73-5

NATIONAL ADVISORY COMMITTEE ON RESEARCH IN THE GEOLOGICAL SCIENCES

CURRENT RESEARCH IN THE GEOLOGICAL SCIENCES IN CANADA, 1972-73

Compiled by Thomas E. Bolton

Published by the Geological Survey of Canada as GSC Paper 73-5

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G E O L O G I C A L S U R V E Y O F C A N A D A PAPER 73-5

DEPARTMENT OF ENERGY, MINES AND RESOURCES

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1973

CONTENTS

CURRENT RESEARCH IN THE GEOLOGICAL SCIENCES IN CANADA, JUNE, 1972 - MAY, 1973

The research projects listed in this compilation have been obtained mainly from the universities, federal and provincial department of mines, and other non-industrial institutions carrying on research in the geological sciences; with the exception of a few projects by some of the larger oil companies, the compilation does not include research by mining and oil company geologists.

Some projects in geophysics and other fields concerned with geology and geological problems were reported and are herein included; comprehensive reports on geophysical research in Canada are published annually in the Canadian Geophysical Bulletin on Seismology and Physics of the Earth's Interior and Geomagnetism.

The survey was made between November, 1972 and January, 1973 and records research in progress from about June, 1972 to May, 1973.

The compilation is useful in enabling research workers to see who are working in similar fields and on similar problems. It indicates lines of research receiving the greatest attention and, by inference, those being neglected. It also serves to record the large number of research projects undertaken as graduate theses in our universities, of which the results are available in manuscript form in university libraries.

Success in assembling project titles and other information for such a compilation depends on the response of institutions and research worker. Acknowledgement is made in particular to those who assembled and forwarded the data on research projects in the organizations under their direction. Readers carrying on projects in geology and in allied fields of interest to geologists and which they consider should be included should notify the Secretary, National Advisory Committee on Research in the Geological Sciences, 601 Booth Street, Ottawa, K1A 0E8.

Use of the Compilation

In this compilation, projects are grouped under main headings that cover the different branches of the geological and allied sciences. The reader can thus find out readily the research in progress in the field in which he is interested. Many contributors provided, in addition to the title, a short statement on the subject under investigation and references to their most recent publication on the projects. Those recorded in detail in the report of Current Research in the Geological Sciences in Canada, 1971-72, Geological Survey of Canada, Paper 72-5, 1972, are included in this year's survey by title only, unless new information was provided.

Many projects that seem to fall equally well under more than one heading are repeated under these headings. An author index (p. 182) lists after each author the numbers of projects, as listed in the compilation, on which he is currently engaged. Thus by reference to the author index, the fields of research and projects of any worker may be found.

Current research in the geological sciences in Canada annual publications:

Issues for 1946-47 and 1949 appeared in Canadian mining and metallurgical bulletin, nos. 415, 423, 445; those for 1950/51-1952/53 and later issued by Geological Survey of Canada.

Surveys for 1953/54-1954/55, 1956/57-1964/65 included in its 4th-5th; 7th-15th annual reports; no survey published for 1955/56.

Issues for 1965/66 and later published as Geological Survey of Canada Papers: 66-53, 67-58, 68-54, 69-5, 70-5, 71-5. It is planned to issue the survey for 1971-72 and later years as no. 5 of the Paper series. Paper 72-5 was issued in September, 1972.

Exchange organizations which do not automatically receive the Paper series can request or purchase the Advisory Committee's reports each year from the Survey's notification cards.

AREAL GEOLOGY

Alberta

1. Bayrock, L.A., Research Council of Alberta:
   Wapiti area, NTS Sheet 83L, 1972-74.

2. Bayrock. L.A., Boydell, A.N., Research Council of Alberta:
   Rocky Mountain House area, NTS Sheet 83B, 1969-73; Ph.D. thesis (Boydell).

3. Burwash, R.A., Krupicka, J., Culbert, R.R., Univ. Alberta:
   Dynamics of cratonic basins, 1970-71.

   See Cratonic reactivation in the Precambrian basement of western Canada; III, Crustal Evolution; Can. J. Earth Sci., vol. 10, no. 2, pp. 283-291, 1973.

4. Fahrig, W.F., Geol. Surv. Can.:
   Basin analysis of the Athabasca sedimentary basin, 1968-.

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

   Precambrian mapping - Ryan-Fletcher Lakes district, 1972-73.

   Precambrian mapping - Wylie Lake district, 1971-.

6. Mellon, G.B., Kramers, J.W., Research Council of Alberta:
   Bedrock mapping western Plains, 1969-73.

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

8. Price, R.A., Mountjoy, E.W., Aitken, J.D., Queen's Univ., McGill Univ., and Geol. Surv. Can.:
   Operation Bow Athabasca, Alberta and British Columbia, 1965-.

British Columbia

9. Carter, N.C., British Columbia Dept. Mines Petrol. Resources:
   Geology and mineral deposits of the Alice Arm area, British Columbia, 1968-73.

   See Geological compilation map of the Stewart, Anyox, Alice Arm and Terrace areas; British Columbia Dept. Mines Petrol. Resources, Prel. Map 8 - 1972.

10. Church, B.N., British Columbia Dept. Mines Petrol. Resources:
    Geology and mineral deposits of the Houston - Francois Lake area, 1969-73.

    Stratigraphy of the Tertiary and upper Mesozoic volcanic pile and mineralization in the area southeast of Houston, British Columbia.

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

AREAL GEOLOGY

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

13. Garnett, J.A., Agar, C.A., British Columbia Dept. Mines Petrol. Resources:
Regional phase relationships and associated mineralization, southern Hogem Batholith, North-central British Columbia, 1971-74.

Methodology includes reconnaissance helicopter supported mapping, systematic collection and cataloguing of representative samples, and follow up modal and normative rock analyses. K/Ar age determinations of selected phases are being completed as an adjunct to this research. A gravity survey and aeromagnetic filtering investigation also represent ancillary aspects.

14. Greenwood, H.J., Reamsbottom, S.R., Paterson, I., Pigage, L.C., Univ. British Columbia:
Studies of metamorphic equilibria: near Harrison and Azure Lakes, British Columbia, 1969-73; Ph.D. theses (Reamsbottom, Paterson, Pigage).

15. Hutchison, W.W., Geol. Surv. Can.:
Prince Rupert-Skeena map-areas, British Columbia, 1962-.

To determine the regional geologic relationships and the origin and evolution of the metamorphic and plutonic rocks of part of the Coast Mountains.

See Coast Mountains project Part I: examination of shoreline between Knight Inlet and Howe Sound; Geol. Surv. Can., Paper 73-1A, pt. A, pp. 42, 43, 1973.

16. McMillan, W.J., British Columbia Dept. Mines Petrol. Resources:
Geology and mineral deposits of the Guichon Creek Batholith, British Columbia, 1969-74.

Mapping of the 400 square mile area underlain by the batholith is at 4 inches to 1 mile. The mineral deposits are being examined both on surface or underground and by examining core from selected drill holes. Ore controls, alteration, mineralogy, mineral zoning and the relationship of the deposits to enclosing rocks are being assessed.

Older rocks but by the Batholith and younger rocks which overlie it are also being examined. These are yielding paleontological and structural data which illuminate the tectonic development of the batholith since it was emplaced.

See Highland Valley porphyry copper district; 24th Internat. Geological Congr., Guidebook A09-C09, pp. 53-63, 1972.

17. Monger, J.W.H., Geol. Surv. Can.:
Upper Paleozoic rocks of Stikine Arch, British Columbia, 1969-.

18. Muller, J.E., Geol. Surv. Can.:
Geology of northern Vancouver Island, British Columbia, 1968-.

See Nootka Sound area, British Columbia; Geol. Surv. Can., Paper 72-1A, pt. A, pp. 33-36, 1972.

Geology of Pacific Rim National Park, British Columbia, 1972-.

19. Preto, V.A., British Columbia Dept. Mines Petrol. Resources:
Structure, stratigraphy and mineral deposits of the Upper Triassic Nicola Group and associated intrusions, 1968-.

20. Reesor, J.E., Geol. Surv. Can.:
Blanket Mountain area, British Columbia, 1972-.

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

See Hazelton (East-half) map-area, British Columbia (93M); Geol. Surv. Can., Paper 73-1A, pt. A., pp. 38-42, 1973.

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

A geological reconnaissance of the Coast Mountains between southeast Alaska and Vancouver to reveal the main events in the geological history of the Coast Crystalline Belt and to develop an understanding of the processes governing the formation of plutonic rocks in such orogenic belts.

See Coast Mountains project Part I: examination of shoreline between Knight Inlet and Howe Sound; Geol. Surv. Can., Paper 73-1A, pt. A, pp. 42, 43, 1973.

23. Taylor, G.C., Geol. Surv. Can.:
Operation Smoky, British Columbia & Alberta, 1968-.

24. Thompson, R.I., British Columbia Dept. Mines Petrol. Resources:
Geology of the Robb Lake area, northeastern British Columbia, 1972-74.

A preliminary study of Zn-Pb mineralization in Devonian rocks near Robb Lake with special emphasis on the stratigraphy of the host rocks and the morphology of individual mineralized zones.

Geology of the Mount Keenan area, west side of Harrison Lake, British Columbia, 1972-74.

A preliminary geological and geochemical investigation of the Harrison Lake Formation with special emphasis on the contained zinc-copper mineralization.

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

To interpret the structure, stratigraphy and geological history and evaluate the mineral potential.

Smithers map-area, British Columbia, 1969-.

To interpret the structure, stratigraphy, and geological history of Smithers map-area and to provide a regional structural, stratigraphic and plutonic framework.

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

AREAL GEOLOGY

Manitoba

27. Bailes, A.H., Manitoba Mines Branch:
Metamorphic and deformational history of the File-Morton-Woosey Lakes area, Manitoba, 1970-73.

28. Bamburak, J.D., Manitoba Mines Branch:
The geology of Turtle Mountain, Manitoba, 1971-73; M.Sc. thesis.

29. Bell, C.K., Geol. Surv. Can.:
Geological investigations across the boundary between the Churchill and Superior tectonic provinces, 1963-73.

To establish the stratigraphy and structure of sedimentary and volcanic rocks in this region and their relationships to adjacent gneisses and intrusive rocks.

30. Davison, W.L., Geol. Surv. Can.:
Geology of the Seal River map-area, Manitoba, 1968-.

Geology of Southern Indian Lake, Manitoba, 1968-.

31. Elbers, F.J., Gilbert, H.P., Manitoba Mines Branch:
Greenstones project, Manitoba, 1971-.

Involves structural and metamorphic history, plutonic history, geochemistry of volcanic rocks, history of the sedimentary environment, and mineralization.

See The stratigraphy of the Hayes River group in Manitoba - a preliminary report; Manitoba Mines Branch, Geol. Paper 2/72.

32. Ermanovics, I.F., Geol. Surv. Can.:
Berens River, Deer Lake map-area, Manitoba - Ontario, 1969-.

Precambrian geology of Norway House, Grand Rapids and Berens River W½ map-areas, Manitoba, 1971-.

33. McRitchie, W.D., Frohlinger, T.G., Baldwin, D.A., Zwanzig, H.V., Manitoba Mines Branch, 1971-74.
Burntwood Project, Manitoba.

Regional study of an upper amphibolite facies metasedimentary gneissic belt as a means to defining the structural, metamorphic and plutonic relations in the Churchill structural Province between Lynn Lake, Flin Flon, and Thompson.

See Burntwood Project; in Summ. Geol. Field Work, Manitoba Mines Branch, Geol. Paper 3/72.

34. Phillips, K.A., Manitoba Mines Branch:
Jenpeg Project, Manitoba, 1972-73.

See Jenpeg Project; in Summ. Geol. Field Work, Manitoba Mines Branch, Geol. Paper 3/72, pp. 54-55.

35. Stephenson, J.F., Manitoba Mines Branch:
Geology of the Ospwagan Lake Area, Manitoba, 1972-74.

See Ospwagan Lake Project; in Summ. Geol. Field Work, Manitoba Mines Branch, Geol. Paper 3/72.

36. Weber, W., Lamb, C., Schledewitz, D., Thomas, K., Manitoba Mines Branch:
Kasmere Project, Manitoba, 1971-74.

Lithology, tectonic and metamorphic history of the Wollaston Lake belt and Hurwitz Group in northwestern Manitoba.

See Kasmere Project; in Summ. Geol. Field Work, Manitoba Mines Branch, Geol. Paper 3/72, pp. 6-16.

New Brunswick

37. Fyffe, L.R., Grriak, R.R., Davis, J.L., New Brunswick Dept. Natural Resources:
Geology of the Miramichi zone (north), Gloucester, Northumberland and Restigouche counties, New Brunswick, 1970-73.

38. Greiner, H.R., Univ. New Brunswick:
Geology of the Campbellton, Oak Bay (east half) and Escuminac (west half) areas, New Brunswick, 1970-75.

Detailed structural, volcanic and petrologic, paleoecological and stratigraphic research.

39. Prest, V.K., Geol. Surv. Can.:
Geology of proposed Kouchibouguac National Park site, New Brunswick, 1970-.
To investigate the character, extent, distribution, age and origin of the bedrock formations and glacial and postglacial deposits, and to explain the geomorphic features and dynamic processes.

40. Skinner, R., Geol. Surv. Can.:
Tuadook Lake map-area, New Brunswick, 1968-.

Plaster Rock (east half) map-area, New Brunswick, 1970-.

Juniper (east half) map-area, New Brunswick, 1971-.

Newfoundland and Labrador

41. Anderson, F.D., Geol. Surv. Can.:
Belleoram map-area, Newfoundland, 1960-.

To provide a suitable geological map, complete descriptions of rock units, and an appropriate description and interpretation of the general structure, historical and economic geology features.

42. Cumming, L.M., Geol. Surv. Can.:
Operation Strait of Belle Isle, 1968-.

Geology of Gros Morne National Park, Newfoundland, 1972-.

See Geology of the proposed Gros Morne National Park; Geol. Surv. Can., Paper 73-1A, pt. A, pp. 5-7, 1973.

AREAL GEOLOGY

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

To delineate the structure and stratigraphy and to relate the mineral (iron) deposits to these parameters.

Northwest Territories

44. Blusson, S.L., Geol. Surv. Can.:
Operation Selwyn, 1965-.

To establish the stratigraphic sequence and determine the nature of abrupt facies changes in lower Paleozoic rocks of western Mackenzie and Selwyn Mountains, and to study the relationship and distribution of formations that are host to large base metal deposits.

45. Bostock, H.H., Geol. Surv. Can.:
Itchen Lake map-area, District of Mackenzie, 1964-.

To outline the limits of gold-bearing rocks of the Yellowknife group; to determine the age and structural relations of the Yellowknife rocks and to ascertain the origin of the gold deposits; to complete mapping and structural interpretation of the Proterozoic outlier at "Rockinghorse Lake" to assist in correlation between the Epworth and Goulburn groups.

46. Christie, R.L., Geol. Surv. Can.:
Operation Prince of Wales, District of Franklin, 1962-.

Geological reconnaissance of the Precambrian, Paleozoic and Younger rocks of Boothia Peninsula and region.

Operation Grant Land - northeastern Ellesmere Island and northwestern Greenland, 1963-.

To obtain a better understanding of the geological features of an orogenic belt extending across northeastern Ellesmere Island into adjacent Greenland.

Geological reconnaissance of eastern Devon Island, with additional stratigraphic studies on southeastern Ellesmere Island, District of Franklin, 1968-.

47. Cook, D.G., Geol. Surv. Can.:
Operation Norman, District of Mackenzie, 1967-.

To complete reconnaissance geological mapping, to conduct stratigraphic and structural studies, and to evaluate the economic potential of bedrock formations.

48. Eade, K.E., Geol. Surv. Can.:
Kognak River area, Northwest Territories, 1962-.

49. Fraser, J.A., Geol. Surv. Can.:
Operation Coppermine and Bathurst Inlet, Districts of Keewatin and Mackenzie, 1969-.

See The Bear Province; Geol. Assoc. Can., Sp. Paper 11, pp. 453-504, 1972.

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

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

See Yellowknife and Hearne Lake map-areas, District of Mackenzie; Geol. Surv. Can., Paper 73-1A, pt. A, pp. 148-151, 1973. Slave Province; Geol. Assoc. Can., Sp. Paper 11, pp. 505-526, 1972.

52. Heywood, W.W., Geol. Surv. Can.:
Tavani map-area, District of Keewatin, 1966-.

To determine the structure, stratigraphy and metamorphism of the sedimentary and volcanic assemblages of Tavani map-area with particular emphasis on the petrology and mineral potential of the volcanic rocks.

Geology of Southampton Island, District of Keewatin, 1968-.

Operation Northern Melville Peninsula, District of Franklin, 1970-.

Operations Back River and Wager, Northwest Territories, 1970-.

Geology of Walrus and Coats Islands, Northwest Territories, 1970-.

53. Jackson, G.D., Geol. Surv. Can.:
Operation Bylot; District of Franklin, 1967-.

Operation Penny Highland, District of Franklin, 1969-.

54. Kerr, J.W., Geol. Surv. Can.:
Axel Heiberg and Ellesmere Islands, District of Franklin, 1961-.

Southwestern Ellesmere - Western Devon Islands (Operation Grinnell), District of Franklin, 1967-.

55. McGlynn, J.C., Geol. Surv. Can.:
Regional correlation - northwest Canadian Shield, 1960-.

To determine the stratigraphy and structure of the Snare and Cameron Bay strata as a contribution to the correlation and interpretation of the Proterozoic rocks of the N.W.T.

56. Reinhardt, E.W., Geol. Surv. Can.:
Gibson-MacQuoid Lakes map-area, Northwest Territories, 1972-.

See Gibson-MacQuoid Lakes map-area, District of Keewatin; Geol. Surv. Can., Paper 73-1A, pt. A, pp. 162-165, 1973.

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

To improve the understanding of the age, structure, sequence, relationship, thickness, and origin of bedrock formations with a view to helping assess the size, grade, mode of occurrence, origin, and potentialities of any fuel or mineral deposits that may occur, and improve the knowledge and understanding of the morphology of the Silurian and Devonian ostracoderms of Cornwallis Island.

AREAL GEOLOGY

58. Trettin, H.P., Geol. Surv. Can.:
Baffin Island-Foxe Basin-Melville Peninsula (Operation Foxe Basin), 1967-.

59. Yorath, C.J., Geol. Surv. Can.:
Mesozoic and Tertiary stratigraphy and sedimentation, Beaufort-Mackenzie area, 1969-.

Nova Scotia

60. Benson, D.G., Geol. Surv. Can.:
Geological study of the Antigonish Highlands, Nova Scotia, 1964-.

To determine the stratigraphy, structure and tectonic history of the sedimentary and igneous rocks of the Antigonish Highlands.

Geological study of the Antigonish Basin, Nova Scotia, 1966-.

To determine the stratigraphy of the Antigonish Basin and the stratigraphy and structure of subsediment rocks underlying George Bay.

Revision of the Arichat map-area, Nova Scotia, 1971-.

Ontario

61. Blackburn, C.E., Ontario Division of Mines:
Lower Manitou Lake area, Ontario, 1972-73.

62. Bond, W.D., Ontario Division of Mines:
The geology of Conant, Jutten and Smye Townships, Savant Lake area, District of Thunder Bay, Ontario 1972-73.

See Conant, Jutten and Smye Townships, District of Thunder Bay; a Summ. Field Work 1972 Ontario Division of Mines, Misc. Paper 53.

63. Carter, M.W., Fraser, E., Ontario Division of Mines:
Macmurchy and Tyrrell Townships, Ontario, 1971-72.
Fawcett and Leonard Townships, Ontario, 1972-73.

Mapping of the volcanic, plutonic and sedimentary associations in the map areas, and genesis of the felsic enclaves in diabase.

64. Fenwick, K.G., Srivastara, P., Ontario Division of Mines:
Lamport - Duckworth Townships, Ontario, 1972-73.

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

To revise the geology with particular emphasis on stratigraphy and correlation, and to standardize the nomenclature and definition of stratigraphic units.

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

To revise the stratigraphy and structure of the Huronian succession; to determine the nature of the Grenville Front within the area and the effect of metamorphism on the Huronian formations; and to determine the metamorphic and structural history and the mineral potential of the map-areas.

See The Southern Province; Geol. Assoc. Can., Sp. Paper 11, pp. 335-380, 1972.

66. Jensen, L.S., Ontario Division of Mines:
Margusi River, Ontario, 1972-73.

67. Kaye, L., Ontario Division of Mines:
Rowan Lake area, District of Kenora, Ontario, 1972-73.

Investigations are mainly concerned with an analysis of the volcanic-tectonic framework of the area, and concomitant metallogenic relations.

68. Liberty, B.A., Brock Univ.:
Geological mapping - southern Ontario.

Outliers in the Ottawa Valley are still under investigation, and plans are formulated to investigate the islands between Manitoulin Island and the Bruce Peninsula.

See Paleozoic geology of southern Ontario; Ontario Division Mines, map 2254, 1972.

69. Lumbers, S.B., Ontario Division of Mines:
Geology of the River Valley area, Ontario, 1971-73.

Geology of the Mattawa - Deep River area, Ontario, 1972-74.

See Mattawa - Deep River area, Districts of Nipissing and Renfrew; Summ. Field Work 1972, Ontario Division of Mines, Misc. Paper 53.

70. Mackasey, W.O., Ontario Division of Mines:
Geology of Eva and Summers Townships, District of Thunder Bay, Ontario, 1969-73.

See Sturgeon River metavolcanic-metasedimentary formations in the Beardmore - Geraldton Area; 24th Intern. Geological Congr., Field Excursion C34, pp. 46-58, 1972.

Geology of Barbara, Meader and Pifher Townships, District of Thunder Bay, Ontario, 1970-73.

71. Mackasey, W.O., Wallace, H., Ontario Division of Mines:
Geology of Elmhirst and Rickaby Townships, District of Thunder Bay, Ontario, 1972-73.

Particular attention to volcanic stratigraphy and lithology of felsic to intermediate pyroclastic rocks underlie a large part of the area.

72. McIlwaine, W., Ontario Division of Mines:
McTavish - Dorion area, Ontario, 1971-73.

AREAL GEOLOGY

73. Meyn, H.D., Ontario Division of Mines:
Afton - Clement area, Ontario, 1972-74.

See Afton and Macbeth Townships, District of Sudbury; Field Work 1972, Ontario Division of Mines, Misc. Paper 53.

74. Mitchell, S., Appleyard, E.C., Univ. Waterloo:
Geology of the Bentley Lake alkaline "skarn", Faraday township, Ontario, 1972-74; M.Sc. thesis (Mitchell).

Nepheline-bearing metagabbros and calc-silicate "skarns" are found in several places on the south margin of the Faraday Gabbro. Associated with them is a white, alkali-syenite varying irregularly from undersaturated to saturated. The petrogenesis of these rocks is being investigated with the framework of the regional tectonic history.

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

To determine the age, thickness, distribution, facies, structure and other relevant parameters of the bedrock formation of the Hudson Bay Lowlands for evaluating the economic potential of the area.

76. Pryslak, A.P., Ontario Division of Mines:
Uchi Lake - Shebumeni River area, Ontario, 1969-73.

See Narrow Lake - Shebumeni River area, District of Kenora (Patricia Portion); Summ. Field Work, Ontario Division of Mines, Misc. Paper 53, pp. 17-22, 1972.

77. Pyke, D., Ontario Division of Mines:
Redstone River area, Ontario, 1970-74.

Bartlett and Geikie Townships; Ontario Division of Mines, Prel. Maps P745, P726, 1972.

Peterlong Lake area, Ontario, 1972-73.

78. Robertson, J.A., Siemiatkowska, K., Ontario Division of Mines:
May - McKinnon area, Districts of Sudbury and Manitoulin, 1971-73.

See Harrow and McKinnon Townships; Summ. Field Work 1972, Ontario Division of Mines, Misc. Paper 53.

79. Sage, R., Breaks, F., Ontario Division of Mines:
Operation Pickle Lake, Ontario, 1971-73.

80. Sanford, B.V., Geol. Surv. Can.:
Paleozoic geology of the Hudson Bay region, 1966-.

81. Schwerdtner, W.M., Waddington, D.H., Bennett, P.J., Janes, T.W., Univ. Toronto:
Paleo-strain analysis and geologic history of southern Georgian Bay - Muskoka region, Ontario, 1969-; M.Sc. thesis (Janes).

General mapping and structural analysis of the Moon River Synform completed. Brandy Lake Complex north of Lake Muskoka, and the area between the Moon River Synform and the southern margin of the Pre-Cambrian Shield, are now being mapped.

82. Siragusa, G.M., Ontario Division of Mines:
Kabinakagami Lake area, Ontario, 1972-73.

Definition of area extent and major stratigraphic features of Archean volano-sedimentary belts in Northern Ontario.

83. Thurston, P., Ontario Division of Mines:
North Oraman area, Ontario, 1972-74.

See North Oraman Area; Summ. Field Work 1972, Ontario Division of Mines, Misc. Paper 53.

84. Thurston, P., Sage, R.P., Siragusa, G.M., Ontario Division of Mines:
Operation Winisk Lake, Ontario, 1971-74.

See Operation Winisk Lake; Summ. Field Work 1972, Ontario Division of Mines, Misc. Paper 53.

85. Thurston, P., Siragusa, G.M., Sage, R.P., Ontario Division of Mines:
Operation Chapleau, Ontario, 1970-73.

Subsidiary geochronologic, petrographic work on Shawmere anorthosite at the south end of the Kapuskasing structural zone.

See Operation Chapleau; Summ. Field Work 1972, Ontario Division of Mines, Misc. Paper 53.

86. Trowell, N.F., Ontario Division of Mines:
Squaw Lake - Sturgeon Lake area, District of Thunder Bay, Ontario, 1972-74.

87. Wood, J., Ontario Division of Mines:
Geology of Hewitt Lake Area (West Half), District of Kenora, Ontario, 1972-73.

See Hewitt Lake Area (West Half), outline of geology; Summ. Field Work 1972, Ontario Division of Mines, Misc. Paper 53.

Quebec

88. Bertolus, M., Ministère des Richesses Naturelles du Québec:
Région du lac Faillon, Comté D'Abitibi-Est, 1972-73.

89. Bourne, J., Ministère des Richesses Naturelles du Québec:
Géology of the Mesgouez lake area, 1972-73.

90. Brisebois, D., Ministère des Richesses Naturelles du Québec:
L'Archipel des Iles-de-la-Madeleine, 1970-74.

91. Dressler, B., Ministère des Richesses Naturelles du Québec:
Géological mapping in the Labrador Trough north of 57° parallel, 1971-76.
Study of iron-formation of the Labrador Trough, 1971-73.
Study of lamprophyres of the Labrador Trough, 1971-.

AREAL GEOLOGY

92. Franconi, A., Ministère des Richesses Naturelles du Québec:
Géologie de la bande volcanique, au sud du lac Erons, territoire d'Abitibi, 1971-74.

93. Gunter, W., Ministère des Richesse Naturelles du Québec:
Bueil Lake area, Abitibi and Mistassini Territory, 1972-73.

94. Liard, P., Ministère des Richesses Naturelles du Québec:
Géology of the Mont Joli - Matane area, 1971-73.

Stratigraphic and structural mapping, and a special study and interpretation of the limestone conglomerates of the Kamouraska facies.

95. Rive, M., Ministère des Richesses Naturelles du Québec:
Géologie de la partie Sud du Comté de Témiscamingue et de la partie Ouest du Comté de Pontiac, 1968-73.

96. Schiman, K., Ministère des Richesses Naturelles du Québec:
Wakeham and Vicenza Lakea area, New Québec Territory. Wakeham and Joy Bay areas, New Québec Territory, 1971-73.

97. Sharma, K.N.M., Ministère des Richesses Naturelles du Québec:
Wakeham Project, 1972.

The metasedimentary rocks belonging to the Wakeham Group form a thick sequence in the eastern part of the Grenville Province, east of Havre St-Pierre, Québec. The majority of the rocks are meta-sandstone, arkose with some phyllites and paragneisses intruded by sills of gabbro and masses of granite. The occurrence of thin bands of iron-formation together with the proximity of the rocks of Wakeham Group to the Labrador trough and their structural orientation, suggest that the entire Wakeham Group may be correlated with the rocks of the Labrador trough.

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

See Precambrian basic dikes metamorphosed to granulite facies in the vicinity of Four Peaks, Torngat Mountains, Labrador Newfoundland; Min. Mag., vol. 38, pp. 666-669, 1972. The Nain Province; Geol. Assoc. Can., Sp. Paper 11, pp. 435-452, 1972.

Operation Nuvilik, Quebec, 1972-.

See A revision of Precambrian structural provinces in north-eastern Quebec and northern Labrador: Reply; Can. J. Earth Sci., vol. 9, no. 7, pp. 930-932, 1972.

99. Wallach, J., Ministère des Richesses Naturelles du Québec:
Geology of Nemiscav River - Nemiscav Lake Area, Abitibi Territory, 1972-73.

Includes an examination of the "grey gneiss" problem in a relatively small area of the Superior Province, and determination of the style and number of phases of deformation as well as temporal relationships between deformation and metamorphic crystallization.

100. Woussen, G., Roy, D.W., Archambault, G., Du Berger, R., Guha, Jayanta, Univ. du Québec à Chicoutimi

Etude géologique dans la région du Haut-Saguenay, 1972-.

Saskatchewan

101. Bell, C.K., Geol. Surv. Can.:
Milliken Lake area, Saskatchewan, 1954-73.

To provide detailed information on the age, structure, sequence, relationships, thickness, and origin of the bedrock formations and on the size, grade, mode of occurrence, origin and potentialities of the mineral deposits.

102. Fuh, Tsu-Min, Saskatchewan Dept. Mineral Resources:
Hewetson Lake (west half), 74-A-4-W, 1972-73.

Mapping of a 15' quadrangle for publication on a scale of 1 mile to 1 inch.

103. Johnston, W.G., Saskatchewan Dept. Mineral Resources:
Southend (east half), 64-D-6-E, 1972-73.

104. Munday, R.J.C., Saskatchewan Dept. Mineral Resources:
Mudjatik (southeast), 74-B-SE., 1972-73.

Reconnaissance mapping of a 1,200 square mile area for publication on a scale of 2 miles to inch.

105. Pearson, D.E., Saskatchewan Dept. Mineral Resources:
Mudjatik (southwest), 74-B-SW, 1972-73.

106. Scott, B.P., Saskatchewan Dept. Mineral Resources:
Thluicho Lake (Part of east half), 74-N-11-E, 1972-73.

Detailed mapping and geochemical studies of a number of chalcopyrite showings within the area.

107. Sibbald, T.I.I., Saskatchewan Dept. Mineral Resources:
Sandy Narrows (east half), 63-M-3-E, 1972-73.

Yukon Territory

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

To outline and interpret the regional stratigraphy and structure in a previously unmapped part of the Selwyn Basin and to relate these features to the search for mineral deposits analogous to the Keno Hill and Vangorda deposits on the west and south.

109. Poole, W.H., Geol. Surv. Can.:
Mt. Haldane and Dublin Gulch map-areas, Yukon, 1964-.

AREAL GEOLOGY

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

See Operation Snag-Yukon; Geol Surv. Can., Paper 73-1A, pt. A, pp. 48, 49, 1973. Geology and origin of the Faro, Vangorda, and Swim concordant zinc-lead deposits, central Yukon Territory; Geol. Surv. Can., Bull. 208, 1972.

General

111. Slaney, V.R., Geol. Surv. Can.:
Multispectral photography, 1963-.

Development of multispectral aerial photography, including high altitude and satellite photography, and methods of interpretation as a means of providing geological information.

DATA STORAGE AND RETRIEVAL

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

To develop a statistical method employing geological information to assess the probability of occurrence of specific types of mineral deposits in geographically-delineated areas.

See Mathematical problems in geology; Bull. Internat. Statistical Inst., vol. 44, pp. 567-595, 1972.

113. Alvey, G.C., Chevron Standard Ltd.:
Application of computer science to exploration geology, 1964-.

114. Badry, Ann, Research Council of Alberta:
Central data file, 1956-.

115. Clark, D.A., Chi, J.W.W., Mobil Oil Canada Ltd.:
Application of computerized techniques to geology, 1964-.

116. Clark, D.A., Chi, J.W.W., Solohub, J., Mobil Oil Canada Ltd.:
Interactive graphics analysis of lithologic data, 1969-72.

Provides a means of quickly analyzing and mapping lithological data in order to determine the pertinent characteristics and associations to be used in further study of the problem.

117. Closs, L.G., Nichol, I., Queen's Univ.:
Interpretation of geochemical reconnaissance data from the Springdale peninsula, Newfoundland, 1970-73.

To evaluate the usefulness of computerized techniques in the interpretation of geochemical data. R and Q mode factor analysis, cluster and regression analyses have been examined as means of establishing the factors affecting the metal distribution of stream sediments in the area. Results indicate that no single technique is a panacea and careful attention needs to be given to the recognition of the interpretational problem and the selection of the appropriate methods to solve the problem.

118. Collins, D.H., von Bitter, P.H., Royal Ontario Museum:
Devlopment and Testing of a Computer-Based System for the storage and retrieval of palaeontological Data, 1972-75.

119. Collins, D.H., von Bitter, P.H., Vicencio, R., Royal Ontario Museum:
Techniques for standardized objective description of fossils, 1972-76.

120. Cruden, D.M., Ramsden, J., Univ. Alberta:
Fabric analysis in the Front Ranges of the Rockies, 1971-.

See Observations on the numerical determination of the axes of cylindrical and conical folds; Bull. Geol. Soc. Amer., vol. 83, pp. 2019-2024, 1972.

121. David, P.P., Lebuis, J., Univ. Montreal:
Computer application to the storage and retrieval of Quaternary field data, 1971-74.

DATA STORAGE AND RETRIEVAL

122. denBoer, J.C., Manning, P.M., Mobil Oil Canada Ltd.:
Computer graphics in exploration, 1968-.

Utilization of interactive computer graphics in geophysical/geological modeling.

123. Dickie, G.J., Univ. Windsor:
Geologic analysis of oil and gas pools, 1972-73.

Geologic data on Cretaceous and Jurassic oil and gas pools in Alberta have been collected and are being analysed to produce statistics on the geometry, stratigraphy and lithology of the most favourable reservoir rocks.

124. Fuh, Tsu-Min, Saskatchewan Dept. Mineral Resources:
Hewetson Lake (west-half), 74-A-4-W, 1972-73.

Mapping of a 15' quadrangle for publication on a scale of 1 mile to 1 inch. A computerized mapping technique was used. The geology of all outcrops examined was recorded on a specially designed field sheet. These data were transferred in the office to input documents designed to recover a complete description of the lithology and structure of each outcrop. The print-out includes a map with rock names and structural symbols.

125. Fuzesy, M.A., Saskatchewan Dept. Mineral Resources:
Index to assessment work in the Reindeer, La Ronge, and Athabasca Mining Districts of Saskatchewan, 1970-.

126. Groen, H.A., Gibson, S.J., Ontario Division of Mines:
Mineral deposits of Ontario, 1970-.

127. Groen, H.A., Sun, S., Ontario Division of Mines:
Canadian index to geoscience data: Ontario portion, 1970-.

Indexing of all published and unpublished maps and reports released or held by the Geological Branch included assessment work reports submitted by the mining industry.

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

To conduct research into and develop varied computer methods for visual display and enhancement of digital data in profile or map form for purpose of clarifying and extracting significant features within a highly complex background.

129. Kelly, A.M., Fabbri, A.G., McCartney, W.D., Brady, J.T., British Columbia Dept. Mines Petrol. Resources and Geol. Surv. Can.:
Mineral potential estimate of the Bulkley - Nechako region (mineral appraisal Skeena arch, MASA), using SAFRAS computer format, 1971-72.

Six hundred and fifty mineral deposits and occurrences were coded and geological parameters for each 10 x 10 km. cell were measured over an area of 28,000 square miles in central and 11,200 square miles in south-central British Columbia.

130. Kruus, J., Inland Water Directorate, Dept. Environment:
Extraction of hydrologic information from E.R.T.S. satellite imagery, 1972-.

To attempt an evaluation of the costs and benefits of obtaining this information by means of polar-orbiting satellites as compared to other means.

Retransmission of hydrologic data, 1972-.

To gain experience with the operation of a data retransmission system based on the E.R.T.S. polar-orbiting satellites and to evaluate the advantages of short-time data acquisition from a site with both hydrologic and water quality instruments.

131. Laznicka, P., Univ. Manitoba:
Manifile - University of Manitoba file of nonferrous metals of the world, 1967-.

Research consists of constant updating and improvement of the file, use of the data contained for research development of methodology and compilation of metallogenic and prognostic maps for ores on the world's scale.

See Development of nonferrous metal deposits in geological time; Can. J. Earth Sci., vol. 10, no. 1, pp. 18-25, 1973.

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

File creation and retrieval programmes have been completed. A geochemical statistical package (GSP) is being prepared that will be able to carry out simple statistical computations, data plotting and a variety of univariate and multivariate interpretational computations.

133. Paterson, D.F., Saskatchewan Dept. Mineral Resources:
Computer plotted isopach and structure maps of the Lower Paleozoic and Devonian Formationsin Saskatchewan, 1971-73.

