columbia:
Petrology of the Precambrian basement rocks of the Carswell Lake area, Saskatchewan, 1973-75; M. Sc. thesis (Herring).

General

842. Bell, K., Carleton Univ.:
Proterozoic volcanism in Canada, 1972-75.

843. Clifford, P. M., McMaster Univ.:
Physical aspects of Archaean volcanicity, 1971-.

See Nature and origin of salic pyroclastic rocks at Kakagi Lake, northwestern Ontario; Can. J. Earth Sci., v. 10, p. 538-550, 1973.

844. Currie, K. L., Geol. Surv. Can.:
Alkaline rocks in Canada, 1968-.

See Petrology of the Red Wine alkaline complexes, central Labrador and a comparison with the Ilimaussaq Complex, southwest Greenland; Geol. Surv. Can., Paper 75-1, pt. A, p. 271-280, 1975.

Granite studies in the Appalachians, 1973-.

See Studies of granitoid rocks in the Canadian Appalachians; Geol. Surv. Can., Paper 75-1, pt. A, p. 265-270, 1975.

845. Edgar, A. D., Univ. Western Ontario:
The roles of chlorine and fluorine in peralkaline undersaturated rock genesis, 1971-75.

See Comparisons of melting relations of volcanic and plutonic undersaturated alkaline rocks; Lithos, v. 7, p. 57-67, 1974.

Studies of the melting relations of natural plutonic and volcanic peralkaline undersaturated rocks and the chemistry of their minerals determined by microprobe indicates tha C1 and F prolong the crystallization interval in slowly cooled plutonic types whereas in volcanic varieties C1 and F will be preferentially incorporated in the liquid phase. In volcanic regimes or even in shallow intrusions degassing of the halogens accounts for their relatively low abundnace in the volcanic types.

Subsolidus phase relations in the system leucite-analcite-H_2O up to 5 Kb, 1973-75.

Phase relations in this system are being investigated to determine the low temperature breakdown of analcite and leucite bearing lavas. At low temperatures assemblages consist of leucite, analcite, alkali feldspar, nephelines, kalsilites and paragonites all representing complex solid solutions. These can be correlated with natural occurrences.

846. Edgar, A. D., Fryer, B. J., Univ. Western Ontario:
Rare earth element distribution in peralkaline rocks, 1973-75.

The distribution of rare earth elements in eudialytes from seven well studied peralkaline intrusions indicates various different patterns which may depend on the crystallization history and chemistry of the intrusion. Rare earth element distribution is also being studied in coexisting pyroxenes, feldspars and nephelines.

847. Edgar, A. D., Green, D. H., Univ. Western Ontario:
Genesis of ultrapotassic mafic magmas, 1974.

Experimental studies up to 30 kb on a composition corresponding to a biotite mafurite indicate that such magmas cannot be evolved from a pyrolitic upper mantle composition but could be derived by localized partial melting of potash-rich material representing an upper mantle "inhomogeneity".

Derivation of hawaiites, mugearites and benmorites in the upper mantle, 1974.

See Upper mantle source for some hawaiites, mugearites and benmorites; Contr. Mineral. Petrol., v. 47, no. 3, 1974.

Analyses of lavas of compositions similar to hawaiites, benmorites and mugearites containing spinel-bearing lherzolite inclusions suggests that these have been produced by crystal fractionation, within the upper mantle, of parental alkali olivine basalts or basanites.

848. Edgar, A. D., Gupta, A. K., Univ. Western Ontario:
Leucite-Na-feldspar incompatibility: an experimental study, 1973-74.

Studies of the systems leucite-albite and leucite-albite-anorthite indicates that leucite and albite will not coexist under conditions of near surface crystallization. Maximum albite content in the absence of CaO is Ab_{56} and in the presence of CaO (as anorthite) is An_{46} $(Ab + 0_2)54$.

849. Francis, D. M., McGill Univ.:
Spinel lherzolites and other ultramafic rocks and the nature of the upper mantle, 1972-76.

Relics of a Cr-bearing, pargasitic amphibole are commonly found in spinel lherzolite xenoliths from Nunivak Island, Alaska. Textural relationships and major element chemistry of the phases involved indicate that the amphibole predates the entrainment of the zenoliths in basalts, but is secondary. The amphibole is interpreted to be the product of an alkali metasomatic event in the upper mantle. Continuing research will concentrate on the trace element character of the xenoliths and the nature of sulfide inclusions commonly found in their silicate phases. This work will be extended to other ultramafic occurrences, such as the intrusive peridotite bodies of the Kluane Range, west of the Shakwak Trench, Yukon Territory.
Anorthoclase, kaersutite and pyroxene megacrysts from Nunivak Island are also being examined to determine their genetic relationship to their host basalts and associated xenoliths.

850. Gupta, A. K., Edgar, A. D., Fyfe, W. S., Univ. Western Ontario:
Phase relations in a synthetic melilite-nepheline leucitite up to 8.5 kb P_{H_2O}, 1972-74.

Phase relations between 650-850°C at P_{H_2O} = P total of 1.-8.5 kb produces assemblages corresponding closely to those of natural K and Na-rich basic lavas of the equatorial African rift region.

851. Hogarth, D. D., Griffin, W. L., Univ. Ottawa:
Origin and nature of lapis lazuli, 1973-75.

852. Krupicka, J., Univ. Alberta:
Petrology of reworked crystalline rocks, 1972-77.

To work out practical diagnostic criteria for the determination of reworked rocks; to carry out a comparative study of reworked and polymetamorphic rocks from different continents; and to build up a systematic and regional collection of samples of reworked rocks.

853. Lambert, R. St. J., Nielsen, P., Univ. Alberta:
Petrology of Mount Ararat, Turkey, 1966-75.

See Chemical petrology of a suite of calc-alkaline lavas from Mount Ararat, Turkey: J. Geol., v. 82, p. 419-438, 1974.

A mineralogical study using microprobe technique.

854. Moore, J. M., Carleton Univ.:
Proterozoic volcanism in Canada, 1967-76.

Comparative study of the geological setting, stratigraphy and petrology of Proterozoic volcanic successions of orogenic affiliation. Emphasis on Aphebian volcanic rocks of the Flin Flon-Snow Lake belt, Manitoba and Helikian volcanics of the Hastins region, Grenville Province, Ontario.

855. Naldrett, A. J., Univ. Toronto:
Study of the sulfur content of volcanic rocks from different tectonic environments, 1972-75.

856. Scarfe, C. M., Univ. Alberta:
Viscosity and related properties of magmas, 1972-77.

Experimental determinations of the viscosity of magmas at one atmosphere and at high water pressures have led to the construction of a viscosity-temperature-composition grid which may be used to predict magma viscosities. Supporting work is being carried out on the structure and properties of silicate melts.

857. Semples, J.-M., Univ. Ottawa:
Textural simulation in igneous rocks, 1972-74; M. Sc. thesis.

858. Smith, D. G. W., Univ. Alberta:
Investigations of rocks from the spilite-keratophyre association, 1969-.

QUATERNARY GEOLOGY

Alberta

859. Emerson, D., Schweger, C., Westgate, J.A., Univ. Alberta:
Late Pleistocene-early Holocene geology and paleoecology of the Cooking Lake hummocky disintegration moraine, Alberta, 1974-76.

860. Fenton, M., Alberta Research Council:
Wabamun area NTS Sheet 83G, Alberta, 1973-76.

To complete the mapping of the eastern half of the sheet, and to map the distribution of the surficial deposits in the west half. Subsurface data will also be collected to aid in outlining the Quaternary stratigraphy of the area.

861. Gold, C.M., Westgate, J.A., Univ. Alberta:
Quaternary subsurface stratigraphy within bedrock channels in the Sand River area, Alberta with special emphasis on computing techniques, 1972-76.

862. Oberg, C., Evans, M., Westgate, J.A., Univ. Alberta:
Paleomagnetism of late Pleistocene sediments in Alberta, Montana and Washington, 1974-76.

863. Prosser, D., Univ. Alberta:
Quaternary stratigraphy and hydrogeology of bedrock channels in the Wabamun area, Alberta, 1974-76.

864. Stalker, A.M., Geol. Surv. Can.:
Quaternary of southern Alberta, 1965-.

865. Yoon, T.N., Vander Pluym, H., Alberta Environment:
Buried channels in the Edmonton-Lac LaBiche-Cold Lake area, Alberta, 1970-75.

Investigations of preglacial buried bedrock channels in the Edmonton-Lac LaBiche-Cold Lake area of east-central Alberta by test drilling, electric and lithologic logging, side-wall sampling and water well developing primarily located three bedrock channels in the area – the northeastern extension of the Beverly, the Kikino and the Helina.

866. Westgate, J.A., Univ. Alberta:
Quaternary geology of the Edmonton area, Alberta, 1965-.

Palaeoecology of Mid-Wisconsin sediments in the Peace River area, Alberta, 1967-75.

Quaternary lithostratigraphic studies in south-eastern Alberta, 1970-.

British Columbia

867. Alley, N.F., Geol. Surv. Can.:
Quaternary geology – terrain inventory, Prince Rupert-Terrace area, British Columbia, 1974-.

868. Armstrong, J.E., Geol. Surv. Can.:
Surficial geology, Fraser Lowland, British Columbia, 1973-.

See Quaternary geology, stratigraphic studies and revaluation of terrain inventory maps, Fraser Lowland, British Columbia; Geol. Surv. Can., Paper 75-1, pt. A, p. 377-380, 1975.

869. Clague, J.J., Geol. Surv. Can.:
Quaternary geology, northern Strait of Georgia, British Columbia, 1974-.

See Geol. Surv. Can., Paper 75-1, pt. A, p. 397-400, 1975.

870. Fulton, R.J., Geol. Surv. Can.:
Terrain mapping, Columbia River basin, south-central British Columbia, 1972-.

See Tephrostratigraphy of Olympia interglacial sediments in south-central British Columbia, Canada; Can. J. Earth Sci., v. 12, no. 3, p. 489-502, 1975.

871. Ricker, K.E., Geol. Surv. Can.:
Offshore Quaternary geology, Juan de Fuca Strait, British Columbia, 1974-.

Quaternary geology and sedimentation of British Columbia coastal zone, 1974-.

872. Rutter, N.W., Geol. Surv. Can.:
Quaternary geology of Peace River Reservoir area, British Columbia, 1966-.

873. Ryder, J.M., Geol. Surv. Can.:
Quaternary geology – terrain inventory, Lytton map-area, British Columbia, 1974-.

See Geol. Surv. Can., Paper 75-1, pt. A, p. 419-420, 1975.

Manitoba

874. Fenton, M.M., Univ. Western Ontario, Geol. Surv. Canada:
Quaternary geology, Winnipeg (east half), Manitoba, 1970-74; Ph.D. thesis.

875. Klassen, R.W., Geol. Surv. Can.:
Quaternary geology, Duck Mountain, Manitoba-Saskatchewan, 1964-.

Quaternary geology inventory, lower Nelson River basin, Manitoba, 1971-.

876. Ringrose, S., Large, P., Manitoba Mines Branch:
Surficial geology and sand and gravel resources of the Leaf Rapids local government district, 1974-75.

877. Teller, J.T., Univ. Manitoba:
Stratigraphy and petrology of glacial sediments in southern Manitoba, 1971-.

Newfoundland

878. Brueckner, W.D., Memorial Univ.:
Post-glacial sea-level fluctuations around Newfoundland, 1970-.

Concerned mainly with evidence indicative of young Holocene changes of sea level, gathered on reconnaissance trips to most of Newfoundland's coastal stretches that can be reached from roads.

879. Grant, D.R., Geol. Surv. Can.:
Quaternary geology St. Anthony – Blanc Sablon, Newfoundland, 1969-.

See Surficial geology and sea-level changes, L'Anse aux Meadows National Historic Park, Newfoundland; Geol. Surv. Can., Paper 75-1, pt. A, p. 409-410, 1975.

880. Slatt, R.M., Memorial Univ.:
Sedimentology of the Newfoundland continental shelf, 1973-76.

881. Slatt, R.M., Alley, D.W., Memorial Univ.:
Drift prospecting and glacial geology in the Sheffield Lake-Indian Pond area of north-central Newfoundland, 1973-75.

Evaluation of the source of Cu-mineralized float (up to 8% in glacial drift using the methods of "drift prospecting"; evaluation of the late glacial history of the area.

882. Vanderveer, D.G., Newfoundland Dep. Mines and Energy:
Surficial and glacial mapping, southwest Newfoundland, 1974-75.

Surfical and glacial mapping, Burin Peninsula, Newfoundland, 1974-75.

Reconnaissance airphotos interpretation, the surfical and glacial geology of the St. John's area, Newfoundland, 1974-75.

Northwest Territories

883. Barnett, D.M., Geol. Surv. Can.:
Surficial geology – terrain inventory, Bathurst, Cornallis and adjacent islands, District of Franklin, 1974-.