134. Shih, K.G., Geol. Surv. Can.:
Underwater photographic data storage and retrieval system, 1972-.

This system is developed for storing the interpretation codes of underwater photographs and retrieving the interpretation results in various format. A similar system will be developed for handling the geological parameters such as coring, dredging etc.

135. Shih, K.G., Heffler, D.E., Geol. Surv. Can.:
AGC geographic based data system, 1971-.

See Bedford Institute geographically ordered marine geophysical data storage and retrieval system; 24th Internat. Geological Congr., sec. 16, 1972.

136. Shih, K.G., Johnston, B.L., Geol. Surv. Can.:
AGC marine geophysical data storage and retrieval system, 1967-.

DATA STORAGE AND RETRIEVAL

137. Smith, F.G., Univ. Toronto:
Computation and plotting of liquidus data in multicomponent systems, 1963-75.

The object is a method of computing and displaying n - dimensional hyper-space phase diagrams of multicomponent systems, e.g., for predicting the composition of the lowest melting temperature mixture of a complex salt system, or the melting temperature of an igneous rock as a function of water concentration and total pressure.

Development of packages of programs to rationalize data on chemical analysis of minerals, 1965-1980.

138. Smith, F.G., Onasick, E.P., Univ. Toronto:
Devlopment 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, 1968-74.

The first aspect to be analysed is the effect of prior knowledge of trends of the z data in the x-y plane. Moving pictures are are being made of azimuthal sweeps of prior bias for subjective use in looking for main and subsidiary cross-trends. The programming is in FORTRAN IV and Assembler Language for an IBM 360/44 machine and a Calcomp microfilm plotter.

139. Smith, F.G., Watson, D.F., Univ. Toronto:
Development of computer programs for statistical analysis of closed data sets (i.e., in which the total concentration of all components of say a rock or mineral is unity), 1969-78.

Dr. Felix Chayes and others have shown that it is incorrect to process data of closed sets (i.e., a+b+c+... = 100%) as if the data were in open sets. A large amount of statistical processing of chemical or mineralogical data now in the literature must be reprocessed if it is to have any quantitative value. Computer-accessible files on rock and mineral compositions are being prepared and traded for testing this new series of statistical programs.

See A minimal test of significance nonuniform density of data points in a three variable closed array; Can. J. Earth Sci., vol. 9, pp. 1124-1128, 1972.

Recrystallization and grain growth in metamorphic rocks, 1965-75.

The information-collecting part of this project is about 40% completed. This will become part of the GESTAR system (of storage and retrieval of information for geo-scientists) with the file name SALEX. Computer programs are being developed to draw sections of grain boundaries in conceptual models of solid aggregates that are close to equilibrium (i.e., have minimal surface free energy), given random initial nucleation and parameters of relative rates of diffusion across and along grain boundaries of same-phase and different-phase components.

Information storage, retrieval and manipulation of all information in a selected field of physical geochemistry, 1963-75.

140. Smith, F.G., Watson, D.F., Kortan, C., Univ. Toronto:
Conversion programs for transliterating and translating bibliographic information in physical geochemistry from Russian to English and vice versa, 1972-74.

In collecting all of the literature on the part of physical chemistry that now makes up the ALKHAL file of the GESTAR information system, we encountered the problem of translating items printed in cyrillic characters. Since the Russian items in this file make up about one half of the present total number (7000-8000), and the ALKHAL file is now available for searching by other computer centres, and we hope to make it available to the VINITI information bank in Moscow, in exchange for similar priviledges from the University of Toronto, we soon will require translation and transliteration programs for chemical titles and keywords.

141. Standing, K.F., Saskatchewan Dept. Mineral Resources:
Digital processing of aeromagnetic data, 1971-.

142. Steiner, J., Univ. Alberta:
Coal deposits of Alberta, 1971-75.

See Coal deposits of the Alberta plains; Alberta Res. Council; Inf. Ser. 60, pp. 85-108, 1972.
Computer storage and retrieval of geological data on coal deposits; Alberta, Res. Council, Inform. ser. 60, pp. 73-84, 1972.

143. Sutterlin, P.G., Dreimanis, A., May, R.W., Gwyn, Q.H.J., Univ. Western Ontario:
Development of a computer processible file of Pleistocene deposits from Ontario using the SAFRAS System, 1971-73.

See Computer applications in the analysis of heavy mineral data from tills; 2nd Guelph Symp. Geomorphol., pp. 109-134, 1972.

144. Zodrow, E.L., St. Francis Xavier Univ.:
Mineral target area section by statistical methods, Cape Breton, Nova Scotia, 1971-73.

Involes SAFRAS storage of 148 mineral occurrences on Cape Breton Island.

ENGINEERING GEOLOGY

145. Archambault, G., Univ. du Québec à Chicoutimi:
Influence de la composition et des structures sur le comportement technique des roches et des massifs rocheux, 1972-.

Etudes géomécaniques sur l'influence de la structure et du champ des contraintes tectoniques sur la mise en place de la minéralisation et la stabilité des ouvertures souterraines et également détermination de l'influence de la composition modale et des microstructures sur les propriétés physico-mécaniques des roches.

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

To prepare case histories of terrain performance encountered by airfields, roads and "overland" vehicles, in relation to geological materials, geomorphic setting and ground ice.

147. Barron, K., Bielenstein, H.U., Grant, F., Mines Branch, Energy, Mines and Resources:
Roof stability in coal mines, 1970-.

148. Barron, K., Fisekci, M.Y., Mines Branch, Energy, Mines and Resources:
Coal and gas outbursts, 1970-.

149. Bérard, J., Ecole Polytechnique:
Le comportement des agrégats à béton, 1969-73.

150. Blunden, R.H., Mathews, W.H., Univ. British Columbia:
Urban geology, metropolitan Vancouver, 1969-73.

151. Coates, D.F., Gyenge, M., Hedley, D.G.F., Herget, G., Larocque, G.E., Sage, R., Yu, Y., Mines Branch, Energy, Mines and Resources:
Stability of slopes in rock, 1963-.

Areas under investigation investigation include: numerical simulation through computer programs to study stress distribution and, by applying failure critera, to predict slope failures; co-operative field studies of particular open pit mines to determine slope deformation under stable and unstable conditions; instrument development for measurements of both stresses and displacements in slopes; field studies on the use of artificial support as a means of stabilizing slopes or of increasing slope angle.

152. Code, J.A., Geol. Surv. Can.:
The stability of natural slopes in the Mackenzie Valley, 1972-.

153. Cruden, D.M., McCann, A., Univ. Alberta:
Stability of natural slopes in rock, 1972-.

To catalogue known rock slides in the Foothills and Main Ranges of the Rockies. Detailed mapping will record the topographic, structural and stratigraphic characteristics of the slide masses. Photogeological reconnaissance backed up by later field studies will detect unreported slides and provide data for the qualitative evaluation of slide risk.

154. Dennison, E., Simpson, F., Saskatchewan Dept. Mineral Resources: Subsurface waste-disposal potential of Saskatchewan, 1972-73.

155. Farquhar, G., Hill, H.M., Rovers, F., Farvolden, R.N., Univ. Waterloo: Sanitary landfill study, 1969-74.

See Sanitary landfill study, Final report; Waterloo Research Inst., Univ. Waterloo, 1972.

156. Farvolden, R.N., Frind, F.O., Benoit, E., Univ. Waterloo: Classification and mapping of surficial deposits in the mid Grand River Basin, 1972-74; M.Sc. thesis (Benoit).

To classify surficial deposits according to engineering properties, using drillers logs, in order that the entire Quaternary section may be divided into a small number of mappable, operational units, suitable for modelling, and to design simple statistical tests to establish the accuracy of the map.

157. Farvolden, R.N., Sinclair, R., Univ. Waterloo: Groundwater flow systems in southern Ontario regime, 1972-73; M.Sc. thesis (Sinclair).

The Welland Canal dewatering project is now in its fifth year. The abundant data are being analyzed to determine the aquifer properties, and the expected, long-term influence on the groundwater regime, using digital methods. These analyses will be compared with analyses done with early data in 1970, to determine the validity of analyses with only meager data.

158. Grice, R.H., McGill Univ.: Engineering geology of Montreal, 1965-.

See Engineering geology of Montreal; Internat. Geol. Congr. Field trip guide B-18, 1972.

159. Heginbotton, J.A., Geol. Surv. Can.: Erosion in a permafrost environment, 1969-.

To document the nature, extent, and rate of erosion in permafrost areas disturbed by activities of man, and to determine the importance of surface material, geomorphology microclimate, snow cover, vegetation, depth of active layer, ground ice distribution and other factors on controlling erosion.

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

160. Herget, G., Hedley, D.G.F., Mines Branch, Energy, Mines and Resources: Mine pillar strength and deformation behaviour, 1970-.

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

162. Hudec, P.P., Univ. Windsor: Effect of pore water in sedimentary carbonate rocks on their weathering characteristics and their engineering properties - soundness as aggregate, and compressive strength, 1971-74.

See Frost and sorption effects in argillaceous rocks; Highway Res. Record, H.E.B., no. 393, pp. 65-78, 1972.

ENGINEERING GEOLOGY

Destructive effect of microwave radiation on rocks of high water adsorption capability.

Certain rocks which have high water adsorptive properties tend to dissintegrate under the influence of concentrated microwave radiation. The proposed research is to determine in greater detail the various factors that contribute to this phenomenon: i.e., rock types, degree of saturation, (absorbed vs. adsorbed), effective rock particle size, effective porosity-permeability relationships, resistance to weathering etc.

Research and development of new method of evaluation of constuction aggregates-sand, gravel and crushed stone.

The methods will be based on the sorptive properties of rocks and the response of those rocks to microwave radiation.

163. Isaacs, R.M., Geol. Surv. Can.:
Engineering geology, Mackenzie Valley transportation corridor, 1970-.

164. Kalin, M., Univ. Waterloo:
The probability of success of geotechnic predictions - A Monte Carlo study, 1972-73.

165. King, M.S., Bamford, T.A., Univ. Saskatchewan:
Static and dynamic elastic properties of rocks, 1967-75; Ph.D. thesis (Bamford).

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 and with different pore saturants. These tests are performed in a controlled environment chamber at temperatures in the range of -6°F to +75°F.

166. King, M.S., Leuschen, A.A., Univ. Saskatchewan:
Mechanical state of rock approaching failure, 1967-75.

To determine methods for predicting the onset of rock failure from analyses of the following laboratory measurements, made at temperatures in the range -6°F to 75°F:
a) microseismic noise emitted by the rock;
b) velocities of compressional and shear waves in the rock;
c) relationship between the static and dynamic mechanical properties as the rock approaches failure under triaxial loading conditions.

Potential applications in the design of foundations for large structures to resist earthquakres in both temperate and permafrost regions, in the drilling and excavation of rock and in the prediction of pillar failure in underground mining.

167. Letts, R.B., Univ. Calgary:
What produces anomalously high crushing strength in a Cretaceous sandstone, 1971-73.

168. Locker, J.G., Research Council of Alberta:
Engineering properties of Upper Cretaceous-Tertiary shales in central Alberta, 1967-73.

169. McPherson, R.A., Kathol, C.P., Research Council of Alberta:
Urban geology of the greater Edmonton area, Alberta, 1971-73.

The last of more than 200 shallow testholes drilled on a one-mile grid in the Edmonton area was completed in July, 1972. These testholes, together with data from 75 outcrop sections, provide a control network upon which data from more than 2000 additional testholes can be interpreted.

This information currently is being plotted on a series of maps and cross sections showing the bedrock topography and thicknesses of various types of glacial deposits in the Edmonton area. In addition, a large body of analytical data dealing with the chemical and physical properties of surficial deposits has been collected for preparation of land use and engineering geology maps, to be supplemented by a detailed summary report of the investigation.

170. Monroe, R.L., Geol. Surv. Can.:
Preliminary terrain classification and sensitivity rating, Mackenzie Valley, 1972-.

171. Neilson, J.M., Queen's Univ.:
Engineering geology of Pittsburgh Township, Frontenac County, Ontario,1970-73.

172. Rampton, V., Geol. Surv. Can.:
Environmental geology of northern settlements Mackenzie Valley-western Arctic (Tuktoyaktuk), 1971-.

173. Root, J.D., Research Council of Alberta:
Strip mine reclamation study, Cadomin area, Alberta, 1971-73.

To determine the geologic, pedologic and microclimatic conditions at the minesite that may affect natural revegetation, slope stability, groundwater contamination and the erosion and sedimentation of streams.

Climatic conditions and spoil lithology are such that runoff is rare and percolation through spoil rapid and as a result slopes are extremely stable and little erosion and stream sedimentation occurs. However, the inability of spoil materials to retain moisture close to the surface and the exposure of the minesite to persistant wind has allowed only sparse vegetation to regenerate naturally.

174. Root, J.D., Knapik, L., Research Council of Alberta:
Great Divide Trail study, 1971-72.

See Survey of trail conditions along the Great Divide Trail route, Alberta and British Columbia Rocky Mountains; Alberta Res. Council, Report 72-5, 1972.

175. Scott, J.S., Geol. Surv. Can.:
Environmental geology prototype study - Ottawa-Hull region, Ontario - Quebec, 1970-.

Stability of natural slopes, 1971-.

ENGINEERING GEOLOGY

176. St-Onge, D.A., Geol. Surv. Can.:
Erosion studies in an area of intensive petroleum exploration and development, 1970-.

Environmental geology of the New Montreal International airport region (NMIAP), 1971-.

177. Xenophontas, Costas, Queen's Univ.:
Engineering geology of three powersites on the Chamonchonane River, Quebec, 1971-72.

178. Yurick, R.I., Univ. Guelph:
Capability of a Geo-Ecosystem at Wasaga Beach to withstand the impact of specific intensive recreational land uses, 1972-74; M.Sc. thesis.

The effect of intense snowmobile activity will be analyzed on a Pleistocene sand dune system and on a lagoonal marl terrain; analysis of incipient to fully developed sand blowouts also will be conducted.

179. Zeman, A., McGill Univ.:
The geology and geotechnical properties of Lake Erie clays, 1972-73; M.Sc. thesis.

GEOCHEMISTRY

Analytical Methods and Analysis

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

181. Boyd, M.L., Blanchard, S., Mines Branch, Energy, Mines and Resources:
Thermal volatilization analysis of oil shales and similar naturally occurring organic materials, 1972-74.

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 temperature and/or time .

182. Brooks, C., Barton, J., Gélinas, L., Hart, S., James, D., Univ. Montréal:
Ancient crust in the Canadian Shield, 1971-75.
Origin of anorthosites, 1970-75.
Archaean mafic and ultramafic lavas, 1968-74.
Evolution of the Andes of Peru and Bolivia, 1971-74.

See An extrusive basaltic komatite from a Canadian Archaean metavolcanic belt; Can. J. Earth Sci., vol. 9, no. 10, pp. 1250-1253, 1972. Andean geochemical studies; Carnegie Yearbook 71, 1972.

183. Dibbs, H.P., Dalton, J.L., McMahon, C., Mines Branch, Energy, Mines and Resources:
Neutron methods for on-line analysis in an ore concentration plant, 1972-.

On-line analysis in an ore concentration plant is customarily carried out by means of an X-ray fluorescence spectrometer, which requires a large initial capital outlay and is also subject to considerable maintenance costs. Neutron methods, using radioisotopic sources, appear to offer an alternative to X-ray fluorescence, and it was the purpose of the investigation to explore the validity of this concept. A Ra-Be neutron source was used for moisture determination in an ore slurry, and an Am-Be neutron source was used for total slurry analysis, that is the determination of the water content by measurement of the hydrogen radiation and the determination of the composition of the solids by measurement of the radiation from copper, sulphur zinc, etc.

See The determination of slurry density by fast neutron thermalization; Mines Br. Tech. Bull. TB147, 1972. The determination of the composition of sluries by the measurement of thermal-neutron-capture gamma radiation; Mines Br. Rept. R-251, 1972.

On-line analysis using gamma-ray attenuation from a radioisotope to determine lead in an ore concentration plant, 1972-73.

GEOCHEMISTRY

The determination of lead in ore slurries by gamma-ray attenuation appears to be an inexpensive alternative to on-stream X-ray fluorescence analysis. The attenuation of gamma-rays of energies of about 150 KeV by lead is significantly different from that of all other elements whose atomic number is less than lead, and it is possible to relate the gamma-ray attenuation to the lead content of the slurry, with the use of two gamma-ray attenuation gauges, one for lead determination and the other for density determination.

184. Gunn, B.M., Univ. Montréal:
Geochemistry of orogenic and sea-floor volcanic rocks, 1966-.

Analysis of andesites from the Lesser Antilles (Martinique), from the Azores, and drill core from Bermuda, thus including island-arc, alkaline islands and seamounts basalts. Dredged sea-floor material and drill core recovered by the "Glomar Challenger" is also being studied. A total of 9,000 chemical analyses are stored on computer file relavent to the project.

See The fractionation effect of kaersutite in basaltic magmas; Can. Mineral., vol. 11, p. 840, 1972.

185. Huang, Y.F., Farquhar, R.M., Univ. Toronto:
Fission track measurements of uranium contents of rocks using solid state track recorders, 1972-73; M.Sc. thesis (Huang).

Project initially involves the setting up of procedures for making the analyses and checking their reproducibility.

186. Liberty, B.A., Brock Univ.:
Trace element geochemistry of Carbonate Rocks, Southern Ontario, 1966-.

Tentative chemical parameters for some Ordovician and Silurian formations have resulted.

187. Parslow, G.R., Tweedy, A., Univ. Saskatchewan (Regina):
Suishnish layered dyke, 1970-73.
Origins of granitic rocks in Saskatchewan Shield, 1971-74.
Analysis of Li isotopes, U, Se, Hg, by atomic absorption, 1971-74.
Trace elements in Flin Flon volcanics, 1972-74; M.Sc. thesis (Tweedy).

188. Pearce, T.H., Queen's Univ.:
Petrochemical studies of volcanic and related rocks, 1972-.

To determine the mechanism of differentiation of unmetamorphosed volcanics using a new method of analysis of chemical data. The procedure is to collect data of well documented volcanic and hypabyssal suites from the literature and using a computer to handle the data, make the calculations and simulate model differentiation for both ancient and more recent volcanics.

189. Perrault, G., Hébert, P., Ecole Polytechnique:
Recherche sur les méthodes analytiques pour les oligo-éléments des roches et des minerais, 1965-.

Nous continuons nos recherches sur les méthodes de mesure des

oligo-éléments des roches: 1) par fluorescence X; et, 2) par spectrophotométrie d'absorption atomique.

Préparation de standards minéraux pout l'analyse instrumentale, 1968-73.

A ce jour, nous avons réalisé un standard, MRG-1 gabbro à olivine du Mont-Royal. Ce standard sera soumis prochainement à la Société Canadienne de Spectroscopie, pour diffusion. Les analyses de contrôle devraient être complètes vers mai 1973. D'autres standard sont prévus: une carbonite, un pyrochlore et probablement d'autres roches alcalines.

190. Reed, D.J., Dalton, J.L., Gillieson, A.H., Mines Branch, Energy, Mines and Resources:
Application of X-ray fluorescence analysis by conventional X-ray tube plus spectrometer methods and also by radioisotopic X-ray source plus electronic energy discrimination to on-stream analysis of sulphide- and iron-ore slurries, and of total sulphur determinations of slurries in coal beneficiation, 1970-74.

The following developments have been made:
1. The modified X-ray goniometer has been enclosed so that the previous air-path is replaced by helium thus enabling the elements sodium, magnesium, aluminium, silicon, phosphorus, sulphur, chlorine, potassium, calcium, and titanium to be determined in addition to the heavier elements from vanadium to uranium.
2. Use of radioisotopic X-ray sources, iron-55, cadmium-109 and americium-241 in place of the X-ray tube, coupled with non-dipersive energy discrimination of the analytical X-ray lines using electronic techniques.
3. Investigation of the applicability of the silicon and solid-state detector to ore and coal-slurry analysis.

191. Stephenson, J.F., Manitoba Mines Branch:
Lake water and sediment, esker and pluton sampling in the Veal-Wolk Lakes Area, Northwestern Manitoba, 1972-74.

An intergrated study into: a) Lake Geochemistry to Augment geological mapping and mineral exploration in drift covered areas; b) esker heavy mineral analysis for miner potential greisen type mineralizers.

See Geochemical Studies; in Summ. Geol. Field Work, Manitoba Mines Branch, Geol. Paper 3/72.

192. Sawatzky, D.H., George, A.E., Mines Branch, Energy, Mines and Resources:
Study of the types of organic sulphur compound and hydrocarbons in some Cretaceous crude oil of western Canada, 1971-74.

New techniques have been developed for the separation and characterization of sulphur compounds in petroleum fractions that are being applied for studying maturation processes in petroleum.

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

194. Williams, J.D.H., Canada Centre for Inland Waters:
Arsenic and selenium in Great Lakes sediments, 1973-.

GEOCHEMISTRY

<u>See</u> Effects of sediment diagenesis and regeneration of phosphorus with special reference to Lakes Erie and Ontario, Nutrients in natural waters, J. Wiley and Sons Inc., New York, 1972.

Phosphorus cycle in sediments, 1970-73.

Retention of nutrients and heavy metals by sediments, 1971-74.

195. Wolfe, W.J., Ontario Division of Mines:
Statistical metal distributions in Precambrian volcanic sequences, 1972-74.

Geochemical data are being statistically processed in an attempt to isolate components of metal variability in Archean volcanic sequences attributable to: (1) processes of normal differentiation by fractional crystallization; and (2) mineralizing processes that lead to formation of stratabound volcanogenic Zn-Cu-Pb-Ag ore deposits.

Chemical Oceanography and Limnology

196. Barnes, M.A., Barnes, W.C., Univ. British Columbia:
Diagenesis of organic-lipids in Recent marine and lacustrine sediments, 1970-73.

197. Bartlett, G.A., Wilson, D., Queen's Univ.:
Manganese nodules in freshwater lakes, 1971-.

198. Cronan, D.S., Univ. Ottawa:
Regional geochemistry of sediments in the world ocean, 1966-.

Investigations on manganese nodules and other ferromanganese oxide deposits from the world ocean, 1964-.

See Composition of Atlantic manganese nodules; Nature, vol. 235, pp. 171-172, 1972.

Geochemistry of basal metalliferous sediments from the Pacific and Indian Oceans collected during the deep sea drilling project, 1971-.

See Iron rich basal sediments from the Eastern Equatorial Pacific; Leg 16, Deep Sea Drilling Project; Science, vol. 175, pp. 61-63, 1972.

Geochemical studies of metalliferous sediments from the Mid-Atlantic Ridge near 45°N, 1971-.

See The Mid-Atlantic Ridge near 45°N, XVIII: Al, As, Hg, and Mn in ferruginous sediments from the Median Valley; Can. J. Earth Sci., vol. 9, no. 3, pp. 319-323, 1972.

199. Cronan, D.S., Murty, P.S.N., Univ. Ottawa:
Geochemistry of sediments from the northeastern Atlantic Ocean, 1970-74; Ph.D. thesis (Murty).

200. Cronan, D.S., Sozanski, A., Univ. Ottawa:
Geochemistry of ferromanganese oxide concretions in North American lakes, 1969-73; M.Sc. thesis (Sozanski).

See Geochemistry of ferromanganese oxide concretions and associated sediments in Lake Ontario; Bull. Geol. Soc. Amer., vol. 83 pp. 1493-1502, 1972.

201. Mothersill, J.S., Lakehead Univ.
Limnological studies of Lake Superior, 1969-.

See The stratigraphy, mineralogy, and trace element concentrations of the Quaternary sediments of the northern Lake Superior Basin; Can. J. Earth Sci., vol. 9, no. 12, pp. 1735-1755, 1972.

202. Nichol, I., Jackson, R., Queen's Univ.:
Lake sediment geochemistry in the Yellowknife area, N.W.T., 1972-74.

203. Peach, P.A., Brock Univ.:
Trace element study of lake bottom sediments, 1970-73.

GEOCHEMISTRY

Exploration Geochemistry

204. Allen, R.J., Geol. Surv. Can.:
Bear-Slave geochemical reconnaissance, District of Mackenzie, 1972-.

205. Armstrong, R.C., Groome, A., Nichol, I., Queen's Univ.:
The geochemistry of mercury and its role in geochemical exploration, New Brunswick and British Columbia, 1971-74; Ph.D. thesis (Armstrong), M.Sc. thesis (Groome).

To establish the nature of mercury dispersion associated with a variety of mineral deposits in British Columbia and New Brunswick; 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.

206. Ball, N.L., Geol. Surv. Can.:
Geochemical prospecting for petroleum in Alberta using interstitial soil gases, 1972-.

207. Baragar, W.R.A., Geol. Surv. Can.:
Volcanic study in the Kaladar area, Ontario, 1967-.

To analyse the samples for major and minor elements and to relate variations in chemistry to stratigraphy.

See Some physical and chemical aspects of Precambrian volcanic belts of the Canadian Shield; Publ. Earth Phys. Branch, vol. 42, no. 3, pp. 129-140, 1972.

208. Blain, C.F., Nichol, I., Queen's Univ.:
The feasibility of regional geochemical reconnaissance in northwest Ontario, 1969-72; Ph.D. thesis (Blain).

Low density reconnaissance sampling over a 5000 square mile area in the Superior Province revealed the existence of marked differences in regional background and anomalous metal contents. These dispersion patterns attributable to variations in the surface environment. In particular concentrations of Fe and Mn in the sediments caused a concentration of other elements unrelated to mineralization.

209. Bristow, O., Geol. Surv. Can.:
Airborne geochemistry, 1970-.

210. Cerny, P., Turnock, A.C., Univ. Manitoba:
Mineralogy, petrology and geochemistry of permatite deposits in southwestern Precambrian of Canada, 1972-.

The mineral composition, crystallization, history, distribution of rare elements, and genetic affiliation of pegmatites are studies to establish guides for their utilization and further prospecting in the area.

See Pegmatites of southeastern Manitoba; Geol. Assoc. Can., Sp. Paper 9, pp. 119-127, 1972.

211. Clark, A.H., Way, D.C., Queen's Univ.:
Geochemistry of mineralized intrusions in southwest Yukon, 1971-73; M. Sc. thesis (Way).

212. Closs, L.G., Nichol, I., Queen's Univ.:
Interpretation of geochemical reconnaissance data from the Springdale peninsula, Newfoundland, 1970-73.

To evaluate the usefulness of computerized techniques in the interpretation of geochemical data. R and Q mode factor analysis, cluster and regression analyses have been examined as means of establishing the factors affecting the metal distribution of stream sediments in the area. Results indicate that no single technique is a panacea and careful attention needs to be given to the recognition of the interpretational problem and the selection of the appropriate methods to solve the problem.

213. Coker, W.B., Nichol, I., Queen's Univ.:
The application of lake bottom sampling in geochemical reconnaissance of the Canadian Shield, 1971-74; Ph.D. thesis (Coker).

214. Coleman, L.C., Truscott, M.G., Univ. Saskatchewan:
Geochemistry and petrology of Tertiary igneous rocks of the Sweetgrass Hills, Montana, 1970-74; Ph.D. thesis (Truscott).

215. Culbert, R., Univ. Alberta:
A multivariate approach to geochemical exploration, 1972-73.

Multivariate analysis may be used in exploration geochemistry to discriminate economic conditions, identify environmental patterns causing fluctuations in economic variables, and correct for these so that real iron sources may be detected at a much greater distance. For stream sediment geochemistry a computer simulation of watershed flow is also being used, and decay and dilution of any anomaly travelling therein modelled to approximate strength of ion source required at any point in watershed to be seen by sample pattern. A library of multivariate computer programs for economic geochemistry is being compiled.

216. Darling, R., Ecole Polytechnique:
The geochemistry of the marble host rocks surrounding the Lynx Canada zinc deposit, Frontenac county, Ontario, 1973-74.

217. Darling, R., Ambrosii, G., Ecole Polytechnique:
Exploration géochimique dans la région de Preissac-LaCorne, Québec, 1968-73; thèse de doctorat (Ambrosii).

Une étude de la distribution des oligo-éléments choisis entre les minéraux majeurs des batholithes de Preissac et LaMotte. Le but de cette étude est de lier le comportement de ces éléments et leur redistribtuion pendant la période post-magmatique du refroidissement des granites à la formation des gisements post-magmatiques de Li et Mo qui se trouvent associés avec ces granites.

GEOCHEMISTRY

218. Darling, R., David, M., Gélinas, L., Carignan, J., Trudel, P., Ecole Polytechnique:

Trace element geochemistry of volcanic rocks along a cross-section northwest of Noranda, Quebec, 1972-74; M.Sc. theses (Carignan, Trudel).

219. Darling, R., Gélinas, L., Campiglio, C., Guha, J., Ecole Polytechnique et l'Université de Québec à Chicoutimi:

La pétrologie et la géochimie du batholithe Bourlamaque: développement d'une méthode de prospection, 1969-1973; thèse de doctorat (Campiglio).

Le batholithe de Bourlamaque est composé d'un gabbro quartzique en partie altéré par des processus post-magmatiques. Il contient, dans quelques endroits, des sulfures (Cu, Mo) disséminés. Il y a aussi plusieurs mines d'or dans les bordures du batholithe. Le but principal de ce projet sera d'étudier la pétrographie et la géochimie du batholithe, de préciser l'histoire de sa cristallisation magmatique et de son altération post-magmatique, de relier à cette histoire la formation des gisements d'or et des concentrations de Cu, Mo.

220. Darling, R., Spitz, G., Ecole Polytechnique:
La géochimie des roches autour du gisement de cuivre de Louvem, Val d'Or, Québec, 1969-72; thèse de maîtrise (Spitz).

See Pétrographie des roches encaissantes du gisement cuprifère de Louvem; Can. J. Earth Sci, vol. 10, no. 5, pp. 760-776, 1973.

221. Davenport, P.H., Nichol, I., Queen's Univ.:
Geochemical dispersion in the Uchi Lake area of northwest Ontario, 1969-72; Ph.D. thesis (Davenport).

A study of geochemical dispersion patterns associated with the Cu, Zn, Ag mineralization. The mineralization is a typical massive sulphide deposit associated with volcanic formations. The acid and intermediate members of the cycle hosting the mineralization, contain a significantly higher Zn content than equivalent although unmineralized lithologies in an adjacent cycle.

222. Delavault, R.E., Univ. British Columbia:
Geochemistry of trace elements in volcaninc rocks, analytical methods, 1968-73.

223. Doyle, P., Fletcher, K., Univ. British Columbia:
Application of regional geochemical techniques to the Prairies, 1972-75; Ph.D. thesis (Doyle).

224. Farquharson, R.B., Univ. Calgary:
The characteristics and genesis of copper mineralization in south-central British Columbia, 1972-74.

A number of major and trace element geochemical parameters, including Ni/Co, $\frac{Mg}{Mg+Fe}$, SiO_2 and total alkalis, will be determined in conjunction with the determination of Cu abundances.

225. Fletcher, K., Doyle, P., Brink, V.C., Univ. British Columbia:
Regional geochemistry and distribution of trace elements in soils and plants of the eastern Yukon, 1969-73.

Regional geochemical studies in the eastern Yukon have delineated an extensive zone characterized by abnormally high values of molybdenum, selenium and associated trace elements in stream sediments, bedrock, soils and vegetation.

See Trace element content of soils and plants from the Selwyn Mountains, Yukon and Northwest Territories, Can. J. Botany, vol. 51, no. 2, pp. 421-427, 1973.

226. Foster, J.R., Nichol, I., Queen's Univ.:
The application of partial extraction techniques in geochemical exploration, 1969-73.

227. Garrett, R.G., Geol. Surv. Can.:
Geochemical study of economic elements in glacial till, 1972-.

228. Goodwin, A.M., Univ. Toronto:
Trace gold content in Archean volcanic rocks, 1966-73.

229. Govett, G.J.S., Univ. New Brunswick:
Rock geochemical techniques of geochemical exploration, 1967-.

See Interpretation of a rock geochemical exploration survey in Cyprus--statistical and graphical techniques; J. Expl. Geochem., vol. 1, no. 1, pp. 77-102, 1972.

230. Govett, G.J.S., Champman, R.P., Univ. New Brunswick:
Evaluation and comparison of different statistical methods of interpreting multi-element geochemical drainage data, 1969-73; M.Sc. thesis (Chapman).

To evaluate various statistical methods such as 'R'-mode Factor Analysis, 'Q'-mode Factor Analysis, Trend Surface Analysis, Multigroup discriminant function analysis, rolling mean analysis in terms of (i) local, (ii) regional geochemical drainage exploration. Determine satisfactory method(s) to process a large quantity of regional geochemical information. Determine optimum sample densities. Data from Saint John-St. George area and Bathurst-Jacquet River area.

231. Govett, G.J.S., Crosby, R.M., Univ. New Brunswick:
Some trace metal relationships in soil and till over stibnite vein mineralization, Lake George, New Brunswick; M.Sc. thesis (Crosby).

232. Govett, G.J.S., Galanos, D.A., Univ. New Brunswick:
Evaluation of rock, soil, and stream geochemical exploration techniques for sulphide deposits in northern Greece, 1971-73; M.Sc. thesis (Galanos).

233. Govett, G.J.S., Goodfellow, W.D., Univ. New Brunswick:
Ore genesis of rock geochemical exploration at Brunswick Mining and Smelting ore bodies, New Brunswick, 1972-75; Ph.D. thesis (Goodfellow).

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234. Govett, G.J.S., Lahti, H.R., Univ. New Brunswick:
Reconnaissance and detailed rock geochemical exploration techniques, Mykonos, Greece, 1972-75; Ph.D. thesis (Lahti).

235. Govett, G.J.S., Punwasee, J.D.N., Univ. New Brunswick:
Secondary dispersion in soil and drainage systems under tropical rain forest conditions, Guyana, 1970-73; M.Sc. thesis (Punwasee).

236. Govett, G.J.S., Whitehead, R.E., Univ. New Brunswick:
Application of rock geochemistry to problems of mineral exploration and ore genesis at Heath Steele Mines, New Brunswick, 1970-73; Ph.D. thesis (Whitehead).

237. Gunton, J.E., Nichol, I., Queen's Univ.:
Geochemical dispersion associated with the Copper Mountain mineralization, 1970-73; Ph.D. thesis (Gunton).

A study of major and minor element dispersion with mineralization associated with the Copper Intrusive stock with a view to recognizing pathfinder elements that may serve to identify areas of mineralization within the surrounding Nicola formations.

238. Hoffman, S., Fletcher, K., Univ. British Columbia:
Development of regional geochemical exploration methods, central British Columbia, 1971-74; Ph.D. thesis (Hoffman).

239. Jonasson, I.R., Geol. Surv. Can.:
Mercury in soil gas applied to exploration for sulphide ores, 1969-.

240. Kuo, S.L., Folinsbee, R.E., Univ. Alberta:
Geological setting and metallogenesis of lead-zinc-silver mineralization, Selwyn Fold Belt and Tintina Trench, Yukon Territory, 1972-74; Ph.D. thesis (Kuo).

To establish a working synthesis about the geotectonic setting and metallogenesis of Pb-Zn-Ag mineralization within this northern part of the Omenica Belt, the following investigations are essential: (1) ore isotopic geochemistry; (2) geochronology of the host rocks and immediate environs; (3) geotectonics study of the related geological settings (Plate tectonics model); and (4) ore textures and controls.

241. Lenton, P.G., Cerny, P., Univ. Manitoba:
Mineralogy, geochemistry, and petrology of the Buck Claim Pegmatite, Bernic Lake, Manitoba, 1972-73; M.Sc. thesis (Lenton).

242. Lett, R., Fletcher, K., Univ. British Columbia:
Role of organic matter in the development of hydromorphic geochemical anomalies related to buried mineral deposits, 1972-75; Ph.D. thesis (Lett).

243. Levinson, A.A., Okon, E., Univ. Calgary:
Exploration geochemistry, 1972-74.

See Hydrogeochemistry of the surface waters of the Mackenzie River drainage basin. I. Factors affecting inorganic composition; Geochim. Cosmochim. Acta, vol. 36, pp. 825-865, 1972.

244. Morse, R.H., Consultant, Toronto:
Development of techniques of geochemical prospecting for uranium.

Comparison of geochemical prospecting methods using radium with those using randon and uranium; Geochem. Explor., Cdn. Inst. Mining Metal., Sp. Vol. 11, 1971.

245. Morton, P., Fletcher, K., Univ. British Columbia:
Bedrock and overburden geochemistry at the Anvil Mine, Yukon Territory, 1970-73; M.Sc. thesis (Morton).

246. Olade, M., Fletcher, K., Univ. British Columbia:
Bedrock geochemistry of porphyry coppers, Highland valley, British Columbia, 1972-75; Ph.D. thesis (Olade).

247. Sherwood, H.G., Nova Scoatia Technical College:
Evaluation of mafic igneous rocks in Nova Scotia, 1971-74.

248. Strong, D.F., Memorial Univ.:
Metallogeny of central Newfoundland.
Geochemical studies in central Newfoundland (ophiolites, managanese sediments, ore deposits, granites).
Reconnaissance geochemistry, eastern Newfoundland granites, 1970-75.

249. Trueman, E.A., Clark, A.H., Queen's Univ.:
Minor element studies on sulphides, oxides and silicates from the Copper Mountain area, British Columbia, 1968-72; M.Sc. thesis (Trueman).

250. Warren, H.V., Univ. British Columbia:
Geochemical techniques in the search for disseminated gold and silver deposits of the carlin type, 1971-74.

Successfully related anomalous quantities of such elements as barium, strontium, beryllium, arsenic, antimony, and mercury to halos associated with epithermal gold and silver deposits.

251. Woussen, G., Univ. du Québec à Chicoutimi:
Minéralisation et problémes d'exploitation dans la région de Chibougamau sous-projet pétrographie - géochimie, 1972-.

GEOCHEMISTRY

Isotope Geochemistry

252. Baadsgaard, H., Univ. Alberta:
Isotope geology of western Canadian geologic events.

A multi-faceted research effort centered about the use of natural isotopic variation is based on facilities for isotopic analysis of Th, U, Pb, Rb, Sr, Ca, K, Ar, C, O, N, H, and sulfur. The types of individual sub-projects currently under investigation include studies of uranium mineralization, metamorphic recrystallization, geologic time scale correlations, isotopic variation in oil genesis and migration, U-Pb systematics in metamorphosed rocks and minerals, geochronology in a number of areas of Western Canada, and C, O, H, S isotope variation in economic mineralization.

253. Baadsgaard, H., Burnie, S., Lambert, R. St J., Univ. Alberta:
C and H/D isotopic variations in oil genesis and maturation.

254. Baadsgaard, H., Coleman, M., Univ. Alberta:
Oxygen isotope mineral realtionships in ancient Greenland gneisses.

255. Baadsgaard, H., Day, L.W., Univ. Alberta:
Zircon U-Pb systematics in a high grade metamorphic terrain; M. Sc. thesis (Day).

256. Baadsgaard, H., Folinsbee, R.E., Univ. Alberta:
S, C and O isotopes in western Canadian mine and mineralization locations.

257. Baadsgaard, H., Schimann, M., Univ. Alberta:
Regional metamorphism and isotopic facies; Ph.D. thesis (Schimann).

258. Baadsgaard, H., Van Kessel, S., Univ. Alberta:
The kinetics of Rb, K, Ca and Sr thermal migration below melting temperatures; M.Sc. thesis (Van Kessel).

259. Baadsgaard, H., Winzer, S., Univ. Alberta:
Rb-Sr isotopic relations applied to a study of metamorphic equilibria; Ph.D. thesis (Winzer).

260. Boyle, R.W., Geol. Surv. Can.:
Lead isotope geology of Keno and Galena Hills, Yukon, 1958-.

261. Crocket, J.H., McNutt, R.H., McMaster Univ.:
Rb-Sr isotopic studies of Chilean volcanic and plutonic rocks, 1971-75.

An initial (Sr^{86}/Sr^{87}) ratio study of Andean igneous rocks which vary in age from 250 m.y. to 0 m.y.

262. Coleman, M.L., Univ. Alberta:
Oxygen isotope analysis of volcanic rocks from Fontale and St. Helena, 1973.

Sulphur isotope values for the Pikwe nickel-copper deposit (Botswana), 1973-.

Search for natural variations in Ca isotope ratios, 1967-.

263. Coleman, M.L., Fritz, P., Univ. Alberta and Univ. Waterloo:
Investigation into the effect of compositional and structural variations in dolomite on its oxygen isotope composition, 1972-.

264. Coleman, M.L., Sassano, G.P., Univ. Alberta:
Isotopic investigation into the conditions of formation of some Canadian uraninites, 1972-73.

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

To determine the effectiveness of amounts and isotope ratios of volatile compounds such as He, SO_2, and light hydrocarbons in natural emanations from faults and fracture zones, ground waters, and rock inclusions in evaluating the mineral potential of buried formations.

266. Fritz, P., Univ. Waterloo:
Stable isotopes in subsurface and surface waters, 1972-.

267. Goodwin, A.M., Thode, G.M., and Monster, J., Univ. Toronto and McMaster Univ.:
Sulfur isotope relations in Archean supracrustal rocks, 1965-75.

268. Lambert, R. St J., Coleman, M., Univ. Alberta:
Geothermometry of Giant Yellowknife ore body, Northwest Territories, 1970-73.

269. Schwarcz, H.P., McMaster Univ.:
Sulfur isotopic studies of sulfide ore deposits, 1968-.

Theoretical and experimental studies of the origin of S^{34}/S^{32} distributions in sedimentary and metamorphosed ore deposits are underway.

See A sulfur isotopic study of the White Pine Mine, Michigan; Econ. Geology, vol. 67, pp. 895-914, 1972.

270. Schwarcz, H.P., Ford, D.C., Thompson, P., Harmon, R., McMaster Univ.:
Isotopic geochemistry of speleothem, 1968-; Ph.D. theses (Thompson, Harmon).

Dating of cave-deposited calcites by Th^{230}/U^{234} and U^{234}/U^{238} ratios coupled with O^{18}/O^{16} and D/H ratio measurement of calcites and included waters permits us to construct temperature-time curve for late Pleistocene at continental sites of cave deposition.

GEOCHEMISTRY

271. Schwarcz, H.P., Olson, E., McMaster Univ.:
Sulfur and oxygen isotope studies of evaporites, 1969-; Ph.D. thesis (Olson).

O^{18}/O^{16} ratios of sulfate minerals in marine evaporites vary with age of deposit, parallel with recognized S^{34}/S^{32} variations. Experimental and field studies of these parameters can help define conditions of evaporite deposition and chemical evolution of world ocean.

272. Schwarcz, H.P., Shieh, Y.N., McMaster Univ.:
Oxygen isotope studies of granite and migmatite, 1968-74.

Deep-level migmatitic paragneiss leucosome and melanosome are isotopically equilibrated and exchanged with a light (low-O^{18}) reservoir, presumably a basaltic lower crust or upper mantle.

273. Seccombe, P., Clark, G.S., Univ. Manitoba:
Sulphur isotope investigation of sulphide deposits in the Birch-Uchi Lakes Greenstone Belt, northwestern Ontario, 1970-73.

The analytical results of over 200 samples have been obtained on Archean sulphide deposits ranging from barren to ore grade. The following conclusions may be drawn from the data obtained so far: (1) The sulphur is volcanogenic with an average close to meteoritic. (2) Barren sulphide occurrences show the greatest dispersion (8 - 9°/oo). (3) Sulphides of the ore-bearing deposits have a more homogeneous °/oo S^{34}. (4) There appears to be a relationship between degree of mineralization (ore-barren) and sulphur isotope ratios.

Mineralogical Phase Chemistry

274. Broughton, P.L., Saskatchewan Dept. Mineral Resources:
Organic geochemistry of lignite deposition, Phase III: Petrology of the resinite maceral, 1971-.

Investigations into the organic geochemistry of low-rank coal deposits utilizing infrared spectroscopy, atomic absorption, thermal analysis (DTA), X-ray diffraction and petrographic techniques.

See Petrology of the Estevan No. 3 lignite seam, southeastern Saskatchewan; Proc. First Geological Conf. Western Canadian Coal, 1972. Identification of leonardite, a naturally oxidized lignite, by low-angle X-ray scattering method; J. Sed. Petrol., vol. 42, no. 2, pp. 356-358, 1972.

275. Budrevics, V., Univ. Manitoba:
Facies-mineralization in the Eramosa Member of the Lockport-Amabel Formation, Ontario, 1973-75; M.Sc. thesis.

276. Chesworth, W., Univ. Guelph:
Mineral-equilibra in system Al_2O_3-H_2O applied to soils.

277. Dostal, J., Shaw, D.M., McMaster Univ.:
Geochemistry and petrology of the Loon Lake pluton, Ontario, 1967-73; Ph.D. thesis (Dostal).

The major and trace element data support the view that the syenitic rocks are a product of a differentiated magma, while granitic rocks probably originated by the partial melting of crustal rocks enhanced by syenite.

278. Dupuy, C., Fratta, M., Shaw, D.M., McMaster Univ.:
K-Rb-Tl relationships in some Italian and French volcanic rocks, 1972-73.

Geochemical behaviour of Tl in young European volcanic series (ignimbrites from Tuscany; basalts of the Herault and Velay) contributes to the understanding of the evolution of these rocks, when considered in parallel with K, Rb and other elements.

279. Edgar, A.D., Univ. Western Ontario:
The system analcite-leucite-water up to 2 kb P_{H_2O}, 1972-74.

280. Edgar, A.D., Fryer, B.J., Univ. Western Ontario:
Major and trace element geochemistry and petrology of the alkalic volcanics of the Kirkland Lake area, Ontario, 1973-75.

281. Edgar, A.D., Gupta, A.K., Univ. Western Ontario:
Phase relations in protions of the expanded basalt tetrahedron (larnite-nepheline-forsterite-silica) with the addition of K-rich molecules up to 10 kb P_{H_2O}, 1968-76.

See The system diopside-nepheline-akermanite-leucite and its bearing on the genesis of alkali-rich mafic and ultramafic rocks; J. Geol., vol. 81, no. 2, pp. 209-218, 1973.

GEOCHEMISTRY

282. Farrell, D.M., Mines, Energy, Mines and Resources:
Determination of the course of structural changes and of the kinetics of conversion of magnetite through maghemite to α - hematite by infrared spectroscopy, 1968-72; M.Sc. thesis.

Extensive work has been carried out on the preparation and obtaining of pure magnetite and maghemite as starting materials. Quality has been assessed by X-ray diffraction analysis, infrared spectroscopy, thermogravimetric and chemical analysis. The reaction cell has been designed and constructed. Kinetic experiments have been completed, but the interpretation of the resulting infrared spectra has presented unforeseen difficulties and has not yielded satisfactory kinetic information.

See A study of the infrared absorption in the oxidation of magnetite of maghemite and hematite; Mines Br. Invest. Rept. IR 72-18, 1972.

283. Fratta, M., Shaw, D.M., McMaster Univ.:
Thallium in basaltic rocks, 1971-73.

Investigation of: a) secular variation of Tl content, Rb/Tl, K/Tl, Li/Tl ratios in basalts and diabases of decreasing age; b) lateral inhomogeneity of upper mantle; c) behaviour of Tl, K, Rb, Sr, Li and Ba in different tectonic settings; and d) determination of Tl partition coefficient in volcanic rocks to correlate Tl distribution with modal analyses of samples.

284. Fung, P., Shaw, D.M., McMaster Univ.:
Partition of thallium in sulfide and silicate rocks and minerals, 1972-73; M.Sc. thesis (Fung).

285. Fyfe, W.S., Univ. Western Ontario:
Geochemical and field studies of the interaction of salt solutions and volcanic rocks at elevated P-T conditions, 1972-76.

Involves an experimental and field study of the stripping and deposition of transition metals in volcanic rocks, particularly in the ocean ridge environment. In particular we are attempting to find out the quantity and types of molecules present in the solutions. Preliminary studies are concerned with Au, W, Ag, Ni, Cu, U.

286. Fyfe, W.S., Schloessin, H.H., Univ. Western Ontario:
Water containing phases in the deep mantle, 1972-.

To study the stability of hydrated silicates up to 100 Kb and 1500°C.

287. Gill, J.W., McGill Univ.:
Phase relations in the system Cu-Fe-Ni-S, 1971-73; M.Sc. thesis (Gill).

Phase relations are being studied by adding copper to the portion of the Fe-Ni-S system involving monosulfide solid solution, pentlandite, and heazlewoodite. Phases are being analysed with the microprobe in order to establish definite tie-lines between these solid solution phases and Cu-Fe-S phases.

288. Grove, E.W., Johnson, W., British Columbia Dept. Mines Petrol. Resources:
Petrochemistry of Pleistocene and Recent volcanics in the Unuk River and Anyox map-areas, Stewart Complex, British Columbia, 1971-73.

289. Grove, E.W., Johnson, W., McMillan, W.J., British Columbia Dept. Mines Petrol. Resources:
Geochemistry of the Guichon Creek Batholith, 1970-74.

Total silicate and trace element analysis has been started using modified rapid analytical methods. The petrochemistry of the batholith rocks particularly with regard to mineralization will be investigated by statistical analysis using the recently completed geological study as a guide.

290. Harmon, K., Shaw, D.M., McMaster Univ.:
Tungsten geochemistry in Precambrian rocks, 1972-74; M.Sc. thesis (Harmon).

291. Helsen, J., Shaw, D.M., McMaster Univ.:
Geochemistry of tungsten in volcanic rocks, 1971-74; Ph.D. thesis (Helsen).

292. Jongejan, A., Wilkins, A.L., Mines Branch, Energy, Mines and Resources:
High-temperature phase equilibrium studies in the system CaO-Nb_2O_5-TiO_2-SiO_2 and the relevant sub-systems, 1962-72.

See Liquidus determinations in the 20%-SiO_2 plane of the quaternary system CaO-Nb_2O_5-TiO_2-SiO_2; J. Less-Common Metals, vol. 27, no. 2, pp. 101-108, 1972. Liquidus determinations in the 25%-SiO_2 plane of the quaternary system CaO-Nb_2O_5-TiO_2-SiO_2; J. Less-Common Metals, vol. 29, no. 4, pp. 349-360, 1972.

293. Kretschmar, U.,Univ. Toronto:
Phase relations in the Fe-As-S system and their applications, 1969-73; Ph.D. thesis.

294. Kretz, R., Univ. Ottawa:
Geochemistry of crystalline rocks.

A study of chemical changes in bodies of crystalline rock, including gneisses and marbles of the Grenville Province and granite, pegmatite, and schist of the Slave Province.

295. Kuo, H., Crocket, J.H., McMaster Univ.:
Rare earth abundance trends and their implications on the genesis of rock types from the Sudbury Nickel Irruptive, 1970-74; Ph.D. thesis (Kuo).

Rare earth abundances have been determined by neutron activation in various rock types from the Sudbury Nickel Irruptive including norites, micropegmatites, quartz diorites from offset deposits, ore-bearing sublayer rocks and ultramafic xenoliths. Preliminary analysis and modelling suggest that all rocks, including the ore bearing sublayer with its ultramafic xenoliths, are derived from a single parent magma by fractional crystallisation. Thus, both the ore and the xenoliths, appear to be genetically related to the Irruptive.

GEOCHEMISTRY

296. MacLean, W.H., McGill Univ.:
The partition of base metals between sulfide and silicate silicate liquids, 1970-73.

Cobalt, nickel, copper, lead and zinc have been added to coexisting sulfide and silicate liquids and the partitioning of these metals between the two liquids is being measured against the parameters of temperature, fugacity of oxygen and SiO_2 content. The work will be extended using silicate liquids of more complex compositions.

297. McOnie, A.W., Fawcett, J.J., Univ. Toronto:
Stability of intermediate Mg-Fe chlorites at 2Kb P_{H_2O}, 1970-73.

298. Mitchell, R.H., Lakehead Univ.:
Petrology and geochemistry of kimberlites and potassic lavas;
Petrology and geochemistry of alkaline undersaturated rocks;
Isotope geochemistry of Sabkha evaporites;
Isotope geochemistry of Western Canadian lead-zinc deposits, 1969-.

Emphasis at present in the study of kimberlites is upon a) rare earth element geochemistry; b) geochemistry of magnesian ilmenite; and c) composition of associated fluid phases. The geochemistry of potassic lavas is concerned with rare earths, K/Cs, Nb/Ta, Zr/Hf ratios. Alkaline complexes in northeastern Ontraio, e.g., Poobah Lake, Seabrook Lake and Sturgeon Lake are being investigated. Sulphur isotope studies have been undertaken on sabkhas from the Devonian of Alberta and from the Persian Gulf.

See Kimberlite from Somerset Island, District of Franklin, Northwest Territories; Can. J. Earth Sci., vol. 10, no. 3, pp. 384-393, 1973. Isotopic composition of strontium in rocks of the Fen alkaline complex, South Norway; J. Petrology, vol. 13, pp. 83-97, 1972.

299. Patton, G.D., Univ. Guelph:
Experimental synthesis in the system Al_2O_3- H_2O, 1971-73; M.Sc. thesis.

The use of aluminium amalgams has made feasible the study of the system Al_2O_3 - H_2O under conditions of low temperature and pressure. The investigation is leading toward delineation of the stability fields of the oxyhydroxide phases and the trihydroxide phases of Aluminium under these conditions. This work is applicable to the genesis of bauxites and soils.

300. Pinsent, R.H., Smith, D.G.W., Univ. Alberta:
Geochemistry and mineralogy of some ankerite-bearing biotite assemblages near Mt. Robson, British Columbia, Canada, 1970-73; Ph.D. thesis (Pinsent).

Metasedimentary rocks from the middle Miette Group have been investigated by wet chemical and microprobe techniques following a structural study across the biotite isograd northeast of Tête Jaune Cache. The compositions of whole rocks and coexisting mineral phases, muscovite, chlorite, biotite and ankerite have been determined, allowing conclusions to be drawn regarding the mineral composition of the original rocks, the temperature of metamorphism and the attainment of equilibrium during crystallisation of the metamorphic minerals.

301. Scott, S.D., Naldrett, A.J., Gasparrini, E., Univ. Toronto:
Thermodynamics of the Fe-Ni-S system, 1972-73.

See FeS activities in the $Fe_{1-x}S$ - $Ni_{1-x}S$ (mss) solid solution at 930°C. (abstract); Econ. Geol., vol. 67, p. 1010, 1972.

302. Shaw, D.M., McMaster Univ.:
Tl in Precambrian and other sedimentary rocks, 1972-73.

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.

303. Shaw, D.M., Vatin-Perignon, N., McMaster Univ.:
Li in spilites, 1972-73.

304. Sie, D.S., Univ. Manitoba:
Melting relations of aulneau granodiorite, 1972-73; M.Sc. thesis.

Experimental determination of the liquidus and solidus equilibrium. The rock is part of a late-tectonic granitic dome in the Keewatin Greenstone Belt.

305. Stanton, M.S., Chevron Standard Ltd.:
Organic and petroleum chemistry, 1967-.

306. Vigrass, L.W., Univ. Saskatchewan (Regina):
Selenium in rocks of southern Saskatchewan, 1972-73.

GEOCHEMISTRY

General

307. Appleyard, E.C., Univ. Waterloo:
Structure and origin of the Reid Lake - Rosenthal nepheline gneiss belt, eastern Ontario, 1969-73.

Nepheline, nepheline-scapolite and nepheline-corundum gneisses of composite origin are exposed as metamorphic tectonites a little above the Grenville Supergroup/Basement contact. Structural, petrographic and geochemical study is directed towards determining the time and mode of emplacement of the undersaturated rocks.

308. Aumento, D.F., Dalhousie Univ.:
Fission tracks studies.

Fission track techniques are being used to (1) date young igneous rocks (Mid-Atlantic Ridge basaltic glasses and northern British Columbia Tertiary alkali lavas), and (2) map the distrbution and concentration of uranium in mafic and ultramafic rocks from the continents and oceans to provide data for heat flow calculations.

309. Broughton, P., Saskatchewan Dept. Mineral Resources:
Mineral genesis in the karst subsurface, 1968-.

The role of silica in subsurface void filling is under investigation.

See Monohydrocalcite in speleothems: an alternative interpretation; Contr. Mineralogy Petrol., vol. 36, no. 2, pp. 171-174, 1972.

310. Clifford, P.M., McNutt, R.H., Walker, R.G., McMaster Univ.:
Evolution of Archaean greenstone belts, 1972-.

Involves integrated field and laboratory studies of the volcanology, sedimentology, structural geology, geochemistry, economic geology and other aspects of greenstone belts, especially those of northwestern Ontario.

311. Ford, D.C., Drake, J.J., McMaster Univ.:
Carbonate and sulphate geochemistry of fresh waters in the southern Canadian Rockies, 1966-75.

The present emphasis is upon temporal and spatial patterns of solution in the mountain basins of the Athabasca and North Saskatchewan Rivers.

312. Fortescue, J.A.C., Grant, B., Brock Univ.:
Fundamental and applied landscape geochemistry, 1970-.

Copies of the ten papers and reports resulting from this research to date may be obtained from the Department of Geological Sciences, Brock University.

313. Fyfe, W.S., Univ. Western Ontario:
Origin of tonalitic magmas, 1972-74.

A study of partial melting of crustal materials but with particular reference to the origin of Archaean tonalites.

314. Goodwin, A.M., Univ. Toronto:
Geochemistry of Archean volcanic rocks, 1961-75.

Origin and evolution of Precambrian crust, 1965-.

315. Hitchon, B., Research Council of Alberta:
Geochemistry of formation waters, crude oils and natural gases in western Canada sedimentary basin.

See Hydrogeochemistry of the surface waters of the Mackenzie River drainage basin, Canada. 1. Factors controlling inorganic composition; Geochem. et Cosmochim. Acta, vol. 36, pp. 825-865, 1972. Low molecular weight aromatic hydrocarbons in gas condensates from Alberta, Canada; Geochem. et Cosmochim. Acta, vol. 36, pp. 1043-1059, 1972.

316. Jen, Lo-Sun, Univ. Ottawa:
Spatial distribution of crystals and phase equilibria in charnockitic granulites from Adirondack Mountains, New York, 1969-73; Ph.D. thesis.

317. Kemp, A.L.W., Thomas, R.L., Anderson, T.W., Canada Centre for Inland Waters:
Modern sedimentation rates in Lakes Superior, Huron, Erie, Ontario and Georgian Bay, 1970-75.

See Changes in C,N,P and S in the last 140 years in three cores from Lakes Ontario, Erie and Huron. Nutrients in natural waters; J. Wiley and Sons Inc., New York, pp. 251-279, 1972.

318. LaSalle, P., Warren, B., Ministère des Richesses Naturelles du Québec:
Prospection alluvionnaire utilisant des données géochimiques, minéralogiques et pétrologiques de la moraine recueillie à la surface du roc dans la région d'Abitibi, 1971-73.

319. Muecke, G.K., Volborth, A., Dalhousie Univ.:
Geochemical studies.

Neutron-activation analysis: an analytical program in which two matched germanium detectors will be used consists of stoichiometry studies of oxygen and sulpur compounds, silicates, rocks, meteorites and lunar material.

320. Scott, S.D., Univ. Toronto:
Experimental calibration and application of the sphalerite geobarometer, 1971-73.

321. Shaw, D.M., McMaster Univ.:
Early Precambrian crustal models.

See Development of the early continental crust. Part I. The use of trace element distribution coefficient models for the protoarchean crust; Can. J. Earth Sci., vol. 9, no. 12, pp. 1577-1595, 1972.

GEOCHEMISTRY

322. Warren, H.V., Univ. British Columbia:
Environmental geochemistry in relation to human welfare, 1970-73.

See Biogeochemistry in Canada; Endeavour, vol. 31, no. 112, pp. 46-49, 1972.

Variations in the trace element contents of some vegetables; J. Royal College General Practitioners, vol. 22, no. 56, pp. 56-60, 1972.

GEOCHRONOLOGY

323. Anderson, R., Clark, G., Weber, W., Univ. Manitoba:
Whole-rock Rb-Sr ages from the Kasmere Lake Area, extreme northwestern Manitoba, 1972-73; M.Sc. thesis (Anderson).

Units being studied include gneisses and migmatites, as well as granitic rocks believed to represent the oldest and youngest units in the area according to detailed field work.

324. Aumento, F., Ade-Hall, J.M., Dalhousie Univ.:
Petrology, chronology and paleomagnetism of basalts drilled from the floor of the median valley of the Mid-Atlantic Ridge at 45° N.

See Deep drill 1971 - diamond drilling of pillow lava in the median valley of the MAR at 45°N E.O.S.; Am. Geophysical Union Trans. vol. 53, nos. 4 and 11, 1972.

325. Aumento, D.F., Ade-Hall, J.M., Hyndman, R.D., Schenk, P.E., Medioli, F., Dalhousie Univ.:
Deep drill - 1972 : A deep diamond drill hole through the Island of Bermuda.

Geochemical, petrological, paleomagnetic, chronological, heat flow and seismic investigations of the deep drill cores are currently underway.

326. Baadsgaard, H., Univ. Alberta:
Isotope geology of western Canadian geologic events.

A multi-faceted research effort centered about the use of natural isotopic variation is based on facilities for isotopic analysis of Th, U, Pb, Rb, Sr, Ca, K, Ar, C, O, N, H, and sulfur. The types of individual sub-projects currently under investigation include studies of uranium mineralization, metamorphic recrystallization, geologic time scale correlations, isotopic variation in oil genesis and migration, U-Pb systematics in metamorphosed rocks and minerals, geochronology in a number of areas of Western Canada, and C, O, H, S isotope variation in economic mineralization.

327. Baadsgaard, H., Drury, S., Univ. Alberta:
Geochronology of some metasedimentary and granitic rocks from northwestern British Isles.

328. Baadsgaard, H., Godfrey, J.G., Univ. Alberta:
Geochronology of Canadian Shield in northeastern Alberta.

329. Baadsgaard, H., Koster, F., Univ. Alberta:
Geochronology of the Tazin Lake area, northwestern Saskatchewan.

330. Baadsgaard, H., Lambert, R. St J., Univ. Alberta:
Geochronology of ancient gneisses from Greenland.

GEOCHRONOLOGY

331. Baadsgaard, H., MacQuarrie, R., Univ. Alberta:
Zircon U-Pb dating of syntectonic granites between Hanson Lake, Saskatchewan and Flin Flon, Manitoba; M.Sc. thesis (MacQuarrie).

332. Baadsgaard, H., Sassano, G., Univ. Alberta:
Nature and time of U-mineralization in Uranium City, Saskatchewan area.

333. Baadsgaard, H., Williams, G., Univ. Alberta:
K-Ar time-scale correlation of mid-Cretaceous bentonites from Saskatchewan.

334. Berger, A.R., Memorial Univ.:
Studies on plutonic and associated metamorphic rocks of Newfoundland, 1972-.

To determine the geological setting and petrogenesis of selected plutonic units and the analysis of their chemical, mineralogical and structural effects on their envelope rocks; in particular the field relationships, petrography, geochemistry and isotopic geochronology of the granitic rocks of eastern Notre Dame Bay. Other field-based problems include (1) the origin, chronology and mechanism of growth of phyllosilicate and aluminosilicate porphyroblasts in the envelopes of the granites of the Musgrave Harbour district, (2) the origin of mineral alignments in foliated felsite dykes of the Carmanville area and (3) the strain history of deformed gabbros and peridotites of the Lewis Hills portion of the Bay of Islands complex. In addition a pilot study will be undertaken to investigate the feasibility of producing alignments of particles and of growing synthetic crystals under varying stress-strain conditions, in order to provide analogies with geological conditions.

335. Clark, A.H., Farrar, E., Quirt, G.S., Queen's Univ.:
Geochronological studies of the Andean Mobile Belt of northern Chile (largely 26°-29°S), 1967-72; Ph.D. thesis (Quirt).

336. Clark, A.H., McNutt, R.H., Crockett, J., Queen's Univ. and McMaster Univ.:
Mineralogy, chemistry and stable isotope distribution of Jurassic-Pleistocene andesitic and rhyolitic volcanics, Copiapo region, northern Chile, 1969-72.

337. Clarke, W.B., McMaster Univ.:
Investigations of isotope patterns in nature, 1965-78.

The use of isotope tracers (principally the inert gases) for study of ocean flow patterns, migration of He^4 through rocks, studies of groundwater flow and mixing patterns in lakes. A method of age dating based on spontaneous fission Xenon from U^{238} is also under study.

See Excess ^3He in the Atlantic Ocean; Earth Planet Sci. Letters, vol. 16, p. 122, 1972.

338. Cormier, R.F., St. Francis Xavier Univ.:
Rubidium-strontium dating of rocks and minerals, 1961-.

Involes whole-rock and mica ages of Devonian (Acadian) granitic rocks on the mainland of Nova Scotia with particular emphasis on the main batholith of southwestern Nova Scotia.

339. Doig, R., Barton, E., McGill Univ.:
Rb-Sr isotopic studies of metasedimentary rocks, 1971-74; M.Sc. thesis (Barton).

340. Doig, R. Barton, J. Frith, R.A., McGill Univ.:
Geochronology of Grenville Province rocks, 1970-74.

Sections across Grenville province, Val d'Or to Montreal, and Chibougamau to Tadoussac, and the Hastings Basin, southeastern Ontario.

See Rb-Sr isotopic studies of the Lac Croche Complex, Grenville Province; Can. J. Earth Sci., vol. 9, pp. 1080-1086, 1972.

341. Farquhar, R.M., Doyle, R.J., Univ. Toronto:
Preliminary Rb-Sr geochronology of granite gneisses along the Midwest Superior Geotraverse, 1971-73.

342. Fletcher, I., Farquhar, R.M., Univ. Toronto:
Lead isotope studies of lead in sulphide minerals, 1972-.

Initially, the project will consist of determining the accuracy and sensitivity of the mass spectrometer currently available for this project.

343. Folinsbee, R.E., Kuo, S.L., Hoiles, H., Haverslew, R., Farkas, A., Univ. Alberta:
Study of major ore deposits using the mass spectrometer and electron microprobe as research tools, 1972-74; Ph.D. and M.Sc. theses.

Major Canadian mines currently under study are Texas Gulf at Timmins, Sherritt Gordon at Ruttan Lake, Afton near Kamloops and ore deposits associated with the Tintina Trench of the Yukon (Anvil, Frances Lake, Keno Hill, Hess Mountains).

See Chinkuashih - A gold-pyrite-enagrite-barite hydrothermal deposit in Taiwan; Geol. Soc. Amer., Mem. 135, 1972.

344. Folinsbee, R.E., Robertson, D.K., Univ. Alberta:
Geochronology of the Ghost River cordierite gneiss belt, Slave nucleus, Northwest Territories, 1972-73.

A geochronologic study of leads in minerals in an ancient belt of gneisses, and of lead and uranium in zircons in the same gneisses, and of zircons from Kenoran (circa 2600 m.y.) granites that intrude the gneiss belt is being undertaken. Some of the gneisses may be Katarchean in age.

345. Franklin, J.M., McIlwaine, W.H., Poulsen, K.H., Lakehead Univ.:
Stratigraphy and age of the Sibley Group, a Paleohelinian red bed sequence, 1970-72.

The Sibley group is a 1375 m.y. old unmetamorphosed red bed sequence, marked by an unusual occurrence of montmorillonite-type clays and stromatolite.

346. Gibbins, W.A., McNutt, R.H., McMaster Univ.:
Rb-Sr geochronologic studies at Sudbury, Ontario, 1968-73.

See Rb-Sr isotopic studies on the Murray granite; Geol. Assoc. Can., Sp. Paper 10, pp. 61-66, 1972.

347. Goodz, R., Frith, R.A., Doig, R., McGill Univ.:
Rb-Sr isotopic studies in the Slave-Bear provinces, 1972-73; M.Sc. thesis (Goodz).

348. Josse, G., Clark, G.S., Bailes, A., Univ. Manitoba:
Rubidium-strontium ages from the File Lake Area, West-Central Manitoba (Flin Flon - Snow Lake Greenstone Belt), 1971-73.

349. Lambert, R. St J., Hogarth, D., Univ. Alberta:
Rb-Sr geochronology of the Wakefield syenite and related rocks, Ontario, 1968-73.

350. Lambert, R. St J., Holland, J.G., Univ. Alberta:
Petrochemistry and age of the Malvernian, England, 1966-73.

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

Geochemistry and geochronology of the Lewisian, Scotland and shield composition and structure in general, 1962-.

See The geochemistry of lithium in the mainland Lewisian of Scotalnd; 24th Internat. Geol. Congr., Sec. 10, pp. 169-178, 1972.

351. Lambert, R.St J., Martineau, M.P., Hoffman, G., Univ. Alberta:
Big Spruce Lake Complex, Northwest Territories, 1967-73.

A petrological and Rb-Sr age study has been completed and oxygen isotope work is in progress.

352. Lowdon, J.A., Geol. Surv. Can.:
Radiocarbon laboratory development and operation, 1957-.

To determine the age of carbonaceous matter using radiocarbon dating techniques; to ensure continuing and improving precision of existing techniques; and to keep abreast of current research on new techniques. To conduct research on variation in the radiocarbon content of modern organic material and its application to age determination on fossil material.

353. Marchand, M., Crocket, J.H., McMaster Univ.:
Rb-Sr isotopic studies of the Onaping Formation, Sudbury, and rocks of Mistastin Lake crater, 1970-74; Ph.D. thesis (Marchand).

Evidence is sought from Rb-Sr studies for a cryptoexplosive origin of these structures.

354. Muecke, G.K., Clarke, D.B., Reynolds, P.H., Ade-Hall, J.M., Hyndman, R.D., Beaumont C., McKenzie, C.B., Rankin, D., Lambert, T., Cochrane, N., Dalhousie Univ.:
Studies on metamorphic and igneous rocks of mainland Nova Scotia; Ph.D. and M.Sc. theses.

Studies include the calc-alkaline volcanics; the Nova Scotia Batholith; metamorphism, geochronology, magnetism, heat flow; ocean tide loading; and geomagnetic induction.

355. Neilson, J.M., Queen's Univ.:
Grenville Front in the Mistassini region, Quebec, 1970-73.

356. Roscoe, S.M., Franklin, J.M., Loveridge, W.P., Sangster, D.F., Poulsen, K.H., Lakehead Univ., Geol. Surv. Can.:
Pb-Isotope studies, Superior Province, 1964-72.

357. Sassano, G.P., Univ. Alberta:
The age of some dioritic intrusions in the central Alps, Italy, 1972-73.
The age of the quartz porphyry dikes occurring in the Fay Mine - Eldorado, Saskatchewan, 1972-73
See Rb-Sr isotopic systematics of the Foot Bay Gneiss, Donaldson Lake Gneiss, and pegmatite dikes from the Fay Mine, NW Saskatchewan; Can. J. Earth Sci., vol. 9, no. 11, pp. 1368-1381, 1972.

358. Schindler, J., Schwarcz, H.P., Crocket, J.H., McMaster Univ.:
Rhenium/Osmium dating feasibility, 1968-73.

Neutron-activation analysis of sulfide ores and associated silicate rocks to assess Re and Os levels and to determine possible applicability of Re/Os dating to ore deposits; Re and Os geochemical study of ores.

359. Stauffer, M.R., MacQuarrie, R., Univ. Saskatchewan:
Geochronology of the Flin Flon area, Manitoba, 1971-73; M.Sc. thesis (MacQuarrie).

360. Steiner, J., Univ. Alberta:
Geological history and the dynamics of the Milky Way galaxy, 1964-75.

See Possible galactic causes for periodic and episodic glaciations; Bull. Geol. Soc. Amer., vol. 84, no. 3, pp. 1003-1018, 1973.

361. Stockwell, C.H., Geol. Surv. Can.:
Geochronology of the Canadian Shield, 1969-.

See Revised Precambrian time scale for the Canadian Shield; Geol. Surv. Can., Paper 72-52, 1973.

362. Terasmae, J., Brock Univ.:
Postglacial geochronology and paleoecology of the Kamloops area, British Columbia, 1971-72.

Quaternary geochronology, paleoecology and dendroclimatology in Ontario, 1969-.

GEOCHRONOLOGY

See Quaternary stratigraphy and geomorphology of the eastern Great Lakes region of Southern Ontario; 24th Intern. Geological Congr. Guidebook Excursion A42, 1972.

363. Trembath, L.T., Univ. New Brunswick:
Selection of material suitable for determining whole rock Rb^{87}/Sr^{86} ages, 1971-74.

The short term objective is the development of quantitative analytical curves for Rb and Sr determination. The long term objective is to develop a screening service for selecting materials suitable for whole rock Rb^{87}/Sr^{86}.

364. Van Niekerk, C.B., Clark, G.S., Univ. Manitoba:
Rubidium-strontium and uranium-lead age study of Archean volcanic rocks in northwestern Ontario, 1971-73.

Volcanic rock samples have been collected from the Lake of the Wood and Birch-Uchi Lake greenstone belts.

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

To undertake detailed isotopic investigations in regions where 'anomalous' K-Ar age relationships have been found in order to establish the true age of the rocks, the time when the isotopic systems were disturbed, and to gain an understanding of the natural processes responsible for the disturbance.

The development of K-Ar dating techniques and their application to very young continental basalts from British Columbia, 1968-.

GEOMORPHOLOGY AND GLACIOLOGY

366. Arnold, K.C., Inland Water Directorate, Dept. Environment:
Mass balance measurement on Queen Elizabeth Islands' glaciers, 1971-76.

To extend the limited number of mass balance measurements obtained by ground parties to more locations. To determine regional and altitudinal variations in mass balance and test the concept of representative glaciers.

367. 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-.

368. Barnett, G., Jones, S.J., Inland Water Directorate, Dept. Environment:
Diffusion and solubility of various substances in ice, 1971-.

369. David, P.P., Univ. Montréal:
Study of selected dune areas in Canada, 1965-.

See Great Sand Hills, Saskatchewan; Guidebook Excursion C-22, 24th Internat. Geological Congr. pp. 37-50, 1972.