884. Blake, W., Jr., Geol. Surv. Can.:
Quaternary chronology and stratigraphy, southern Ellesmere Island, 1967-.

See Marine surficial geology: Observations in the High Arctic, 1974; Geol. Surv. Can., Paper 75-1, pt. A, p. 383-387, 1975.

Glacial geological investigations in north-western Greenland; Geol. Surv. Can., *ibid*, p. 435-439, 1975.

885. Boydell, A.N., Geol. Surv. Can.:
Quaternary geology – terrain inventory, Boothia Peninsula and northeast Keewatin, 1974-.

See Evaluation of the potential uses of Earth Resources Technology Satellite (ERTS-1) data for small-scale terrain mapping in Canada's North; Geol. Surv. Can., Paper 75-1, pt. A., p. 389-392, 1975.

Terrain inventory and land classification, Boothia Peninsula and northern Keewatin; Geol. Surv. Can., *ibid*, p. 393-395, 1975.

Biophysical study of the Boothia Peninsula and northern Keewatin; Geol. Surv. Can., *ibid.*, p. 423-424, 1975.

886. Hughes, O.L., Geol. Surv. Can.:
Surficial geology and land classification, Mackenzie Valley transportation corridor, 1971-.

887. Rampton, V., Geol. Surv. Can.:
Quaternary geology, Beaufort-Mackenzie, 1969-.

888. Rutter, N.W., Geol. Surv. Can.:
Surficial geology and land classification, Mackenzie Valley transportation corridor (southern part), 1971-.

Nova Scotia

889. Grant, D.R., Geol. Surv. Can.:
Surficial geology, southern Cape Breton Island, Nova Scotia, 1970-.

See Surficial geology of northern Cape Breton Island; Geol. Surv. Can., Paper 75-1, pt. A, p. 407-408, 1975.

890. Piper, D.J.W., Dalhousie Univ.:
Quaternary geology of parts of the deep water Atlantic continental margin of Canada, 1972-80.

See Upper Cenozoic glacial history south of Grand Banks of Newfoundland; Can. J. Earth Sci., v. 12, no. 3, p. 503-508, 1975.

Main areas of concentration at present are:
1) sedimentology of Laurentian Fan;
2) origin of laminated red muds on Laurentian Fan and Scotian Slope;
3) late Quaternary stratigraphy and sediment dispersal on the margin of the Grand Banks;
4) stratigraphy and sedimentology of the central basin of Baffin Bay; and
5) regional clay mineralogy of the continental margin.

891. Wightman, D.M., Dalhousie Univ.:
Late Pleistocene – early Holocene history of the Chignecto Peninsula, Nova Scotia, 1974-77.

Ontario

892. Aaltonen, R.A., Univ. Western Ontario:
Geology of the City of London, Ontario, 1970-75; Ph.D. thesis.

893. Anderson, T.W., Geol. Surv. Can.:
Quaternary geology, Great Lakes, 1968-.

See Acoustic profiling and sediment coring in Lake Ontario, Lake Erie, and Georgian Bay; Geol. Surv. Can., Paper 75-1, pt. A, p. 373-376, 1975.

894. Barnett, P.J., Ontario Division of Mines:
Quaternary geology of the Simcoe area, Ontario, 1975-76.

895. Bowlby, J.R., Queen's Univ.:
Sublacustrine front wedge costs, eastern Lake Ontario, 1972-75; M.Sc. thesis.

Lake bottom acoustic profiling has intersected about 500 V-shaped features enclosed in layered bottom sediments along a terrace-like structure under about 30 m of water in the Kingston basin of Eastern Lake Ontario. These features are interpreted to be late glacial ice wedge casts, remnants of a periglacial environment that existed in the region about 11 000 years B.P. The ice wedge casts, as indicators of sub-aerial exposure, give the maximum water plane elevation during the Admiralty Phase of Early Lake Ontario. This has led to postulation of the positions of the low-level Admiralty Phase beaches in the Ontario basin.

896. Burwasser, G.J., Ontario Division of Mines:
Quaternary geology of the Barrie-Orr Lake area, Ontario, 1974-76.

See Quaternary geology of the Barrie area (west half); Ontario Division of Mines, Prel. Map P 978, 1974.

Quaternary geology of the Orr Lake area (west half); Ontario Division of Mines, Prel. Map P 975, 1974.

897. Cooper, A.J., Ontario Division of Mines:
Quaternary geology of the Grand Bend-Parkhill area, 1973-75.

Quaternary geology of the Goderich-Seaforth area, Ontario, 1975-76.

See Quaternary geology of the Grand Bend area; Ontario Division of Mines, Map P 974, 1974.

898. Cowan, W.R., Ontario Division of Mines:
Quaternary geology of the Wingham – Lucknow area, southern Ontario, 1973-75.

899. Dreimanis, A., Raukas, A., Univ. Western Ontario, Estonian Acad. Sci.:
Stratigraphy of the last ice age in the east-central Canada and its correlations with other regions, 1958-.

900. Dreimanis, A., Tanaskow, P.D., Univ. Western Ontario:
Late Pleistocene deposits at St. Mary's Cement Company quarries, St. Mary's, Ontario, 1973-75; B.Sc. thesis (Tanaskow).

901. Feenstra, B.H., Univ. Western Ontario:
Late Wisconsin stratigraphy between the Milverton and Elmira moraines, southwestern Ontario, 1967-74; M.Sc. thesis.

Quaternary geology of Niagara, Welland, Dunnville, and Grimsby areas, southern Ontario, 1969-.

See Quaternary geology of the Dunnville area, southern Ontario; Ontario Division of Mines, Prel. Map P 981, 1974.

Quaternary geology of the Grimsby area, southern Ontario; Ontario Division of Mines, Misc. Paper 59, p. 196-198, 1974.

902. Geddes, R.S., Univ. Western Ontario:
The North-Dorchester Esker, east of London, Ontario, 1973-74; B.Sc. thesis.

903. Gombos, F., Peach, P.A., Brock Univ.:
Relationship of soil montmorillonite clays to potassium deficiency in grapevines in the Niagara area, Ontario, 1973-75; M.Sc. thesis (Gombos).

904. Pinch, J., Univ. Western Ontario:
Stratigraphy and sedimentology of Late Pleistocene deposits in the lower Beaver Valley, Ontario, 1973-76; M.Sc. thesis.

905. Richard, S.H., Geol. Surv. Can.:
Surficial geology, Ottawa Valley lowlands, Ontario and Quebec, 1974-.

See Surficial geology mapping: Morrisburg – Winchester area (parts of 31B,G); Geol. Surv. Can., Paper 75-1, pt. A, p. 417-418, 1975.

906. Rust, B.R., Romanelli, R., Univ. Ottawa:
Quaternary deposits of Ottawa-Hull area, 1972-76; M.Sc. thesis (Romanelli).

Sands and gravels of fluvial aspect deposited in ice-contact situations in relatively deep water of the Champlain Sea. Growth rates of the Champlain Sea molluscan fauna.

907. Sharpe, D.R., Ontario Division of Mines:
Quaternary geology of the Durham area, southern Ontario, 1975-77.

Quaternary geology of the Merrickville area, southern Ontario, 1974-75.

See Quaternary geology of the Merrickville area, southern Ontario; Ontario Division of Mines, Misc. Paper 59, p. 183-185, 1974.

A limited glacial stratigraphy consisting of till (Fort Covington) and minor ice-contact stratified drift of late Wisconsinian age marks the Quaternary geology of this area. A marine transgression known as the Champlain Sea washed and reworked these glacial sediments, forming beaches and strandlines from 84 m (275 feet) to as high as 137 m (450 feet) a.s.l., a level which may be close to the marine limit for this portion of the Champlain Sea.

The shallow, brackish-water environment in this area produced clays that are silty and non-sensitive compared to the clay-rich, failure-prone, deep water marine sediments to the east. Granular resources in the area are meagre and are restricted to beach-strandline environments.

908. Terasmae, J., Brock Univ.:
Quaternary geochronology, paleoecology and dendroclimatology in Ontario, 1969-.

See The deglaciation history of the Lake Superior regiona and its climatic implications; Quaternary Research, v. 4, no. 3, p. 316 339, 1974.

Stratigraphical studies on the shoreline displacement of Lake Superior; Can. J. Earth Sci., v. 12, no. 2, p. 300 319, 1975.

Quebec

909. DiLabio, R., Univ. Western Ontario:
Drift prospecting in the Lac Mistassini Lac Waconichi area, Quebec, 1971 75; Ph.D. thesis.

Laboratory analyses continued on samples of glaciogenic sediments in order to evaluate such sediments as sampling media in exploration for ore deposits and to study glacial dispersal of ore minerals.

910. Dionne, J-C., Environment Canada:
Geomorphology and surficial deposits mapping of the James Bay area, Québec, 1973 76.

See Cryosols avec triage sur rivage et sond de lacs, Québec cental subarctique; Rev. Géogr. Montréal, v. 28, no. 4, 1974.

The eastward transport of erratics in James Bay area, Quebec; Rev. Geogr. Montreal, v. 28, no. 4, 1974.

911. Dubois, J-M, Sherbrooke Univ. (Géographie):
Géologie de surface et quaternaire de la côte nord de l'estuaire maritime du Saint-Laurent, 1974-77.

Voir Geol. Surv. Can., Paper 75-1, pt. A, p. 403 405, 1975.

912. Gadd, N.R., Geol. Surv. Can.:
Distribution of marine deposits, Ottawa-St. Lawrence Basin, 1971-.

913. Lebuis, J., Ministère des Richesses Naturelles du Québec:
Géologie des dépôts meubles dans la région de Matapédia, comtés de Matapédia et de Bonaventure, 1974-75.

914. Occhietti, S., Université de Québec à Trois-Riviéres (Géographie):
Dépôts et faits quaternaires du Bas St-Maurice, Québec, 1973-76.

Voir Geol. Surv. Can., Paper 74-1, pt. B, p. 217, 1974.

915. Terasmae, J., Brock Univ.:
Late Quaternary history of the Magdalen Islands, Quebec, 1972-76.

See Deglaciation of Port Hood Island, Nova Scotia; Can. J. Earth Sci., v. 11, no. 10, p. 1357-1365, 1974.

Saskatchewan

916. Christiansen, E.A., Saskatchewan Research Council:
Environmental geology, 1971-.

See Geology and groundwater resources of the Waterhen River area (73K), Saskatchewan; Saskatchewan Research Council Map 19, 1974.

Involves study of collapse and thrust structures in Quaternary deposits.

917. Christiansen, E.A., Haughton, D.H., Alley, D.W., Schreiner, B.T., Saskatchewan Research Council:
Quaternary geology and geochemistry of the unconsolidated deposits of the Canadian Shield in Saskatchewan south of 58° North Latitude, 1974-78.

Quaternary geology:
1974 – Lac La Ronge area (73P);
1975 – Reindeer Lake South area (64D), Foster Lake area (74A), and Pelican Narrows area (63M);
1976 to 1978 – complete areas in the Shield north to 58° latitude.

Geochemistry:
1974 – sampling of rock, overburden and lake sediments for geochemical analysis;
1975 to 1978 – continuation of sampling.

918. Robertson, R., Univ. Saskatchewan:
Glacial and environmental geology of the Churchill – Reindeer Rivers area, Saskatchewan, 1973-75; M.Sc. thesis.

Part of the Churchill River Study, an environmental impact study of the Saskatchewan Power Corporation's proposal to dam the Churchill River at Wintego Lake for hydro-electric generation purposes.

General

919. Babcock, E.A., Cruden, D.M., Schwartz, F.W., Univ. Alberta:
Areal variations in the mechanical and hydrologic properties of tills, 1974-75.

920. Craft, J.L., Univ. Western Ontario:
Late Wisconsin glaciation in the Adirondack Mountains, New York, 1965-75; Ph.D. thesis.

921. Dreimanis, A., May, R.W., Stankowski, W., Univ. Western Ontario, Alberta Research Council, A. Mickiewicz Univ.:
Investigations of tills, 1962-.

See Changeability of mechanical and petrographical compositions of Catfish Creek Drift sediments; Zesz. Nauk. Univ. Im. A. Mickiewicza w. Poznaniu, Geografia Nr. 10, p. 215-228, 1974.

922. King, L.H., Geol. Surv. Can.:
Surficial geology, Grand Bank, 1973-.

Surficial geology, Scotian Shelf and adjacent areas, 1973-.

923. Peach, P.A., Brock Univ.:
Fine particle studies in glacial deposits, 1972-.

See Grain-size distribution within glacial varves; Geol. Soc. Amer., Geology, vol. 3, no. 1, p. 43-46, 1975.

Detailed studies of the fine material in glacial deposits using the Quantiment 720 Image analysing computer for size distribution studies and the S.E.M. for grain identification and sculpture in an on-going programme relating glacial material to environmental factors.

924. Schwarcz, H.P., Ford, D.C., Harmon, R., Gascoyne, M., McMaster Univ.:
Palaeoclimate determination through study of speleothem isotopic variations, 1967-; Ph.D. theses (Harmon and Gascoyne).