370. de Romer, H.S., Sir George Williams Univ.:
Geology and age of some leucocratic stocks in north-central Gaspé.
Intrusion and deformation in north-central Gaspé, Quebec.
Structural geology of the Pre-Cordillera in the Uspallata area, Province of Meudoza, Argentina.
Soil structures of Mt. Jacques Cartier Co., Gaspé North, Quebec, 1972-73.

371. Flint, J.-J., Brock Univ.:
Fluvial systems in glaciated terrains, 1970-72.

372. Ford, D.C., McMaster Univ.:
The karst geomorphology of the High Rock Range in the vicinity of Crowsnest Pass, Alberta, British Columbia, 1968-74.

Complex cave systems in the region pre-date the development of the extant mountain range. The cave sequence is being studied in its own right and to determine the age of this portion of the Rocky Mountain Front Ranges.

See Dating cave calcite by the uranium disequilibrium method: some preliminary results from Crowsnest Pass; Internat. Geog., vol. 1, pp. 21-23, 1972.

373. Ford, D.C., Brook, G.A., McMaster Univ.:
Karst and fluvial landform genesis in the south Nahanni River area Northwest Territories, 1971-74.

See Development of the Canyons of the South Nahanni River, Northwest Territories; Can. J. Earth Sci., vol. 10, no. 3, pp. 366-378, 1973.

GEOMORPHOLOGY AND GLACIOLOGY

374. Ford, D.C., Ewers, R.O., Waterman, S., McMaster Univ.:
The general problem of the genesis of solution caverns.

Present emphases are upon analog modelling of initial (laminar flow) conduits, using plaster of paris and electric flowfield models. The aim is to prepare a set of equations specifying the geometric proportionality of proto-cavern networks.

375. Ford, D.C., Fish, J.E., McMaster Univ.:
Karst geomorphology and geohydrology of the Sierra de El Abra, S.L.P., Mexico, 1969-74.

The Sierra de El Abra is a reef-back reef massif which has proved to have a most complex geohydrological pattern developed during the Pliocene and Pleistocene.

376. Ford, D.C., Quinlan, J.F., McMaster Univ.:
The nature and distribution of karst terrains in Canada, 1972-73.

377. Grove, E.W., British Columbia Dept. Mines Petrol. Resources:
Recent landslides on glaciers, 1967-72.

On glaciers in the Unuk River Map area rock landslides include simple small collapse features, Blackhawk-type slides of large dimensions, and an unusual lobate-type slide previously not described in Cordilleran literature. This latter type are dry avalanche induced talus-moraine slides with a final mud-slide stage. This type was first recognized on Haimila Glacier and has subsequently been observed forming on Bromley Glacier east of Stewart, British Columbia.

Surging glaciers in the Coast Ranges of British Columbia, 1971 - 73.

Major glaciers in the Stewart Map Area have been observed since 1964 and the rates of ablation measured. The Salmon glacier was observed to surge about 800 m. during 1971 - at about the same rate as Steele glacier - and is the first recorded surging glacier in British Columbia. Historical evidence suggests that Salmon glacier has surged periodically at least since 1921. In 1972 the Frankmackie glacier was noted to surge for the first time, suggesting a local change in ablation regime. Evidence collected indicates that glaciation - deglaciation in the Coast Ranges has been periodic, very rapid, and essentially continuous after Wisconsin time.

Ice dammed lakes - Summit Lake and Tide Lake, northwest British Columbia, 1968-.

The phenomenon known as jokulhlaup related to Summit Lake has been studied during the period 1964 to 1972 during which time five outburst have been observed, associated with the position of the ice dam and hydrostatic head. The concept of a critical barrier, related to sub-ice topography, is proposed.

378. Hattersley-Smith, G., Defence Research Establishment Ottawa:
Investigation of land and sea ice in the northern part of the Arctic Archipelago as climatic indicators, 1970-.

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

380. Jones, S.J., Inland Waters Directorate, Dept. Environment:
Mechanical properties of ice containing impurities, 1968-72.

Study of defect in ice crystals, 1968-.

To determine the density of dislocations and their velocity under stressiopuse and impure ice and by studying these distributions to further understand the nature of the flow law of ice under stess, the underlying reason for the effect that impurities have on the flow of ice and the role of dislocations in the formation of ice.

381. Kucera, R.E., Univ. British Columbia:
Time and space relations of geologic processes, 1967-.

Continuing investigations of: a) evolution of miniature drainage channels on a beach-face during ebb-tide; b)origin of mudflow levees, Britannia Beach, B.C.; c) time-lapse cinematography of evolution of mudcracks; and d) formation of annual moraines, Athabasca Glacier, Alberta.

See Time lapse cinematography applied to the study of geological processes at the Athabasca Glacier, Alberta, Canada; Geol. Soc. Amer., Abst. vol. 4, no. 3, pp. 186-187, 1972.

382. Lewis, C.F.M., Geol. Surv. Can.:
Surficial geology and geomorphology, Hudson Bay, 1971-.

383. MacKay, D.K., Inland Waters Directorate, Dept. Environment:
Hydrologic - geomorphic studies in Mackenzie Basin, related to pipeline.

See Break-up and ice jamming of the Mackenzie River, Northwest Territories; Mackenzie delta area monog., Brock Univ. pp. 87-93, 1972.

384. Mathews, W.H., Geol. Surv. Can.:
Glacial geology, northeastern British Columbia, 1971-.

385. McDonald, B.C., Geol. Surv. Can.:
Sedimentary and geomorphic processes, Yukon coastal plain, 1972-.

386. Mokievsky-Zubok, O., Beck, T.M.H., Stanley, A.D., Inland Waters Directorate, Dept. Environment:
Mass and water balance measurements on selected glaciers in Canada - Place, Sentinel, Woolsey, Peyto, Ram, Berendon, Decade and Per Ardua Glaciers, 1965-.

Several glaciers have been selected for long-term investigations to determine the role of glaciers in the hydrologic cycle by: 1) measuring accumulation and ablation; 2) recording meltwater discharge and meteorologic data; 3) relating glacier variations to recent climatic trends.

GEOMORPHOLOGY AND GLACIOLOGY

387. Moore, T.R., Nicholson, H.M., McGill Univ.:
A study of the soils of Subarctic and Arctic Zones of Quebec/Labrador, 1971-74; M.Sc. thesis (Nicholson).

A reconnaissance survey of soils developed in areas of Quebec/Labrador representative of the transition from the boreal forest environment to the Subarctic and Arctic environments. In 1972, surveys were made in the Sept Iles, Ross Bay, Esker and Cambrian Lake areas, plus a more detailed study of the soils in the Schefferville area (Nicholson); it is intended to carry the study to the Arctic (Subarctic) zones near Fort Chimo in the 1973 season.

388. Morgan, A.V., Univ. Waterloo:
Quaternary geology of the Parkhill-Lucan area, southwestern Ontario. Evaluation of techniques for the location of patterned ground in southern Ontario, 1971-73.

See Late Wisconsinan ice-wedge polygons near Kitchener, Ontario, Canada; Can. J. Earth Sci., vol. 9, no. 6, pp. 607-617, 1972.

389. Ommanney, C.S.L., Inland Waters Directorate, Dept. Environment:
An inventory of perennial snow and ice masses in Canada, 1968-.

To produce a Glacier Atlas of Canada and develop a comprehensive information system based on the glacier inventory numbers. Analysis of data obtained will be to investigate the factors that influence the geographical distribution and types of ice masses and the role and variations of perennial ice in the Canadian water balance.

390. Ommanney, C.S.L., Holdsworth, G., Arnold, K.C., Inland Waters Directorate, Dept. Environment:
Calving glacier studies, 1970-.

To study the distribution of tidal glaciers in Arctic Canada, the present rate and volume of iceberg production and variations in the last 25 to 30 years and be specific detailed studies, to determine discharge rates and develop an understanding of the glaciological/oceanographic processes influencing iceberg calving.

391. Parry, J.T., Granberg, H., Grey, B., Dredge, L., McGill Univ.:
Terrain analysis project, 1964-.

Includes Ungava Bay transect summer and winter conditions using medium and large scale photography and the evaluation of IR thermograms, x band SLAR, and color photography in terrain analysis.

See The application of two morphometric terrain classification systems using air photo interpretation methods; Rept. 1GR - 7090061, Defence Research Board Can., 1972.

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

393. Thakur, T., Inland Waters Directorate, Dept. Environment:
Regional hydrologic characteristics of Mackenzie River basin and morphometric analysis of Mackenzie drainage basin networks, 1970-72.

To study hydrologic characteristics of the Mackenzie River basin, to mathematically formulate the seasonal runoff variations of the rivers in the region and to construct a mathematical model of periodic water levels. To study the complete Mackenzie basin morphometry including all factors of drainage networks and topography from available maps and records and to interpret the hydrologic and geomorphic characteristics from the collected data.

GEOPHYSICS

(See Canadian Geophysical Bulletin, vol. 25,and Geophysical activities at some Canadian universities; Canadian Society of Exploration Geophysics, vol. 8, no. 1, pp. XXVI-XXVIII, 1972.)

Electrical

394. Becker, A., Bertin-Mahieux, J.M., Hubert, J.M., Ecole Polytechnique: Electrical prospecting in diamond drill holes, 1970-74; M.Sc.A. (Hubert).

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.

395. Becker, A., Bolduc, P.M., Ecole Polytechnique: Electromagnetic reflectometer, 1971-73.

396. Collett, L.S., Geol. Surv. Can.: Airborne INPUT surveys, 1966-.

To assess the usefulness of airborne INPUT electromagnetic surveys as an aid to geological mapping.

DC Resistivity-Ontario, 1967-.

To assess the capabilities and limitations of DC resistivity as a means of determining geological structure including the tracing of faults in the Ottawa area and to determine the resistivity of various geological formations in the map-area to provide data needed to assess the capabilities and limitations of other geophysical methods (such as AC resistivity, electromagnetic, INPUT and magnetotelluric) as aids to geological mapping.

397. Govett, G.J.S., Univ. New Brunswick: Electrogeochemical techniques and processes, 1970-.

See Differential secondary dispersion in transported soils and post-mineralization rocks: an electrochemical interpretation; Proc. 4th Internat. Geochem. Expl. Symp., Sp. vol. IMM, pp. 81-91, 1973.

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

To study the electrical parameters including polarization phenomena of rocks, soils, minerals and frozen soils.

399. Lazreg, H., Water Resources Br., Dept. Environment: Geophysical methods applied to the study of salt water intrusion, 1969-73.

Vertical resistivity sounding and horizontal profiling were investigated in terms of their suitability in detecting groundwater contamination by salt water in the Maritime Carboniferous basin which is characterized by thinly interbedded sandstone, siltstone and mudstone. The simultaneous presence of brackish groundwater and shale resulted in an electrical indetermination making it difficult to distinguish between brackish water

aquifers and shale layers. The IP time domain technique was used with the hope to resolve this indetermination. Field results indicates that fresh water sandstone is characterized by a high IP response due most likely to the presence of disseminated pyrite (>5%). It also indicated that, generally, shale may be distinguished from highly salt water contaminated sandstone. Brackish water sandstone generates a background IP response of nearly the same magnitude as that of shale layers.

See Application of surface resistivity methods to the detection of salt-water intrusion in Shippegan, N.B.; Can. Inst. Mining Metal., Trans., vol. 75.

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

To assess the capabilities and limitations of using VLF radio waves as a means of providing geological information to delineate fault and shear zones, and for mapping permafrost.

401. Standing, K.F., Saskatchewan Dept. Mineral Resources:
Induced polarization surveys of areas where disseminated sulphide mineralization may occur, 1973-75.

402. Watanabe, T., Michkofsky, R.N., Univ. British Columbia:
Propagation of whistler mode waves in a medium having small scale irregularities, 1970-74; Ph.D. thesis (Michkofsky).

The propagation of electromagnetic waves in a weakly inhomogeneous magneto-active plasma is being investigated. For electromagnetic waves with wave numbers perpendicular to the background magnetic field, it was found that quasi-static electric fields, induced due to the plasma inhomogeneities, become resonantly strong at the hybrid resonance frequencies. The induced electric fields can be considered to have a quasi-static nature if the electromagnetic wave number is much less than the wave number characterizing the inhomogeneity. The application of the above to whistler-triggered lower hybrid resonance noise is being studied.

403. Wing, K.K., Univ. British Columbia:
Analytic solutions to resistivity and I.P. problems; Ph.D. thesis.

GEOPHYSICS

Geomagnetic and Paleomagnetic

404. Ade-Hall, J.M., Kitazawa, K., Lee, K., Ryall, P., Dalhousie Univ.: Magnetic properties of rocks; M.Sc. theses (Lee, Ryall).

Studies include submarine igneous rocks cored in the Bermuda drill hole, and paleomagnetic measurement programs involving subaerial basalts from Libya and sediments from ponds in the vicinity of the Mid-Atlantic Ridge crest near 45°N.

405. Bachinski, D.J., Burke, K.B.S., Ball, D., Univ. New Brunswick: Magnetic transformation in thermally metamorphosed rocks, 1971-73; M.Sc. thesis (Ball).

406. Becker, A., Geol. Surv. Can.: ARES (airborne resistivity electromagnetic system), 1968-.

The development of a variable frequency airborne EM system to aid in geological mapping through the measurement of the electrical properties of the ground.

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

Paleomagnetism of the Hopedale diabse dykes, Newfoundland, 1972-.

408. Coles, R., Hall, D.H., Univ. Manitoba: Rock magnetism and magnetic anomalies, 1969-73; Ph.D. thesis (Coles).

Directed towards interpreting regional magnetic anomalies in Manitoba.

409. Currie, J.B., Nwachukwu, S.O., Univ. Toronto: Paleomagnetic and susceptibility anisotropy studies in the Wabigoon volcanics of Lac des Milles Lacs area, Northwestern Ontario, 1971-74.

Possible use of remanence vectors as facing indicator and the relation between susceptibility anisotropy and the orientation of foliation and lineation in folded Archean metavolcanic and intrusive rocks of the Lac des Milles Lacs area is being investigated.

410. Dunlop, D.J., Buchan, K.L., Univ. Toronto: Paleomagnetism of basic intrusive rocks of Grenville age from Glamorgan township, Ontario, 1971-; M.Sc. thesis (Buchan).

Oriented samples of the Bark Lake and Dudmon diorites and the Glamorgan gabbro-anorthosite complex yield an average palepole at 152°E, 32°S, in good agreement with published poles but significantly divergent from poles from nearby Keweenawan rocks of the Superior Province. Many samples posses an unusually hard secondary remanence, quite different in direction from either the primary direction or the present geomagnetic field. Thermal demagnetization studies are in progress to isolate the minerals responsible for each type of remanence.

411. Dunlop, D.J., Hanes, J.A., Univ. Toronto:
Petrology and magnetic properties of Archean Blake River volcanics, Ontario, 1971-; M.Sc. thesis (Blake).

Very good correlation has been found between a three-tiered classification of deuteric oxidation of Archean tholeritic basalts and magnetic stability parameters of the same basalts determined. The classification is based on the Wilson & Watkins classification which has been very successful in the case of Tertiary basalts and as in that scheme, high stability is correlated with a degree of deuteric oxidation. The effects of regional hydrothermal alteration can be separated to a considerable extent from these of deuteric oxidation, but it appears that oxides of high deuteric oxidation state (which tend to carry the most stable paleomagnetic remanence) are also the most susceptible to hydrothermal alteration and thus to contamination by secondary components of remanence.

412. Ellis, R.M., Miller, H.G., Univ. British Columbia:
Investigation of the geomagnetic variation coast effect; Ph.D. thesis (Miller).

Data from a 5-station line of magnetometers which was operation in a profile from the west coast of Queen Charlotte Islands to the interior of British Columbia in 1971 are being analyzed. The profile is of particular interest since the margin is a transform fault and the boundary between oceanic and continental structure is very sharp. In addition to a major conductivity discontinuity at the continental margin, preliminary interpretation of the transfer functions indicates the presence of an additional conductor at intermediate depth (40-60 min. period) in the Hecate Strait region.

413. Fahrig, H.F., Geol. Surv. Can.:
Diabase dykes of the Canadian Shield, 1961-.

To extend knowledge of diabase dyke swarms in the Canadian Shield, their tectonic significance, paleomagnetism, age relationships and their chemical and petrologic characteristics.

Paleomagnetic correlation of basic intrusive and extrusive rocks in the region of the Grenville Front, 1971-.

To determine the age and correlation of basic intrusive and extrusive rocks in the vicinity of the Grenville Front, (1) the Michael diabase which extends inland from the coast of Labrador, (2) the diabases and volcanic rocks of the Seal Lake area, (3) Shabogamo diabase (at southern end of the Labrador Trough) and (4) the diabase sheets of the Otish Mountain area.

Paleomagnetism of the Lac St. Jean anorthosite, Quebec, 1972-.

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

See Additional paleomagnetic data on the Baffin diabase dikes and a revised Franklin pole; Can. J. Earth Sci. vol. 10, no. 4, pp. 576-581, 1973.

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

GEOPHYSICS

415. Gendzwill, D.J., Kwon, T., Univ. Saskatchewan:
Gravity and magnetic studies in Saskatchewan, 1967-; Ph.D. thesis (Kwon).

416. Halls, H.C., Hanes, J., Personen, L., Univ. Toronto:
Paleomagnetism of Archean volcanics, 1971-74; M.Sc. theses (Hanes, Personen).

A series of paleomagnetic studies are being undertaken on Archean to test (a) whether these old rocks have retained a primary remanence and (b) to establish sample selection criteria whereby areas in the Superior Province unsuitable for paleomagnetic work may be avoided.

To date a project has been completed on mafic volcanics from near Kirkland Lake and a similar one with improved structural control may be attempted near Lake Abitibi if preliminary magnetic stability tests are positive. Data obtained from Kirkland Lake indicate the extreme variability of magnetic stability within mafic volcanics, but a number of trends appear to be emerging. The most magnetically stable samples obtained have extreme high temperature deuteric oxidation of original titanomagnetite, small effective oxide grain size and a low degree of secondary (burial ?)metamorphism.

417. Hanes, J.A., Hitchen, A., Dunlop, D., Univ. Toronto:
Correlation of mineralogy and magnetic properties of basic volcanic rocks, 1971-75.

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

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

To assess the usefulness of measuring the vertical gradient in magnetic survey and to develop the necessary theory for the interpretation of the results.

Queen Air high resolution aeromagnetics, 1968-.

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

421. McCance, J.A., Wadge, D.R., Ontario Division of Mines:
A geomagnetic survey of Dondonald and Clergue Townships, Ontario, 1972-73.

See A Magnetic Survey of Dundonald and Clergue Townships, District of Cochrane; Summ, Field Work, 1972; Ontario Division of Mines Misc., Paper 53.

422. McGlynn J.C., Geol. Surv. Can.:
Paleomagnetic study of Proterozoic redbeds of the Western Canadian Shield, 1968-.

See Paleomagnetism of the Et-Then Group and Mackenzie diabase in the Great Slave area; Can. J. Earth Sci., vol. 9, pp. 744-745, 1972.

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

Utilization of geologic, aeromagnetic, ground magnetic, and rock magnetic data to delineate the regional crustal structure of the Canadian Appalachian region.

424. Muecke, G.K., Clarke, D.B., Reynolds, P.H., Ade-Hall, J.M., Hyndman, R.D., Beaumont, C., McKenzie, C.B., Rankin, D., Lambert, T., Cochrane, N., Dalhousie Univ.:

Studies on metamorphic and igneous rocks of mainland Nova Scotia; Ph.D. and M.Sc. theses.

425. Schwartz, E.J., Geol. Surv. Can.:
Thermomagnetics of single minerals and rocks, 1970-.

See Magnetic properties of pyrrhotite and their contribution to magnetic anomalus; Proc. 24th Internat. Geol. Congress, sec. IX, pp. 84-88, 1972.

426. Scott, W.J., Geol. Surv. Can.:
Geophysical investigations, 1967-.

To determine the cause of certain elliptical electromagnetic anomalies in the Moose River area, Ontario and the thickness of the causative formation; to carry out similar investigations over the Winkler aquifer near Senneterre; and to carry out Induced Polarization field phase measurements over selected sulphide bodies.

427. Seguin, M.K., Côté, M., Keating, P., Univ. Laval:
Paleomagnétisme des ophiolites de la partie central de la fosse due Labrador et d'un secteur des Appalaches, 1972-74.

Nous avons terminé la construction d'un démagnétiseur en champ alternatif allant jusqu'à une intensité maximum de 500 Gauss. Un autre démagnétiseur en champ AC allant jusqu'à 3000 Gauss et commandé par un inductrol est en construction. Il en est de même d'une désaimanteur thermique. On a de plus créé quelques facilitiés pour étudier la désaimantation chimique.

428. Suryam, J.V., Saskatchewan Dept. Mineral Resources:
Statistical correlation of the geophysical data with the spatial distribution of the economic mineralization in the Precambrian Shield of North Saskatchewan, 1973-74.

A statistical correlation of all geophysical data available with the nature and mode of the areal distribution of mineralization and the prediction of the patterns of distribution of the economic mineralization, based on the aggregate behaviour of the present distribution.

429. Symons, D.T.A., Univ. Windsor:
Paleomagnetism of carbonatites in northern Ontario, 1971-75.

Samples have been collected from the Seabrook Lake, Nemogosenda, Lackner Lake and firesand carbonatite complexes. Remanence measurements and data analysis are currently in progress.

GEOPHYSICS

Paleomagnetism of radiometrically-dated igneous rocks in the Cordillera, 1969-74.

Analysis of data on the Nass River flow, on some plutons in the Prince Rupert area, on the Tulameen ultramafic complex, and on other topics including the paleomagnetism of the Sooke gabbro stock, the Hope and Mt. Barr plutons, the Howe Sound granodiorites, the Copper Mountain stock and the Topley Intrusions.

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

To produce a magnetic anomaly map and selected shallow seismic profiles of the Beaufort Sea.

431. Ulrych, T.J., Goh, R., Univ. British Columbia:
Magnetic variations observed over the Beaufort Sea; M.Sc. thesis (Goh).

The magnetic variations observed at sea are strikingly correlated with those recorded by a fixed land station, 150 miles away. Further, the higher frequencies present in the marine records are severely attenuated with respect to those in the land data. The conclusions inferred from these observations, that the Mackenzie Bay/Beaufort Sea area is geomagnetically anomalous, has important implications relating to the tectonic history of the Canadian Arctic.

432. Watanabe, T., Nourry, G., Univ. British Columbia:
Solar wind and geomagnetic micropulsations, 1972-75; Ph.D. thesis (Nourry).

Micropulsations observed at Ralston, Alberta during the year of 1967 are being compared with solar wind plasma data obtained by the satellite IMP F and interplanetary magnetic fields observed by the satellite IMP D. The comparison indicates that Pc 3 activity following a sudden commencement due to a hydromagnetic shock varies with fluctuations in solar wind dynamic pressure.

433. Watanabe, T., Smith, B.P., Univ. British Columbia:
Investigation of the origin of irregular nighttime geomagnetic micropulsations, Pi 2, 1971-73; M.Sc. thesis (Smith).

Variations in Pi 2's morphological characteristics such as period, polarization and occurrence frequency have been compared with changing conditions of the magnetosphere and the solar wind.

See Relations between geomagnetic micropulsations and magnetotail field changes; J. Geophys. Res., vol. 77, pp. 159-171, 1972.

434. Watanabe, T., Ueda, H., Univ. British Columbia:
Observation of geomagnetic micropulsations, 1971-73; M.Sc. thesis (Ueda).

Two different types of induction magnetometers have been set up. One employs an air-core coil sensor. The other system has a high μ-metal core coil. A cursory comparison of the two systems revealed that the μ-metal core system has a higher density in spite of its smaller size and lighter weight. However, its response deviates from linearity more than the air-core system in the frequency range higher than about one cycle per second.

Geothermal

435. Clarke, C.K.C., Hoffmann, J.W., Univ. British Columbia:
A model for a thermal instability mechanism to explain glacier surges; M.Sc. thesis (Hoffman).

A model for a thermal instability mechanism to explain glacier surges has been developed. It is believed that surging results from a cycle of melting and refreezing of basal ice to the glacier bed. If the surface temperature and ice thickness assume suitable values, geothermal heat can warm the bed to the melting point of ice, allowing a water film to form. The onset of basal sliding initiates the surge, causing a rapid increase in the flow rate and an advance of the glacier snout. As the glacier advances, downward advection of cold surface ice cools the bed, ultimately eliminating the water film and arresting the sliding. A quiescent period follows until surface accumulation and thermal conduction again allow a water film to form. This model of glacier surging results in a periodic cycle and gives results that agree well with observed glacier surges.

436. Clarke, C.K.C., Narod, B.B., Univ. British Columbia:
Thermal regime of the Helm Glacier; M.Sc. thesis (Narod).

437. Hyndman, R.D., Rankin, D., Dalhousie Univ.:
Heat-flow on the Mid-Atlantic Ridge.

See The Mid-Atlantic Ridge near 45°N, XVIII. Heat flow measurements; Can. Jour. Earth Sci., vol. 9, no. 6, pp. 664-670, 1972.

438. Jarvis, G.T., Clarke, G.K.C., Univ. British Columbia:
Testing the predicitons of the thermal instability surge theory; M.Sc. thesis (Jarvis).

A field project on Trapridge Glacier, Yukon Territory, with the aim of testing the predictions of the thermal instability surge theory against observed ice temperature distributions in a surge-type glacier has started. The last surge of the Trapridge was around 1941 and a surge in the next few years is anticipated. Radio echo sounding to map ice thickness and thermal drilling to obtain deep ice temperatures are planned.

439. Parsons, M.L., Water Resources Br., Dept. Environment:
Regional groundwater flow and subsurface temperatures in a Maritime Province coastal environment, 1969-73.

To assess the effect of groundwater withdrawal on the regional groundwater hydrodynamics and to explore the application of geothermal measurements to the evaluation of groundwater flow.

GEOPHYSICS

Gravity

440. Burke, K.B.S., Tejirian, H.G., Gupta, V.K., Univ. New Brunswick:
Geophysical investigation of tectonic framework of southeastern New Brunswick, 1970-74; M.Sc. thesis (Tejirian), Ph.D. thesis (Gupta).

A regional gravity survey of about 500 stations has been completed near the Caledonia uplift in southern New Brunswick.

441. Agar, C.A., McMillan, W.J., Ulrych, T.J., British Columbia Dept. Mines Petrol. Resources:
Gravity and geology of the Guichon Creek Batholith, 1971-72.

The model with the best fit to the geological and gravity data suggests the Batholith has a glattened, funnel-shaped form. The "spout" underlies Witches Brook Creek and plunges steeply toward the east-northeast.

See Gravity and geology of the Guichon Creek Batholith; British Columbia Dept. Mines Petrol. Resources, Bull. 62, 1972.

442. Gendzwill, D.J., Kwon, T., Univ. Saskatchewan:
Gravity and magnetic studies in Saskatchewan, 1967-; Ph.D. thesis (Kwon).

443. Green, W.R., Univ. British Columbia:
Statistical communication theory applied in geophysics; M.Sc. thesis.

Techniques under investigation include application of the concept of statistical entropy in developing models from gravity anomalies.

444. Howells, K., Zwicker, D., Nova Scotia Research Foundation:
Gravity studies in the Baddeck area, Cape Breton Island, Nova Scotia, 1972-73.

445. Moon, W., Ontario Division of Mines:
Regional gravity survey, east Quetico belt, Ontario, 1972-73; Ph.D. thesis.

446. Ulrych, T.J., Agar, C.A., Univ. British Columbia:
Intepretation of gravity survey of the Guichon batholith; Ph.D. thesis (Agar).

A striking correlation between the spatial relationship of mineral deposits and the core of the batholith has been discovered.

447. Vigrass, L.W., Univ. Saskatchewan (Regina):
Gravity survey, City of Regina, 1972-73.

Seismic

448. Clowes, R.M., Knize, S., Univ. British Columbia:
System for deep seismic sounding at sea; Ph.D. thesis (Knize).

The system is designed for two-ship operation, one a stationary receiving ship, the other a moving shooting ship. Recording is achieved through individual hydrophone systems suspended at 45 m depth from a neutrally buoyant cable attached to the receiving ship. At present six hydrophone systems are used, but the capability exists for expanding to eleven. During a cruise off the coast of California on November 1971, a 20 km wide-angle profile was recorded successfully on FM analog tape. Preliminary analyses of the data indicate that reflections from the ocean bottom and ranging as deep as the Mohorovicic discontinuity were recorded. This data will be digitized and processed. A portable digital recording system with 14 bit A-to-D conversion for a maximum of 16 channels, with 9-track tapes and IBM 360 compatible has been developed. This system will be used during a cruise off British Columbia's west coast in 1973. Both reflection and refraction profiles are being planned.

449. Collett, L.S., Geol. Surv. Can.:
AFMAG surveys, 1968-.

To assess the value of airborne AFMAG surveys as aids to geological mapping of faults, shear zones and ultramafic dykes; to develop and improve present instrumentation for measuring natural EM fields.

450. Desmarais, R., Hall, D.H., Univ. Manitoba:
Upper mantle seismic discontinuity, 1972-73; M.Sc. thesis (Desmarais).

451. Du Berger, R., Univ. du Québec à Chicoutimi:
Seismic studies in the Haut-Saguenay and Chibougamau areas, 1972.

Using quarry blasts and a network of portable microearthquake systems to determine a crustal model to be used subsequently for locating microearthquakes and the strain release related to mining operations by monitoring microshocks in the Henderson and Portage mines of the Chibougamau area.

See A microearthquake survey of the St-Lawrence Valley near La Malbaie, Québec; Can. J. Earth Sci., vol. 10, no. 1, pp. 42-53, 1973.

452. Ellis, R.M., Clowes, R.M., Bennett, G.T., Univ. British Columbia:
Seismic refraction survey in the Southern Rocky Mountain Trench; M.Sc. thesis (Bennett).

Seismic arrivals from mine blasts have been recorded along a profile from Windermere to Valemount. Three components of ground motion at 20 sites along the trench have been recorded on FM analog tape. Arrivals from an upper crustal refractor and the Moho have been identified. Digitization, digital processing and interpretation is being carried out.

GEOPHYSICS

453. Ellis, R.M., Forsyth, D.A., Univ. British Columbia:
Seismic refraction survey between Prince George and Prince Rupert; M.Sc. thesis (Forsyth).

Explosion data recorded in this region during 1969 and 1970 are being analyzed. Normalized cross-sections have been formed in which the amplitudes show strong correlation with regional geology. Interpretation of the seismic section in terms of a velocity-depth model and their relation to the regional geology is presently under way.

454. Ellis, R.M., Ozard, J.M., Meldrum, R.D., Russell, R.D., Univ. British Columbia:
Seismic instrumentation of the mica reservoir.

Five components of a 6-component telemetered seismic array have been installed in the Mica reservoir region to study induced seismic activity during reservoir loading. Of particular interest is the role of environmental stress and fluid pressure. Data collected are being analysed to determine background seismicity and local velocities.

455. Ellis, R.M., Pareja, G.J., Univ. British Columbia:
Portable long period seismic system; M.Sc. theis (Pareja).

Work continuing on a portable long period seismic system in which temperature stability is achieved by using a solid state controller. The tripartite array will be installed in the Vancouver Island region to study crust and upper mantle structure using Rayleigh wave dispersion data.

456. Ellis, R.M., Somerville, P.G., Univ. British Columbia:
Homomorphic deconvolution applied to the study of earthquake source mechanism; Ph.D. thesis (Somerville).

Application of homomorphic deconvolution techniques to study the source mechanism of earthquakes. To minimize signal-generated-noise at the receiver, data from UK Atomic Energy Authority arrays are being used.

457. Favini, G., Univ. Laval:
Séismicité de la région de Québec, 1972-74.

458. Gendzwill, D.J., Glover, W., Hajnal, Z., Univ. Saskatchewan:
Investigation of karst structures in Saskatchewan due to solution of the Prairie Evaporite Formation, 1969-.

Solution of the Prairie Evaporite Formation in Saskatchewan has resulted in regional and local subsidence of the ground in prehistoric times. Recent evidence indicates that active subsidence may be occurring even now, and it is the intention to investigate this possibility with geophysical methods.

459. Grant, A.C., Geol. Surv. Can.:
Seismic and magnetic study of the continental Shelf of Southern Baffin Island, 1971-73.

See The continental margin off Labrador and eastern Newfoundland morphology and geology; Can. J. Earth Sci., vol. 9, no. 11, pp. 1394-1430, 1972.

460. Hajnal, Z., McClure, J.E., Univ. Saskatchewan:
Seismic investigation of deep seated structures in Saskatchewan, 1970-75.
Seismic investigation of Precambrian contact zones, 1971-74.

461. Hajnal, Z., Stauffer, M.R., Univ. Saskatchewan:
Seismic reflection study of the Flin Flon area, Manitoba, 1972-73.

462. Hall, D.H., Brown, R.J., Friesen, G., Univ. Manitoba:
Deep crust and upper mantle explosion seismic and teleseismic studies, 1972-77; M.Sc. thesis (Freisen).

Using teleseismic short-period observatory data and mobile seismic refraction equipment, to extend our crustal map of Manitoba and explore special targets in the Canadian Shield.

463. Hobson, G.D., Geol. Surv. Can.:
Seismic-Oak Ridge moraine, Ontario, 1962-.

To investigate thickness and nature of overburden and topography of bedrock; to determine easterly extent of the moraine; to determine structure in bedrock and differentiate bedrock lithology.

Seismic-Beauceville, Quebec, 1963-.

To determine thickness and nature of overburden; to determine bedrock topography; to outline a preglacial drainage system into the Chaudiere Valley associated with placer gold deposits on the Gilbert River.

Marine seismic-Great Lakes, 1966.

To determine water-sediment interface, stratification within the unconsolidated sediments, bedrock topography and lithology if possible and stratigraphy within bedrock.

Seismic-Winkler, Manitoba and Frobisher, Saskatchewan, 1966-.

To investigate use of amplitude and frequency characteristics of seismic waves in the study of groundwater problems and definition of overburden materials.

Seismic-Welland-Port Colborne, Ontario, 1967-.

To determine thickness and nature of overburden and configuration of bedrock.

Seismic-Beaufort-Mackenzie, 1969-.

Seismic refraction-Sverdrup Basin, District of Franklin, 1972-.

464. Hunter, J.A., Geol. Surv. Can.:
Shallow seismic investigations in the permafrost environment.

465. Hunter, J.A., Hobson, G.D., Geol. Surv. Can.:
Shallow seismic investigations in Canada.

466. King, M.S., Leuschen, A.A., Univ. Saskatchewan:
Field studies of microseismic energy emission, 1970-75.

GEOPHYSICS

467. MacAulay, H.A., Geol. Surv. Can.:
Seismic-Interior plateau, British Columbia, 1971-73.

Estimating thickness of valley fill by seismic refraction methods.

See A seismic refraction survey of the North Okanagan and South Shuswap Valleys, Part A; Geol. Surv. Can., Paper 72-8, pp. 1-8, 1973.

468. Overton, A., Geol. Surv. Can.:
Seismic-Precambrian Shield, 1970-.

To apply seismic refraction and reflection methods to solution of geological problems in the Precambrain Shield; to apply sonic methods to downhole environments and to such as problems as subsurface structure, boundaries between gelogical provinces, interfaces between geological formations, definitions of ore-bodies, delineation of Conrad discontinuity, etc.

469. Pliva, G., Fligg, K., Ontario Ministry of the Environment:
Geophysical surveys and well logging for hydrogeologic investigations, 1965-.

Primarily using seismic, electrical resistivity and well logging techniques to aid in determining hydrogeologic conditions, mainly in southern Ontario, for purposes of ground water development and pollution control programs.

470. Ulrych, T.J., Univ. British Columbia:
Homomorphic filtering applied to seismology.
Homomorphic filtering has been used to deconvolve three earthquake and one underground nuclear explosion seismograms recorded at Leduc, Alberta. Comparison of actual recording with seismograms sythesized using deconvolved wavelets together with a crustal response computed from a well defined crustal model shows striking correlations. This improved wavelet extraction procedure is expected to be an aid in Q source mechanism and depth studies, as well as crustal deconvolution investigations.

471. Wiggins, R.A., Univ. Toronto:
Interpretation techniques for seismological observations, 1970-.

Studies of all aspects of the interpretation of seismic body waves, surface waves and free oscillations. We use amplitudes, seismogram shapes and travel times of body waves and phase and group velocity of surface waves to determine the velocity-depth function of the structure under consideration. To support the project, we have developed both an analytical method for characterizing the total uncertainty when the travel times of body waves alone are known and several highly efficient programs for computing synthetic seismograms and phase and group velocities for a given model. These and other techniques are being applied to studies of the mantle and core of the earth.

General

472. Aumento, F., Dalhousie Univ.:
Fission tracks studies.

Fission track techniques are being used to (1) date young igneous rocks (Mid-Atlantic Ridge basaltic glasses and northern British Columbia Tertiary alkali lavas), and (2) map the distribution and concentration of uranium in mafic and ultramafic rocks from the continents and oceans to provide data for heat flow calculations.

473. Cameron, R.A., Dorff, N.J., Laurentian Univ.:
Correlation of Precambrian rocks using their physical properties, 1970-72.

The measurement of natural gamma radiation emitted by rocks of the Sudbury irruptive was carriedout along two traverses 500 feet apart employing an integral gamma ray spectrometer of the type commonly used in mineral exploration. These data were compared with measurements taken using a differential gamma ray spectrometer of a type commonly used by the Geological Survey of Canada. The two sets of measurements were compared with each other and with modal analyses of thin sections cut from rocks of the irruptive. Good correlation was obtained between both sets of measured values for the gamma radiation due to thorium and the modal distribution of quartz, feldspar and pyroxene. Observed values for the gamma radiation due to potassium did not show any apparent relationship to mineralogy of the irruptive.

474. Clarke, G.K.C., Univ. British Columbia:
Numerical modelling of glacier flow.

A numerical model of rectilinear glacier flow with viscous self-heating and a sliding boundary condition that can be used to obtain the stress, velocity and temperature fields in sub-polar and polar glaciers is nearing completion. For temperature glaciers with sliding at the boundary, Weertman's sliding theory provides a boundary condition on the stress and velocity. It is therefore possible to solve numerically for both the creep and sliding velocities.

475. denBoer, J.C., Mobil Oil Canada Ltd.:
Acoustic velocities of porous rocks, 1971-.

476. Duckworth, K., Univ. Calgary:
Development of equipment and techniques in prospecting for base metal ores, 1968-.

477. Gendzwill, D.J., Hajnal, Z., Univ. Saskatchewan:
Geophysical investigation of a buried iron formation in east central Saskatchewan, 1971-.

Recent aeromagnetic surveys in the Nipawin area of Saskatchewan have revealed large aeromagnetic anomalies which appear to be related to the Choiceland iron deposit some 30 miles away. The site was chosen for a field camp for under-graduate geophysics students with the intention that eventually sufficient data would

be collected so that a report could be published, describing the geophysical character of the region.

478. Greenhouse, J.P., Univ. Waterloo:
Groundwater geophysics.
Geomagnetic induction in the earth, 1972-.

479. Hall, D.H., Anderson, D.T., Univ. Manitoba:
Test of remote sensing data with regional geophysical data, 1972-74.

480. Haworth, R.T., Watts, A.B., Geol. Surv. Can.:
Geophysical investigations of the Gulf of St. Lawrence, 1970-73.

To provide an evaluation and interpretation of the geological and geophysical data presently available in the Gulf of St. Lawrence.

See Geophysical investigations east of the Magdalen Islands, southern Gulf of St. Lawrence; Can. J. Earth Sci., vol. 9, no. 11, pp. 1504-1528, 1972.

Geophysical investigation of the Laurentian Channel and Southern Grand Banks of Newfoundland, 1972-74.

Using the geophysical data presently available, to deduce the structural geology of the Grand Banks south of Newfoundland and to relate this to its tectonic history.

See Geophysical investigation of the Laurentian Channel and southern Grand Banks of Newfoundland; Geol. Surv. Can., Paper 73-1, pt. A, p. 112, 1973.

481. Henry, J.B., Canada Centre for Inland Waters:
Integrated geophysical system, 1972-75.

To develop and test geophyscial systems in the nearshore environment of the Great Lakes to elucidate bottom morphology, sediment type and distribution, and subsurface structure with specific reference to problems associated with fine sand and silt.

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

483. King, M.S., DeVries, J.G., Univ. Saskatchewan:
Underground acoustic measurements, 1970-75.

A controlled-pulse reflection system has been successfully tested in a Saskatchewan potash mine and a borehole acoustic-velocity logging device has been designed, constructed and tested in a Manitoba nickel mine.

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

Application of new developments in gamma-ray spectrometry techniques to geologic mapping and exploration by making cross country surveys and detailed area surveys.

485. Russell, R.D., Univ. British Columbia:
Oxygen isotope ratios in samples of glacier melt waters.

One 30-cm radius mass spectrometer is being converted from lead tetramethyl operation to oxygen isotope measurement in order to analyze samples of glacier melt waters.

486. Srivastava, S.P., Geol. Surv. Can.:
Geophysical studies of the continental margin and of the deep sea off the west coast of Canada, 1972-.

487. Suryam, J.V., Saskatchewan Dept. Mineral Resources:
Prediction of the trends of occurrence of new oil and gas pools in Saskatchewan based on the statistical analysis of the geophysical well log data, 1972-73.

Geophysical well data (Resistivity, Spontaneous Potential, Gamma Ray, and Sonic) from nearly 700 producing wells in South Saskatchewan has been analyzed statistically by multivariate, multiple stepwise regression, and canonical correlation techniques. The resulting set of coefficients, which correlate the geophysical well data with the mode and distribution of the oil and gas pools, is utilized further to formulate a set of predictor equations which are used in delineating new prospective and potential areas of hydrocarbon accumulation in the Saskatchewan basin.

The entire processing of the data, including mapping of the results, is done by computer programming.

Interpretation of the geophysical data for deeper structures by the method of stripping, 1973.

A broad but reasonably detailed geological picture of the deeper sections is invaluable in planning hydrocarbon prospecting at deeper levels. The study involves the application of the method of stripping, wherein geophysical anomalies arising out of the known shallower structures are computed analytically, and these anomalies are subtracted from the total (observed) anomalies to arrive at the effect due to the deeper structures.

Correlation of the geophysical, geological, and well data of the oil fields of South Saskatchewan, 1972.

A correlations of existing geophysical data with the mode of occurrence of oil pools and the delineation of new prospective and potential areas in the wake of the correlation. The method employed is based on statistical analysis and interpretation of the geophysical data using Fourier transform techniques and power spectral methods.

488. Tanguay, M.G., Dufresne, R., Faucher, G., Do Lam Sinh, Ecole Polytechnique:
Etude de la réflectance spectrale des matériaux terrestres, 1969-74; optical processing of aerial photo patterns by coherent light, 1969-73; utilisation des images infrarouges dans les problèmes que les Forces Armées peuvent rencountrer dans les régions nordiques, 1970-75.

GEOPHYSICS

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

To establish the geological framework of the Pacific Continental Margin; determine the hydro-carbon potential of its contained sedimentary basins, and to determine the tectonic development of the Pacific Continental Margin especially its interaction with the Pacific ocean floor.

490. Ulrych, T.J., Smylie, D.E., Jensen, O.G., Clarke, G.K.C., Univ. British Columbia:
New method of filtering and smoothing short records.

The method is based on the Burg Algorithm for estimating the maximum entropy power spectrum. This technique is being applied at present to the separation of the annual component of the polar motion from the 1.2 year Chandler component.

HYDROGEOLOGY

491. Badry, Ann., Research Council of Alberta:
Alberta hydrogeological information map series (AHIMS), 1968-75.

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

493. Borneuf, D., Beerwald, A., Research Council of Alberta:
Alberta hydrogeological reconnaissance map series, NTS 82P, Drumheller, 1969-72.

See Hydrogeology of the Drumheller area, Alberta; Alberta Res. Council, Rept. 72-1, 1972.

494. Borneuf, D., Brulotte, M., Research Council of Alberta:
Alberta hydrogeological reconnaissance map series, NTS 72E, Foremost, 1971-73.

Alberta hydrogeological reconnaissance map series, NTS 72M, Oyen, 1972-73.

495. Borneuf, D., Zacharko, N., Research Council of Alberta:
Alberta hydrogeological reconnaissance map series, NTS 831, Tawatinaw, 1970-73.

496. Borneuf, D., Zacharko, N., Research Council of Alberta:
Alberta hydrogeological reconnaissance map series, NTS 831, Tawatinaw, 1970-73.

497. Bruce, D.L., Roy, A.C., Lammers, W., Wang, K.T., Ontario Ministry of the Environment:
Northern Ontario Water Resource studies, 1966-74.

A reconnaissance survey of surface and groundwater resources in the five major river basins in Ontario draining to Hudson Bay and James Bay. The collection of hydrometric, hydrogeologic, water quality and water-use data, their interpretation to provide a preliminary assessment of both the quantitative and qualitative aspects of these resources, their current and anticipated future uses.

498. Bryck, L.G., Dennis, P., Viirland, J., Grass, J., Miller, J., Small, E., Ontario Ministry of the Environment:
Investigation of water-supply interference due to ground-water withdrawals.

The extent of interference attributed to withdrawals by high-capacity wells, dewatering systems and quarrying operations was investigated to assess the validity of well-interference complaints and to recommend restorative action where valid interference was established.

499. Callan, D.M., British Columbia Water Resources Service:
Applied hydrogeological investigations, 1972-.

Reconnaissance investigations near Frt. St. John, Dease Lake and Terrace.

HYDROGEOLOGY

500. Clister, W.E., Newbury, R.W., Univ. Manitoba:
Hydrogeologic factors in radioactive waste management at Whiteshell nuclear research station, Manitoba, 1970-73; M.Sc. thesis (Clister).

501. Currie, D.V., Research Council of Alberta:
An evaluation of the groundwater budget for the Tri-Creek watershed, 1967-73.

502. Currie, D.V., Waterman, C., Research Council of Alberta.
Evaluation of suitability of waste disposal sites, Defence Research Establishment, Suffield, Alberta, 1972.

503. Currie, D.V., Zacharko, N., Research Council of Alberta:
Alberta hydrogeological reconnaissance map series, NTS 73E, Vermilion, 1971-73.

504. Eggboro, M., McGill Univ.:
Ground water geology of Montreal Island, 1971-73; M.Sc. thesis.

505. Farvolden, R.N., Gillham, R., Univ. Waterloo:
Groundwater flow systems in southern Ontario, 1972-73.

Our work shows that, even if the distribution of hydrostratigraphic units is known, in cross section, an error in permeability (measurement or estimate) of a factor of five, would lead to a serious error in calculating head distribution, and thereby flow patterns. Thus we cannot expect to construct flow patterns from geologic information. However, if the hydrostratigraphy is known, and two head measurements are available, then the ratio of permeability ratio and the anistropy can be solved for the two layered case.

506. Fitzpatrick, M.M., Queen's Univ.:
Groundwater investigations in Prince Edward County, Ontario, 1969-73.

507. Ford, D.C., Coward, J.M.H., McMaster Univ.:
Hydrogeology of three contrasted karst groundwater basins in West Virginia, 1968-73.

508. Foweraker, J.C., Moncur, M., British Columbia Water Resources Service:
Gulf Islands groundwater study, 1971-.

509. Frind, E. O., Univ. Waterloo:
Digital modelling of groundwater flow systems, 1971-76.

Work will be done in the following areas: (1) Model development and application: A family of general digital models based on the isoparametric finite element concept will be developed. Several aquifer response studies are planned. (2) Direct solution for aquifers parameters: Finite element theory will be applied to the solution of the inverse problem. (3) Indirect solution for aquifer parameters: Dynamic programming principles will be used to find the parameters corresponding to an observed flow condition. A sensitivity study relating permeability and anisotropy ratios in a multi-layered system to measured heads is underway. (4) Probabilistic relationships: Type, amount

and accuracy of field data will be related to the level of confidence achieved in modelling. (5) Geophysical aspects: The feasibility of using effects of tidal forces for determining hydrogeologic properties will be investigated. (6) Geochemical aspects: Flow paths revealed by the study of stable isotopes in groundwater will be related to flow paths predicted by digital modelling.

See Application of Galerkins' procedure to aquifer analysis; Water Resources Res., vol. 8, no. 1, pp. 108-120, 1972.

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

Investigation for groundwater in the Red Deer area, central Alberta, 1965-73.

511. Gale, J.E., Water Resources Br., Dept. Environment:
Hydrogeology of fissured media in the Halifax area, Nova Scotia, 1970-73; Ph.D. thesis.

To evaluate the geometric and hydrologic parameters of fissured rock in the Halifax area, and the applicability of pump test theory to fissured flow media. A down hole periscope for mapping fractures has been field tested and the construction of a fracture deformation gauge has been completed.

512. Gilliland, J.A., Water Resources Br., Dept. Environment:
Interaction of groundwater with the Environment, 1970-75.

513. Hackbarth, D.A., Research Council of Alberta:
Effects of strip mining on the groundwater regime, Grande Cache, Alberta, 1972-75.

514. Hackbarth, D.A., Beerwald, A., Research Council of Alberta:
Alberta hydrogeological reconnaissance map series, NTS 73D, Wainwright, 1972-73.

515. Harlan, R.L., Water Resources Br., Dept. Environment:
Northern hydrogeology, 1971-77.

See Ground conditioning and the groundwater response to winter conditions; Proc. Intern. Symp. Role of Snow and Ice in Hydrology, UNESCO Symp. on Properties and Processes, Banff, Canada, 1972.

516. Hore, R.C., Fleischer, F.C., Logan, L.A., Barouch, M., Jaffray, R.B., Ontario Ministry of the Environment:
International hydrological decade (IHD) representative basin studies, 1965-.

To study the hydrogeologic conditions of five basins in southern Ontario which are considered to be representative of five major physiographic regions in the province in order to provide input into research of all aspects of water-balance studies. These studies will ultimately allow for the preparation of mathematical models to describe the characteristics of the complex, inter-related hydrologic parameters of the basins.

HYDROGEOLOGY

517. Jeffs, D.N., Mellary, A.A., Ontario Ministry of the Environment:
Drawdowns and recovery of an artesian sand and gravel aquifer, London, Ontario, 1972.

The magnitude of drawdown and recovery of the London - White Oak aquifer was used to estimate an approximate recharge rate of 40,000 to 50,000 imperial gallons per day per square mile in the White Oak area, during the production period for 1959 to 1967.

See Drawdown and Recovery of an Artesian Sand and Gravel Aquifer, London, Ontario; 24th Internat. Geological Congr., Sec. 11, 1972.

518. Lawson, D.W., Water Resources Br., Dept. Environment:
Subsurface hydrological modelling, 1972-.

To determine the accuracy and efficiency of existing hydrological models which incorporate soil moisture and groundwater phenomena.

Principles of groundwater pollution, 1967-.

To develop a mathematical model of phsicochemical transport in porous media which will be useful in solving subsurface water quality problems; presently restricted to theoretical and numerical studies of transport phenomena in porous media.

519. La Breton, E.G., British Columbia Water Resources Service:
A hydrogeological study of the Kalamalka-Wood Lake basin, 1971-73.

A study of the role of groundwater in nutrient input to Wood and Ellison Lakes.

520. La Breton, E.G., Halstead, E.C., Hall, P.L., British Columbia Water Resources Service:
A hydrogeological study of the Okanagan River Basin, 1970-73.

521. Lissey, A., Brock Univ.:
Hydrogeology of the Niagara Peninsula, 1970-.

522. Mellary, A.A., Ontario Ministry of the Environment:
Aquifer characteristics of the Detroit River Group of rock formations in the Township of Morris, near Brussels, Ontario, 1971-74.

523. Mellary, A.A., Aaltonen, R.A., Ontario Ministry of the Environment:
Groundwater probability of the County of Haldimand, Ontario, 1972-73.

Groundwater probability, overburden thickness and bedrock elevation contour maps of the county of Haldimand.

524. Mellary, A.A., Novakovic, B., Ontario Ministry of the Environment:
Groundwater probability of the County of Elgin, Ontario, 1971-72.

525. Niemela, V., Dennis, P., Goff, K., Choo-Ying, A.V., Singer, S., Creighton, W., Fleischer, F.C., Pirie, D., Ontario Ministry of Environment:

Thames River basin study, 1972-73.

To develop guidelines for water-management planning in the Thames River basin. As part of the project, hydro-geological studies of ground-water availability and use are being carried out.

526. Ostry, R.C., Singer, S., Sheardown, K., Ontario Ministry of the Environment:
International Field Year for the Great Lakes (IFYGL) ground water inflow into Lake Ontario, 1968-74.

To study the movement of ground-water in selected representative areas of the Lake Ontario drainage basin in order to assess the total ground-water contribution to the lake.

Ground-truth information on soil moistures, snow covers, ground temperatures and ground and surface water temperatures to assess ground-water recharge and discharge areas and direct ground-water inflows to Lake Ontario is being collected in conjunction with remote sensing flights undertaken by other agencies.

527. Ozoray, G.F., Research Council of Alberta:
Alberta hydrogeological reconnaissance map series, NTS 83G, Wabamun Lake, 1969-72.

See Hydrogeology of the Wabamun Lake area, Alberta; Alberta Res. Council, Rept. 72-8, 1972.

528. Ozoray, G.F., Lytviak, A.T., Research Council of Alberta:
Alberta hydrogeological reconnaissance map series, NTS 82I, Gleichen, 1970-74.

Alberta hydrogeological reconnaissance map series, NTS 73M & 74D, Winefred Lake and Waterways, 1971-73.

Alberta hydrogeological reconnaissance map series, NTS 82 N,O, Golden and Calgary, 1972-73.

529. Pliva, G., Fligg, K., Ontario Ministry of the Environment:
Geophysical surveys and well logging for hydrogeologic investigations, 1965-.

Primarily using seismic, electrical resistivity and well logging techniques to aid in determining hydrogeologic conditions, mainly in southern Ontario, for purposes of ground water development and pollution control programs.

530. Schwartz, F.W., Univ. Alberta:
Investigations of mass transfer in groundwater systems, 1970-.

Objective is the continued development and application of digital models that can describe theoretically the chemical evolution of groundwaters. One of the most important applications of these models is as a tool to explore the controls that natural and man-made processes exert on the overall composition of groundwaters.

531. Sibul, U., Choo-Ying, A., Ontario Ministry of the Environment:
Water resources of the upper Nottawasaga River drainage basin, 1968-72.

See Water resources of the upper Nottawasaga River drainage basin; Ontario Water Res. Commission, Water Rept. 3, 1972.

532. Sibul, U., Choo-Ying, A., Goff, K., Ontario Ministry of the Environment:
Water resources of the Moira River drainage basin, 1969-73.

HYDROGEOLOGY

533. Stevenson, D.R., Research Council of Alberta:
An evaluation of the groundwater budget and its significance within the hydrologic balance for the Marmot Creek, Streeter, and Deer Creek basins, 1964-.

An evaluation of the groundwater budget of the Cache Percotte and Whiskeyjack basins, 1965-.

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

535. Stevenson, D.R., Green, R., Research Council of Alberta:
Hydrogeological investigations near Hyderabad, Andhra Prades, India, 1970-76.

536. Tokarsky, O., Research Council of Alberta:
Alberta hydrogeological reconnaissance map series, NTS 84F, Bison Lake, 1967-72.

See Hydrogeology of the Bison Lake area, Alberta; Alberta Res. Council, Rept. 72-2, 1972.

Alberta hydrogeological reconnaissance map series, NTS 84K, Mount Watt, 1967-72.

See Hydrogeology of the Mount Watt area, Alberta; Alberta Res. Council, Rept. 72-3, 1972.

Hydrogeology of the Butte Springs, Alberta, 1971-73.

Application of airphoto interpretation to hydrogeological investigations in Alberta, 1972-74.

537. Tokarsky, O., Beerwald, A., Research Council of Alberta:
Alberta hydrogeological reconnaissance map series, NTS 82H & G, Lethbridge, Fernie, 1970-73.

Alberta hydrogeological reconnaissance map series, NTS 83K & J, losegun Lake and Whitecourt, 1971-74.

538. Tokarsky, O., Bibby, R., Carlson, V.A., Gabert, G.M., Stein, R., Research Council of Alberta:
"Project Edmonton": A regional and detailed hydrogeological study of the Edmonton map area (NTS 83H), 1972-75.

539. Tokarsky, O., Bibby, R., Carlson, V.A., Gabert, G.M., Stein, R., Zacharko, N., Research Council of Alberta:
Alberta hydrogeological reconnaissance map series, NTS 83H, Edmonton, 1972-75.

540. Toth, J., Research Council of Alberta:
Olds groundwater investigations, 1970-72.

Feasibility of groundwater development in the Isiolo-Marsabit Districts, Kenya, Africa, 1972.

541. Toth, J., Hackbarth, D.A., Research Council of Alberta:
The application of regional hydrogeological studies to open pit operations, 1972-73.

542. Vanden Berg, A., Water Resources Br. Dept. Environment:
Groundwater well field design in coastal aquifers, Maritime Provinces, 1971-74.

A mathematical model of the movement of the fresh water-salt water interface in a coastal aquifer subjected to pumping has been formulated and programed. The model uses a finite difference technique for the determination of the time-variant fluid-potential in the aquifer, which forms the basis for the calculation of the seepage velocity and the position of the interface. Application of the model to a planned coastal well field will allow optimization of well locations and pumping rates and avoid future pumping of salt water.

See Nomogram for the construction of flow nets near singular boundary points; J. Hydrology, vol. 16, pp. 301-306, 1972.

543. Van Der Kamp, G., Water Resources Br. Dept. Environment:
Groundwater motion in coastal aquifers, 1969-72, Ph.D. thesis.

Relate tidally induced groundwater motion to the hydraulic characteristics of aquifers; develop practical methods of analyzing tidal fluctuations and of removing these from water level records such as drawdown data; compare aquifer parameters determined by pump testing to those determined by tidal analysis; study the natural variations of water salinity in coastal aquifers with position and time and attempt to find a relation between these and the observed tidal fluctuations, mean water levels, and aquifer characteristics.

544. van Everdingen, R.O., Dept. Environment:
Influence of surface-water levels in Diefenbaker Lake, Saskatchewan on piezometric levels in underlying Upper Cretaceous Aquifers, 1962-71.

See Permanent changes in groundwater regime caused by the creation of Diefenbaker Lake, Saskatchewan; Inland Waters Directorate, Tech. Bull. 59, 1972.

Thermal and mineral springs in the Rocky Mountains, 1967-70.

See Thermal and mineral springs in the southern Rocky Mountains of Canada; Inland Waters Directorate, EN36-415, 1972.

Groundwater in permafrost areas, 1972-.

Investigation of interaction between groundwater flow systems and permafrost; groundwater contribution to river discharge; freshwater, thermal, and saline springs; slope stability aspects.

Subsurface disposal of liquid wastes, 1971-.

545. Vonhof, J.A., Water Resources Br., Dept. Environment:
Jointed tills in Western Canada, 1969-73.

To determine parameters controlling joint density; mode of origin of joints; and the significance of joints on the rate of movement of groundwater and pollutants.

HYDROGEOLOGY

The effect of Brine Ponds on the groundwater regime, 1967-73.

To determine 1) the rate and extent of groundwater pollution in the vicinity of waste disposal basins; 2) the long term effects of brine ponds on the surface water regime in the area; 3) if and when remedial measures must be taken to limit the spread of subsurface pollution; and 4) to recommend possible alternative solutions to the waste disposal problem of the potash industry.

546. Yakutchik, T.J., Sobanski, A.A., Andrijiw, D.J., McKenna, P.F., Whitehead, B.R., Ontario Ministry of the Environment:
Ground water surveys, test drilling and well construction for municipal supplies.

A continuing program of regional and municipal hydrogeologic surveys to assess the ground-water potential of areas and to locate and develop sources of municipal water supply.

547. Yakutchik, T.J., Sobanski, A.A., Campbell, F.R., Phimister, J.P., McArthur, R.E., Patterson, R.J., Ontario Ministry of the Environment:

Investigation of ground water pollution and quality protection.

A continuing program of hydrogeologic investigations of reported ground-water contamination and impact studies of existing and proposed waste disposal activities on ground-water quality.

MINERAL DEPOSITS

(See Current graduate and post graduate theses on geologic research related to mineral deposits; CIM Bulletin, vol. 65, no. 726, pp. 38-44, 1972).

Base Metals

548. Allen, D.G., Clark, A.H., Queen's Univ.:
Mineralogy and geochemistry of the Galore Creek copper deposit, British Columbia; 1967-72; Ph.D. thesis (Allen).

A study of sulphide, oxide, and silicate minerals in an unusual, quartz-free, syenitic porphyry copper deposit, stressing phase relations involving biotite, K-feldspar, sphalerite, pyrite, and magnetite. Chemical and microprobe analyses of these minerals are defining a narrow fugacity-temperature region for ore deposition and alteration.

549. Beales, F.W., Anderson, G., Barrett, T., Univ. Toronto:
Transport and precipitation of sphalerite in limestone host rocks, 1972-74; M.Sc. thesis (Barrett).

550. Beales, F.W., Lozej, G.P., Univ. Toronto:
Stratigraphic aspects of base metal deposition, 1965-.

551. Beales, F.W., Strangway, D.W., Univ. Toronto:
Paleomagnetics of Mississippi Valley-type ore deposits, 1969-.

552. Brown, A.C., Aubertin, R., Ecole Polytechnique:
Mineralogy and fluid inclusion of the Icon copper deposit, Chibougamau, Québec, 1970-.

553. Brown, A.C., Legault, Y., Ecole Polytechnique:
Sulfide mineralogy of Grenville sediments and cross-cutting veins, Fernleigh syncline, Eastern Ontario, 1972-.

554. Brown, A.C., Massé, J.-P., Ecole Polytechnique:
Simulation of base metal zoning in sediments using chromatographic columns, 1970-73.

555. Brown, A.C., Meunier, M., Ecole Polytechnique:
Mineralogy of the Long Lake zinc deposit, eastern Ontario, 1972-.

556. Burwash, R.A., Chipperfield, J., Univ. Alberta:
Lower Paleozoic metasedimentary rocks of southeastern Yukon Territory and associated lead-zinc skarn deposits, 1972-73; M.Sc. thesis (Chipperfield).

557. Carter, N.C., British Columbia Dept. Mines Petrol. Resources:
Porphyry copper deposits of the Babine Lake area, British Columbia, 1965-73.

Geology and geochronology of porphyry copper and molybdenum deposits in central British Columbia, 1967-73; Ph.D. thesis.

MINERAL DEPOSITS

558. Clark, A.H., Farrar, E., Haynes, S.J., Lortie, R.B., Zentilli, M., Quirt, G.S., McNutt, R.H., McMaster Univ., Conn, H., Mortimer, C., Sillitoe, R.H., Instituto de Investigaciones Geologicas de Chile, Queen's Univ.:

Metallogenetic relationships in the Andean copper province of northern Chile, 1967-73.

559. Clark, A.H., Lortie, R.B., Queen's Univ.:
Genesis of disseminated, strata-bound copper deposits in felsic pyroclastic flows, Copiapo region, northern Chile, 1967-72; Ph.D. thesis (Lortie).

Field relations and sulphur isotope fractionation indicate that a simple, magmatic origin is unlikely.

560. Clark, A.H., McNutt, R.H., Crockett, J., Queen's Univ., McMaster Univ.:
Mineralogy, chemistry, and stable isotope distribution of Jurassic-Pleistocene andesitic and rhyolitic volcanics, Copiapo region, northern Chile, 1969-72.

561. Collins, J.A., Queen's Univ.:
Copper mineralization in North American Proterozoic and Paleozoic sediments, 1971-74; Ph.D. thesis.

562. Comba, C.D.A., Ambrose, J.W., Queen's Univ.:
Fabric of the Millenbach copper deposit, Noranda, Quebec, 1972-74; M.Sc. thesis (Comba).

563. Darling, R., Ecole Polytechnique:
The geochemistry of the marble host rocks surrounding the Lynx Canada zinc deposit, Frontenac county, Ontario, 1973-74.

564. Davies, J.F., Brown, D.S., Laurentian Univ.:
Petrology and geochemistry of rocks enclosing McIntyre disseminated copper deposit; 1971-73; M.Sc. thesis (Brown).

565. Davies, J.F., Laporte, B., Laurentian Univ.:
The distribution of gold and copper with respect to carbonate alteration of mafic volcanic rocks, McIntyre Mines; M.Sc. thesis (Laporte).

The altered volcanic rocks in which the gold-bearing quartz veins occur are regarded as the outer propylitic zone of a single alteration entity which includes the Pearl Lake "porphyry" itself. The research is designed to test the hypothesis that the gold and possibly copper concentration originate by metasomatism and and scavenging of these metals out of the volcanic rocks by metasomatizing fluids.

566. Davies, J.F., Luhta, L.E., Laurentian Univ.:
Minerology and wall-rock alteration, McIntyre disseminated copper deposit, 1971-73; M.Sc. thesis (Luhta).

567. Davies, J.F., Taylor, R.W., Laurentian Univ.:
A study of sulphide fabrics Chisel Lake Mine, Manitoba, 1970-73; M.Sc. thesis (Taylor).

568. Franklin, J.M., Lakehead Univ.:
Metallogenic studies, Sturgeon Lake volcano-sedimentary belt, 1971-75.

Sturgeon Lake area is composed of several volcanic piles, each with a basal plate and partially developed felsic edifice. Massive sulphide (Cu-Zn) deposits are stratigraphically controlled and have most of the classic "Lake Du fault" type features. Cu-Mo porphyry and gold deposits are associated with a "high level" granodiorite sill. Oxide facies iron formation are confined to the overlying sedimentary sequences; sulphide facies I.F. are formed in thin sedimentary bands within the volcanic pile. Fluorite veins are associated with alkalic complexes.

569. Grove, E.W., British Columbia Dept. Mines Petrol. Resources:
Massive sulfide deposits in British Columbia: preliminary study with special reference to lithostratigraphic controls, 1971-74.

The chemistry of these deposits, particularly the metal content, sets these deposits apart, and should lead to inferences regarding possible biogenic/volcanic/sedimentary processes during the Mesozoic in the western Cordillera.

570. Guha, Jayanta, Univ. 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.

Mineralogy of the "oxidized ores" in some of the major ore-bodies in Chibougamau and the factors controlling their distribution, 1972-.

571. Guha, J., Darling, R., L'Université du Québec à Chicoutimi et Ecole Polytechnique:
Etude préliminaire de la minéragraphie du gisement de cuivre Louvem, 1970-72.

See Ore mineralogy of the Louvem copper deposit, Val d'Or Québec; Can. J. Earth Sci., vol. 9, no. 12, pp. 1596-1611, 1972.

572. Johnson, A.E., Petruk, W., Mines Branch, Energy, Mines and Resources:
Mineralogy and geochemistry of copper-molybdenum stockwork deposits in British Columbia, 1972-73.

Studies on the ore minerals and their textural relationships within stockwork deposits occuring within volcanic, intrusive and skarn host rocks. These deposits also will be subdivided according to the major economic elements present, e.g. Cu, Cu-Mo, Mo, Cu-Fe, and Cu-Au.

573. Harris, D.C., Mines Branch, Energy, Mines and Resources:
Mineralogical examination of the base-metal deposits of the Red Lake area, Ontario, 1969-72.

See Mineralogical investigation of some base metal ore deposits and occurrences in the Red Lake Mining Division, Ontario; Mines Br. Tech. Bull. TB146, 1972.

574. Johnson, A.E., Mines Branch, Energy, Mines and Resources:
Study of the massive sulphide deposits of the Sturgeon Lake area, northwestern Ontario, 1972-73.

575. Kindle, E.D., Geol. Surv. Can.:
Geology of copper deposits in Canada, 1960-1972.

See Classification and description of copper deposits, Coppermine River area, District of Mackenzie; Geol. Surv. Can., Bull. 214, 1972.

576. Koo, Ja Hak, Mossman, D.J., Univ. Saskatchewan:
Origin and metamorphism of the Flin Flon pyritic Cu-Zn deposit, northern Saskatchewan - Manitoba, 1970-73; Ph.D. thesis (Koo).

577. Kuo, S.L., Folinsbee, R.E., Univ. Alberta:
Geological setting and metallogenesis of lead-zinc-silver mineralization, Selwyn Fold Belt and Tintina Trench, Yukon Territory, 1972-74; Ph.D. thesis (Kuo).

To establish a working synthesis about the geotectonic setting and metallogenesis of Pb-Zn-Ag mineralization within this northern part of the Omenica Belt, the following investigations are essential:
(1) ore isotopic geochemistry;
(2) geochronology of the host rocks and immediate environs;
(3) geotectonics study of the related geological settings (Plate tectonics model);
(4) ore textures and controls.

578. Lydon, J.W., Clark, A.H., Queen's Univ.:
Sedimentary and geochemical controls of strata-bound lead-zinc-silver-copper-iron mineralization in the Aracena-Portal belt of southern Iberia, 1968-72; Ph.D. thesis (Lydon).

579. McBride, D., McAllister, A.L., Univ. New Brunswick:
Geology of the Heath Steele ore zones, 1970-73; Ph.D. thesis (McBride).

To establish the detailed stratigraphy of the ore zones, which have been subjected to multiple folding, and to interpret the stratigraphy in terms of paleoenvironment.

580. Mossman, D.J., Harper, C., Univ. Saskatchewan:
Investigation of sulphide mineralization in the vicinity of Sito Lake West in the Foster Lake area of Wollaston fold-belt, northern Saskatchewan, 1971-73; Ph.D. thesis (Harper).

581. Mossman, D.J., Randall, J.A., Univ. Saskatchewan:
Metallization in the Anglo-Rouyn-Sulphide Lake Belt, Lac La Ronge, northern Saskatchewan, 1971-74; Ph.D. thesis (Randall).

582. Muir, T.L., Queen's Univ.:
Relationship of nickel mineralization to ultramafic rocks, Eldorado and Langmir Township, Ontario, 1972-74; M.Sc. thesis.

583. Panteleyev, A., Univ. British Columbia:
Geological setting, mineralization, and aspects of zoning at the Berg porphyry copper-molybdenum prospect, Central British Columbia, 1969-73; Ph.D. thesis.

584. Petruk, W., Mines Branch, Dept. Energy, Mines and Resources:
Mineralogy and geochemistry of the prophyry copper-molybdenite deposits in the Highland Valley area in British Columbia, 1969-73.

To determine the mineral assemblages present in each deposit, and to correlate the compositions and physical properties of the individual minerals to each assemblage. In addition the assemblages will be correlated to the host rock and wall rock alteration products to assess the affect of each factor on mineral beneficiation.

585. Preto, V.A., British Columbia Dept. Mines Petrol. Resources:
Geology and copper deposits of the Iron Mask Batholith near Kamloops, British Columbia, 1967-.

A continuing study of the porphyry type copper deposits associated with this complex of multiple quartz-poor calc-alkalic intrusions. Particular attention is paid to the structural setting of the deposits and to the associated rock alteration.

586. Roberts, R.G., Univ. Waterloo:
The magnesium metasomatism of acid vitroclastic rocks associated with volcanogenetic sulphide ores, 1972-73.

587. Sangster, D.F., Geol. Surv. Can.:
Geology of lead and zinc deposits in Canada, 1965-.
To provide: (1) a systematic record and appraisal of geological data; (2) a geological classification of lead and zinc deposits; (3) definition of criteria for recognition of each type of deposit; (4) development of concepts and hypotheses on geological environment, provenance, and genetic processes of lead and zinc deposits; (5) determination of regions and geological units in Canada most favourable for the occurrence of each type of deposit.

588. Scott, S.D., Univ. Toronto:
Metamorphism and deformation of massive sulfide ores, 1972-74.

589. Smitheringale, W.G., Memorial Univ.:
Features of volcanogenic sulfide deposits in the Lush's Bight Group ophiolite sequence, Notre Dame Bay, Newfoundland, 1970-74.

To reconstruct the ophiolite sequence (it has been fragmented by folding and faulting), to relate the position of the sulfide deposits to the ophiolite "stratigraphy", and to describe the characteristic mineralogy, textures, and geochemistry of the deposits.

See Low-Potash Lush's Bight tholeiites: ancient oceanic crust in Newfoundland?; Can. J. Earth Sci., vol. 9, pp. 574-588, 1972.

MINERAL DEPOSITS

590. 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, 1970-74.

See The Onaping ash-flow sheet, Sudbury Ontario; Geol. Assoc. Can., Sp. Paper 10, pp. 41-48, 1972.

591. Suryam, J.V., Saskatchewan Dept. Mineral Resources:
Statistical correlation of the geophysical data with the spatial distribution of the economic mineralization in the Precambrian Shield of North Saskatchewan, 1973-74.

A statistical correlation of all geophysical data available with the nature and mode of the areal distribution of mineralization and the prediction of the patterns of distribution of the economic mineralization, based on the aggregate behaviour of the present distribution.

592. Teruta, Y., Crocket, J.H., McMaster Univ.:
Partition of Pt, Pd, Ir and Au between sulfides, chromite and silicates of the Merensky Reef horizon, Bushveld Igneous Complex, 1972-74; M.Sc. thesis (Teruta).

Pt, Pd, Ir and Au are determined by activation analysis on samples from cores cutting the ore-grade platinum horizon on the Merensky Reef. Detailed profiles for each metal on one inch core samples have been obtained. All metals peak at a chromitite I marker horizon but Pt and Pd show this affect most strongly. Interest is centered mainly on the chromite and on sulfieds as bearers of noble metals.

593. Thompson, R.I., British Columbia Dept. Mines Petrol. Resources:
Geology of the Robb Lake area, northeastern British Columbia, 1972-74.

A preliminary study of Zn-Pb mineralization in Devonian rocks near Robb Lake with special emphasis on the stratigraphy of the host rocks and the morphology of individual mineralized zones.

Geology of the Mount Keenan area, west side of Harrison Lake, British Columbia, 1972-74.

A preliminary geological and geochemical investigation of the Harrison Lake Formation with special emphasis on the contained zinc-copper mineralization.

594. Watkinson, D.H., Mainwaring, P.R., Grimes, J., Findlay, A., Carleton Univ.:
Relation of ore deposits to igneous petrology, 1967-.