Oxygen and carbon isotope ratios in cave-deposited travertine reflect change in temperature of deposition. Cave temperatures are average of surface temperature over one or more years. Th, U disequilibrium dating is used to determine age of deposits. D/H ratios of fluid inclusions give O-isotope ratio of original drip water. Pleistocene climates show warm peaks at 100 000 and 200 000 y. B.P.

925. Schwarcz, H.P., Harmon, R., McMaster Univ.:
Dating of archeologic sites in caves, 1974-78.

Speleothem associated with sites of human occupation in cave mouths is being dated by Th-230/U234 disequilibrium methods. Dates are being obtained for sites in U.S.A., Isreal.

926. Shilts, W.W., Geol. Surv. Can.:
Properties and provenance of till, 1969-.

See Dispersal of clasts and trace elements in the Windsor esker, southern Quebec; Geol. Surv. Can., Paper 75-1, pt. A, p. 495-499, 1975.

927. Stalker, A.M., Geol. Surv. Can.:
Glacially displaced intertill bedrock blocks, Canadian Prairies, 1974-.

See The large interdrift bedrock blocks of the Canadian Prairies; Geol. Surv. Can., Paper 75-1, pt. A, p. 421-422, 1975.

928. van der Linden, W.J.M., Geol. Surv. Can.:
Surficial geology of the Labrador Continental Shelf and Slope, 1973-.

See The surficial geology of Hamilton Bank and periphery; Geol. Surv. Can., Paper 74-1, pt. B, p. 157-160, 1974.

929. Westgate, J.A., Univ. Alberta:
Quaternary tephrostratigraphic studies in western Canada, including fission-track, 1967-.

SEDIMENTOLOGY AND SEDIMENTARY PETROLOGY

Recent and Unconsolidated Sediments

930. Ashley, G.M., Univ. British Columbia:
Sedimentation in a tidal lake, Pitt Lake, British Columbia, 1973-76; Ph.D. thesis.

Water drains from Pitt Lake through a southern outlet into the Pitt River, into the Fraser River, and eventually into the Strait of Georgia. Tidal fluctuations in the Strait periodically retard flow in the Fraser but reverse flow of Pitt River into the lake. The study will attempt to show that sediment is moved up Pitt River on the flood tide and deposited as a delta at the southern end of the lake.

931. Bornhold, B.D., Summerhayes, C.P., Univ. Toronto, Woods Hole Oceanographic Inst.:
Sedimentary processes in the northern Cape Basin, South Atlantic, 1973-75.

932. Buckley, D.E., Geol. Surv. Can.:
Environmental marine geology of a coastal inlet, Nova Scotia, 1973-.

See Geol. Surv. Can., Paper 74-1, pt. B, p. 115-118, 1974.

933. Dionne, J-C., Environment Canada:
Drift ice processes and phenomena in Québec, 1964-.

See How drift ice shapes the St. Lawrence; Can. Geogr. J., v. 88, 1974.

Polished and striated mud surfaces in the St. Lawrence tidal flats, Quebec; Can. J. Earth. Sci., v. 11, no. 6, p. 860-866, 1974.

934. Edwards, D., Univ. Western Ontario:
Lithologic variation in glacio-fluvial systems of southwestern Ontario, 1974-76; M.Sc. thesis.

935. Grieve, D., Fletcher, K., Univ. British Columbia:
Trace element distribution on the Fraser Delta, 1974-76; M.Sc. thesis (Grieve).

936. Hesse, R., Chough, S.K., Lalli, C., Müller, J., Yoshinari, T., McGill Univ.:
Labrador Sea sediments, 1973-77.

The deep basin of the Labrador Sea appears to be one of the least studied oceanic areas as far as the sediments are concerned, although the formation of the 2000 mi. long Mid-Ocean Canyon of the Labrador Sea offers some intriguing problems. To unravel the Recent and Pleistocene history of sedimentation in the deeper parts of the Labrador Sea, particularly the origin of the Mid-Ocean Canyon. Special attention will be given to the interactions between sediment, fauna, and water masses.

937. Hesse, R., Preda, M., McGill Univ.:
Pelagic sedimentation in West-Pacific, 1971-75; M.Sc. thesis (Preda).

See WALTHER'S facies rule in pelagic realm – a large scale example from the Mesozoic Cenozoic Pacific; Zeitschr. Deutsche Geol. Ges, v. 125, p. 151-172, 1974.

938. Hill, P.A., Ruest, A., Desnoyers, D., Carleton Univ.:
Heavy minerals, Port au Port Bay, Newfoundland.
Heavy minerals, recent sediments of Newfoundland, 1974-75.

939. Keen, M.J., Piper, D.J.W., Barnes, N., Dalhousie Univ.:
Investigations of coastal bays of Nova Scotia, 1972-76.

To elucidate the history of formation of some of the inlets of the coast of Nova Scotia, in relation to Holocene changes in sea-level and the conversion of lakes into marine inlets. In St. Margaret's Bay and in Mahone Bay methane generated by the fermentation of organic matter derived from kelp, largely, is responsible for a very stong acoustic reflector 2 metres below the sea floor in deeper basins.

940. Luternauer, J. L., Geol. Surv. Can.:
Fraser Delta sedimentation, 1974-.

See Fraser Delta sedimentation, Vancouver, British Columbia; Geol. Surv. Can., Paper 75-1, pt. A, p. 467-468, 1975.

941. Martini, I. P., Univ. Guelph:
Fluvial environment, 1970-.

To contribute to the construction of sedimentological models of coarse sediments, a three-faceted approach has been taken: (a) Recent environments of the Grand River are being analyzed as analogs for both open outwash (braided streams with erodible banks) and valley train (braided streams with non-erodible banks); (b) the hydrodynamics and resultant sedimentary features of sandy, gravelly bars are analyzed in flume experiments; and (c) braided stream deposits are being studied also in ancient conglomerates, and in Quaternary sections where the three-dimensional features of the deposits can be observed during progression of excavations made for aggregates.

Coastal environments of the Great Lakes, 1972-.

See Wasaga Beach: A Quaternary classic landscape, its geological history and biological carrying capacity of and sand dunes; Geogr. Monog., v. 5, York Univ. Ser., Univ. Toronto Press, 1974-.

Objectives of this research are: (a) to study the process of formation and fossilization of barrier systems that have developed along the coasts of the Great Lakes during the Quaternary; (b) to determine the carrying capacity for recreational activities of the coastal dunes of lakes and sea-coasts; and (c) to determine the limiting factors for the formation and maintenacne of sand blowouts and related dune forms.

Formation and modification of structures of sediments and soils, 1973-.

The study consists of the analysis of sedimentary structures of selected deposits of Ontario and states of central-north U. S. A. and of the analysis of the changes and processes involved during the early stages of weathering. A major objective of the research is to describe and understand the progressive disruption of sedimentary structures and fabrics and the contemporaneous development of soil structures and related micromorphologies and chemical redistributions of elements.

942. McLaren, P., Geol. Surv. Can.:
Coastal erosion – sedimentation, southeast Melville Peninsula, District of Franklin, 1973-.

See Under-ice diving observations in the coastal environments of southeast Melville and western Byam Martin Islands; Geol. Surv. Can., Paper 75-1, pt. A, p. 475-477, 1975.

943. Middleton, G. V., McMaster Univ.:
Sediment movement in the Minas Basin, Bay of Fundy, 1973-76.

944. Owens, E. H., Geol. Surv. Can.:
Regional coastal geomorphology of the southern Gulf of St. Lawrence, 1973-.

See An investigation of ice in the littoral zone at Richibucto, northeast New Brunswick; Geol. Surv. Can., Paper 74-1, pt. B, p. 120-121, 1974.

The relationship of littoral processes and sediment dynamics to the coastal geomorphology of the Magdalen Islands, 1974-.

See Littoral processes and sediment dynamics, Magdalen Islands, Quebec: July – August, 1974; Geol. Surv. Can., Paper 75-1, pt. A, p. 157-160, 1975.

945. Pelletier, B. R., Geol. Surv. Can.:
Sediment texture and entropy in relation to hydrodynamic vigour in the Bay of Fundy System, 1973-.

946. Piper, D. J. W., Keen, M. J., Dalhousie Univ.:
Geological study of Mahone Bay and St. Margaret's Bay, Nova Scotia, 1973-76.

947. Risk, M. J., McMaster Univ.:
Bioturbation rates in the Strait of Canso, 1974-.

948. Rust, B. R., Univ. Ottawa:
The distribution and transport of mercury and bed sediment in the Ottawa River, 1972-76.

The nature and distribution of bed sediment relates to both source and transport dynamics. Mercury concentrations in the bed relate to sediment type, and are best explained as mercury adsorbed on grain surface coatings of iron oxide. Transport rates for bed sediment and mercury have been established, and

the rate of mercury loss over the three-year study period (use of mercury in pulp mills was discontinued in 1971). The rate varies with sediment type and is somewhat less than 50% per years.

949. Rust, B.R., Koster, E.H., Univ. Ottawa:
Modern and experimental fluvial sedimentology, 1969-75; Ph.D. thesis (Koster).

See Flume studies of isolate gravel fabric on a sand bed; Geol. Surv. Can., Paper 74-1, pt. B, p. 247-249, 1974.

950. Schafer, C.T., Geol. Surv. Can.:
Marine geology of the nearshore and estuaries of Chaleur Bay, Gulf of St. Lawrence, 1973-.

See Environmental marine geology of Chaleur Bay; Geol. Surv. Can., Paper 74-1, pt. B, p. 123-126, 1975.

951. Slatt, R.M., Memorial Univ.:
Sedimentology/sedimentary geochemistry of sediments in Newfoundland coastal inlets, 1972-.

Sedimentology of the Newfoundland continental shelf, 1973-76.

To map relict and dynamic areas of sedimentation as well as the offshore limit of Wisconsinan ice, to delineate sediment provenance, and to ultimately evaluate the Late Quaternary depositional history of the shelf.

Sedimentological/sedimentary geochemical investigations on the Newfoundland continental shelf and in adjacent inlets, 1973-.

See Geochemistry of bottom sediments in Conception Bay, southeastern Newfoundland; Can. J. Earth. Sci., v. 11, p. 768-784, 1974.

Continental shelf sediments off eastern Newfoundland: A preliminary investigation; Can. J. Earth. Sci., v. 11, p. 362-368, 1974.

952. Smith, N.D., Univ. Illinois at Chicago Circle:
Sedimentological studies of mountain lakes and deltas, 1974-.

Sediment distribution processes and pattterns are being examined in several glacier-fed lakes in the mountain parts region of southwestern Alberta and southeastern British Columbia.

953. Stauffer, M.R., Hajnal, Z., Gendzwill, D., Univ. Saskatchewan:
A study of rhomboidal beach structures, 1973-75.

954. Taylor, R.B., Geol. Surv. Can.:
Coastal erosion – sedimentation, Barrow Strait region, District of Franklin, 1973-.

See Coastal investigations of northern Somerset Island and Barrow Strait, District of Franklin; Geol. Surv. Can., Paper 75-1, pt. A, p. 501-504, 1975.

Nearshore marine geological reconnaissance at Cunningham Inlet, Somerset Island, N.W.T.: Geol. Surv. Can., *ibid.*, p. 505-507, 1975.

Sedimentary Rocks

955. Ayres, L.D., Univ. Manitoba:
Sedimentology of early Precambrian metagreywacke, Lake Superior Park, Ontario, 1961-75.

956. Beakhouse, G., Univ. Manitoba:
Nature and subdivision of the English River gneissic belt, 1974-76.

A study of the provenance of English River belt sediments; recognition of distinctive northern and southern subdivisions of the belt and a documentation of the nature of each part.

957. Beales, F., Lozez, G.P., Arengi, J., Univ. Toronto:
Stratigraphy of meteorite impact craters; M.Sc. thesis (Arengi).

See The unmetamorphosed sedimentary fill of the Brent Meteorite Crater, southeastern Ontario; Can. J. Earth Sci., v. 12, no. 4, p. 606-628, 1975.

Sudbury Basin sediments and the meteoritic impact theory of origin for the Sudbury structure; Can. J. Earth Sci., v. 12, no. 4, p. 629-635, 1975.

958. Bell, R.T., Brock Univ.:
Survey of Archean sediments in the Midwest Superior Geotraverse, 1972-75.

Stratigraphy and sedimentology of early Proterozoic sediments of the Belcher Islands, Northwest Territories, 1972-76.

See Aphebian Halite and Sulphate Indications in the Belcher Group, Northwest Territories; Can. J. Earth Sci., v. 11, p. 722-728, 1974.

959. Belyea, H.R., Geol. Surv. Can.:
Devonian of Alberta, British Columbia and southern District of Mackenzie, 1950-.

960. Bornhold, B. D., Hynes, A. J., Univ. Toronto:
Nature of island arc volcanic flysch in the Appalachians, 1974-76.

961. Brun, J., Ministère des Richesses Naturelles du Québec:
Etude du Black River et du Trenton, 1973-75.

962. Campbell, F. H. A., Geol. Surv. Can.:
Sedimentary rocks of the Prince Albert belt, Districts of Franklin and Keewatin, 1972-.

963. Danner, W. R., Univ. British Columbia:
Carbonate sedimentology and petrology of the western Cordillera of North America, 1960-.

Concentration on limestones of the Cache Creek, Chilliwack and Sicker Groups of southern British Columbia and adjacent parts of Washington State.

The origin of bedded cherts of the western Cordillera, 1965-.

Studies show that some bedded cherts are shallow water instead of deep water origin and that most are biogenic accumulations and not chemical precipitates.

964. Davies, G. R., Schmidt, V., Geol. Surv. Can., Mobil Oil Canada, Ltd.:
Gravity displaced shallow-water carbonate sediments in Pennsylvanian Topermian basinal facies of the Sverdrup Basin, Arctic Archipelago, 1972-75.

965. Davies, G. R., Geol. Surv. Can.:
Sedimentology of selected Upper Paleozoic carbonates and evaporites, Queen Elizabeth Islands, Arctic Archipelago, 1972-.

966. Davis, M. W., Bredwell, H. D., Univ. Windsor:
Carboniferous stratigraphy and depositional history of Bay and Saginaw Counties, Michigan, U. S. A., 1974-76.

967. Davis, M. W., Phelps, R. K. Univ. Windsor:
Cambro-Ordovician stratigraphy and depositional history of Essex and Kent Counties, Ontario, 1974-77; M. Sc. thesis (Phelps).

968. Fahraeus, L. E., Memorial Univ.:
Studies of Paleozoic conodonts and depositional environments of sedimentary rocks, 1971-.

969. Foscolos, A. E., Geol. Surv. Can.:
Mineralogy of fine-grained clastic rocks in central Sverdrup Basin, District of Franklin, 1973-.

Interstratified mica – expandable clay minerals from the Buckinghorse Formation shales at Tetsa and Muskwa Rivers of northeastern British Columbia, 1973-.

970. Hardy, I. A., Geol. Surv. Can.:
Depositional history and facies distribution of the Tertiary Systems on the Atlantic Shelf, 1973-.

See Depositional history and facies distribution of the Tertiary System on the Scotian Shelf; Geol. Surv. Can., Paper 74-1, pt. B, p. 137-138, 1974.

971. Harrison, R. S., Univ. Manitoba:
Sedimentation and diagenesis in cyclic Mississippian carbonate sequences of western Canada, 1974-76.

972. Henderson, J. B., Geol. Surv. Can.:
Sedimentological studies of the Yellowknife Supergroup in the Slave structural province, 1974-.

See Geol. Surv. Can., Paper 75-1, pt. A, p. 325-330, 1975.

973. Hendry, H. E., Misko, R., Univ. Saskatchewan:
Sedimentology of Frenchman (Upper Cretaceous) and Ravenscrag (Lower Tertiary) sands in southern Saskatchewan, 1972-.

974. Hendry, H. E., Stauffer, M. R., Univ. Saskatchewan:
Recumbent folded, deformed cross-bedding in the Floral Formation, Saskatoon, Saskatchewan, 1973-75.

Investigation of penecontemporaneous deformation of cross-bedding in Pleistocene fluvioglacial sediments, 1973-.

975. Hesse, R., McGill Univ.:
Clastic sedimentary sequences – distinctive characteristics of turbidite sequences on plate boundaries, 1974.

976. Hesse, R., Butt, A. A., McGill Univ., Univ. Tübingen:
Clastic sedimentary sequences – paleobathymetry of turbidite basins, 1971-76.

Application of the concept of calcite compensation depth to Cretaceous turbidite basins of the Alps.

977. Hesse, R., Reading, H.G., McGill Univ., Oxford Univ.:
Clastic sedimentary sequences – diagenesis of greywackes; diagenesis of chert and chalk; physical diagenesis (secondary sedimentary structures), 1971-.

978. Jansa, L.F., Geol. Surv. Can.:
Stratigraphy and sedimentology of the Mesozoic and Tertiary rocks of the Atlantic Shelf, 1971-.

See Geol. Surv. Can., Paper 74-1, pt. B, p. 141-143, 1974.

979. Jones, B., Univ. Ottawa:
Stratigraphy, sedimentology, invertebrate fossils of the Silurian Read Bay Formation, northern Somerset Island, Northwest Territories, 1971-75.

See A biometrical analysis of *Atrypella foxi* n. sp. from the Canadian Arctic; J. Paleontol., v. 48, p. 963-977, 1974.

The Leopold Formation: an Upper Silurian intertidal/supratidal carbonate succession on northeastern Somerset Island, Arctic Canada; Can. J. Earth Sci., v. 12, no. 3, p. 395-411, 1975.

Study of the stratigraphic succession of rock types and fossil faunas in subtidal to intertidal and supratidal carbonate facies. Systematic and ecological study of the brachiopod faunas of the Read Bay Formation, using statistical techniques.

980. Kent, D.M., Univ. Regina:
Evaporites and related carbonate environments in Phanerozoic rocks of the Interior Plains, 1972-75.

981. Kimberley, M.M., Univ. Toronto (Erindale College):
Diagenesis and the origins of sedimentary ores, 1973-77.

See Origin of iron ore by diagenetic replacement of calcareous oolite; Nature, v. 250, p. 319-320, 1974.

A doctoral study of several Phanerozoic and Middle Precambrian ironstones and iron-formations led to a new genetic model of iron concentration. The hypothesized process of oolite replacement by leachates of soils has subsequently been discovered, on Nov. 22/74, to be occurring in a modern environment and a comprehensive study of this phenomenon has just begun. Gradations from calcareous to ferriferous oolite are also being studied in Ordovician rocks in the Toronto area. Zonation of thorium content in Elliot Lake uraninite is being determined with an electron microprobe to resolve the detrital versus diagenetic precipitation controversy.

982. Kliske, A.E., Chevron Standard Ltd.:
Clastic rock petrography, 1965-.

983. Knight, I., Newfoundland Dep. Mines and Energy:
Geological mapping, stratigraphy and sedimentology of the Anguille group, Codroy group and Searston Beds of the Carboniferous of the Arguille Mountains and Codroy Valley, Southwest Newfoundland, 1974-75.

Sedimentology of the Carboniferous of Conche, Northern Peninsula, Newfoundland, 1974-75.

984. Kramers, J.W., Alberta Research Council:
Primrose Air Weapons Range, oil sands evaluation drilling program, 1974.

Wabasca A Oil Sand Deposit, Grand Rapids Formation study, 1972-.

The Grand Rapids Formation in this area can be subdivided into three sandstone units, the upper two of which are oil bearing and contain in excess of 31 billion barrels of heavy oil (ERCB estimate, 1963). Overburden above the oil sands varies from 250 feet in the north to 2000 feet in the south. Oil accumulation was probably the result of updip migration and entrapment in those structural features with a favorable lithology. Tilting of the oil reservoirs may have taken place after degradation of the oil. Preliminary petrographic analysis indicates that the mineralogy of the sandstones is complex. Oil impregnated sands have a relatively low content of montmorillonite (0.7-1.8%) and total clay, compared to the barren sand (1.5-6.5% montmorillonite).

985. Lerand, M.M., Gulf Oil Canada Ltd.:
Mesozoic-Cenozoic sedimentology, Mackenzie Delta, 1970-.

See Beaufort Sea; Can. Soc. Petrol. Geol., Mem. 1, 1974.

986. Long, D.G.F., Univ. Western Ontario:
Stratigraphy and sedimentation of the Mississagi and Serpent Formations (Aphebian), north shore of Lake Huron, Ontario, 1973-76; Ph.D. thesis.

987. Martini, I.P., Univ. Geulph:
Silurian clastic rocks, 1970-.

See Environments of deposition of the Medina (Grimsby) Formation and exploration of hydrocarbons; Ontario Petrol. Inst. Proc., 1974.

The basic preoccupation is to compare and contrast materials and processes of recent coasts with characters of sedimentary sequences formed along coasts of Lower Silurian basins, which have been affected by different climatic conditions, reduced tidal ranges, and absence of terrestrial vegetation.

988. McCabe, H. R., Manitoba Mines Branch:
Lithofacies of the Winnipeg Formation, southwestern Manitoba, 1972-75.

989. McIlreath, I. A., Geol. Surv. Can.:
Stratigraphic relationships at the western edge of the Middle Cambrain facies carbonate belt, Field, British Columbia, 1972-.

See Geol. Surv. Can., Paper 75-1, pt. A, p. 557-558, 1975.

990. Oldershaw, A. E., Univ. Calgary:
Genesis and diagenesis of sedimentary rocks.

A continuing research interest based largely on the use of scanning-electron microscopy X-ray and electron microprobe analysis to delineate ultramicroscopic structures and mineralogies in both carbonate and non-carbonate rocks. The research involves examination of a wide range of sedimentary environments, both ancient and recent, in an attempt to formulate general models of diagenesis related to porosity generation and occlusion. Current areas of investigation include: (a) Devonian "reef" complexes in western Canada, (b) microporosity development in Ordovician limestones of southern Ontario, and (c) Carboniferous-Permian sedimentary environments in northern Yukon.

991. Oliver, T. A., Univ. Calgary:
Relation of diagenetic effects to depth in sandstones of central Alberta, 1974-.

992. Ollerenshaw, N. C., Geol. Surv. Can.:
Cretaceous and Tertiary conglomerates and sandstones of the eastern Cordillera, 1969-.

993. Pounder, D. A., Chevron Standard Ltd.:
Sedimentology, diagenesis and stratigraphy of carbonate rocks, 1959-.

994. Rottenfusser, B. A., Gulf Oil Canada Ltd.:
Tertiary petrology of Mackenzie Delta, 1973-.

995. Rottenfusser, B. A., Oliver, T. A., Univ. Calgary:
Petrology and depositional environments of the Watt Mountain Formation, northern Alberta, 1972-74; M. Sc. thesis (Rottenfusser).

996. Rust, B. R., Gibling, M. R., Univ. Ottawa:
Ancient alluvial sedimentation, Arctic and Gaspé, Quebec, 1973-77; Ph. D. thesis (Gibling).

Facies models for alluvial sedimentation derived from ancient examples: Peel Sound Formation (Devonian), Somerset Island, Northwest Territories, and Malbaie Formation (Devonian), Gaspé, Québec.

997. Savelle, J. M., Univ. Ottawa:
Sedimentary and faunal studies of the Silurian Read Bay Formation near Creswell Bay, Somerset Island, Northwest Territories, 1973-75; M. Sc. thesis.

998. Schmidt, V., Nelson, H. F., Mobil Oil Canada, Ltd.:
Cementation and decementation of sandstones during deep burial, 1974-75.

999. Sonnenfeld, P., Univ. Windsor:
Models of evaporite genesis, 1973-75.

See The Upper Miocene evaporites of the Mediterranean region – a study in paleooceanography; Geologische rundschau, v. 63, no. 3, p. 1133-1172, 1974.

1000. Swagor, N., Oliver, T. A., Univ. Calgary:
Depositional environments of the Cardium Formation, west-central Alberta, 1974-75; M. Sc. thesis (Swagor).

1001. Trettin, H. P., Geol. Surv. Can.:
Stratigraphy and sedimentology of Silurian and Devonian clastic formations, central Ellesmere Island, District of Franklin, 1972-.

1002. Vecsey, G. E., Gulf Oil Canada Ltd.:
Carbonate rock studies – diagenesis, porosity development and paleoenvironments.

1003. Wardlaw, N. C., Cheshire, S., Univ. Calgary:
Pore systems in sedimentary rocks and their influences on multiphase fluid flow, 1973-76; Ph. D. thesis (Cheshire).

See Water above the transition zone in carbonate oil reservoirs; Bull. Can. Petrol. Geol., v. 22, no. 3, p. 305-325, 1975-.

1004. Yeo, G. M., Univ. Western Ontario:
Sedimentology of the Hadrynian Rapitan Group, Yukon and Northwest Territories, 1974-76; M. Sc. thesis.

1005. Young, G.M., Univ. Western Ontario:
Stratigraphy and sedimentation of Hadrynian rocks in the Yukon/Northwest Territories boundary region, 1974-.

Stratigraphy and sedimentology of Upper Precambrian rocks in the Arctic Archipelago, 1971-.

See Stratigraphy, paleocurrents and stromatolites of Hadrynian (Upper Precambrian) rocks of Victoria Island, Arctic Archipelago, Canada; Precambrian Res., v. 1, p. 13-14, 1974.

1006. Young, H.R., Greggs, R.G., Brandon Univ., Queen's Univ.:
Diagenesis in Lodgepole Limestones, southwestern Manitoba, 1965-74.

Study of diagentic processes, and their relative time relationships, that have affected oil-bearing Lodgepole (Mississippian) limestones in southwestern Manitoba.

General

1007. Mothersill, J.S., Lakehead Univ.:
Sediment-water interface processes, Thunder Bay, Ontario, 1974.

1008. Shilts, W.W., Geol. Surv. Can.:
Mineral indicator tracing, southern Keewatin, 1970-.

1009. Veizer, J., Univ. Ottawa:
Chemical evolution and diagenesis of carbonate rocks during geological history, 1974-78.

See $^{87}Sr/^{86}Sr$ composition of seawater during the Phanerozoic; Geoch. et Cosmochim. Acta, v. 38, p. 1461-1484, 1974.