Coal and Peat

595. Bell, G.L., British Columbia Dept. Mines Petrol. Resources:
Coal reserves, British Columbia, 1972-.

596. Broughton, P., Whitaker, S., Irvine, J., Saskatchewan Dept. Mineral Resources, Saskatchewan Research Council, Geol. Surv. Can.:
Lignite exploration in the Tertiary subsurface of southern Saskatchewan, Phase II, 1971-75.

Phase I, completed in 1972, borehole drilled a regional stratigraphic framework control into the nonmarine Upper Cretaceous and Lower Tertiary sediments. Six to 8 mile center grid drilling was utilized. Phase II will be 1 mile center drilling concentrated in areas of significant recoverable lignite accumulation as determined by Phase I.

See Lignite exploration in the Ravenscrag Formation of southern Saskatchewan; Proc. First Geological Conf. Western Canadian Coal, 1972.

597. Cameron, A.R., Geol. Surv. Can.:
Petrographic examination of coking coals from the Crowsnest coalfield, Alberta and British Columbia, 1961-.

Petrographic analysis of Saskatchewan lignites, 1972-.

598. Hacquebard, P.A., Geol. Surv. Can.:
Rank studies of coal and carbonaceous matter, 1968-.

Petrography of coal seams in the Rocky Mountain Foothills Belt north of the Crowsnest area, Alberta, 1968-.

Petrography of the coal seams of Telkwa River area, British Columbia, 1968-.

599. Holter, M.E., Mellon, G.B., Research Council of Alberta:
Lithology of the Luscar coal beds, Alberta Foothills, 1971-72.

See Geology of the Luscar (Blairmore) coal beds, central Alberta Foothills; Alberta Res. Council, Information Ser. 60, 1972.

600. Kramers, J.W., Mellon, G.B., Research Council of Alberta:
Upper Cretaceous coal deposits, northwest-central Alberta, 1969-72.

See Upper Cretaceous-Paleocene coal-bearing strata, northwest-central Alberta Plains; Alberta Res. Council Information Ser. 60, 1972.

601. Mériaux, E., Geol. Surv. Can.:
Study of tonstein bands in coal seams of Kootenay Formation, British Columbia and Alberta, 1971-.

602. Steiner, J., Univ. Alberta:
Coal deposits of Alberta, 1971-75.

See Coal deposits of the Alberta plains; Alberta Res. Council; Inform. ser. 60, pp. 85-108. Computer storage and retrieval of geological data on coal deposits; Alberta, Res. Council, Inform. ser. 60, pp. 73-84, 1972.

MINERAL DEPOSITS

Ferrous Metals

603. Dressler, B., Ministère des Richesses Naturelles du Québec:
Geological mapping in the Labrador Trough north of 57° parallel, 1971-76.
Study of iron-formation of the Labrador Trough, 1971-73.
Study of lamprophyres of the Labrador Trough, 1971-.

604. Gross, G.A., Geol. Surv. Can.:
Geology of iron and manganese deposits in Canada, 1957-.

To provide: (1) a systematic record and appraisal of geological data; (2) a geological classification of deposits; (3) definition of criteria for recognition of each type of deposit; (4) development of concepts and hypotheses on geological environment, provenance, and genetic processes of iron and manganese deposits; (5) determination of regions and geological units in Canada most favourable for the occurrence of each type of deposit.

See Primary features in cherty iron-formation; Sedimentary Geol., vol. 7, pp. 241-261, 1972.

605. Henriquez, Fernando, MacLean, W.H., McGill Univ.:
Study of iron formation is some massive sulfide deposits, 1972-73; M.Sc. thesis (Henriquez).

Study of iron formation in four deposits: Heath Steele and Brunswick No. 6 (both in New Brunswick) and Matagami Lake and Bell Allard (Matagami, Quebec) from a microscopic (mineralogical composition and textural relationship) and geochemical(analysis of magnetite) point of view, in order to establish the changes in the chemical environment of the sulfide and oxide facies.

606. Neilson, J.M., Queen's Univ.:
Iron ore deposits, Chorkbak Inlet, Baffin Island, Northwest Territories, 1971-73.

607. Ridler, R.H., Geol. Surv. Can.:
Metallogeny of iron-formation (exhalite) at the southern margin of the Abitibi Basin, Ontario and Quebec, 1971-.

Industrial Minerals

608. Brady, J.G., Dean, R.S., Bell, K.E., Zemgals, L.K., Mines Branch, Dept. Energy, Mines and Resources:
The composition and properties of Canadian clays and shales, 1956-.

609. Burwasser, G.J., Ontario Division of Mines:
Industrial minerals and Pleistocene geology of Thunder Bay and vicinity, Ontario, 1971-73.

Industrial minerals and Pleistocene geology of the Sudbury Basin, Ontario, 1970-73.

See Quaternary geology and industrial mineral resources of the Sudbury area; Ontario Division of Mines, Prel. maps P 751, P 752.

610. Godfrey, J.D., Research Council of Alberta:
Granite buildingstone, Fort Chipewyan area, 1971-.

611. Hamilton, W.N., Research Council of Alberta:
Quartzite, 1970-.

Clay and shale resources of Alberta, 1970.

612. Holter, M.E., Research Council of Alberta:
Silica sand deposits of the Red Deer area, Alberta, 1969-72.

See Dune sands in the Red Deer area Alberta; Res. Council Report 72-A, 1972.

Limestones of Alberta, 1970-72.

613. Holter, M.E., Kathol, C.P., Research Council of Alberta:
Sand and gravel resources, Grande Prairie area, Alberta, 1972.

614. Kent, D.M., Univ. Saskatchewan (Regina):
Evaporite and related carbonate environments in Phanerozoic rocks of the Interior Plains, 1972-74.

A combination of the microfacies of the associated carbonate rocks and the petrology of the anhydrites indicates that many of the deposits were formed under conditions similar to the supratidal environment on the Trucial Coast of the Persian Gulf. However some anhydrites do not fit the supratidal model and may have been precipitated from standing water in a restricted basin. The latter may be, infact, secondary after gypsum. Petrographic examination of anhydrites indicates that it is difficult to distinguish primary and secondary anhydrite using crystal habit as a criterion, but geochemical analyses may be useful in this regard, especially employing the Sr/Ca ratios. Correlation of anhydrites from one control point to another may be possible using trace element distribution to identify a specific anhydrite in an alternating sequence of carbonate and anhydrite.

615. Scafe, D.W., Research Council of Alberta:
Alberta bentonite studies, 1968-.

616. Staff, Research Council of Alberta:
Sand and gravel resources of Alberta; 1973.

Other Metals

617. Bannatyne, B.B., Manitoba Mines Branch:
Pegmatites with rare element minerals, Manitoba, 1972-74.

To determine mineralogy, zonal structure, and relationship to regional geology of the complex pegmatites of Manitoba.

618. Boyle, R.W., Geol. Surv. Can.:
Dispersion of fluorine in the vicinity of fluorite deposits, 1972-.

MINERAL DEPOSITS

619. Cabri, L.J., Mineral Sciences Division, Mines Branch:
The mineralogy of the Tulameen River sands, 1971-73.

Ten platinum-group minerals have been identified from this area so far including two new ores.

620. Carignan, J., Trudel, P., Brown, A.C., Gélinas, L., Ecole Polytechnique:
Distribution and significance of minor opaque minerals in Archean volcanic sequences, Abitibi region, Quebec, 1972-.

621. Dawson, K.R., Geol. Surv. Can.:
Geology of barium, fluorine and strontium deposits in Canada, 1972-.

622. Eckstrand, O.R., Geol. Surv. Can.:
Geology of Canadian nickel and platinum group deposits, 1963-.

To provide: (1) a systematic record and appraisal of geological data; (2) a geological classification of nickel and platinum group deposits; (3) definition of criteria for recognition of each type of deposit; (4) development of concepts and hypotheses on geological environment, provenance, and genetic processes of nickel and platinum group deposits; and (5) determination of regions and geological units in Canada most favourable for the occurrence of each type of deposit.

623. Ferguson, S.A., Wahl, W.G., Freeman, E.B., Ontario Division of Mines:
Ontario occurrences of float, placer gold and other heavy minerals, 1972-73.

624. Grove, E.W., British Columbia Dept. Mines Petrol. Resources:
The Silbak Premier ore deposit - a telescoped, telethermal Middle Jurassic Au-Ag deposit of plutonic-volcanic affinity, 1964-71.

Spatial, temporal and detailed mineralogical relationships indicate that the Silbak Premier gold-silver deposits has formed in a shallow, low temperature environment and was related to late or postmagmatic volcanic processes. Sturctural controls localized the extensive mineralized replacement vein zone in Lower Jurassic cataclasites near the margin of a Middle Jurassic pluton with related Middle Jurassic rhyolite flows.

625. Harris, D.C., Cabri, L.J., Mineral Sciences Division, Mines Branch:
Mineralogical examination of low-grade nickel deposits of Canada, 1970-.

Involves the characterization of low-grade nickel-bearing serpentinites (0.2 -0.6%) by determining the occurrence and textural relationships of the nickel phases with the electron microprobe.

See Pentlandite compositions and association is some mineral deposits; Can. Mineralogist, vol. 11, pp. 861-878, 1972.

626. Inasi, J.C., McAllister, A.L., Univ. New Brunswick:
Geology of the Eagle Mountain molybdenum occurrences, Guyana, 1972-74; M. Sc. thesis (Inasi).

627. Kirkham, R.V., Geol. Surv. Can.:
Geology of copper and molybdenum deposits of Canada, 1970-.

628. Mercer, W., Crocket, J.H., McMaster Univ.
Palladium and gold in stratiform base metal deposits from northern New Brunswick, 1968-74; Ph.D. thesis (Mercer).

The main emphasis is on noble metal variation across the mineralogical layering in these deposits and on a study of its correlation with Cu, Pb, Zn and Mg. Gold, which is occasionally present in economic quantities in these deposits, is highly correlated with copper whereas palladium does not correlate with the major base metals.

See Gold and palladium in host rocks and ores from the Heath Steel B-1 deposit, New Brunswick; 24th Internt. Geological Congr., sec. 10, pp. 180-185, 1972.

629. Mulligan, R., Geol. Surv. Can.:
Geology of Canadian lithophile metals (Li, Be, Sn, W), 1953-.

To provide: (1) a systematic record and appraisal of geological data; (2) a geological classification of deposits; (3) definition of criteria for recognition of each type of deposit; (4) development of concepts and hypotheses on geological environment, provenance, and genesis of the deposits; and (5) determination of regions and geological units in Canada most favourable for the occurrence of each type of deposit.

See Lithium distribution in Canadian granitoid rocks; Can. J. Earth Sci., vol. 10, no. 2, pp. 316-323, 1973.

Metallogenic study of the beryllium-tin province of Cassiar batholith, Yukon-British Columbia, 1965-.

630. Petruk, W., Mines Branch, Energy, Mines Resources:
Mineralogy of the bismuth-molybdenum-tungsten-tin deposit in southwestern part of New Brunswick, 1970-72.

The compositions and physical properties of individual minerals have been correlated to the assemblages. It has been determined that the early minerals are the oxides-wolframite, rutile and cassiterite, the phosphates-apatite and rare earth phosphates, and molybdenite. Intermediate minerals are arsenopyrite, loellingite and bismuth, and late ones are cassiterite and a wide variety of sulphides. Fluorite is the main gangue mineral. An understanding of these assemblages has helped in designing a flow sheet for the beneficiton of this ore.

631. Ridler, R.H., Geol. Surv. Can.:
The interrelation of the Archean volcanic stratigraphy and mineral deposits of the Kirkland Lake area, Ontario, 1966-.

632. Rose, E.R., Geol. Surv. Can.:
Geology of titanium and titaniferous deposits of Canada, 1958-.

To provide: (1) a systematic record and appraisal of geological data; (2) a geological classification of titanium deposits; (3) definition of criteria for recognition of each type of deposit; (4) development of concepts and hypotheses on geological environment, provenance, and genetic processes of titanium deposits;

and (5) determination of regions and geological units in Canada most favourable for the occurrence of each type of deposit.

Geology of vanadium deposits in Canada,

See Geology of vanadium and vanadiferous occurrences of Canada; Geol. Surv. Can., Econ. Geol. Rept. 27, 1963.

Geology of rare earth deposits of Canada, 1967-.

633. Scott, S.D., Univ. Toronto:
Fluid inclusion of the Ag-Co-Ni-Fe-As ore type, 1970-74.

634. Shegelski, R.J., Univ. Toronto:
Geology and mineralogy of the silver deposits of the Camsell River area, Northwest Territories, 1971-73; M.Sc. thesis.

635. Theis, N.J., Queen's Univ.:
Comparative mineralogy of the Quirke No. 1 and New Quirke mines, Elliot Lake, Ontario, 1971-73; M.Sc. thesis.

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

To provide: (1) a systematic record and appraisal of geological data; (2) a geological classification of deposits; (3) definition of criteria for recognition of each type of deposit; (4) development of concepts and hypoteheses on geological environments, provenance and genetic processes of silver and gold deposits; (5) determination of regions and geological units in Canada most favourable for the occurrence of each type of deposit.

637. Traoré, M., Brown, A.C., Ecole Polytechnique:
Mineralogy of the Sigma gold deposit, Val d'Or, Quebec, 1972-73, M.Sc.A. (Traoré).

Petroleum

638. Bailey, N.J.L., Imperial Oil Ltd.:
Organic geochemistry, 1968-.

To define characteristics of adequate source rocks under a variety of geological conditions, and identify the key factors controlling type and amount of hydrocarbon generated in a sedimentary basin.

639. Bourque, P.A., Lespérance, P.J., Univ. Montréal:
Inventaire des possibilités pétrolières de L'Est de la Gaspésie, au Siluro-Dévonien, 1967-78.

Les méthodes utilisées sont celles de la paléogéographie et paléontologie stratigraphique, assistés de la lithostratigraphie sous l'égide du Ministère des Richesses Naturelles du Québec.

640. Carrigy, M.A., Research Council of Alberta:
Athabasca oil sands investigations, 1972-.

641. Charbonnier, R.P., Draper, R.G., Harper, W.H., Yates, A., Mines Branch, Energy, Mines and Resources:
Directory of reservoir data and analyses of Typical Canadian Crude Oils, 1964-.

642. Heslop, A., Imperial Oil Ltd.:
Log analysis of shaly sands, 1972-73.

To derive meaningful data on reservoir porosity, permeability and fluid saturation of shaly sand reservoirs from analysis of digitized mechanical log data.

643. McCrossan, R.G., Geol. Surv. Can.:
The environment of oil and gas in western Canada, 1968-.

Petroleum potential of sedimentary basins of Canada, 1970-.

Origin and migration of petroleum in western Canada, 1971-.

To develop a method of relating reservoired hydrocarbons to organic material in source rocks; to reconstruct the evolutionary history of the organic material; to determine the pattern and timing of hydrocarbon migration and entrapment; and to evaluate the application of this type of geochemical investigation to the assessment of ultimate pooled hydrocarbon reserves in the study area as well as other basins.

Evaluation of Canada's petroleum potential, 1972-.

644. Simpson, F., Saskatchewan Dept. Mineral Resources:
Statistical decision theory as an aid to petroleum exploration strategy in Saskatchewan, 1972-73.

Hydrocarbon prospects in Saskatchewan are examined with reference to a probability framework, derived from frequency distributions of reserves in the Williston Basin as a whole.

645. Snowdon, L.R., Geol. Surv. Can.:
Regional distribution of gaseous hydrocarbons in the Northwest Territories, 1968-.

646. Suryam, J.V., Saskatchewan Dept. Mineral Resources:
Prediction of the trends of occurrence of new oil and gas pools in Saskatchewan based on the statistical analysis of the geophysical well log data, 1972-73.

Geophysical well data (Resistivity, Spontaneous Potential, Gamma. Ray, and Sonic) from nearly 700 producing wells in South Saskatchewan has been analyzed statistically by multivariate, multiple stepwise regression, and canonical correlation techniques. The resulting set of coefficients, which correlate the geophysical well data with the mode and distribution of the oil and gas pools, is utilized further to formulate a set of predictor equations which are used in delineating new prospective and potential areas of hydrocarbon accumulation in the Saskatchewan basin.

The entire processing of the data, including mapping of the results, is done by computer programming.

Interpretation of the geophysical data for deeper structures by the method of stripping, 1973.

A broad but reasonably detailed geological picture of the deeper sections is invaluable in planning hydrocarbon prospecting at deeper levels. The study involves the application of the method of stripping, wherein geophysical anomalies arising out of the known shallower structures are computed analytically, and these anomalies are subtracted from the total (observed) anomalies to arrive at the effect due to the deeper structures.

Correlation of the geophysical, geological, and well data of the oil fields of South Saskatchewan, 1972.

A correlation of existing geophysical data with the mode of occurrence of oil pools and the delineation of new prospective and potential areas in the wake of the correlation. The method employed is based on statistical analysis and interpretation of the geophysical data using Fourier transform techniques and power spectral methods.

647. White, W.I., Saskatchewan Dept. Mineral Resources:
Heavy oil occurrences in the Kindersley area, Saskatchewan, 1972-73.

An examination of well file data, chip samples and cores pertaining to heavy oil reservoirs in an area encompassing townships 28 to 34 in ranges 23 to 29 west of the Third Meridian where production principally is from the Viking Formation.

Radioactive Deposits

648. Baadsgaard, H., Sassano, G., Univ. Alberta:
Nature and time of U-mineralization in Uranium City, Saskatchewan area.

649. Cameron, A.R., Geol. Surv. Can.:
Uranium possibilities in lignite, 1968-.

To check the uranium content of Tertiary lignite deposits for the purpose of delineating areas that are geologically favourable for the occurrence of U_3O_8.

650. Coleman, M.L., Sassano, G.P., Univ. Alberta:
Isotopic investigation into the conditions of formation of some Canadian uraninites, 1972-73.

651. Little, H.W., Geol. Surv. Can.:
Geology of uranium and thorium deposits of Canada, 1967-.

To provide: (1) a systematic record and appraisal of geological data; (2) a geological classification of uranium and thorium deposits; (3) definition of criteria for recognition of each type of deposit; (4) development of concepts and hypotheses on geological environment, provenance, and genetic processes of uranium and thorium group deposits; and (5) determination of regions and geological units in Canada most favourable for the occurrence of each type of deposit.

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

See Comparison of geochemical prospecting methods using radium with those using radon and uranium; Geochem. Explor., Cdn. Inst. Mining Metal., Sp. Vol. 11, 1971.

General

653. Bristol, C.C., Brandon Univ.:
Trace elements in Flin Flon District ores, 1971-73.

654. Brown, A.C., La Rose, R.-Y., Ecole Polytechnique:
High temperature recrystallization textures, Weedon Mine, Quebec, 1972-.

655. Garnett, J.A., Agar, C.A., British Columbia Dept. Mines Petrol. Resources:
Regional phase relationships and associated mineralization, southern Hogem Batholith, north-central British Columbia, 1971-74.

Methodology includes reconnaissance helicopter supported mapping, systematic collection and cataloguing of representative samples, and follow up modal and normative rock analyses. K/Ar age determinations of selected phases are being completed as an adjunct to this research. A gravity survey and aeromagnetic filtering investigation also represent ancillary aspects.

See Preliminary geological map of part of Hogem Batholith, Duckling Creek area; British Columbia Dept. Mines Petrol. Resources, Prel. Map 9-1972.

656. Giles, P.S., Venugupal, D.V., McCutcheon, S., Buttimer, S.M., Ruitenberg, A.A., Chandra, J., New Brunswick Natural Resources:
Stratigraphic, structural and metallogenic investigations of the Caledonia Mountain area, southern New Brunswick, 1970-73.
Metallogenic investigation of the Silurian-Devonian Belt in southern New Brunswick, 1967-.

Application of geophysical methods to geology, Annidale copper belt, southern New Brunswick; Can. Mining J., vol. 93, no. 7, pp. 40-42, 1972.

See Metallization episodes related to tectonic evolution, Rolling Dam and Mascarene-Nerepis belt, New Brunswick; Econ. Geol., vol. 67, pp. 434-444, 1972. Metallization in the Caledonian Belt, southern New Brunswick- a geological and geophysical investigation; Bull. Can. Mining Metall., vol. 65, no. 725, pp. 81-89, 1972.

657. Govett, G.J.S., Univ. New Brunswick:
World mineral resources and their development, 1970-.

See New directions for development aid in the earth sciences; 24th Internat. Geol. Congr., symp. 2, pp. 203-211, 1972. Mineral resource supplies and the limits of economic growth; Earth Sci. Rev. vol. 8, pp. 275-290, 1972.

MINERAL DEPOSITS

658. Guha, Jayanta, Univ. du Québec à Chicoutimi:
Etudie de L'indice de la minéralisation dans la région du Haut-Saguenay, 1972-.

Etude sur les sulfures contenus dans les roches afin d'établir des associations entre ces roches et les sulfures.

659. Guha, Jayanta, Nagy, A., Woussen, G., Roy, D.W., Archambault, G., Du Berger, R., Stumpf, A., Univ. du Québec à Chicoutimi:
Minéralisation et problèmes d'exploitation de gisements dans la région de Chibougamau, Québec, 1972-.

660. Hamilton, W.N., McLaws, I.J., Research Council of Alberta:
Economic minerals map of Alberta, 1970-.

661. Hodgson, C.J., Queen's Univ.:
Metallogenic studies of Canadian ore environments, 1972-.

662. Hodgson, C.J., Karvinen, W.O., Queen's Univ.:
The Behavior of Ore Constituents in the Zone of Mobilization, 1971-73; Ph.D. thesis (Karvinen).

663. Jackson, E.V., Balicki, E.M., British Columbia Dept. Mines Petrol. Resources:
Mineral inventory and potential mineral maps of British Columbia, 1969-.

664. Kaiman, S., Hughson, M.R., Mines Branch, Energy, Mines and Resources:
Mineralogical investigation of ores and process products, a continuing project.

665. Kelly, A.M., Fabbri, A.G., McCartney, W.D., Brady, J.T., British Columbia Dept. Mines & Petrol. Resources, Geol. Surv. Can.:
Mineral potential estimate of the Bulkley - Nechako region (mineral appraisal Skeena arch, MASA), using SAFRAS computer format, 1971-72.

Six hundred and fifty mineral deposits and occurrences were coded and geological parameters for each 10 x 10 km. cell were measured over an area of 28,000 square miles in central and 11,200 square miles in south-central British Columbia.

666. McCartney, W.D., Matheson, A.H., Wolferstan, W.H., Watson, D., James, B., British Columbia Mines Petrol. Resources and Mineral Resources Branch, Energy, Mines and Resources:
Mineral deposit - land use maps, 1:250,000 scale, 1972-73.

The maps define areas of various mineral potential in five probability categories, and show the location of individual occurrences in five size categories. Mineral Inventory cards are also prepared for each occurrence.

Areas covered to date in northwestern British Columbia are the Districts of Kitimat-Stikine and Skeena "A", approximately latitude 52° to 58°, longitude 128° to 134°, an area of about 32,000 square miles.

667. McMillan, W.J., British Columbia Dept. Mines Petrol. Resources:
Geology and mineral deposits of the Guichon Creek Batholith, British Columbia, 1969-74.

Mapping of the 400 square mile area underlain by the batholith is at 4 inches to 1 mile. The mineral deposits are being examined both on surface or underground and by examining core from selected drill holes. Ore controls, alteration, mineralogy, mineral zoning and the relationship of the deposits to enclosing rocks are being assessed.

Older rocks cut by the Batholith and younger rocks which overlie it are also being examined. These are yielding paleontological and structural data which illuminate the tectonic development of the batholith since it was emplaced.

See Highland Valley porphyry copper district; 24th Internat. Geological Congr., Guidebook A09-C09, pp. 53-63, 1972.

668. Northcote, K.E., British Columbia Dept. Mines Petrol. Resources:
Geology and mineral deposits Rupert Inlet-Cape Scott map-area, Vancouver Island, 1968-73.

Mineral deposits of Vancouver Island, 1971-74.

See Volcanism, plutonism and mineralization: Vancouver Island; Bull. Can. Inst. Mining Metal., vol. 65, no. 726, pp. 49-57, 1972.

669. Panteleyev, A., British Columbia Dept. Mines Petrol. Resources:
Mineral Deposits in northwestern British Columbia, 1972-.

Mineral deposits in the Stikine Arch and surrounding regions.

670. Procyshyn, E., Price, R.A., Queen's Univ.:
Metallogeny of south-central British Columbia, 1967-73.

An analysis of regional interrelationships between the character and distribution of mineral deposits and the tectonic and petrologic evolution of south-central, British Columbia.

671. Strong, D.F., Memorial Univ.:
Metallogeny of central Newfoundland.
Geochemical studies in central Newfoundland (ophiolites, manganese sediments, ore deposits, granites).
Reconnaissance geochemistry of eastern Newfoundland granites, 1970-75.

672. Sutherland Brown, A., British Columbia Dept. Mines, Petrol. Resources:
Metallogeny of Cordillera, 1968-73.

Morphology and classification of porphyry deposits of the Canadian Cordillera, 1968-.

673. Thorpe, R.I., Geol. Surv. Can.:
Geology of mineral deposits of Bear-Slave Provinces, Northwest Territories, 1971-.

MINERALOGY

Specific Minerals

674. Appleyard, E.C., Univ. Waterloo:
Subsilicic hastingsitic amphiboles from metasomatic alkaline gneisses at Wolfe, eastern Ontario, 1972-73.

Silica-poor hastingsitic amphiboles from several metasomatic lithologies are investigated to determine their evolution from less sodic progenitors. The amphibole composition provides a ready index to the degree of metasomatic alteration of the host rocks.

675. Aumento, F., Hyndman, R.D., Dalhousie Univ.:
Uranium content of the oceanic upper mantle.

Fission tract determinations of both the whole rock contents and the distribution of uranium in individual phases were made on 20 serpentinized ultramafic rocks from the Mid-Atlantic Ridge at 45°N (Hudson Geotraverse) and 52°N (Gibbs Fracture Zone). The rocks are thought to represent uppermost oceanic upper mantle material.

676. Bayliss, P., Univ. Calgary:
Crystal chemistry of the pyrite group, 1967-.

Members of the pyrite group, such as gersdorffite, cobaltite, ullmannite, willyamite, corynite, kallilite, villiamanite, penrosite, bravoite, cattierite, vaesite, wolfachite and pyrite are being investigated to determine the effects of compositions and formation temperature on the non-metal ordering and crystal structure distortion from cubic symmetry.

677. Berry, L.G., Scott, J.D., Lin, H., Davis, G.C., Queen's Univ.:
Re-definition and crystal structure of miserite, 1960-73.

See A new occurrence of miserite from the Kipawa Lake area, Temiscamingue co., Quebec; Can. Mineralogist, vol. 11, p. 569, (abstract), 1972.

678. Bliss, N.W., McGill Univ.:
A comparative study of two ultramafic bodies at the southwest end of the Manitoba Nickel Belt: with special reference to the chromite mineralogy, 1969-73; Ph.D. thesis.

It is concluded that chromite is a metamorphic petrogenetic indicator, important where post-metamorphism serpentinisation has obscured the silicate mineralogy.

679. Cabri, L.J., Mines Branch, Energy, Mines and Resources:
The relationship between crystal structure and reactivity of pyrrhotite, 1970-72.

See Leaching of pyrrhotite with hydrochloric acid; Can. Metallurgical Quart., vol. 11, pp. 407-411, 1972.

Compositions and stability relations of copper-iorn sulphides, 1965-72.

See Mooihoekite and haycockite, two new copper-iron sulfides, and their relationship to chalcopyrite and talnakhite; Am. Mineralogist, vol. 57, pp. 689-708, 1972.

Exsolution products in heated chalcopyrite; Can. J. Earth Sci., vol. 9, pp. 1305-1317, 1972.

680. Cabri, L.J., Harris, D.C., Mines Branch, Energy, Mines and Resources:
Mineralogical study of the platinum-group elements, 1971-73.

Tulameenite, a new platinum-iron-copper mineral from placers in the Tulameen River area, British Columbia; Can. Mineralogist, vol. 12, pt. 1, pp. 21-25, 1973.

See The mineralogy of the platinum-group elements; Minerals Sci. Eng., vol. 4, pp. 3-19, 1972.

681. Calvo, C., Ito, J., McMaster Univ.:
Crystal structure of some silicoaptites, chevkinite and perrierite, 1972-74.

682. Calvo, C., Ito, J., Gopal, R., McMaster and Harvard Univ.:
Crystal structure of whitlockite, 1969-73.

See Relationship between whitlockite and β $Ca_3(PO_4)_3$; Nature, vol. 237, pp. 30-34, 1972.

683. Corlett, M.I., Queen's Univ.:
Nickel contents of pentlandite and pyrrhotite as an aid to geological interpretation, 1969-.

See Minor element variation in Pyrrhotite from Falconbridge Mine-Anaidin Geological interpretation (abstract); Can. Mineral., vol. 11, pp. 570-71, 1972.

Minor element variations in sulphosalts, 1969-.

684. Douglas, G.B., Burley, B.J., McMaster Univ.:
Study of scapolite parageneses in Grenville rocks, 1971-73.

685. Edgar, A.D., Fryer, B.J., Morton, D., Univ. Western Ontario:
Distribution of rare-earths in eudialytes and associated minerals in alkaline rocks, 1971-74.

See Eudialyte from Kipawa Lake, Temiscaminque Co., P.Q.; Can. Mineralogist, vol. 11, p. 554, 1972.

686. Foscolos, A.E., Geol. Surv. Can.:
Clay mineralogy of Lower Cretaceous shales of northeastern British Columbia, 1967-.

Identification of unknown minerals by X-ray and chemical methods, 1968-.

Clay mineral investigation, 1968-.

To improve and develop techniques for routine mineralogical and chemical analyses of clays; to develop better techniques for quantitative, semiquantitative and qualitative analyses of clays and clay minerals in sedimentary rocks; to conduct research related to the crystal lattice structure of clay minerals.

MINERALOGY

687. Gittins, J., Univ. Toronto:
Petrogenesis and mineralogy of the Kipawa alkalic complex, Quebec, 1964-.

Studies have been completed on HIORTDAHLITE (wholerite group), VLASOVITE, and the new mineral AGRELLITE.

688. Gosselin, J.R., Tremblay, R.J., Townsend, M.G., Mines Branch, Energy, Mines and Resources:
Mössbauer investigation of sulphide minerals, 1970-.

689. Greenwood, H.J., Duffy, C., LeCheminant, A.N., Univ. British Columbia:
Geological phase equilibrium: stability of the humite group, 1967-; Ph.D. theses (Duffy, LeCheminant).

Investigation of a portion of the system Fe-Ni-Si-O-S involving pyrrhotite, and the compressibility of H_2O - CO_2 mixtures up to 1500 bars and 800°C.

690. Grice, J.D., Ferguson, R.B., Univ. Manitoba:
Crystal structures of the tantalum oxide minerals tantilite and wodginite, and of millerite NiS, 1970-73; Ph.D. thesis (Grice).

691. Grundy, H.D., McMaster Univ.:
Crystallography of silicate minerals -- framework silicates, 1970-73.

The refinement of the crystal structure of a synthetic monoclinic Sr-labradorite is in progress to determine the ordering pattern of this plagioclase feldspar.

692. Grundy, H.D., Hawthorne, F.C., McMaster Univ.:
Crystallography of silicate minerals -- chain silicates, 1968-73; Ph.D. thesis (Hawthorne).

A number of Ca-rich clino-amphiboles and some unusual clino-pyroxenes are under investigation using X-ray, neutron diffraction and other spectral techniques such as Mossbauer infra-red, etc.

693. Harris, D.C., Mines Branch, Energy, Mines and Resources:
Characterization of copper selenides, 1968-72.

See Bambollaite, a new copper telluro-selinide; Can. Mineralogist, vol. 11, pp. 738-742, 1972.

694. Harris, D.C., Cabri, L.J., Mines Branch, Energy, Mines and Resources:
Mineralogical examination of low-grade nickel deposits of Canada, 1970-.

Involves the characterization of low-grade nickel-bearing serpentinites (0.2 -0.6%) by determining the occurrence and textural relationships of the nickel phases with the electron microprobe.

See Pentlandite compositions and associations in some mineral deposits; Can. Mineralogist, vol. 11, pp. 861-878, 1972.

695. Herd, R.K., Carleton Univ.:
Research on sapphirine-bearing and related rocks.

Mineralogical, petrographic, chemical and field studies of the magnesium aluminium silicate sapphirine, and related minerals,

in many natural occurrences, with special emphasis on material from the type area in Greenland.

696. Hogarth, D.D., Univ. Ottawa:
Lapis Lazuli in Baffin Island, 1969-74.

697. Hogarth, D.D., Steacy, H.R., Amyot, J., Univ. Ottawa; Geol. Surv. Can.:
Radioactive minerals, 1971-75; M.Sc. thesis (Amyot).

Investigation of radioactive minerals from the Evans-Lou pegmatite and metamict niobium titatium oxides.

See New data on hellandite; Can. Mineralogist, vol. 11, pp. 760-776, 1972.

698. Jambor, J.L., Geol. Surv. Can.:
Mineralogy of porphyry deposits of Cu and Mo in Canada, 1970-.

699. Johnson, A.E., Mines Branch, Energy, Mines and Resources:
The systematic determination of minor elements in pyrite from Canadian ores, 1972-.

The minor element (particularly Co, Ni, As, and Se) content of pyrites which are common to practically all Canadian ore deposits will be examined; details on the morphology and textural characteristics of the pyrites selected for analysis will be included.

700. Johnson, A.E., Petruk, W., Mines Branch, Energy, Mines and Resources:
Mineralogy and geochemistry of copper-molybdenum stockwork deposits in British Columbia, 1972-73.

Studies on the ore minerals and their textural relationships within stockwork deposits occuring within volcanic, intrusive and skarn host rocks. These deposits also will be subdivided according to the major economic elements present, e.g. Cu, Cu-Mo, Mo, Cu-Fe, and Cu-Au.

701. Kissin, S.A., Univ. Toronto:
Phase relations of intermediate pyrrhotites in the system Fe-S 1969-73; Ph.D. thesis.

See Phase relations of intermediate pyrrhotites (abstract); Econ. Geol., vol. 67, p. 1007, 1972.

702. Lin, S.B., Burley, B.J., McMaster Univ.:
Mineralogical investigations on scapolite, 1971-73.

703. Macek, J.J., Ferguson, R.B., Cerny, P., Univ. Manitoba:
New optical curves for the evaluation of composition and structural state of twinned plaioclases, 1971-73.

704. Nagy, A., Univ. du Québec à Chicoutimi:
Etude des minéralisateurs fluorés dans les pyrosynthèses des silicates bi et tricalciques, 1966-.

Par analyse thermique différentielle (ATD) on étudie le comportement des mélanges SiO_2 + CaO_3 jusqu'à 1600°C. L'influence chimique et structurale des fluorures alcalins et alcalino-terreux sur la combinaison de SiO_2 -CaO, ainsi que sur le composé est observée.

MINERALOGY

705. Perrault, G., Rigaud, M., Ecole Polytechnique:
Cristallochimie du niobium, 1968-75.

En 1973, nous comptons: compléter les travaux publiés dans l'article ci-haut; préparer et faire publier une synthèse sur la "Cristallochimie du niobium": étude de toutes les structures cristallines connues des composés du niobium; et étudier les oxychlorures de niobium: synthèses et définition de la structure.

706. Perrault, G., Vincent, H., Ecole Polytechnique:
Structure des oxychlorures de plomb, 1971-73.

Nous comptons entreprendre bientôt la définition de la structure cristalline $2PbO.\ PbCl_2$.

707. Petruk, W., Mines Branch, Dept. Energy, Mines and Resources:
Mineralogy and geochemistry of the prophyry copper-molybdenite deposits in the Highland Valley area in British Columbia, 1969-73.

To determine the mineral assemblages present in each deposit, and to correlate the compositions and physical properties of the individual minerals to each assemblage. In addition the assemblages will be correlated to the host rock and wall rock alteration products to assess the affect of each factor on mineral beneficiation.

Characteristics of the minerals in the $Cu_2(Fe,Zn)SnS_4$ (stannite)-$Cu_8(Fe,Zn)_3S_{12}$ (stannoidite) - $Cu_6Fe_2SnS_8$ (mawsonite) system from the bismuth-molybdenum-tungsten-tin deposit in southwestern New Brunswick, 1971-72.

The chemical and X-ray diffraction properties of these minerals were determined and their relationships to other minerals in this deposit were defined.

See Tin sulphides from the deposit of Brunswick Tin Mines Limited; Can. Mineralogist, vol. 12, pt. 1, pp. 46-54, 1973.

Mineralogy of the bismuth-molybdenum-tungsten-tin deposit in southwestern part of New Brunswick, 1970-72.

The compositions and physical properties of individual minerals have been correlated to the assemblages. It has been determined that the early minerals are the oxides-wolframite, rutile and cassiterite, the phosphates-apatite and rare earth phosphates, and molybdenite. Intermediate minerals are arsenopyrite, loellingite and bismuth, and late ones are cassiterite and a wide variety of sulphides. Fluorite is the main gangue mineral. An understanding of these assemblages has helped in designing a flow sheet for the beneficiation of this ore.