Chemical diagenesis of belemnite shells and possible consequences for paleotemperature determinations; N. Jb. Geol. Pal., v. 147, p. 91-111, 1974.

STRATIGRAPHY AND PALEONTOLOGY

Precambrian

1010. Aitken, J.D., Geol. Surv. Can.:
Helikian and Hadrynian stratigraphy, Eastern Cordillera and Interior Platform, 1973-.

See Proterozoic stratigraphy and sedimentology Tuchodi Lakes map-area, B.C. (94K); Geol. Surv. Can., Paper 75-1, pt. A, p. 511, 1975.

1011. Aitken, J.D., Balkwill, H.R., Cook, D.G., Klassen, R.W., Yorath, C.J., Geol. Surv. Can.:
Operation Norman, District of Mackenzie, 1967-.

1012. Anderson, M.M., Memorial Univ.:
Geology of eastern part of the Avalon Peninsula, south of lat. 47°N, 1970-.

Study of late Precambrian tillites and metazoan fossils. An investigation of the turbidite sequences and the incidence of vulcanism in the Conception Group which underlies the greater part of the eastern portion of the Avalon Peninsula.

1013. Bailes, A.H., Brisbin, W.C., Manitoba Mines Branch, Univ. Manitoba:
Stratigraphy, sedimentology, metamorphism and regional significance of an Aphebian turbidite sequence near Snow Lake, Manitoba, 1971-75; Ph.D. thesis (Bailes).

1014. Christie, R.L., Geol. Surv. Can.:
Stratigraphy and age of Pre-cambrian sedimentary rocks and contained sills and dykes, east coast of Canadian Arctic Islands and north and northwest Greenland, 1967-.

1015. Fahraeus, L.E., Bergstrom, J., Memorial Univ.:
Trace fossils of Bell Island, Conception Bay, Newfoundland, 1974-75.

1016. Hoffman, P.F., Geol. Surv. Can.:
Stratigraphic, sedimentological and paleontological study of the Epworth Group, north-central District of Mackenzie, 1969-.

1017. Jefferson, C.W., Univ. Western Ontario:
Stratigraphy, sedimentology and stromatolites of the Glenelg and Reynolds Point Formations, Banks and Victoria Islands, Northwest Territories, 1973-75; M.Sc. thesis.

1018. Knight, I., Newfoundland Dep. Mines and Energy:
Stratigraphy and sedimentology of the Proterozoic Ramah Group, northern Labrador, 1971-75.

1019. McGlynn, J.C., Geol. Surv. Can.:
Stratigraphy, sedimentology and correlation of Nonacho Group, Northwest Territories, 1965-.

1020. Morgan, W.C., Geol. Surv. Can.:
Study of the Ramah Group and of Proterozoic-Archean relationships in northern Labrador, 1971-.

1021. Stauffer, M.R., Reynolds, J., Burnett, A., Univ. Saskatchewan:
Stratigraphy and structure of the Missi Group of Precambrian meta-sedimentary rocks near Flin Flon, Manitoba, 1966-76; M.Sc. theses (Reynolds and Burnett).

1022. Young, F.G., Geol. Surv. Can.:
Stratigraphy of Gog and Cariboo Groups near the Rocky Mountain Trench, McBride area, British Columbia, 1967-.

Cambrian to Silurian

1023. Achab, A., Univ. Québec (INRS Pétrole):
Etude palynostratigraphique de l'ordovicien de l'est du Canada (Anticosti, Basses terres du St Laurent), 1973-.

1024. Aitken, J.D., Geol. Surv. Can.:
Lower Paleozoic stratigraphy, southern Rocky Mountains, 1972-.

1025. Anderson, M.M., Memorial Univ.:
Trace fossils of the Random Formation, and the stratigraphic position of the Random Formation in relation to the Cambrian and Precambrian of southeastern Newfoundland, 1974-76.

Collection of trace fossils in progress, and the nature of the lower and upper boundaries of the formation are being studied.

1026. Anderson, M.M., Edhorn, A-S., Memorial Univ., Brock Univ.:
Fossil algae and other organisms from the Lower and Middle Cambrian of southeastern Newfoundland, 1973-.

To provide a description of the algae present, to establish the nature of the environmental conditions that existed at the time these organisms were living, and to find out whether or not they are of any stratigraphic significance.

1027. Anderson, M.M., Poulsen, V., Memorial Univ., Univ. Copenhagen:
Upper Cambrian olenid faunas of southeastern Newfoundland, 1972-76.

1028. Barnes, C.R., Univ. Waterloo:
Ordovician conodont biostratigraphy and paleoecology, Ontario, Quebec, New York, 1965-.

Ordovician conodont biostratigraphy, Manitoba, 1969-.

Ordovician – Silurian conodont biostratigraphy southern Rocky Mountains, Alberta and British Columbia, 1970-.

Ordovician conodont biostratigraphy, Turkey, 1971-77.

1029. Barnes, C.R., Bergström, S.M., Univ. Waterloo; Ohio State Univ.:
Ordovician conodont biostratigraphy, Spitzbergen, 1972-77.

1030. Barnes, C.R., Nowlan, G.S., Mirza, K., Univ. Waterloo:
Lower Paleozoic conodont biostratigraphy of the Canadian and Greenland Arctic, 1968-; Ph.D. thesis (Nowlan), M.Sc. thesis (Mirza).

1031. Barnes, C.R., Uyeno, T.T., LeFevre, J., Univ. Waterloo, Geol. Surv. Can., Soc. Nat. Pétroles d'Aquitaine:
Ordovician – Silurian conodont biostratigraphy Hudson Bay and Foxe Basins, 1970-76.

1032. Bolton, T.E., Geol. Surv. Can.:
Ordovician and Silurian biostratigraphy Southampton Island, District of Keewatin, and eastern Melville Peninsula, District of Franklin, 1970-.

Silurian – Ordovician macrobiostratigraphy of Anticosti Island, Quebec, 1974-.

See Geology of the central part of Anticosti Island, Quebec; Geol. Surv. Can., Paper 75-1, pt. A, p. 519-523, 1975.

1033. Dean, W.T., Geol. Surv. Can.:
Lower and Middle Paleozoic biostratigraphy Gaspé, Quebec, and Maritime provinces, 1969-.

1034. Donohoe, H.V., Jr., Nova Scotia Dep. Mines:
Cobequid Mountains project, 1974-79.

To synthesize unpublished data from the Geological Survey of Canada with intensive structural and stratigraphic work by Department of Mines personnel in order to understand the metallogenic framework of these pre-Upper Devonian rocks.

1035. Fritz, W.H., Geol. Surv. Can.:
Cambrian biostratigraphy of the Canadian Cordillera, 1965-.

See Broad correlations of some Lower and Middle Cambrian strata in the North American Cordillera; Geol. Surv. Can., Paper 75-1, pt. A, p. 533-540, 1975.

Lower and Early Middle Cambrian formations near Mount Robson, British Columbia and Alberta; Can. J. Earth Sci., v. 12, no. 2, p. 119-133, 1975.

1036. Giles, P.A., Univ. Western Ontario:
Stratigraphy and geochemistry of the Beekmantown Group (Lower Ordovician), southeastern Ontario, 1968-75; Ph.D. thesis.

1037. Hubert, C., Lespérance, P., Lajoie, J., Walters, M., Beaupré, M., Shalaby, H., Beaulieu, J., Univ. Montréal:
Tectonics, stratigraphy and sedimentology of the Cambro-Ordovician rocks in the external domain of the Quebec Appalachians and the St. Lawrence Lowlands, 1972-77.

Biostratigraphy and lithostratigraphy of the Middle and Upper Ordovician. Lorrain flysch in the foothill and thrust-imbricated belts of the Quebec Appalachians in order to define petrographically, the evolution of the Taconian orogen and the time of emplacement of the nappes, present in this sector. Definition of Logan's Line.

1038. Lespérance, P.J., Univ. Montréal:
Trilobites de l'Ordovicien Supérieur au Dévonien Inférieur des Appalaches, des régions limitrophes et des Basses Terres du Saint-Laurent, 1962-.

Voir Stratigraphy and paleontology of the Synphoriidae (Lower and Middle Devonian dalmanitacean trilobites); Paleontol., v. 49, p. 91-137, 1975.

1039. Ludvigsen, R., Univ. Western Ontario:
Paleontology, biostratigraphy and paleoecology of the Sunblood Formation (Ordovician), Mackenzie Mountains, 1972-75; Ph.D. thesis.

1040. Mamet, B., Guilbault, J.-P., Univ. Montréal:
Algues de l'Ordovicien, 1973-75.

1041. Mamet, B., de Heinzelin-Martin, F., Univ. Montréal, Inst. Royal Sci. Naturelles de Belgique:
Acritarches, Chitinozoaires et Hystrichosphères de l'Ordovicien, 1974-77.

1042. Norford, B.S., Geol. Surv. Can.:
Ordovician and Silurian biostratigraphy of British Columbia, Alberta, Yukon, Mackenzie, and Franklin, 1961-.

1043. Pugh, D.C., Geol. Surv. Can.:
Cambrian stratigraphy from western Alberta and northeastern British Columbia, 1972-.

1044. Telford, P.G., Ontario Division of Mines:
Guidebook to geology and scenery of the Niagara Escarpment, 1974-75.

Paleozoic geology of the Galt, Brantford, and Simcoe areas, southern Ontario, 1975-76.

Includes continued study of Silurian and Early Devonian conodonts initiated in the summer of 1974 on the Silurian of Niagara Gorge and Devonian Bois Blanc and Onondaga Formations of the Niagara Peninsula.

1045. Tipnis, R.S., Chatterton, B.D.E., Univ. Alberta:
Biostratigraphy, paleoecology and systematics of Ordovician conodont faunas from the southern Mackenzie Mountains, 1974-76.

Some aspects of this study are expected to throw new light on the paleoecologic and paleobiogeographic affinities of conodont faunas in relation to paleotectonic environments.

1046. Uyeno, T.T., Geol. Surv. Can.:
Conodont biostratigraphy of Upper Ordovician to Devonian rocks of the Arctic Islands, 1968-.

1047. Walters, M., Univ. Montréal:
Middle and Upper Ordovician graptolites from the St. Lawrence Lowlands, 1974-75.

1048. Williams, S.R., Univ. Ottawa:
Stratigraphy and invertebrate faunas of the Silurian Read Bay Formation, Somerset and Prince of Wales Islands, Northwest Territories, 1967-1975; Ph.D. thesis.

1049. Winder, C.G., Univ. Western Ontario:
Paleozoic geology of southern Ontario, 1951-.

Present research is directed toward conodont distribution and the carbonate petrology in the Upper Trenton Group (Ordovician) of Ontario.

Devonian to Permian

1050. Bamber, E.W., Geol. Surv. Can.:
Carboniferous and Permian biostratigraphy and coral faunas, western and northern Canada, 1971-.

1051. Barss, M.S., Geol. Surv. Can.:
Palynological zonation of the Carboniferous and Permian rocks of the Atlantic Provinces, Gulf of St. Lawrence, 1968-.

See Palynological zonation of the Carboniferous and Permian rocks of the Atlantic Provinces; Geol. Surv. Can., Paper 74-1, pt. B, p. 135-136, 1974.

1052. Bourque, P.-A., Ministère des Richesses Naturelles du Québec:
Stratigraphie du Siluro-Devonien du sud-est de la Gaspésie, comté de Bonaventure, 1974-75.

1053. Braun, W.K., Univ. Saskatchewan:
Devonian ostracod faunas and biostratigraphy of western Canada, 1964-76.

1054. Braun, W.K., Featherstone, R., Univ. Saskatchewan:
The Middle Devonian Slave Point Formation of Alberta and adjoining areas, 1974-76; M.Sc. thesis (Featherstone).

1055. Braun, W.K., Matthews, D., Univ. Saskatchewan:
The Upper Devonian Nisku Formation of southeastern Alberta, 1973-75; M.Sc. thesis (Matthews).

1056. Danner, W.R., Univ. British Columbia:
Late Paleozoic rocks of southwestern and south central British Columbia and their relation to the plate tectonic history of the region, 1967-.

Studies indicating that the western and Central cordilleran regions of British Columbia and adjacent parts of Alaska and the United States consist of separate plates which evolved in different parts of the Pacific Basin and joined on to North America in Mesozoic time.

1057. Ferguson, L., Mount Allison Univ.:
A stratigraphic and faunal study of the Permo-Pennsylvanian of north-central Ellesmere Island, Northwest Territories, 1961-78.

1058. Giles, P.S., Nova Scotia Dep. Mines:
Windsor Group, Lower Mississippian stratigraphy and paleogeography, 1974-79.

Utilize petrographic techniques, palaeontology and micropalaeontology and whole-rock geochemistry, in order to provide the most objective means possible for delineating and defining favourable lithostratigraphic units and/or areas for mineral exploration.

1059. Klovan, J.E., Embry III, A.F., Univ. Calgary:
Devonian stratigraphy of Canadian Arctic Islands, 1972-75; Ph.D. thesis (Embry).

1060. Lenz, A.C., Univ. Western Ontario:
Lower and Middle Paleozoic faunas, biostratigraphy and paleoecology of the northern Canadian Cordillera, 1968-76.

See Evolution in *Monograptus priodon*; Lethaia, v. 7, no. 4, p. 265-272, 1974.

1061. Lespérance, P.J., Ministère des Richesses Naturelles du Quebec, Univ. Montréal:
Stratigraphie des calcaires supérieurs de Gaspé au nord-est de la Péninsule, 1974-75.

Stratigraphie des Calcaires de Gaspé, Québec, 1967-.

Les Formations de "Cap Bon Ami" et de "Grande Grève" on été étudiées dans le cadre de ce projet. Ces études se veulent lithostratigraphiques et biostratigraphies, mais d'autres aspects seront couverts:
(1) paléontologie des Trilobites;
(2) paléontologie des Brachiopodes, en collaboration avec P.M. Sheehan (attaché de recherche, Univ. Montréal);
(3) écologie de ces strates (aven la collaboration de P.M. Sheehan).

1062. Macqueen, R.W., Geol. Surv. Can.:
Mississippian physical stratigraphy, sedimentology and correlation, British Columbia and Alberta, 1963-.

1063. Mamet, B., Roux, A., Univ. Montréal:
Algues de Carbonifère, 1970-.

1064. McCabe, H.R., Norris, A.W., Uyeno, T.T., Manitoba Mines Branch, Geol. Surv. Can.:
Devonian geology of southwestern Manitoba, 1970-75.

1065. McGregor, D.C., Geol. Surv. Can.:
Biostratigraphy study of Paleozoic palynomorphs of Arctic Islands, 1968-.

1066. Monger, J.W., Geol. Surv. Can.:
Upper Paleozoic rocks of Western Canadian Cordillera, 1972-.

See The takla Group near Dewar Peak, McConnell Creek map-area (94D), British Columbia; Geol. Surv. Can., Paper 74-1, pt. B, p. 29-30, 1974.

Operation Saint Elias, Yukon Territory: The Mush Lake Group and Permo-Triassic rocks in the Kluane Ranges; Geol. Surv. Can., Paper 75-1, pt. A, p. 55-59, 1975.

1067. Nassichuk, W.W., Geol. Surv. Can.:
Permian biostratigraphy, northern British Columbia and northern Yukon, 1968-.

Stratigraphy and paleontology of Upper Paleozoic rocks on parts of Ellesmere and Axel Heiberg Islands, District of Franklin, 1968-.

See Carboniferous ammonoids and stratigraphy on the Canadian Arctic Archipelago; Geol. Surv. Can., Bull. 237, 1975.

1068. Norris, A.W., Geol. Surv. Can.:
Devonian biostratigraphy of Lake Manitoba-Lake Winnipegosis region, 1964-.

Devonian biostratigraphy of northern Yukon Territory and adjacent District of Mackenzie, 1970-.

1069. Pedder, A.E.H., Geol. Surv. Can.:
Devonian biostratigraphy, western and northern Canada, 1968-.

See Revised megafossil zonation of Middle and lowest Upper Devonian strata, central Mackenzie Valley; Geol. Surv. Can., Paper 75-1, pt. A, p. 571-576, 1975.

1070. Perry, G.D., Univ. Western Ontario:
Upper Silurian and Lower Devonian paleontology and biostratigraphy of Delorme Formation, Mackenzie Mountains, 1971-74; Ph.D. thesis.

See Age of the Ogilvie Formation (Devonian), northern Yukon: based primarily on the occurrence of brachiopods and conodonts; Can. J. Earth Sci., v. 11, p. 1055-1097, 1974.

1071. Sweet, A.R., Geol. Surv. Can.:
Palynological studies of Upper Jurassic and Cretaceous coal measures in western Canada, British Columbia and Alberta, 1971-.

1072. Tranchant, J-C., Geol. Surv. Can.:
Middle Devonian lithostratigraphy of Zania and Rainbow areas, Elk Point Basin, northern Alberta, 1974-.

1073. Trettin, H.P., Geol. Surv. Can.:
Stratigraphy, structure, and carbonate petrography of the Marble Canyon Formation (Permian) in the Marble Range, Cariboo District, British Columbia, 1967-.

1074. Utting, J., Univ. Québec (INRS-Pétrole):
Palynology and stratigraphy of Karroo rocks of Zambia, Africa, 1966-.

Most of the stratigraphic work carried out so far has been in the northern and middle part of the Luangwa Valley, Zambia. Detailed palynological investigations have been carried out on Permo/Carb. and lower Permian (coal bearing) sediments. Work is now in progress on Upper Permian samples collected from localities famous for their mammal like reptile fossils.

1075. Uyeno, T.T., Geol. Surv. Can.:
Conodont biostratigraphy of Middle and Upper Devonian strata of southern and central Manitoba, 1967-.

1076. Ward, D.M., Univ. British Columbia:
Stratigraphy, structure and paleoenvironment of the Upper Paleozoic "Cache Creeks" rocks of the Vernon-Monashee Pass area, south-central British Columbia, 1974-78; Ph.D. thesis.

Mesozoic

1077. Ascoli, P., Geol. Surv. Can.:
Biostratigraphic zonation (Foraminifera) of the Mesozoic and Cenozoic rocks of the Atlantic Shelf, 1971-.

See Biostratigraphic zonation (Foraminifera and Ostracoda) of the Mesozoic and Cenozoic rocks of the Atlantic Shelf; Geol. Surv. Can., Paper 74-1, pt. B, p. 132-135, 1974.

1078. Brookfield, M.E., Univ. Guelph:
Stratigraphy, palaeontology and structure of the Jurassic rocks of Harrison Lake, British Columbia, 1970-.

Relationship of tectonic development to recent island arc models.

1079. Caldwell, W.G.E., North, B.R., McNeil, D.H., Wright, C.E., McKellar, R.G., Seo, H.Y., Lee, D.G., Univ. Saskatchewan:
Biostratigraphic studies in western Canada, 1960-.

Recent attention has been focussed on the Cretaceous System in the eastern Interior Plains with a view to establishing a zonal scheme based on Foraminifera, to correlating the rocks with those better exposed and more intensively studied in the Western Interior of the United States, to delineating unconformities, which account in part for the thinness of the Cretaceous rocks in the eastern plains, and to assessing the proportions of Boreal and Gulfian elements in the faunas as an aid to biogeographical and palaeogeographical reconstruction.

1080. Chamney, T.P., Geol. Surv. Can.:
Lower Cretaceous (Albian) stratigraphy of Peel and Snake Rivers, Yukon Territory, 1963-.

Foraminiferal zonation of the Mesozoic and lower Cenozoic rocks of the Mackenzie Delta and adjacent Arctic Coastal Plain, 1970-.

1081. Fensome, R.A., Univ. Saskatchewan:
Palynology of the Middle and Upper Jurassic of Jameson Land and Bah Brewster, Greenland, 1973-77; thesis.

1082. Gibson, D.W., Geol. Surv. Can.:
Stratigraphic and sedimentological studies of the Edmonton Group, between Ardley and Dorothy, on Red Deer River, Alberta, 1973-.

1083. Gradstein, F.M., Geol. Surv. Can.:
Biostratigraphic history of the Mesozoic and Cenozoic sediments of the Grand Banks, Newfoundland and Labrador Shelves (based on Foraminifera and Ostracoda), 1974-.

See Stratigraphy of the Amoco IOE A-1 Puffin B-90 well, Grand Banks of Newfoundland; Geol. Surv. Can., Paper 74-61, 1974.

1084. Gordon, W.A., Univ. Regina:
Mesozoic paleobiogeography, 1970-.

See Physical controls on marine biotic distribution in the Jurassic Period; Soc. Econ. Paleont. Min., Sp. Publ. 21, p. 136-147, 1974.

1085. Hall, R.L., Westermann, G.E.G., McMaster Univ.:
Middle Bajocian ammonite faunas of the western Americas, 1970-75; Ph.D. thesis (Hall).

Involves revision of the Middle Bajocian ammonite faunas of the Queen Charlotte Islands, mainland British Columbia and Alberta with particular attention to sexual dimorphism. Faunal and biochronological comparisons with similar faunas from southern Alaska, western United States and South America are also proposed.

1086. Harker, S.D., Univ. Saskatchewan:
A comparison of Campanian dinoflagellate assemblages of the Interior Plains of Canada and the Gulf Coast of the United States; Ph.D. thesis.

1087. Hopkins, W.S., Jr., Geol. Surv. Can.:
Mesozoic palynology and biostratigraphy, Arctic Islands, 1968-.

1088. Jeletzky, J.A., Geol. Surv. Can.:
Cretaceous and uppermost Jurassic biostratigraphy of western Cordillera, 1967-.

See Contributions to the Jurassic and Cretaceous geology of northern Yukon Territory and District of Mackenzie, Northwest Territories; Geol. Surv. Can., Paper 74-10, 1974.

1089. Jenkins, W.A., Geol. Surv. Can.:
Biostratigraphic history of the Mesozoic and Cenozoic sediments of the Grand Banks, Newfoundland and Labrador Shelves (based on palynology), 1974-.

See Stratigraphy of the Amoco IOE A-1 Puffin B-90 well, Grand Banks of Newfoundland; Geol. Surv. Can., Paper 74-61, 1974.

1090. Johnston, P.F., Univ. Saskatchewan:
Jurassic microfaunas and biostraigraphy of the Arctic Islands, Canada, 1974-76; Ph.D. thesis.

1091. Langhus, B.G., Kapp, U.S., Gulf Oil Canada Ltd.:
Mesozoic and Teritary biostratigraphy, Mackenzie Delta, Northwest Territories, 1970-.

1092. Legault, J.A., Caldwell, W.G.E., North, B.R., Univ. Saskatchewan:
Stratigraphy, micropaleontology and palynology of the Turtle Mountain Formation, 1972-75.

The Turtle Mountain Formation, exposed only at Turtle Mountain in Manitoba, is poorly fossiliferous, but it has yielded a sufficient number of foraminifers and palynomorphs to suggest a latest Cretaceous (latest Maestrichtian) and possible earliest Paleocene age. The microfossils are being investigated with a view to relating the Turtle Mountain Formation to its surrounding time-equivalents and to reconstructing more accurately the environments of sedimentation.

1093. Sarjeant, W.A.S., Univ. Saskatchewan:
Study of the stratigraphical distribution and significance of dinoflagellate cysts and acritarchs in the Jurassic and Cretaceous, 1953-.

See The classification of dinoflagellate cysts above generic level; a discussion and revisions; Birbal Sahni Inst. Palaeobotany, Sp. Publ. no. 3, p. 9-32, 1974.

Current investigations in this long-term project include:

(1) Completion of work on assemblages from English and Scottish Middle and Upper Jurassic localities, with a view to establishing a firm basis for stratigraphical correlation; and
(2) Examination of material from the Upper Jurassic and Lower Cretaceous of Iran, Sicily, Tunisia, and Algeria.

1094. Singh, C., Alberta Research Council:
Late Cretaceous-Tertiary microfloras, west-central Alberta, 1970-76.

Palynological study of the coal-bearing Late Cretaceous strata in the Red Deer River Valley, Alberta, 1973-.

Approximately 340 samples out of 658 samples collected last year from the coal-bearing strata of the Edmonton Group and Scollard Member of the Paskapoo Formation have been processed. A rich and varied microflora has been

recovered from the carbonaceous shales associated with coal seams. The recovery from the shale and laminated siltstone samples is also good. However, the coal itself contains a very limited and sparse microflora. It is hoped that the carbonaceous shales lying above and below or intercalated with the coal seams will provide the distinguishing qualitative and microfloral characteristics of the individual coal seams.

Cenomanian-Turonian microfloras of the Peace River district, Alberta, 1969-76.

The processing of 165 outcrop and 238 subsurface samples collected from the upper Shaftesbury, Dunvegan and lower Kaskapau Formations (spanning the interval between the "Fish Scale" Marker Bed and the Second White Speckled Shale) in the Peace River district of northwestern Alberta has been completed. The major qualitative changes which characterize the recovered microfloral assemblage and distinguish it from the underlying Albian microflora are as follows:

(1) Introduction of angiosperm permanent tetrads e.g. *Dicotetradites* and *Artiopollis;*
(2) First appearance of large tricolporate angiosperm pollen with reticulate or tegillate exines;
(3) Presence of numerous species belonging to typical Cenomanian megaspore genera, e.g. *Ariadnaesporites* and *Molaspora;* and
(4) Entrance of numerous species of microplankton in the upper Shaftesbury Formation (above the "Fish Scale" Marker Bed) that characterize the basal Cenomanian strata in Europe.