708. Rimsaite, J.Y.H., Geol. Surv. Can.:
Mica group minerals and related silicates in Canadian mineral deposits, 1970-.

709. Roberts, A.C., Queen's Univ.:
Geochemical and crystallographic study of the andorite group, 1972-74; M.Sc. thesis.

710. Rucklidge, J.C., Univ. Toronto:
Microprobe study of serpentinization of Olivine, 1971-73.

See Chlorine in partially serpentinized dunite; Econ. Geol., vol. 67, pp. 38-40, 1972.

711. Rush, P.J., McGill Univ.:
A study of the variation in composition of olivine from the ultramafic rocks of the Thompson mine and a comparison with ultramafics from the Birchtree mine, 1972-74; M.Sc. thesis.

712. Scott, J.D., Queen's Univ.:
Crystal structure of dyscrasite, 1972-73.

713. Scott, S.D., Univ. Toronto:
Nonstoichiometry and phase changes in sulfides, 1964-.

See Sphalerite-wurtzite equilibria and stoichiometry; Geochim. et Cosmochim. Acta, vol. 36, pp. 1275-1295, 1972.

714. Simpson, F.M., Cerny, P., Ferguson, R.B., Univ. Manitoba:
Mineralogy of pollucite and beryl in the tanco pegmatite, Bernic Lake, Manitoba, 1972-73.

715. Smith, D.G.W., Bliss, R., Univ. Alberta:
Stability of carbonate minerals beneath the electron beam, 1972-74.

Carbonate minerals are notoriously easily degraded beneath the beam of an electron microprobe, giving changing X-ray count rates with time and making quantitative analysis very difficult.

716. Smith, D.G.W., Goble, R.J., Univ. Alberta:
Cu-sulphides of the Precambrian Lewis series of southern Alberta, 1970-73.

Electron microprobe investigation of Cu-sulphides occurring in stratabound deposits in the Precambrian Upper Appekuny, Grinnel and Siyeh Formations of the Lewis Series in southwestern Albera, including variations in composition of covellite, blaublerbender covellite, anilite, digenite, chalcocite, bornite and idaite.

717. Springer, R.K., Brandon Univ.:
Exsolution in pyroxenes, 1972-73.

718. Starkey, J., Univ. Western Ontario:
Crystal structures of plagioclase feldspars, 1967-.

See A Refinement of the Structure of Anorthite; Zeit. Kristallographie, vol. 133, pp. 75-84, 1971.

719. Steger, H.F., Mines Branch, Dept. Energy, Mines and Resources:
Adsorption of trace amounts of metal ions by open-lattice silicates, 1971-73.

Canadian bentonite clay has been examined for use as an adsorber of trace metal ion pollutants from thio-acid mine waste water.

MINERALOGY

720. Townsend, M.G., Horwood, J.L., Tremblay, R.J., Mines Branch, Dept. Energy Mines and Resources:
Electrical and magnetic studies of sulphide minerals, 1969-.

See Metallic character of Co_9S_8 and $(Fe,Ni)_9S_8$; Physica Status Solidi, vol. i, p. K137, 1972.

General

721. Ahmed, S.M., Bartels, K., Mines Branch, Dept. Energy, Mines and Resources:
Studies of the double layer at oxide and sulphide surface by potentiometric methods, 1966-.

See The electrical double layer at metal oxide-solution interfaces; in Anodic behaviour of metals and semiconductors, vol. 1 - oxides and oxide films; pp. 319-517, 1972.

Measurement of the surface areas of mineral powders with a modified perkin-elmer, model 212-D, sorptometer using a nitrogen-He gas mixture; Mines Br. Tech. Bull., TB-162, 1972.

722. Cerny, P., Turnock, A.C., Univ. Manitoba:
Mineralogy, petrology, and geochemistry of pegmatite deposits in southwestern precambrian of Canada, 1972-.

The mineral composition, crystallization, history, distribution of rare elements, and genetic affiliation of pegmatites are studied to establish guides for their utilization and further prospecting in the area.

See Pegmatites of southeastern Manitoba; Geol. Assoc. Can., Sp. Paper 9, pp. 119-127, 1972.

Mineralogy and petrology of pegmatites, 1971-.

723. Clarke, D.B., Dalhousie Univ.:
Mineralogical studies.

Phase relationships in pyroxenes, concentration gradients in natural glasses, and mineralogy of the Somerset Island Kimberlite.

See Calcium poor pyroxenes in the system $CaO-MgO-Al_2O_3-SiO_2-FeO_2$; Lithos, vol. 5, pp. 203-216, 1972. A theory for some pyroxene crystallization trends; Lithos, vol. 5, pp. 307-314, 1972.

724. Coleman, L.C., Fillo, W., Univ. Saskatchewan:
A comparison of the Kinely and Catherwood meteorites, 1971-73; M.Sc. thesis (Fillo).

725. Davis, A.R., Gross, H., Kruus, J., Inland Waters Directorate, Dept. Environment:
Development of laser fluorometer, 1971-.

726. Dayal, R.R., Mines Branch, Dept. Energy, Mines and Resources:
Phase equilibrium studies in the system $ZnO-Nb_2O_5-SiO_2$, 1969-72.

See Phase relations in the system $ZnO-Nb_2O_5-SiO_2$; J. Less-Common Metals, vol. 29, no. 1, pp. 1-10, 1972.

727. Dean, R.S., Mines Branch, Dept. Energy, Mines and Resources: Mineralogy of argillaceous materials in Canada, 1958-.

Mineralogical analyses of twenty-nine samples of clays and shales from the Atlantic Provinces have been completed. These are raw materials which are of actual or potential interest to the ceramic industry in Canada.

728. Dibbs, H.P., Mines Branch, Dept. Energy, Mines and Resources: Determination of the zeta potentials of minerals, 1969-72.

See The determination of the zeta potential of minerals; Mines Br. Tech. Bull. TB 156, 1972.

729. Dibbs, H.P., Fortin, R.A., Mines Branch, Dept. Energy, Mines and Resources: The effect of nuclear radiation on adsorption at the mineral-solution interfaces, 1969-.

Initial measurement have been made of the flotation recovery of quartz and some other oxide minerals following exposure to radiation from a high-intensity cobalt-60 source. No significant effects directly due to the irradiation were observed.

730. Faye, G.H., Mines Branch, Dept. Energy, Mines and Resources: Preparation of samples of canadian ores for use as standard reference materials, 1970-.

Zinc-tin-copper-lead ore, MP-1: its characterization and preparation for use as a standard reference material, Mines Br. Tech. Bull. TB155, 1972.

See Standard reference ores and rocks available from the Mines Branch; Mines Br. Inf. Circular IC 294, 1972.

731. Hall, S.R., Szymanski, J.T., Rowland, J.F., Stewart, J.M., Mines Branch, Dept. Energy Mines and Resources: Crystal structure of minerals, 1968-.

The crystal structures of haycockite, cubanite, H.T. cubanite, braggite, michenerite, Ag-pentlandite, costibite, paracostibite using accurate X-ray diffraction techniques.

See The crystal structure of mooihoekite $Cu_9 Fe_9 S_{16}$ and its relationship to other chalcopyrite-like minerals; I.U.Cr. Congr., Japan, 1972.

732. Harris, D.C., Mines Branch, Dept. Energy Mines & Resources: Electron microprobe analysis of ore minerals, 1968-.

See A stannite-kesterite exsolution from British Columbia; Can. Mineralogist, vol. 11, pp. 531-534, 1972.

Two fibrous iron sulfides and valleriite from Cyprus with new data on valleriite; Am; Mineralogist, vol. 57, pp. 1029-1044, 1972.

Hauchecornite-antimonian, arsenian and tellurian varieties; Can. Mineralogist, vol. 11, pp. 819-825, 1972.

MINERALOGY

733. Herdman, D., Burley, B.J., McMaster Univ.:
Petrological study of the Port Coldwell intrustion, Marathon, Ontario, 1971-73; M.Sc. thesis (Herdman).

734. Hung, W.S.Y., McGill Univ.:
Mineralogical studies of the Onaping Formation, Sudbury, Ontario, 1972-74; M.Sc. theis.

735. Kaiman, S., Mines Branch, Dept. Energy, Mines and Resources:
Development of accessories for the ore microscope.

Improvement of the design of a microscope stage to facilitate the comparison of a polished (or thin) section with an autoradiograph of the section.

See Electrical traversing accessory for Vickers projection microscope; Can. Mineralogist, vol. 11, pt. 2, pp. 543-547, 1972.

736. Lenton, P.G., Cerny, P., Univ. Manitoba:
Mineralogy, geochemistry, and petrology of the Buck Claim pegmatite, Bernic Lake, Manitoba, 1972-73; M.Sc. thesis (Lenton)

737. Lerbekmo, J.F., Smith, D.G.W., Westgate, J.A., Denton, G.H., Univ. Alberta:
Compositional and stratigraphic studies of the White River Ash, Yukon Territory, 1973.

Electron microprobe analysis has been used to supplement radiometric and stratigraphic studies in distinguishing lobes of the Ash.

738. McIlreath, I., Corlett, M.I., Queen's Univ.:
Mineral formation during diagenesis of Ordovician limestone, 1971-73; Ph.D. thesis (McIlreath).

739. Nagy. A., Univ. du Québec à Chicoutimi:
Etude de l'altération des épontes dans les mines Henderson et Portage à Chibougamau, 1972-.

L'altération des épontes est étudiée en vue de 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 traces et des minéralisateurs.

740. Nuffield, E.W., Univ. Toronto:
Crystal chemistry of the ore minerals.

Accuracy of lattice parameters determined by X-ray diffraction methods, 1970-75.

See Bambollaite, a new copper telluro-selenide; Can. Mineralogist, vol. 11, pt. 4, p. 738, 1972.

741. Owens, D.R., Harris, D.C., Petruk, W., Cabri, L.J., Johnson, A.E., Pinard, R.G., Mines Branch, Dept. Engery, Mines and Resources:

Mineralogical investigation of canadian ores in conjunction with mineral processing research, 1930-.

742. Perrault, G., Le Page, Y., Currie, K.L., Ecole Polytechnique:
Minéralogie du Mont St-Hilaire, Québec, 1964-75.

Voir Les collines Monérégiennes: Minéralogie du Mont St-Hilaire, P.Q.; Livret-guide B-15, 24e Congrès Géologique International, 1972.

743. Ripley, L.G., Webster, A.H., Mines Branch, Dept. Energy Mines and Resources:
Growth of single crystals of base-metal sulphides and related compounds of controlled composition, 1964-.

See Crystal growth, Part III: The sulphides of cobalt, iron and nickel; Mines Br. Res. Rept. R 237, 1972.

744. Smith, D.G.W., Univ. Alberta:
A refined carbon-coating technique for electron microprobe analysis, 1969-73.

A modification of the evaporation technique for depositing a film of carbon on non-conducting minerals prior to microprobe analysis, is being developed.

745. Smith, D.G.W., Folinsbee, R.E., Hall-Beyer, M., Univ. Alberta:
Mineralogy of the Vilna meteorite, 1969-73.

746. Smith, D.G.W., Jones, J.B., Milne, A., Univ. Alberta and Univ. Adelaide:
Mineralogy of the Moorabie (Australia) meteorite, 1972-74.

The mineralogy of this unequilibrated chondrite is being investigated in detail by means of electron microprobe and other techniques. In particular the ranges of chemical variation of the mineral phases and of the glass chondrules are being studied.

747. Smith, D.G.W., O'Nions, R.K., Bliss, R., Univ. Alberta:
Applications of soft X-ray spectroscopy in mineralogy, 1970-.

Information obtained is pertinent to bonding processes in the minerals and to the development of methods of quantitative analysis of light (low atomic number) elements in minerals by means of the electron microprobe.

See Investigations of bonding in some oxide minerals by oxygen Kα emission spectroscopy; Chem. Geol., vol. 9, pp. 29-43, 1972.

748. Soles, J.A., Mines Branch, Dept. Energy Mines and Resources:
Construction materials: petrography, mineralogy and utilization.
Materials beneficiation: mineral relations in rock and ore and the effect on processing.
Waste utilization: phase studies to determine potential value, 1959-.

See Petrography of Samples of Magnesite from Northwest Gander River, Newfoundland; Mines Br. Invest. Rept. IR-72-15, 1972.

Utilization of Waste: Evaluation of a Slag Cooling-Pond residue for for use in Concrete; Mines Br. Invest. Rept. IR-72-14, 1972.

Petrography of Rock Specimens from the Old Waterfront Trading Post at Halifax, N.S.; Mines Br. Invest. Rept. IR-72-50, 1972.

MINERALOGY

749. Sutarno, B., Bowman W.S., Alexander, G.E., Bright, N.F.H., Mines Branch, Dept. Energy, Mines and Resources:
Studies in the science and technology of "soft" ferrites, 1969-72.

Soft or spinel-type ferrites are widely used in computer applications and in magnetic tapes. A statistically-designed study of the various chemical and processing parameters that can affect the ceramic and magnetic properties of a typical "soft" ferrite was conducted and the results were obtained using a special magnetic-testing facility.

See Ferrites: Part V. A preliminary investigation of the effects of some operational variables on the properties of Mn-Zn ferrites; Mines Br. Invest. Rept. IR 72-40, 1972.

750. Sutarno, B., Bowman, W.S., Lake, R.H., Alexander, G.E., Bright, N.F.H., Mines Branch, Dept. Energy, Mines and Resources:
Studies in the science and technology of"hard" ferrites, 1966-72.

Lead, strontium or barium hexaferrite permanent - magnet types of ceramic magnets are widely used in TV picture tubes, automobile ignition systems, telephone head sets, magnetic door catches, etc. Advise and assistance have been extended to relevant Canadian industries and an international reputation for competence in this field has been developed. Service work on behalf of outside organizations continues.

751. Traill, R.J., Geol. Surv. Can.:
Studies of meteorites and other extra-terrestrial material, 1957-.

To study the mineralogy, petrology, and chemistry of meteorite falls and finds in Canada, and of other extra-terrestrial material, and apply the knowledge thus gained towards a better understanding of earth science processes.

PALEONTOLOGY

Invertebrate

752. Barnes, C.R., Sass, D.B., Poplawski, M.L.S., Telford, P.G., Univ. Waterloo:
Ultrastructure of conodonts, 1965-.

753. Bender, K.P., Geol. Surv. Can.:
Pennsylvanian and Permian conodonts of Arctic Canada, 1971-.

754. Brice, D., Geol. Surv. Can.:
Middle Devonian brachiopods of Arctic Islands, 1971-.

755. Collins, D.H., Royal Ontario Museum:
Ultrastructure and buoyancy mechanisms of coleoid cephalopoda, 1970-73.

756. Copeland, M.J., Geol. Surv. Can.:
Paleozoic micropaleontology of eastern Canada, 1972-.

To determine the stratigraphic relationships of microfaunas in eastern Canada; to identify, describe, and determine their zonal affinities.

See Ostracoda from the Ellis Bay Formation (Ordovician), Anticosti Island, Quebec; Geol. Surv. Can., Paper 72-43, 1973.

757. Dawes, C., Queen's Univ.:
Trilobite faunas of the Bison Creek Formation (Upper Cambrian), Alberta, 1971-73; M.Sc. thesis.

758. Ferguson, L., Mount Allison Univ.:
A biometrical study of the Scottish Carboniferous ostracod genera Bairdia and Paraparchites, 1969-75.

The L:W plots of the various species at any one locality appear to represent, in very many cases, a growth series of only one species, thus substantiating the suspicion that the originally described "species" are merely instars (and in some cases sexual dimorphs of the true species.)

759. Gradstein, F.M., Imperial Oil Ltd.:
Pliocene Globorotalia, biometrical approach, lineages, biostratigraphy, 1970-74.

760. Greiner, H.R., Univ. New Brunswick:
Cyrtospirifer and related genera from the Upper Devonian-Lower Mississippian of western Canada, 1965-74.

761. Hooper, K., McNally, K., Carleton Univ.:
Microfaunas of the Eastern Canadian continental margin. Element analysis of foraminiferal tests. Recent Foraminifera of the continental slope.

761a. Jansonius, J., Craig, J.H., Imperial Oil Ltd.:
Scolecodonts; systematics and stratigraphic application, 1964-.

To demonstrate usefulness of scolecodonts for stratigraphic application, and to determine the degree of stratigraphic detail with which they can be applied.

PALEONTOLOGY

762. Jeletzky, J.A., Geol. Surv. Can.:
Monograph of the Canadian Buchia (=Aucella), 1948-.

To describe and illustrate, and to give a stratigraphical appraisal of all described species. To investigate critically the relationships of Canadian species with the American, Eurasian, and Indo-Pacific species and to elucidate the ages of the Canadian Buchia zones in terms of standard stages.

Monograph of the Canadian belemnites, 1959-.

To describe and figure all hitherto known Canadian belemnites species and genera.

Cretaceous index fossils of Western And Arctic Canada, 1961-.

763. Jull, R.K., Univ. Windsor:
Growth studies in Paleozoic rugose and tabulate corals, 1969-73.

Using closely spaced acetate peel sections, Ordovician and Silurian tabulate corals with well developed septal structures are being studied to determine growth patterns, especially with regard to septal development.

764. Karrow, P.F., Morgan, Anne, Poplawski, S., Sreenivasa, B.A., Univ. Waterloo:
Paleontology of the Toronto interglacial.

765. Lespérance, P.J., Univ. Montréal:
Trilobites de l'Ordovicien Moyen au Dévonien Inférieur des Appalaches du Québec et des Basses Terres du Saint-Laurent, 1962-.

766. Letendre, J., Univ. Montréal:
Phacopidae du Silurien (trilobites), 1972-74; thése de maitrise.

767. Miller, A., Waterhouse, J.B., Univ. Toronto:
Brachiopods from the Trold Fiord Formation, Arctic Canada, 1972-73; M.Sc. thesis (Miller).

768. Morgan, Anne, Univ. Waterloo:
Investigation of the fossil insect fauna of the Scarborough Bluffs, Ontario, 1970-72.

See The fossil occurrence of Helophorus arcticus Brown (Coleoptera: Hydrophilidae) in Pleistocene deposits of the Scarborough Bluffs, Ontario; Can. J. Zool., vol. 50, pp. 555-558, 1972.

To document climatic change, areas of glacial refrigia, movements of insect populations during the Pleistocene, and possibly predict future climatic trends.

769. Noble, J.P.A., Logan, A., Webb, R., Univ. New Brunswick:
Recent Brachiopod morphology and ecology, eastern Canada, 1971-74; M.Sc. thesis (Webb).

770. Poulton, T.P., Geol. Surv. Can.:
Jurassic Trigoniidae of western British Columbia, 1971-.

771. Stearn, C.W., McGill Univ.:
Paleoecology and taxonomy of stromatoporoids in Canadian Devonian reefs, 1954-.

See A Devonian megabreccia at the margin of the Ancient Wall carbonate complex, Alberta; Can. J. Petrol. Geol., vol. 20, No. 3, pp. 412-438, 1972.

Systematic revision of the Stromatoporoidea with particular reference to their microstructure, 1965-.

See The relationship of the stromatoporoids to the sclerosponges; Lethaia, vol. 5, pp. 369-388, 1972.

Variations in the form of reef building organisms, 1971-.

See Forms of the hydrozoan Millepora on a Recent coral reef, Barbados; Lethaia, vol. 6, pp. 183-195, 1973.

772. 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-.

773. Tozer, E.T., Geol. Surv. Can.:
Canadian Triassic Ammonoidea and Bivalvia, 1967-.

774. Vilks, G., Geol. Surv. Can.:
Comparative ecology of Recent planktonic Foraminifera in the surface waters of Arctic, Atlantic and Pacific Oceans, 1968-73.

See Planktonic Foraminifera in the water and sediments of Beaufort Sea, Canadian Arctic; 24th Internat. Geological Congr., sec. 8, pp. 135-141, 1972.

775. von Bitter, P.H., Royal Ontario Museum, Rowell, A.J., Univ. Kansas:
Morphology and mode of occurrence of some Hyolithids from the Pioche Shale (Lower and Middle Cambrian) of Nevada, 1968-73.

776. Walker, D.A., Atlantic Geoscience Centre:
Field and laboratory investigation of the life cycles, micro-ecology and species succession of tide pool foraminifera of Nova Scotia, 1971-74.

Test surface ultrastructure of foraminifera, and applications of scanning electron microscopy.

777. Waterhouse, J.B., Nazer, R.E., Univ. Toronto.
A study of Carboniferous brachiopods from Arctic Canada, in relation to paleogeography, paleoecology and continental drift, 1972-75; Ph.D. thesis (Nazer).

778. Westermann, G.E.G., McMaster Univ.:
Middle Jurassic ammonite fauna and biochronology of the Chilean-Argentine Andes. Part II: Stephanocerataceae, Perisphinctaceae and Haploceratacea, 1970-74.

Septal strength and depth limits of nautiloids and coleoids, 1972-73.

Simple concave septa of nautiloids and coleoids (aulacocerids and belemnites) are considered to act as spherical membranes under hydrostatic pressure (from the body); strength is proportional to the ratio of test thickness and curvature radius. Calibration of an absolute scale (bars and water column) is achieved by the known implosion data for living Nautilus (70-90 bars) and Spirula (∿150 bars). The resulting estimates of bathymetric limits are compatible with previous estimates based on bio- and lithofacies.

779. Westermann, G.E.G., Chamberlain, J., McMaster Univ.:
Streamlining of cephalopod shells, 1970-72.

Shell drag coefficients are used as a basis for evaluating swimming adaptations and estimating swimming ability. Flow visualization experiments are used to determine the nature of flow around a moving cephalopod, and to show how shell shape effects flow. At the present time most efforts are directed toward establishing the effect of shell ornamentation on the flow and on swimming ability.

780. Westermann, G.E.G., Hall, R.L., McMaster Univ.:
Ammonoid systematics, zonation and global correlation in the Middle Bajocian (Jurassic) of the eastern Pacific margin, particularly western Canada, 1970-74.

781. Zingula, R. P., Imperial Oil Ltd.:
Microfossils of Mackenzie delta and Arctic Islands areas, 1972-.

Paleobotany

782. Anderson, T., Geol. Surv. Can.:
Sediment palynology, 1971-75.

See Geological reconnaissance of Georgian Bay; 15th Conference on Great Lakes Res., 1972.

To investigate the fossil pollen spectra and to apply it to sedimentary processes and to the Quaternary history of the Great Lakes.

783. Berti, A.A., Royal Ontario Museum:
Seeds and pollen of the early Wisconsin Scarborough Formation, Toronto, Canada, 1971-72.

784. Brideaux, W.W., Geol. Surv. Can.:
Taxonomy, biostratigraphy, and paleoecology of Mesozoic miospore and micro-plankton 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 south-western Alberta and adjacent British Columbia, 1972-.

785. Cox, R.L., Geol. Surv. Can.:
Microplankton from the Upper Cretaceous of Saskatchewan and Manitoba, 1966-.

786. Kuc, M., Geol. Surv. Can.:
Fossil mosses in the Arctic.

To provide information on age and environment of origin of Beaufort, interglacial, and postglacial deposits in the western Arctic.

787. McGregor, D.C., Geol. Surv. Can.:
Devonian plant microfossils of eastern Canada, 1960-.

Morphologic and taxonomic revision of the Gaspé and related spore floras which will be related to the stratigraphy of the areas. To establish the spores and other palynomorphs as correlation markers and age determinants.

788. McIntyre, D., Chevron Standard Ltd.:
Mesozoic and tertiary palynology, 1966-.

789. Pocock, S.A.J., Imperial Oil Ltd.:
Lower Jurassic palynology, Arctic Islands, Canada, 1971-73.

790. Staplin, F.L., Imperial Oil Ltd.:
Triassic palynology, Arctic Islands, Canada, 1971-.

791. Van Helden, B.G.T., Chevron Standard Ltd.:
Mesozoic Palynology, 1971-.

PALEONTOLOGY

792. Walton, H.S., Chevron Standard Ltd.:
Paleozoic Palynology, 1960-.

793. Williams, G.L., Geol. Surv. Can.:
Palynology of the Mesozoic and Cenozoic rocks of the Atlantic Shelf, 1971-75.

Palynological analysis of 120 samples from 8 coreholes on the Grand Banks has permitted the recognition of 22 biostratigraphic divisions for the Late Cretaceous-Cenozoic. Studies currently underway on the Jurassic-Early Cretaceous penetrated by wells drilled on the Scotian Shelf should extend palynological control and provide biostratigraphic zonation in the post-Palaeozoic section.

Vertebrate

794. Dineley, D.L., Bernacsek, G.M., Broad, D., Univ. Bristol:
Vertebrate faunas from the Peel Sound Formation, Somerset and Prince of Wales Islands, Northwest Territories, 1965-75.

Detailed revision of the family Traquairaspididae, together with the description of several minor cyathaspidids and (new) amphiaspidids. Additional work on a new Ctenaspis spp. osteostraci and pteraspidids, and on the osteichthyes, which include poraspidinids.

795. Dineley, D.L., Loeffler, E., Bernacsek, G.M., Univ. Bristol:
Ostracoderm faunas of the Delorme Formation (Siluro-Devonian), Northwest Territories, 1970-73; theses.

Acanthodian fishes associated with the ostracoderms are also under description. The acanthodian fauna is one of the oldest yet found.

796. Forey, P.L., Univ. Alberta:
Lower Cretaceous Fishes from Northwest Territories, 1971-.

797. Fox, R.C., Univ. Alberta:
Lower Cretaceous ichthyosaurs from Northwest Territories, 1971-.

Upper Cretaceous microvertebrates from Alberta, 1965-.

See A primitive therian mammal from the Upper Cretaceous of Alberta; Can. J. Earth Sci., vol. 9, No. 11, pp. 1479-1494, 1972.

798. Greiner, H.R., Univ. New Brunswick:
Fossil fishes of the Maritime Provinces: with special emphasis on the Palaeoniscidae, 1972-74.

The first reasonable well-preserved bony-scaled rhipidistian crossopterygian fish have been found in a quarry 2 miles north of Irishtown, N.B. Numerous scales, several fin spines, and most of a crushed skull comprise the bulk of the material, as well as an almost complete lower jaw. Study of the latter reveals small marginal teeth, with large labyrinthodont teeth on the inside of the jaw. It is almost certainly a smallish Eusthenopteron foordi.

The enclosing rock--a dolomitic siltstone with fragile plant remains--seems to indicate a very near-shore, possibly in part super-tidal, lagoonal environment.

Fossil fish material from the mid-Devonian Campbell Formation has also been collected.

799. Karrow, P.F., Churcher, C.S., Univ. Waterloo and Univ. Toronto:
Hamilton Bay vertebrate fauna, 1958-73.

800. Krause, D.W., Univ. Alberta:
Paleocene vertebrates from southeastern Saskatchewan, 1971-73; M.Sc. thesis.

801. O'Brien, D., Univ. Alberta:
Paleocene mammals from Alberta, 1971-74; Ph.D. thesis.

802. Nash, D., Univ. Alberta:
Non-mammalian Paleocene vertebrates from Alberta, 1972-72; Ph.D. thesis.

803. Naylor, B., Univ. Alberta:
Evolutionary relationships among Upper Cretaceous and Lower Tertiary salamanders; Ph.D. thesis.

General

804. Bartlett, G.A., Smith, R., Queen's Univ.:
Ultramicrostructure and elemental content of microorganisms, 1967-; M.Sc. thesis (Smith).

805. Greiner, H.R., Univ. New Brunswick:
Recent tracks and borings in littoral zones near St. Andrews, New Brunswick, including Spio setosa and Glycera dibranchiata, 1969-74.

Trace fossils from northern New Brunswick strata, including dalmanitid trails and Zoophycus sp., 1969-74.

Arthropod trace fossils in the Lower Devonian Jacquet River Formation of New Brunswick; Can. J. Earth Sci., vol. 9, No. 12, pp. 1772-1777, 1972.

Collections have been augmented from the Gaspé side of Chaleur Bay, Quebec.

806. Guliov, P., Saskatchewan Dept. Mineral Resources:
Micropaleontological investigation of Lower Tertiary beds in southeastern Saskatchewan, 1972-73.

Investigation of sidewall samples derived from coal exploratory holes drilled in the summer of 1972.

807. Hofmann, H.J., Univ. Montreal:
Phanerozoic organosedimentary structures and problematica, 1970.

See Systematically branching burrows from the Lower Ordovician (Quebec Group) near Quebec, Canada; Palaont. Zeitschrift, vol.46, no.3/4, pp. 186-198, 1972.

PALEONTOLOGY

808. Jansonius, J., Imperial Oil Ltd.:
File of Genera of fossil spores, 1965-75.

File consists of generic name, author, date, status of validity, reference to original publication, original diagnosis and subsequent emendations, description of type species, with reference to original publication. If in other languages, a translation into English is given. Publication now being prepared, in form of 5 x 8 filing cards, each with text and drawing of holotype of type species.

809. Johnston, P.F., Chevron Standard Ltd.:
Micropaleontology, 1971-.

810. Lewis, W.J., Chevron Standard Ltd.:
Micropaleontology, 1972-.

811. Logan, A., Univ. New Brunswick:
Distribution, life habits and taphonomy of the Recent brachiopod Argyrotheca bermudana from the Bermuda Platform, 1972-73.

812. Logan, A., Noble, J.P.A., Webb, G.R., Univ. New Brunswick:
Recent brachiopod morphology and ecology, Bay of Fundy, 1971-75; M.Sc. thesis (Webb).

PETROLOGY AND PETROGRAPHY

British Columbia

813. Ghent, E.D., Jones, J.W., Miller, B., Univ. Calgary:
Petrologic and geochemical studies in the cordillera and electron microprobe study of minerals, 1970-76.

See Plagioclase-Garnet-Epidote Equilibria in Hornblende-Plagioclase bearing rocks from the Esplanade Range, British Columbia; Can. J. Earth Sci., vol.9, No. 6, pp. 618-635, 1972.

During the past three years the following topics have been investigated 1) Structure and petrology of a metamorphic complex centered in the Esplanade Range, B.C.: 2) An electron probe study with R. McQueen (G.S.C.) on element distribution in diagenetically altered carbonates; 3) A study of diagenesis and burial metamorphism of the lower Cretaceous Blairmore Group (Alberta); 4) Element distribution in metamict and non-metamict allanite.

At present, work is continuing on 1), including K-AR and O^{18}/O^{16} investigations of minerals. An M.Sc. thesis has been initiated in the area between Revelstoke and Three Valley Gap, B.C.

814. Greenwood, H.J., McTaggart, K.C., Read, P.B., Wright, R.L., Paterson, I., Univ. British Columbia:
Studies of British Columbia ultramafic rocks: Bridge River, Yalakom, Pinchi areas, 1971-77; M.Sc. thesis (Wright).

815. Grove, E.W., McGill Univ.:
Detailed study of Stewart Complex, northwestern British Columbia, 1970-73; Ph.D. thesis.

816. Lambert, M.B., Geol. Surv. Can.:
Study of a Tertiary cauldera complex, Bennett Lake, British Columbia and Yukon, 1967-.

See Evolution of the Bennett Lake cauldron subsidence complex, southwestern Yukon Territory, Canada; Prox. 24th Internat. Geol. Congress, sec. II, pp. 191-197, 1972.

817. Lambert, R. St J., Hall-Beyer, B., Hall-Beyer, M., Univ. Alberta:
Petrology and structure of an area west of the Clearwater River, British Columbia, 1972-73.

818. Lambert, R. St J., Smith, D.G.W., Winzer, S., Univ. Alberta:
Petrology of high-grade metamorphic rocks at Kootenay, British Columbia, 1970-73; Ph.D. thesis (Winzer).

819. Lavoie, S.J., Hewins, R.H., Fawcett, J.J., Univ. Toronto:
Chemical petrology of Tertiary flood basalts from British Columbia, 1968-73.

820. McTaggart, K.C., Greenwood, H.J., Read, P.B., Univ. British Columbia:
Ultramafic rocks of the Canadian Cordillera, 1972-77.

821. Nicholls, J.W., Univ. Calgary:
Petrology and geochemistry of Recent volcanic rocks from the Cordillera, 1970-74.

PETROLOGY AND PETROGRAPHY

822. Reesor, J.E., Geol. Surv. Can.:
Structural and petrological study of Pinnacle Peaks gneiss dome, British Columbia, 1967-.

To determine the origin, emplacement and tectonic history of the Pinnacle Peak gneiss dome, to compare the structural and metamorphic development of an "intermediate level" gneiss-dome complex (Pinnacle Peaks) with the deeper level Valhalla and Thor-Odin domes, and to elucidate the time of deformation and metamorphism of the Shuswap metamorphic complex.

823. 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 Stikine region.

See Physical evolution of Mt. Edziza volcanic complex, northwestern British Columbia; Vol. Soc. Japan., vol. 17, no. 2, pp. 107,108,1972.

Manitoba

824. Baldwin, D.A., Univ. Manitoba:
Metamorphism in the Burntwood River area, Manitoba, 1971-76; Ph.D. thesis.

825. Bond, W.D., Ontario Division of Mines:
The ovoid anorthositic gabbro at Bernic Lake, Manitoba, 1970-73; M.Sc. thesis.

Large elliptical and/or spherical "ovoids" of anorthosite averaging 6-8 inches in diameter occur uniformly distributed in a narrow metagabbroic sill. The ovoids are polycrystalline aggregates of plagioclase feldspar that were part of a crystal-mush magma and became concentrated in narrow sills through flow differentiation.

826. Bristol, C.C., Springer, R.K., Brandon Univ.:
Petrology of the Garner Lake ultramafic body, southeastern Manitoba, 1972-74.

827. Froese, E., Geol. Surv. Can.:
Petrological studies in the vicinity of the Kisseynew Front, Manitoba, 1970-.

828. Muntanion, H., Univ. Manitoba:
Metamorphism of sickle series rocks, Kississing Lake, Manitoba, 1972-73; M.Sc. thesis.

829. Trueman, D.L., Univ. Manitoba:
The Kenoran orogeny in the Bird River Area, Manitoba, 1970-76; Ph.D. thesis.

The Bird River greenstone belt in the Archean terrain of eastern Manitoba includes a cycle of volcanic and sedimentary supracrustal rocks, which have been deformed into a deep geosyncline, intruded by basic and granitic rocks, and metamorphosed at low temperatures and pressures. In contrast, there are gneisses and schists of high grade metamorphism in the surrounding gneissic terrain. The problem of the relationship between the two terrains is being studied by working out the structural and metamorphic history of the supracrustal rocks, and attempting to place the igneous plutonic rocks in sequence.

New Brunswick

830. Pajari, G.E., Cherry, M.E., Butt, K.A., Univ. New Brunswick:
The calc-alkali rocks of southwestern New Brunswick, 1966-76; Ph.D. thesis (Cherry), M.Sc. thesis (Butt).

831. Pajari, G.E., Gemmell, D.E., Univ. New Brunswick:
The Mississippian volcanic rocks of central New Brunswick, 1971-74; M.Sc. thesis (Gemmell).

832. Rast, N., Grant, R., Wardle, R., O'Brien, B., Donohoe, H.V., Jr., Univ. New Brunswick;
Structural profiles across the Caledonian-Appalachian intercontinental orogenic belt, 1971-74; Ph.D. thesis (Wardle).

To establish the general chronological petrologic and structural relationships in specific orogenic profiles in New Brunswick and to test their pre-Tertiary drift correlation with Europe, U.S.A. and Mexico. Parallel scaled model studies would be used to examine the dynamic processes responsible for the formation of the orogenic belt.

833. Stirling, J., Pajari, G.E., Univ. New Brunswick:
Devitrification and recrystallization textures in Felsic Igneous rocks, 1972-74; M.Sc. thesis (Stirling).

Newfoundland and Labrador

834. Bachinski, D.J., Univ. New Brunswick:
Sulphur isotopic composition of cupriferous iron sulphide deposits associated with volcanic rocks, Notre Dame Bay, Newfoundland, 1965-73.

835. Baragar, W.R.A., Geol. Surv. Can.:
Studies in the Seal Lake volcanic province, Newfoundland, 1968-.

PETROLOGY AND PETROGRAPHY

836. Berger, A.R., Memorial Univ.:
Studies on plutonic and associated metamorphic rocks of Newfoundland, 1972-.

To determine the geological setting and petrogenesis of selected plutonic units and the analysis of their chemical, mineralogical and structural effects on their envelope rocks, in particular the field relationships, petrography, geochemistry and isotopic geochronology of the granitic rocks of eastern Notre Dame Bay. Other field-based problems include (1) the origin, chronology and mechanism of growth of phyllosilicate and aluminosilicate porphyroblasts in the envelopes of the granites of the Musgrave Harbour district, (2) the origin of mineral alignments in foliated felsite dykes of the Carmanville area and (3) the strain history of deformed gabbros and peridotites of the Lewis Hills portion of the Bay of Islands complex. In addition a pilot study will be undertaken to investigate the feasibility of producing alignments of particles and of growing synthetic crystals under varying stress-strain conditions, in order to provide analogies with geological conditions.