1095. Stelck, C.R., Hedinger, A., Univ. Alberta:
Foraminiferal studies of the Sully Formation, northeastern British Columbia, 1973-75; M.Sc. thesis (Hedinger).

An endemic microfauna is present in the Cretaceous Sully Shale of northeastern British Columbia of much greater variety than found elsewhere within the Mowry Seaway. The fauna is apparently entirely arenaceous but not shallow water in aspect.

1096. Wade, J.A., Geol. Surv. Can.:
Regional subsurface geology of Mesozoic and Cenozoic rocks of the Atlantic Continental Shelf, 1972-.

See Regioal geology of the Mesozoic-Cenozoic sediments off Nova Scotia and Newfoundland; Geol. Surv. Can., Paper 74-1, pt. B, 1974, p. 147-149, 1974.

1097. Wall, H.G., Geol. Surv. Can.:
Reconnaissance of Mesozoic Foraminifera of Arctic Islands, 1972-.

1098. Westermann, G.E.G., McMaster Univ.:
Bajocian ammonites of Tethyan affinities in Kenya and implications to plate tectonics, 1973-74.

Abundant occurrences of phylloceratids and lytoceratids indicate proximity of deep Tethys, so that Madagascar cannot have been situated here as shown in many reconstructions of Gondwanaland. The Mozambique location of Madascar proposed most recently by geophysicists and geologists is consistent with the fossil record.

1099. Williams, G.L., Geol. Surv. Can.:
Biostratigraphic zonation (Palynology) of the Mesozoic and Cenozoic rocks of the Atlantic Shelf, 1971-.

See Biostratigraphy and paleoecology of the Mesozoic and Cenozoic rocks of the Atlantic Shelf; Geol. Surv. Can., Paper 74-1, pt. B, p. 150-152, 1974.

Stratigraphy of the Shell Naskapi N-30 well, Scotian Shelf, eastern Canada; Geol Surv. Can., Paper 74-50, 1974.

1100. Wilson, M.A., Univ. Saskatchewan:
The determination of the Cretaceous/Tertiary boundary from material collected in the Mackenzie Delta and Fish Creek area (west of the Delta) using palynomorphs, 1972-75; M.Sc. thesis.

Cenozoic

1101. Andretsch, A.P., Reed, R., Sabry, H., Poelth, F., Shell Canada Ltd.:
Biostratigraphy group-palynology.

Andretsch and Reed are actively involved with Mackenzie delta palynology. Poelth continues his studies of the East Coast offshore. Sabry has recently completed a detailed study of the Gulf of St. Lawrence and is presently initiating a new project in the Northwest Territories.

1102. Bradford, M.R., Univ. Saskatchewan:
Distribution and paleoecology of recent dinoflagellate cysts: with special reference to the Persian Gulf and Arabian Sea sediments, 1971-75; Ph.D. thesis.

Relation of Recent dinoflagellate cysts to:

(1) Sediment type; distribution of cysts in sands, silts, clays, carbonate muds etc.; and
(2) Geochemistry of sediment; organic carbon phosphorous, manganese content etc.; and
(3) Physical parameters of habitat medium; temperature, salinity, ocean currents, water depth, etc.

1103. Cameron, B.E.B., Geol. Surv. Can.:
Tertiary foraminiferal succession of Western Cordillera and Pacific Margin, 1969-.

See Geology of the Tertiary rocks north of latitude 49°, west coast of Vancouver Island; Geol. Surv. Can., Paper 75-1, pt. A, p. 17-19, 1975.

1104. Liskiw, K., Grey, R., Shell Canada Ltd.:
Biostratigraphy group – micropaleontology.

Present studies are concentrating on the biostratigraphic framework of the East Coast offshore and the Mackenzie delta.

1105. Matthews, J.V., Jr., Geol. Surv. Can.:
Quaternary fossil insects and paleoecology, 1973-.

General

1106. Howie, R.D., Geol. Surv. Can.:
Subsurface geology of the Paleozoic basins of eastern Canada, 1971-.

See Compilation of geoscientific data in the Paleozoic basins of eastern Canada; Geol. Surv. Can., Paper 74-1, pt. B, p. 139-140, 1974.

1107. Souaya, F.J., Gulf Oil Canada Ltd.:
Biostratigraphy of Sun-Gulf-Global Linckens Island P-46, 1973-75.

1108. Stearn, C.W., Scoffin, T.P., MacGeachy, K., Hunter, I., Martindale, W., McGill Univ. Edinburgh Univ.:
Studies in the carbonate budget of the Bellairs Reef, Barbados, 1973-; theses.

Involves:

1) growth rate of the major corals;
2) contributions to reef growth of encrusting organisms (mainly algae);
3) bioerosion by boring organisms in hard tissue;
4) production of sand and dispersal from the reef; and
5) bioerosion by grazing of sea urchins, etc.

STRUCTURAL GEOLOGY AND TECTONICS

Alberta

1109. Babcock, E.A., Univ. Alberta:
Structural geology and tectonic framework of the Athabasca Oil Sands region, 1974-76.

1110. Bielenstein, H.U., Hughes, B., Mines Branch, E.M.R., Univ. Alberta:
Structure of the Cascade coal basin, Alberta, 1970-75.

1111. Mountjoy, E.W., McGill Univ.:
Structure and geology of Canadian Rocky Mountains between 52 and 54 degrees North latitude, Alberta, 1973-.

1112. Spang, J.H., Univ. Calgary:
Mechanical behavior of the thrust plates in the Front Ranges of the Rocky Mountains, 1971-.

A preliminary study has revealed that the rocks above and below the fault plane are locally highly deformed as is indicated by the presence of small scale folds and faults. The presence of these structures implies that there was considerable friction along the fault surface. On a regional scale dynamic and kinematic analyses of the small scale features will yield much information about the mechanical origin of the major overthrust faults. Dynamic anlaysis of the calcite and dolomite in the competent stress bearing units in the thrust plates will give important information about the mechanisms of emplacement of the over-thrust faults. A preliminary analysis has indicated that the competent units have been compressed parallel to the transport direction. This information supports the hypothesis that the overthrusts did not slide down hill under the influence of gravity. On a regional scale the orientations of the principal stresses and strains should yield information which explains the fanning of the leading edges of some of the overthrusts.

British Columbia

1113. Brookfield, M.E., Univ. Guelph:
Stratigraphy, palaeontology and structure of the Jurassic rocks of Harrison Lake, British Columbia, 1970-.

1114. Brown, R.L., Carleton Univ.:
Structural evolution of the northern Selkirk Mountains (Big Bend), British Columbia, 1973-76.

1115. Campbell, R.B., Geol. Surv. Can.:
Geology of the Cariboo Mountains, British Columbia, 1968-.

1116. Ghent, E.D., Simony, P.S., Perry, J., Robbins, D., Univ. Calgary:
Metamorphic and structural evolution of a portion of the Southern Canoe River area, British Columbia, 1973-76; M.Sc. theses (Perry, Robbins).

Stratigraphy and structure of Hadrynian rocks progressively being worked out. Three phases of folding are recognized and the timing of Barrowan metamorphism to these fold phases is being worked out. The complex geometry of the isogradic surfaces and the metamorphic reactions in the vicinity of these surfaces are being investigated. Migmatite and pegmatite appears between the kyanite and sillimanite isograds. Its genesis is being investigated.

1117. Simony, P.S., Univ. Calgary:
Relation of gneisses to sediments and volcanics near Trail, British Columbia, 1974-76.

Gneisses of Shuswap type are found in contact with late Paleozoic clastic sedimentary rocks and Jurassic volcanics and sediments; in most localities the contact is a fault but in zone north of Trail the contact appears to be a sheared unconformity. The nature of the contact, the stratigraphy of the supracrustal rocks and the complex history of the gneisses is under investigation.

1118. Taylor, G.C., Geol. Surv. Can.:
Operation Liard, 1963-.

See Facies changes, breccias, and mineralization in Devonian rocks of Rocky Mountains, northeastern British Columbia (94 B, G, K, N); Geol. Surv. Can., Paper 75-1, pt. A, p. 577-585, 1975.

1119. Wynne-Edwards, H.R., Griffiths, J.R., Univ. British Columbia:
Evolution of the Canadian Cordillera in relation to plate tectonics, 1974-.

Using space-time plots as a means of interrelating tectonic, depositinac, plutonic, volcanic, metamorphic and metallogenic events, the southern part of the Canadian cordillera is being compared with a variety of possible plate tectonic models. The study is expected to pose as many questions as it answers, with the primary objective of identifying gaps in the interpretation that could be resolved by detailed areal, structural, isotopic, petrological on geochemical study.

Manitoba

1120. Brisbin, W.C., Brown, B., Univ. Manitoba:
Gravity and structural studies in Manitoba and northwestern Ontario, 1974-.; Ph.D. thesis (Brown).

Investigations of the deformational history in Superior Province greenstone belts have identified pre, syn-, and post-diapiric granite emplacement folding followed by several brittle deformational events. Pre-intrusive deformation is interpreted to be flexural, with layering surfaces active; syn-diapiric deformation has led to the development of a penetrative foliation which is a consequence of sub-horizontal compressive, and sub-vertical extensive strain. Folding developed during this event is passive and due to heterogeneous pure and simple shear. Post-intrusive folding is flexural on the pentrative foliation. At least 3 periods of faulting follow these events. Variations in the character and amount of finite strain interpreted to accompany the diapirism are now being investigated. The results of gravity surveys over diapiric bodies and adjacent greenstone masses provide dimensional limits within which the bulk strain has taken place.

1121. Davison, W.L., Geol. Surv. Can.:
Geological investigation across the boundary between the Churchill and Superior tectonic provinces, 1963-.

1122. McRitchie, W.D., Baldwin, D.A., Zwanzig, H.V., Frohlinger, T.G., Manitoba Mines Branch:
Burntwood project, Manitoba, 1971-75; Ph.D. theses (Baldwin, Frohlinger).

Russell Lake project, Manitoba, 1974-76.

See The Sickle-Wasekwan Debate: A review; Manitoba Mines Branch Geol. Paper 1/74, 1974.

Regional setting of Kisseynew metasedimentary gneiss belt, Lynn Lake and Flin Flon greenstone belts in context of Proterozoic crustal evolution and environments of mineralization with stratigraphic, structural and petrological studies on the north flank of the gneiss belt.

1123. Stauffer, M.R., Reynolds, J., Brunett, A., Univ. Saskatchewan:
Stratigraphy and structure of the Missi Group of Precambrian meta-sedimentary rocks near Flin Flon, Manitoba, 1966-76; M.Sc. theses (Reynolds and Burnett).

New Brunswick

1124. Lajtai, E. Z., Univ. New Brunswick:
Mechanisms of deformation and fracture, 1971-.

Part of investigations into the formation of faults and joints is complete. Research continues on influence of residual stress and the nature of ductile fracture.

1125. Stringer, P., Univ. New Brunswick:
Analysis of polyphase deformation and correlation of phases in selected areas of New Brunswick and eastern Maine, 1971-75.

See Recent advances and the interpretation of geological structure of New Brunswick; Geoscience Canada, v. 1, no. 4, p. 15-25, 1974.

Acadian slaty cleavage is noncoplanar with axial surfaces of associated folds in Upper Ordovician, Silurian and Lower Devonian sediments in several regions of the northern Appalachians, particularly northeast and southwest New Brunswick and eastern Maine. Shortening due to folding and shortening due to compression producing the noncoplanar cleavage can be distinguished. A possible origin of the noncoplanar structures due to decollement of folded Silurian sediments upon Ordovician basement is being investigated in northeast New Brunswick.

Newfoundland

1126. Brown, P. A., Chorlton, L. B., Kennedy, M. J., Memorial Univ.:
Structural and stratigraphic studies in southwestern Newfoundland, 1972-77; Ph. D. theses (Brown, Chorlton).

Delineation of deformed belts of different ages their internal stratigraphy, structure and interrelationships and their bearing on development of the Appalachian belt.

1127. Kennedy, M. J., Blackwood, R. F., Memorial Univ.:
Geologic relationships within and bordering the eastern Crystalline Belt (Gander zone) of Newfoundland, 1973-76; M. Sc. thesis (Blackwood).

1128. Malpas, J., Memorial Univ.:
Geochemical study of ophiolite suites in Newfoundland. Proposed study of ocean floor rocks from Trans-Atlantic Geotraverse, 1972-75.

1129. Neale, E. R. W., Williams, H., Kennedy, M. J., Memorial Univ.:
Tectonostratigraphic division of the Canadian Appalachian region, 1970-80.

See The northeastward termination of the Appalachian Orogen; Ocean Basins and Margins, v. 2, chapter 4, p. 79-123, Plenum Press, New York, 1974.

1130. Neale, E. R. W., Upadhyay, H. D., Memorial Univ., Northeastern Illinois Univ.:
Post-ophiolite sedimentation and volcanism in Newfoundland Appalachians, 1973-78.

A study of the tectonic setting, sedimentation pattern and volcanic petrology of the Old Red sandstone equivalents in Newfoundland. The Cape St. John Group has once again been recognized as a Silurian, post-ophiolite sequence and is no longer interpreted as an upper member of the Ordovician and older Fleur de Lys Supergroup.

1131. Williams, H., Memorial Univ.:
The definition and nomenclature of transported rock groups in western Newfoundland, 1970-74.

1132. Williams, H., Hibbard, J., Memorial Univ.:
The Dunnage Melange and its relationships to nearby groups, 1974-76.

1133. Williams, H., Payne, J. G., Memorial Univ.:
The Twillingate Granite and its relationships to nearby groups, 1972-74.

Northwest Territories

1134. Balkwill, H. R., Geol. Surv. Can.:
Structure and stratigraphy, Ringnes Island and nearby smaller islands, District of Franklin, 1971-.

1135. Charlesworth, H. A. K., Lambert, R. St. J., Hodgson, G., Univ. Alberta:
Structure of the Giant Yellowknife ore body, Northwest Territories, 1972-75; M. Sc. thesis (Hodgson).

1136. Davies, G. R., Geol. Surv. Can.:
Northern basin analysis program: Viscount Melville Sound map-area, District of Franklin, 1971-.

Northern basin analysis program: Lancaster Sound map-area, District of Franklin, 1971-.

Northern basin analysis program: Eureka Sound map-area, District of Franklin, 1972-.

1137. Dyke, L.D., Geol. Surv. Can.:
Comparative study of Campbell Barn, White and Romanzof uplifts, 1973-.

See Structural investigations in Campbell uplift, District of Mackenzie; Geol. Surv. Can., Paper 75-1, pt. A, p. 525-532, 1975.

1138. Eade, K.E., Geol. Surv. Can.:
Structural and stratigraphic study of the Precambrian rocks of southwestern Keewatin, Northwest Territories, 1968-.

1139. Fyson, W.K., Univ. Ottawa:
Structural studies in Archean rocks of the Slave Province, Ross Lake area, Northwest Territories, 1971-75.

1140. Lambert, R.St.J., Univ. Alberta:
Geotectonics of the Canadian Arctic continental shelf, 1972-76.

1141. MacKenzie, W.S., Geol. Surv. Can.:
Northern basin analysis program: Bear River map-area (Paleozoic part), District of Mackenzie, 1971-.

See Lower Paleozoic carbonates C.D.R. Tenlen Lake A-73 well, Northwest Territories; Geol. Surv. Can., Paper 74-1, pt. B, p. 265-270, 1974.

1142. Meijer-Drees, N.C., Geol. Surv. Can.:
Northern basin analysis program: Redstone River map-area, District of Mackenzie, 1971-.

See Geology of the "Bulmer Lake High", a gravity feature in the southern Great Bear Plain, District of Mackenzie; Geol. Surv. Can., Paper 74-1, pt. B, p. 274-277, 1974.

1143. Roy, K.J., Geol. Surv. Can.:
Northern basin analysis program: Belcher Channel map-area, District of Franklin, 1971-.

See Mound-like carbonate rocks of Early Cretaceous (Albian) age adjacent to Hoodoo Dome, Ellef Ringnes Island, District of Franklin; Geol. Surv. Can., Paper 75-1, pt. A, p. 565-569, 1975.

Northern basin analysis program: Ballantyne Strait map-area, District of Franklin, 1971-.

1144. Williams, G.K., Geol. Surv. Can.:
Northern basin analysis program: Slave River map-area, District of Mackenzie, 1971-.

See Lower Paleozoic, Slave River map-area, District of Mackenzie NTS 85; Geol. Surv. Can., Paper 74-1, pt. B, p. 287-290, 1974.

Devonian metalliferous shales, Pine Point region, District of Mackenzie; Geol. Surv. Can., Paper 75-1, pt. A, p. 553-556, 1975.

1145. Wilson, D.G., Geol. Surv. Can.:
Northern basin analyses program: Jones Sound map-area, District of Franklin, 1971-.

1146. Yorath, C.J., Geol. Surv. Can.:
Northern basin analysis program: Horton River map-area, District of Mackenzie, 1971-.

Northern basin analysis program: Firth River map-area, District of Mackenzie and Yukon Territory, 1971-.

1147. Young, F.G., Geol. Surv. Can.:
Northern basin analysis program: Peel River map-area, District of Mackenzie and Yukon Territory, 1971-.

Nova Scotia

1148. Keppie, J.D., Nova Scotia Dep. Mines:
Structural model for Saddle Reef gold veins in Nova Scotia, 1974-75.

Tectonic and metamorphic maps of Nova Scotia, 1974-79.

Ontario

1149. Carnevali, J., Appleyard, E.C., Roberts, R.G., Univ. Waterloo:
Structural studies in the Timmins-Porcupine area, Ontario, 1974-75; M.Sc. thesis (Carnevali).

1150. Clifford, P.M., Gower, C.F., McMaster Univ.:
Petrogenesis, tectonic evolution of Archaean gneisses and associated plutons, near Kenora in the English River gneiss belt, northwestern Ontario, 1974-77; Ph.D. thesis (Gower).

1151. Clifford, P.M., Wallace, P.I., McMaster Univ.:
State of deformation in Archaean supracrustal rocks, Upper Manitou Lake, northwestern Ontario, 1973-75; M.Sc. thesis (Wallace).

1152. Clifford, P.M., Westerman, C.J., McMaster Univ.:
Tectonic evolution of the English River gneiss belt at Cedar Lake, northwestern Ontario, 1973-77; Ph.D. thesis (Westerman).

1153. Currie, J.B., Univ. Toronto:
Midwest Superior Geotraverse: metamorphism structural geometry and paleostrain analysis, 1973-76.

1154. Francoeur, D., Baer, A.J., Univ. Ottawa:
Petrographic and structural evolution in Glamorgan and Monmouth Townships, Grenville Province of Ontario, 1973-75; M.Sc. thesis (Francoeur).

Examination of leucocratic phases in migmatites allows one to distinguish five phases of granitic rocks and three phases of deformation.

1155. Kehlenbeck, M.M., Lakehead Univ.:
Tectonic evolution of part of the Quetico belt, Ontario, 1972-80.

Entails a crustal section from Thunder Bay northwards to Armstrong, Ontario.

1156. Mitchell, S.L., Appleyard, E.C., Univ. Waterloo:
Structure and petrology of the Bentley-Siddon Lakes area, Bancroft, Ontario, Canada, with special reference to rocks of alkaline affinity, 1972-75; M.Sc. thesis (Mitchell).

1157. Rivers, C., Univ. Ottawa:
Structures and textures in metamorphic rocks of the Grenville Province, Ompah area, Ontario, 1972-75; Ph.D. thesis.

1158. Rousell, D.H., Everitt, R.A., Laurentian Univ.:
Fracture and lineament analysis of Sudbury basin rocks, 1974-76; M.Sc. thesis (Everett).

1159. Schwerdtner, W.M., Univ. Toronto:
Structural evolution of greenstone belts and emplacement of granitic batholiths in Superior geotraverse region, northwestern Ontario, 1972-78.

1160. Schwerdtner, W.M., Grunsky, E., Themistocleous, S., Univ. Toronto:
Strain distribution in belts of mylonitic rocks, 1973-76.

Use of feldspar porphyroclasts as indicators of paleodisplacement and strain.

1161. Schwerdtner, W.M., Mitchell, S., Univ. Toronto:
Regional fold patterns in Muskoka-Georgian Bay region, Ontario, 1968-; Ph.D. thesis (Mitchell).

See Polycrystalline pseudomorphs as natural gauges of incremental paleostrain; N. JC. Miner, Mh. Jg. H. 314, p. 174-182, 1974.

1162. Stott, G.M., Appleyard, E.C., Univ. Waterloo:
A structural and petrological study of the migmatite terrain near the margin of the Grenville Supergroup in the Radcliffe Township area, Renfrew County, Ontario, 1974-75; M.Sc. thesis (Stott).

Quebec

1163. Archambault, G., Université du Québec à Chicoutimi:
Influence de la structure et du champ des contraintes tectoniques sur la mise en place de la minéralisation dans la région de Chibougamau, Province de Québec, 1973-.

La mise en place de plusieurs gisements dans la région de Chibougamau est contrôlée par la structure géologique. Le gisement Henderson-Portage qui se situe dans une zone de cisaillement démontre bien ce contrôle structural. La présente étude, qui porte ce gisement, nous permettra d'élaborer un modèle géomécanique qui pourra être généralisé par la suite pour la région. Les renseignements qu'on peut tirer d'un tel modèle pourront être utilisés pour la définition de certains critères de prospection.

1164. Fyson, W.K., Univ. Ottawa:
Relationship of small-scale to large-scale structures in Paleozoic rocks, Gaspé Peninsula, and Eastern Townships, 1964-.

1165. Hubert, C., Lespérance, P., Lajoie, J., Walters, M., Beaupré, M., Shalaby, H., Beaulieu, J., Univ. Montréal:
Tectonics, stratigraphy and sedimentology of the Cambro-Ordovician rocks in the external domain of the Quebec Appalachians and the St. Lawrence Lowlands, 1972-77.

1166. Ravnal, M., Baer, A.J., Univ. Ottawa:
Structure and metamorphism of the southern part of Calumet Island, 1973-76; Ph.D. thesis (Ravnal).

1167. Roy, D.W., Université du Québec à Chicoutimi:
Origin and evolution of the Charlevoix crypto-explosion structure, 1968-75.

See Paleomagnetism of Anorthosite in and around the Charlevoix crypto-explosion structure, Quebec; Can. J. Earth Sci., v. 11, p. 854-859, 1974.

1168. Vallières, A., Ministère des Richesses Naturelles du Québec; Univ. Laval:
Relations structurales et lithostratigraphiques du Cambro-Ordovicien dans le comté de Rivière-du-Loup, 1974-75; thèse du doctorat.

Saskatchewan

1169. Pearson, D.E., British Columbia Dep. Mines Petrol. Resources:
Structural and metamorphic geology of the Precambrian shield of Saskatchewan, 1972.

See Large-scale fold interference structures in the Mudjatik River area of northern Saskatchewan; Can. J. Earth Sci., v. 11, no. 5, p. 619-634, 1974.

1170. Schwerdtner, W.M., Ashton, K.E., Univ. Toronto:
Sillimantic fabrics in metasedimentary rocks of northern Saskatchewan, 1970-76.

Involves a study of sillimanite modules, veins, lenses and partings in meta-arkoses and similar clastic rocks, including an analysis of sillimanite lineation. These structural features are wide-spread in the Wollaston Lake and Lac La Rouge fold belts.

Yukon Territory

1171. Tempelman-Kluit, D.J., Geol. Surv. Can.:
Stratigraphy, structure, and metallogeny of Pelly Mountains and Yukon Plateau, Yukon Territory, 1973-.

See Stratigraphic and structural studies in the Pelly Mountains, Yukon Territory; Geol. Surv. Can., Paper 75-1, pt. A, p. 45-48, 1975.

General

1172. Brown, R.L., Carleton Univ.:
Analysis of rock fabrics, 1970-.

1173. Dixon, J.M., Queen's Univ.:
Experimental model and field studies of finite strain and progressive deformation in large and small-scale geologic structures, 1974-77.

Project involves the construction of scale models of geologic structures of materials such as plasticene and silicone putty, and their deformation in pure shear and simple shear squeeze boxes as well as in a large-capacity centrifuge. Small scale structures such as folds and boudins are studied with a view to determining the deformation history of small elemental volumes of rock around the structures. This data is applied to the interpretation of the structural relationships produced in models of crustal structures such as mountain chains, igneous batholiths and thrust belts. Gravity plays an important role in the development of these structures, and models of them are therefore deformed in a centrifuge to simulate the action of the gravitational body force.

1174. Fyson, W.K., Univ. Ottawa:
Structural patterns in metamorphic rocks, 1970-.

1175. Harris, I.M., Geol. Surv. Can.:
Structural and stratigraphic synthesis of the Phanerozoic rocks of eastern Canada, 1973-.

See Sedimentological study of the Goldenville Formation, Nova Scotia; Geol. Surv. Can., Paper 75-1, pt. A, p. 171-174, 1975.

1176. Haynes, S., Brock Univ.:
Tectonics and metallogeny of southern Iran, 1972-75.

See Evolution of the Zagros suture zone, southern Iran; Bull. Geol. Soc. Amer., v. 85, no. 5, p. 739-744, 1974.

Study of the overall tectonic history of southern Iran (completed), the Zagros ophiolite belt; structure and petrology, and individual mineral deposits and their relation to the different tectonic regimes.

1177. King, L.H., Geol. Surv. Can.:
Regional bedrock geology, Grand Banks, 1973-.

Regional bedrock geology, Scotian Shelf and adjacent areas, 1973-.

1178. Lambert, R.St.J., McKerrow, W.S., Univ. Alberta:
Comparison of Californian and Caledonian faults, 1972-76.

1179. Price, R.A., Queen's Univ.:
Tectonic analyses of the southeastern Cordillera in Canada, 1973-.

1180. Sonnenfeld, P., Univ. Windsor:
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