837. Emslie, R.F., Geol. Surv. Can.:
Michikamau anorthosite, Labrador, 1966-.

To determine the mode of origin, and geological setting of the Michikamau intrusion and its implications as to mineral potential.

838. Emslie, R.F., 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).

See Some chemical characteristics of anorthositic suites and their significance; Can. J. Earth Sci., vol. 10, No. 1, pp. 54-71, 1973.

839. Payne, J., Williams, H., Memorial Univ.:
The Twillingate granite, Notre Dame Bay, Newfoundland, 1972-73; M.Sc. thesis (Payne).

The Twillingate Granite is a deformed and well foliated pluton that is surrounded by amphibolites of mafic volcanic derivation along its northern contact and it is bounded by relatively undeformed pillow lavas to the south. The granite cuts amphibolites to the north, pre-tectonicly. Mafic pillow lavas to the south apparently post-date the granite intrusion. The geologic setting of the Twillingate granite and its associated metamorphic rocks are of special interest in the Lower Ordovician oceanic domain of relatively undeformed and little metamorphosed rocks of Notre Dame Bay.

840. Upadhyay, H.D., Neale, E.R.W., Strong, D.F., Memorial Univ.:
Geology of the Betts Cove ophiolite sequence, Newfoundland, 1969-73.

See Geological setting of the Betts Cove copper deposits, Newfoundland: an example of ophiolite sulfide mineralization; Econ. Geol., vol. 68, No. 2, pp. 161-167, 1973.

To produce a reliable map, description and interpretation of the Betts Cove ophiolite sequence and the overlying volcanic rocks of the Ordovician Snooks Arm Group.

Northwest Territories

841. Baragar, W.R.A., Geol. Surv. Can.:
Geochemical and petrological study of Yellowknife volcanic rocks, 1962-.

To provide composition, petrographic, and stratigraphic data from which the volcanic character, eruptive history, and characteristic composition may be obtained.

842. Studies of Coppermine River volcanic rocks, Northwest Territories, 1966-.

To determine the total composition, variation in composition, and stratigraphy of the Coppermine River volcanic succession and its relationships to Mackenzie dyke swarm and Muskox Complex.

See Age of Coppermine River basalts; Geol. Surv. Can., Paper 72-73, pp. 21-24, 1972. Coppermine and Dismal Lakes map-areas; Geol. Surv. Can., Paper 71-39, 1973.

843. Davidson, A., Geol. Surv. Can.:
Granite studies in the Ennadai-Rankin Inlet region, District of Keewatin, 1966-.

844. Granite studies in the Slave Province (Phase 1), District of Mackenzie, 1971-.

To classify the granitic rocks according to age, geological and chemical nature, geophysical parameters where available, and to relate them to the regional geology and to mineral deposits.

845. Frisch, T., Geol. Surv. Can.:
Gneisses of the Prince Albert belt, Districts of Franklin and Keewatin, 1972-.

846. Gordon, T.M., Geol. Surv. Can.:
Petrology and structure of the Daly Bay Complex and environs, District of Keewatin.

847. Irvine, T.N., Geol. Surv. Can.:
Muskox Intrusion, 1959-.

To determine the chemical, petrographic and mineralogical characteristics of the Muskox intrusion with the purposes of describing its crystallization history, relating it to events of basaltic magmatism in the Coppermine province, and defining its significance in relation to the general origin of layered intrusion.

PETROLOGY AND PETROGRAPHY

848. Kamineni, D.C., Univ. Ottawa:
Petrology and geochemistry of some Archean metasedimentary rocks near Yellowknife, District of Mackenzie, Northwest Territories, 1969-73; Ph.D. thesis.

849. Krupicka, J., Univ. Alberta:
Retrogressive metamorphism of granulites, 1971-74.

A case study of retrogressive metamorphism of granulite facies rocks on NE Devon Island.

850. Lambert, R. St J., Nielsen, P., Univ. Alberta:
Petrochemistry of Mattberry-Basler Lake region, Northwest Territories, 1972-76; Ph.D. thesis (Nielsen).

851. Lambert, R. St J., Ramsay, C.R., Univ. Alberta:
Petrology of the Yellowknife metagreywacke suite, Northwest Territories, 1969-73; Ph.D. thesis (Ramsay).

A petrochemical investigation of the mineral reactions occurring during progressive regional metamorphism of a low P/T metamorphic series.

852. Reesor, J.E., Geol. Surv. Can.:
Penrhyn Group metamorphic complex, Melville Peninsula, District of Franklin, 1971-.

To determine structural, metamorphic, stratigraphic, and age relations between 'basement' gneisses and migmatites and Penrhyn Group metasedimentary gneisses and schists; to elucidate the structural development of 'gneiss domes' in an area of upper amphibolite facies rocks; to provide structural-stratigraphic and isotopic age bases for regional correlation.

853. Reinhardt, E.W., Geol. Surv. Can.:
Petrologic and structural study of the McDonald fault system south of Great Slave Lake, District of Mackenzie, 1965-.

To describe and interpret the mylonites north and south of the McDonald Fault and their relationships to nearby Archean and Proterozoic rocks; to estimate the order of magnitude and sense of horizontal and vertical components of movement along the McDonald Fault system; and to evaluate the possible correlation of the Yellowknife Group with highly metamorphosed rocks southeast of the McDonald Fault.

854. Ridler, R.H., Geol. Surv. Can.:
Volcanic study in the Ennadai Belt, District of Keewatin, 1970-.

See Volcanic stratigraphy and metallogeny; Rankin Inlet-Ennadai Belt, District of Keewatin; Geol. Surv. Can., Paper 73-1A, pt.A, pp. 165-174, 1973.

855. Schau, Mikkel., Geol. Surv. Can.:
Volcanic rocks of the Prince Albert belt, Districts of Franklin and Keewatin, 1972-.

To determine the structure, stratigraphy and petrology of the volcanic rocks of the Prince Albert Group and their relationship to the adjacent gneisses and the enclosed basic and ultrabasic rocks.

See Volcanic rocks of the Prince Alfred Group; Geol. Surv. Can., Paper 73-1A, pt. A, pp. 175-177, 1973.

856. Tremblay, L.P., Geol. Surv. Can.:
Yellowknife and Goulburn rocks in the Contwoyto Lake area, Northwest Territories, 1964-.

To study the metamorphic rocks of the Yellowknife Group with particular reference to petrologic, stratigraphic and/or structural control of ore deposition and to study the stratigraphy of the Goulburn Group in this area for regional comparison and correlation.

Ontario

857. Appleyard, E.C., Univ. Waterloo:
Structure and origin of the Reid Lake - Rosenthal nepheline gneiss belt, eastern Ontario, 1969-73.

Nepheline, nepheline-scapolite and nepheline-corundum gneisses of composite origin are exposed as metamorphic tectonites a little above the Grenville Supergroup/Basement contact. Structural, petrographic and geochemical study is directed towards determining the time and mode of emplacement of the undersaturated rocks.

Syn-orogenic alkaline igneous rocks of eastern Ontario and northern Norway, 1962-72.

858. Beggs, D., Univ. Toronto:
Stratigraphy and petrochemistry of Sturgeon Lake volcanic pile (North Limb); M.Sc. thesis.

859. Currie, J.B., Fawcett, J.J., Schwerdtner, W.M., Bau, A.F.S., Univ. Toronto:
Midwest Superior Geotraverse: metamorphism, structural geometry and paleostrain analysis, 1972-76; Ph.D. thesis (Bau).

Five distinct belts are intersected in the field area from Shebandowan northward to Pickle Crow. Three of these belts are dominated by low-grade metavolcanic rocks and diapiric granitic plutons; this contrasts with the remaining two belts which consist mainly of gneissic metasediments. Involves study of variation in metamorphic grade across one greenstone belt, with particular emphasis being placed on the nature of contacts with adjacent belts of metasediments. Close structural study is also being devoted to these margins with a view to establishing with certainty their significance in the regional history of structural development. Structural studies are also attempting to reconstruct the nature of tectonic evolution at these regional

boundaries and within the belts through use of paleotectonic strain indicators. Strain analysis can also be expected to provide information concerning the emplacement of some granitic bodies found within the volcanic belts.

860. Edgar, A.D., Duke, N., Univ. Western Ontario:
Geochemistry and petrology of the major minerals of the Blue Mountain and French River, Ontario, nepheline syenites, 1971-73; M.Sc. thesis (Duke).

861. Gittins, J., Univ. Toronto:
Petrogenesis of nepheline syenites in the Haliburton-Bancroft area, Ontario, 1972-.

Based on further mapping the study now consists of microprobe analysis of pyroxenes, amphiboles and olivines in these rocks. It is now realized that these are late-stage highly differentiated rocks. Attention is being given to nepheline-clinopyroxene solid solutions, and to the olivine-clinopyroxene reaction relationship. The highly differentiated nature of these rocks is indicated by the presence of manganoan fayalite.

862. Goodwin, A.M., Univ. Toronto:
Archean volcanic relations in the Timmins-Kirkland Lake-Noranda region, Ontario-Quebec, 1966-73.

863. Petrochemistry of English River gneiss belt, 1970-74.

864. Jolly, W.T., Brock Univ:
Metamorphic alteration of Kirkland Lake lavas, Ontario, 1972-74.

The development of low rank facies of metamorphism are being investigated through textural and spatial relations. Zeolites, prehnite, pumpellyite, and epidote are the main minerals concerned.

865. Kuehnbaum, R., Gittins, J., Univ. Toronto:
Petrology of the Deloro granite, Madoc area, southeastern Ontario, 1971-72; M.Sc. thesis (Kuehnbaum).

866. Concerned primarily with the xenoliths of mafic granite in the main intrusion, with the amphiboles and biotites of both xenoliths and the main intrusion, and with the mineralogy and petrology of a syenite complex at the margin of the intrusion. Minor emphasis is on the wollastonite rocks of the contact aureole.

867. Loubat, H., Lakehead Univ.:
Metamorphic trends in pillow-lavas of northwestern Ontario Coldwell syenitic complex, 1969-75.

868. Mummery, R.C., McNutt, R.H., McMaster Univ.:
Study of corona garnet amphibolites: Whitestone, Anorthosite area, Parry Sound, Ontario, 1969-73; Ph.D. thesis (Mummery).

869. Pyke, D., Naldrett, A., Eckstrand, R., Ontario Division of Mines:
Ultramatic flows in Munro Township, Ontario, 1971-73.

870. Reinhardt, E.W., Geol. Surv. Can.:
Petrochemical study of selected granulites, 1969-.

To define equilibrium conditions of granulite facies metamorphism for selected parts of the Grenville Structural Province including accurate estimates and comparisons of temperature, depth, and partial pressure of water.

871. Srivastava, P., Ontario Division of Mines:
Ultramafics Rocks of Lamport Township, Ontario, 1972-74.

A body of peridotite, which appears to be a flow(?), has been discovered. Its textural and Petrographic variations across the width, and relations to the enclosing volcanics are currently under investigation.

872. 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, 1970-74.

See The Onaping ash-flow sheet, Sudbury, Ontario; Geol. Assoc. Can., Sp. Paper 10, pp. 41-48, 1972.

873. Wallace, H., Univ. Toronto:
Differentation trends in Osler volcanics, Shesheeb Bay section, Lake Superior; M.Sc. thesis.

Quebec

874. Baer, A.J., Univ. Ottawa:
Relationships between anorthosites and granulite facies, 1972-.

Detailed study of a sub-circular body of anorthosite and of the apparent ring of granulite-facies metamorphism that affects the surrounding gneisses located north of La Tuque, Quebec.

875. Barraud, C., Univ. Montréal:
Granulites de la région de Pine Hill, Québec, 1971-74; thèse de doctorate.

876. Bouillon, J.J., Univ. Montréal:
Etude pétrographique et structurale de la couverture nord du Complexe Plutonique de Morin, Province de Grenville, 1970-73; thèse de maitrise.

877. Darling, R., Gélinas, L., Ecole Polytechnique:
The petrography and geochemistry of the volcanic host rocks around the Manitou-Barvue Ag-Zn-Cu deposit, Val d'Or, Quebec, 1972-74.

To define the volcanic stratigraphy of the mine area and determine the stratigraphic position of known ore bodies, and search for wallrock alteration haloes around the ore.

PETROLOGY AND PETROGRAPHY

878. Darling, R., Gélinas, L., Campiglio, C., Guha, J., Ecole Polytechnique et l'Université de Québec à Chicoutimi:
La pétrologie et la géochimie du batholithe Bourlamaque: développement d'une méthode de prospection, 1969-1973; thèse de doctorat (Campiglio).

Le batholithe de Bourlamaque est composé d'un gabbro quartzique en partie altéré par des processus post-magmatiques. Il contient, dans quelques endroits, des sulfures (Cu, Mo) disséminés. Il y a aussi plusieurs mines d'or dans les bordures du batholithe. Le but principal de ce project sera d'étudier la pétrographie et la géochimie du batholithe, de préciser l'histoire de sa cristallisation magmatique et de son altération post-magmatique, de relier à cette histoire la formation des gisements d'or et des concentrations de Cu, Mo.

879. Emslie, R.F., Geol. Surv. Can.:
Morin anorthosite, Quebec, 1964-.

To determine the nature of the differentiation and the processes leading to development of the present form of the Morin intrusion.

880. Gittins, J., Univ. Toronto:
Petrogenesis of the Obedjiwan (Gouin Resevoir) nepheline syenite complex, Quebec, 1966-.

A ring complex of late-Grenville age, consisting of biotite syenite, ijolite and saturated pyroxene perthite syenite. Whole rock chemistry has been completed, and much data has been gathered on pyroxene and biotite compositions. A general study of geochronology by K/Ar has been completed.

881. Gittins, J., Curtis, L., Univ. Toronto:
Agpaitic alkalic rock complexes in the Seal Lake - Red Wine River area, Labrador, 1972-75; Ph.D. thesis (Curtis).

Concerned primarily with the petrogenesis of a series of agpaitic alkalic rock complexes that have undergone regional metamorphism. Primary emphasis is on the pyroxenes and amphiboles at present. Subsequent emphasis will be on the other minerals, bulk rock chemistry, structure and geochronology of the complex.

882. Gittins, J., Hewins, R., Laurin, A.F., Univ. Toronto:
Petrogenesis of kimberlitic and carbonatitic dikes of Arvida area, Quebec, 1965-72.

883. Hogarth, D.D., Durocher, M., Univ. Ottawa:
Igneous and metamorphic history of the southern Gatineau region, 1971-75; M.Sc. thesis (Durocher).

See Precambrian Rocks, in Geology of the National Capital area; 24 Internat. Geol. Congr., Guidebook Excursions B23-B27, pp. 1-15, 1972.

Investigations of rare element pegmatites; igneous and metamorphic rocks of the Gatineau Park; and the Castor Blanc Lake syenite pluton.

884. Hogarth, D.D., Lapointe, P., Univ. Ottawa:
Alkalic intrusive rocks, 1971-75; M.Sc. thesis (Lapointe).

Investigations of alkalic intrusive rocks in west of the Gatineau River and alkalic intrusive rocks and associated fenites near Cantley, Quebec.

885. Hubert, C., Heroux, Y., Univ. Montreal:
Stratigraphy and carbonate petrology of the Silurian Sayabec Formation at La Rédemption, Matapédia County, Quebec, 1969-73; Ph.D. thesis (Heroux).

886. Martignole, J., Univ. Montreal:
Recherches pétrologiques et structurales dans le sud de la province tectonique de Grenville, 1965-.

Voir Pétrologie et structure de l'Anorthosite de Morin; Congrès Géologique International, Livret-guide B-01, 1972.

Etude des anorthosites, de granulites, du métamorphisme et de la tectonique catazonale.

887. Schimann, K., Univ. Alberta:
Metamorphic petrology of the Cape Smith - Wakeham Bay Belt (eastern portion), 1971-74; Ph.D. thesis.

888. Spence, A., Univ. Toronto:
Stratigraphy and volcanic history of Archean volcanic rocks in the Rouyn-Noranda area of Quebec; Ph.D. thesis.

889. Trzcienski, W.E., Jr., Savard, R., Poulin, R., Ecole Polytechnique:
Metamorphism in the Eastern Townships of Quebec, 1972-; M.Sc. theses (Savard, Poulin).

890. Woussen, G., Univ. du Québec à Chicoutimi:
Etude géologique dans la région du Haut Saguenay, sous-projet étude pétrographique, 1972-.

Etude pétrographique et pétrologique sur le massif d'Anorthosite du Lac St-Jean.

Yukon

891. Hacquebard, P.A., Geol. Surv. Can.:
Petrographic correlation of coal seams at Carmacks, and evaluation of their coking properties, 1969-.

General

892. Aumento, F., Ade-Hall, J.M., Dalhousie Univ.:
Petrology, chronology and paleomagnetism of basalts drilled from the floor of the median valley of the Mid-Atlantic Ridge at 45° N.

PETROLOGY AND PETROGRAPHY

See Deep drill 1971 - diamond drilling of pillow lava in the median valley of the MAR at 45°N. E.O.S.; Am. Geophysical Union Trans., vol. 53, nos. 4 and 11, 1972.

893. Aumento, F., Ade-Hall, J.M., Hyndman, R.D., Schenk, P.E., Medioli, F., Dalhousie Univ.:
Deep Drill-1972: A deep diamond drill hole through the Island of Bermuda.

Geochemical, petrological, paleomagnetic, chronological, heat flow and seismic investigations of the deep well cores are currently under way.

894. Bachinski, D.J., Univ. New Brunswick:
Fabric changes in sulphide aggregates, 1970-73.

895. Compositional variations in naturally occurring ferromagnesian silicate minerals in metamorphosed sulphide ore deposits, 1967-73.

896. Cameron, A.R., Geol. Surv. Can.:
Petrographic study of particle types in coking coal charges, 1969-.

897. Campbell, Vivien, Queen's Univ:
Spinel inclusions in plagioclase from the Kiglapait intrusion, 1972-74; M.Sc. thesis.

To determine whether the oriented spinel inclusions in plagioclase are the result of exsolution or are from the reaction of plagioclase and olivine.

898. Chesworth, W., Univ. Guelph:
Studies related to the weathering of granite.

899. A metamorphic grid for the Haliburton Highlands.

900. Origin of hypersthene - Granite.

901. Church, B. N., British Columbia Dept. Mines & Petrol. Resources:
Research on problems of classification and identification of volcanic rocks, 1970-72.

A simple quantitative method of identification and chemical comparison of the main volcanic rock species has been devised using the three axis orthogonal plot $Na_2O + K_2O$ versus $FeO + Fe_2O_3 + 1/2\ (MgO + CaO)$ versus Al_2O_3/SiO_2, in weight per cent. The method combines a new index of basicity with some of the important aspects of variation diagrams proposed by Tilley (1950) and Murata (1960). The resulting generalized treatment of major oxide data, which stresses the gross differences in rock composition, has the important advantages of de-emphasizing the possible effects of analytical error and requiring a minimum of data manipulation and processing.

902. Clarke, D.B., Hyndman, R.D., Dalhousie Univ.:
Studies on the continental margin.

See Comparative trace element geochemistry of Tertiary basalts from Baffin Bay; Earth and Planet. Sci. Letters, vol. 15, pp. 436-446, 1972.

Areas under investigation are the basalts of Baffin Bay, opening of the Labrador and Norwegian Seas, and the continental margin off Nova Scotia and the Grand Banks.

903. Clifford, P.M., Walker, G.P.L., McMaster Univ. and Imperial College:
Recent ignimbrites of central Italy, 1971-.

An exploration of techniques of analysis of tephra deposits, from the caldera of Lago di Bolsena. These techniques are being adapted to the study of Archaean pyroclastic rocks.

904. Currie, K.L., Geol. Surv. Can.:
Alkaline rocks in Canada, 1968-.

To identify and examine occurrences of alkaline rocks in Canada, and to explain their origin, development and emplacement.

See A study of fenitization in mafic rocks, with special reference to the Callander Bay complex; Can. J. Earth Sci., vol. 9, no. 10, pp. 1254-1261, 1972. A note on the conditions of formation of melilite in the Oka alkaline carbonitite complex; Can. J. Earth Sci., vol. 9, no. 12, pp. 1766-1771, 1972.

905. Davies, J.F., Brown, D.S., Laurentian Univ.:
Petrology and geochemistry of rocks enclosing McIntyre disseminated copper deposit, 1971-73; M.Sc. thesis (Brown).

906. Edgar, A.D., Univ. Western Ontario:
Genesis of peralkaline undersaturated rocks, 1965-75.

907. Fawcett, J.J., Univ. Toronto:
Metamorphic studies, Midwest Superior geotraverse corridor, 1972-75.

908. Fleming, P.D., Fawcett, J.J., Univ. Toronto:
Stability of the chlorite-quartz assemblage, 1972-74.

909. Gittins, J., Allen, C.R., Univ. Toronto:
Carbonatite petrogenesis, 1966-; M.Sc. thesis (Allen).

The emphasis at present is on the major rock-forming minerals and their chemistry, particularly on amphibole - mica-titanoclinohumite relations with concentration on carbonatite complexes of the Kapuskasing High in Ontario. Recently completed is a study of the ultramafic rocks associated with the Cargill complex.

910. Kliske, A.E., Chevron Standard Ltd.:
Clastic rock petrography, 1971-.

911. Koehler, T., Univ. Toronto:
Petrology of the Whim Creek copper deposit, Western Australia; M.Sc. thesis.

912. Krausz, Klara, Univ. Ottawa:
Diffusion coefficient measurements in micas, 1970-73; M.Sc. thesis.

PETROLOGY AND PETROGRAPHY

913. Krupicka, J., Univ. Alberta:
Comparative study of mylonites, 1972-76.

See Multiple deformation of crystalline rocks in the Tazin Group, Eldorado Fay Mine, NW Saskatchewan; Can. J. Earth Sci., vol. 9, no. 4, pp. 422-433, 1972.

Systematic study of the textural, mineralogical and chemical changes in crystalline rocks undergoing brittle and semiplastic deformation in tectonically active areas.

914. Lambert, R. St J., Holland, J.G., Owen, P.F., Nielsen, P., Univ. Alberta:
Petrology of Mount Ararat, Turkey, 1966-73.

915. Potter, Ann, Queen's Univ.:
Silicate glass inclusions in olivine crystals, 1972-74; M.Sc. thesis.

Using electron microprobe analysis of samples heated at various temperatures to determine the composition of the silicate liquid at the time of entrapment.

916. Roeder, P., Queen's Univ.:
Crystallization of basalt.

The crystallization of basalt is being studied under controlled oxygen and sulphur fugacities in order to determine the factors which control the distribution of elements between basaltic liquid and crystals.

917. Scarfe, C.M., Univ. Alberta:
Viscosity and related properties of magmas, 1972-.

918. Scarfe, C.M., Lambert, R. St. J., Jacobs, J.A., Univ. Alberta:
Geochemical and geophysical properties of the crust and upper mantle, 1972-.

The three-year program involves installation and calibration of an internally-heated gas pressure vessel (already purchased) and a piston-cylinder apparatus (grant applied for). This will be followed by work on hydration-dehydration reactions and the stability of serpentine-muscovite-and amphibole-bearing assemblages in the crust and upper mantle with particular reference to the presence of water in the low velocity zone and the origin of andesitic magmas.

919. Scarfe, C.M., McReath, I., Kruchkowski, E., Univ. Alberta:
Trace elements in andesites and related volcanic rocks, 1972-; M.Sc. thesis (Kruchkowski).

Amphibole fractionation may be important in the petrogenesis of andesites. Trace element analyses of coexisting liquid and solid phases produced by the incongruent melting of amphibole will provide data on the P-T conditions of fractionation.

920. Sempels, Jean-Marie, Univ. Ottawa:
Textural simulation, 1971-73; M.Sc. thesis.

A computer simulation model is proposed which allows individual control on the main textures-producing factors, mineralogy, nucleation sites and rates, crystal growth rates and interactions between crystals.

921. Smith, D.G.W., Coleman, M., Morton, R.D., Clarke, D.B., Univ. Alberta and Dalhousie Univ.:
Investigations of rocks from the spilite-keratophyre association, 1969-.

The petrology, geochemistry and petrogenesis of rocks of spilite-keratophyre associations and their associated mineral deposits from Canada and other parts of the world are being investigated by means of electron microprobe, stable isotope, bulk chemical, petrographic and other techniques to throw more light on the petrogenesis of this problematic association and, in particular, to test further recent suggestions regarding the important role played by burial metamorphises.

922. Turnock, A.C., Univ. Manitoba:
Phase relations of Ca-Mg-Fe Pyroxenes, 1965-73.

See Synthesis and unit cell parameters of Ca-Mg-Fe pyroxenes; Am. Mineralogist, vol.58, Nos. 1,2, pp. 50-59, 1973.

Experimental determination of the subsolidus relationships is in progress. Work on two joins across the quadrilateral, with P total = 15 kb, is nearly finished.

Experimental determination of the liquidus surface, with P total = 1 atm, PO_2 = Fe-FeO, is in progress. The Mg-rich portion of the quadrilateral is known from three cross-sections, but the Fe-rich portion, especially the locations of the piercing points, is incomplete.

923. Watkinson, D.H., Mainwaring, P.R., Grimes, J., Findlay, A., Carleton Univ.:
Relation of ore deposits to igneous petrology, 1967-.

924. Westgate, J.A., Tomlinson, Maureen, Univ. Alberta:
Petrochemistry of extensive Holocene tephra layers in western Canada, 1970-73; M.Sc. thesis (Tomlinson).

QUATERNARY GEOLOGY

Alberta

925. Bayrock, L.A., Research Council of Alberta:
Surficial geology of the Edmonton area, NTS Sheet 83H, 1958-72.

See Surficial geology, Edmonton area; map with marginal notes (scale 1:250,000), 1972.

926. Surficial geology of northeastern Alberta, 1969-72.

See Surficial geology, Bitumount area; map with marginal notes (scale 1:250,000). Surficial geology, Peace Point area; map with marginal notes (scale 1:250,000). Surficial geology, Lake Claire area; map with marginal notes (scale 1:250,000). Surficial geology, Chipewyan area; map with marginal notes (scale 1:250,000), 1972.

927. Berg, T.E. (deceased), McPherson, R.A. Research Council of Alberta:
Surficial geology of the Medicine Hat area, NTS Sheet 72L, 1965-72.

See Surficial geology, Medicine Hat area; map with marginal notes (scale 1:250,000), 1972.

928. Carlson, V.A., Research Council of Alberta:
Bedrock topography map series, 1965-75.

See Bedrock topography of the Wainwright map area, NTS 73D, Alberta; Alberta Res. Council, 1972.

929. Bedrock topography and drift thickness of southern Alberta, 1972-74.

930. Gold, C., Westgate, J.A., Univ. Alberta:
Quaternary geology of the Sandy River area, east-central Alberta, 1972-75; Ph.D. thesis (Gold).

931. Ozoray, G.F., Research Council of Alberta:
The scientific and economic value of karst studies in Alberta, 1971-72.

See Alternate solutional and nonsolutional effects in cavern genesis; G.F. Ozoray. Proc. 22nd Internat. Geog. Congr., Karst Symposium, vol. 2, pp. 1327-28, 1972.

932. Rutter, N.W., Geol. Surv. Can.:
Quaternary geology, Bow River valley, Alberta, 1967-.

To determine relationship of Cordilleran and Laurentide glaciation; to elucidate Quaternary chronology of the area.

933. Stalker, A.M., Geol. Surv. Can.:
Quaternary of southern Alberta, 1965-.

934. St-Onge, D.A., Geol. Surv. Can.:
Quaternary geology and geomorphology of Whitecourt area, Alberta, 1966-.

935. Westgate, J.A., Univ. Alberta:
Quaternary geology of the Cypress Hills region, southern Alberta, 1960-.

See The Cypress Hills in Quaternary geology and geomorphology between Winnipeg and the Rocky Mountains; pp. 50-62, 1972.

936. Westgate, J.A., Evans, M., Bingham, D., Univ. Alberta:
Palaeomagnetic characterisation of Quaternary sediments in Alberta, 1972-.

937. Westgate, J.A., Green, R., Fritz, P., Kolas, L., Delorme, D., Matthews, J., Aario, R., Lichti-Federovich, S., Univ. Alberta, Research Council of Alberta, Univ. Waterloo, Inland Waters, Geol. Surv. Can.:
Paleoecological studies on Mid-Wisconsin (Quaternary) sediments in the Peace River area, Alberta, 1966-73.

938. Westgate, J.A., Green, R., Schweger, C., Fritz, P., Univ. Alberta:
Research Council of Alberta, Univ. Waterloo:
Palaeoecological studies of protglacial sediments in Lake Wabamun, Alberta, 1971-74.

British Columbia

939. Blunden, R.H., Mathews, W.H., Univ. British Columbia:
Urban geology, metropolitan Vancouver, 1969-73.

940. Clague, J., Univ. British Columbia:
Aspects of surficial geology in the Rocky Mountain Trench, southeastern British Columbia, 1969-73; Ph.D. thesis.

Involves sedimentology, palynology and deformation of the St. Eugene formation (Miocene), ice-flow patterns and the origin of Late Wisconsinan till, and sedimentology and paleohydrology of Late Wisconsinan outwash.

941. Fulton, R.J., Geol. Surv. Can.:
Quaternary geology, Vernon map-area, British Columbia, 1963-.

942. Terrain-Quaternary inventory, Ashcroft map-area, British Columbia, 1972-.

943. Terrain mapping in mountainous areas, British Columbia, 1972-.

To devise terrain mapping units which can be used to adequately define mountainous country, and to map the terrain in several small, mountainous, pilot areas.

944. Mathews, W.H., Univ. British Columbia:
Quaternary geology, Charlie Lake sheet, British Columbia, 1971-73.

See Quaternary geology, Charlie Lake, British Columbia; Geol. Surv. Can., Paper 72-1, pt.A, pp. 169-170, 1972.

QUATERNARY GEOLOGY

945. Rutter, N.W., Geol. Surv. Can.:
Quaternary geology of Peace River Reservoir area, British Columbia, 1966-.

Reconnaissance of Quaternary geology of Peace, Parsnip and Finlay valleys in an advance of flooding to determine chronologic sequence of Quaternary events; to study geomorphic evolution of valleys; to gather areal information including data applicable for engineering and land capability inventory.

946. Quaternary geology, Pine Pass-Jasper, British Columbia-Alberta, 1969-.

947. Terasmae, J., Brock Univ.:
Postglacial geochronology and paleoecology of the Kamloops area, British Columbia, 1971-72.

948. Westgate, J.A., Fulton, R., Univ. Alberta and Geol. Surv. Can.:
Interglacial tephra units in southern British Columbia, 1970-74.

Manitoba

949. Fenton, M.M., Univ. Western Ontario:
Quaternary geology, Winnipeg (east half), Manitoba, 1970-73; Ph.D. thesis.

950. Klassen, R.W., Geol. Surv. Can.:
Quaternary geology and bedrock topography of the Riding Mountain area, Manitoba-Saskatchewan, 1961-.

951. Quaternary geology, Duck Mountain, Manitoba-Saskatchewan, 1964-.

952. Quaternary geology inventory, lower Nelson River Basin, Manitoba, 1971-.

To map, describe and explain the Quaternary deposits and landforms to provide areal geologic-geomorphic data and knowledge of the stratigraphy, age and history of deposition of surficial materials.

953. Last, W., Univ. Manitoba:
General stratigraphy and petrology of Lake Agassiz sediments in southern Manitoba, 1972-73.

954. Ringrose, Susan, Manitoba Mines Branch:
Aspects of the Quaternary Geology of the Grand Rapids (63-G) and Wekusko Lake (63-J) areas, Manitoba, 1971-73; Ph.D. thesis.

See Pleistocene geology of the Ponton-Grand Rapids area; Manitoba Mines Branch, geol. paper 3/72.

955 Teller, J.T., Univ. Manitoba:
Stratigraphy and petrology of glacial sediments in Manitoba, 1971-.

Newfoundland and Labrador

956. Grant, D.R., Geol. Surv. Can.:
Quaternary geology St. Anthony-Blanc Sablon, Newfoundland, 1969-.

957. O'Donnell, N.D., Univ. Western Ontario:
Investigation of an indicator train of sulphide ore at Gull Pond, Newfoundland, 1967-73; M.Sc. thesis.

Northwest Territories

958. Blake, W., Jr., Geol. Surv. Can.:
Quaternary reconnaissance, northeastern District of Mackenzie, 1962-.

959. Quaternary chronology and stratigraphy, southern Ellesmere Island, District of Franklin, 1967-.

960. Pumice on raised beaches, eastern Arctic Canada, 1968-.

961. Fyles, J.G., Geol. Surv. Can.:
Quaternary reconnaissance, western Arctic Islands, 1964-.

962. Glaciation and emergence, Archer Fiord, District of Franklin, 1971-.

963. Hodgson, D.A., Geol. Surv. Can.:
Quaternary reconnaissance, northeastern Baffin Island, District of Franklin, 1968-.

964. Hughes, O.L., Geol. Surv. Can.:
Surficial geology and land classification, Mackenzie Valley transportation corridor, 1971-.

965. Rampton, V., Geol. Surv. Can.:
Quaternary geology, Beaufort Mackenzie, 1969-.

966. Rutter, N.W., Geol. Surv. Can.:
Surficial geology and land classification, Mackenzie Valley transportation corridor (southern part), 1971-.

967. Wagner, F.J.E., Geol. Surv. Can.:
Recent benthonic Foraminiferida and Mollusca from the continental shelf, southeastern Beaufort Sea, 1970-74.

See Molluscan faunas as indicators of Late Pleistocene history, southeastern Beaufort Sea; 24th. Internat. Geological Congr., sec. 8, pp. 142-153, 1972.

QUATERNARY GEOLOGY

Nova Scotia and Prince Edward Island

968. Cooke, H.B.S., Nielsen, E., Dalhousie Univ.:
Pleistocene of Nova Scotia; M.Sc. thesis (Nielsen).

969. Grant, D.R., Geol. Surv. Can.:
Surficial geology, southern Cape Breton Island, Nova Scotia, 1970-.

970. MacLean, B., Univ. Guelph:
Pleistocene and recent geological history of central Prince Edward Island, 1972-74; M.Sc. thesis.

971. Prest, V.K., Geol. Surv. Can.:
Geology of Prince Edward Island, 1953-.

Ontario

972. Aaltonen, R.A., Hancock, J.S., Univ. Western Ontario:
Geology of the city of London, Ontario, 1970-74; theses.

973. Cooper, A.C., Karrow, P.F., Univ. Waterloo:
Pre-Catfish Creek Tills in the Woodstock-Drayton district, Ontario, 1972-74.

974. Cowan, W.R., Ontario Division of Mines:
Quaternary geology of the Orangeville area, southern Ontario, 1971-73.

975. Quaternary geology of the Palmerston area, southern Ontario, 1972-74.

See Quaternary geology, Orangeville area (40P/16) west half and Palmerston area (40P/15) east half; Summ. Field Work 1972, Ontario Division of Mines, Misc. Paper 53.

976. Dreimanis, A., Karrow, P.F., Morgan, A., Univ. Western Ontario, and Univ. Waterloo:
Stratigraphy of the last ice age in the eastern Great Lakes Region, 1958-.

See The last ice age in the eastern Great Lakes region, North America, in Etudes sur le Quaternaire dans le Monde; VIII^{e} Congres Inqua, vol. 1, pp. 69-75, 1972. Glacial history of the Great Lakes-St. Lawrence region, the Classification of the Wisconsin(an) Stage, and its correlatives; 24th Internat. Geol. Congr., sec. 12, pp. 5-15, 1972.

977. Dreimanis, A., Mörner, N.A., Univ. Western Ontario:
Lake Wisconsin varved sediments in the area between London, Ontario, and Lake Erie, 1970-73.

978. Dreimanis, A., Zubrzycki, A.J., Univ. Western Ontario:
Waterlaid tills in southwestern Ontario, 1971-75.

979. Feenstra, B.H., Ontario Division of Mines:
Quaternary geology of the well and area, southern Ontario, 1972.

980. Quaternary geology of the Dunnville area, southern Ontario, 1972-73.

981. Feenstra, B.H., Univ. Western Ontario:
Late Wisconsin stratigraphy between the Milverton and Elmira moraines, southwestern Ontario, 1967-73; M.Sc. thesis.

982. Gadd, N.R., Geol. Surv. Can.:
Quaternary geology, Ottawa map-area, 1956-.

To map, describe and explain the Quaternary deposits and landforms in order to provide: (1) areal information; (2) knowledge of the Quaternary stratigraphy and chronology of the region; and (3) background information applicable to engineering, groundwater, and soils mapping.

983. Gwyn, H., Ontario Division of Mines:
Quaternary geology of Alexandria-Hawkesbury area, eastern Ontario, 1973-75.

984. Quaternary geology of the Alliston-Newmarket area, Ontario, 1972-73.

985. Henderson, E.P., Geol. Surv. Can.:
Quaternary geology, Kingston N½, Ontario, 1968-.

986. Pleistocene geology, Lake Ontario Basin, 1970-.

987. Karrow, P.F., Univ. Waterloo:
Quaternary geology of the Stratford-Conestogo area, Ontario, 1965-73.

988. Karrow, P.F., Anderson, T.W., Univ. Waterloo and Canada Centre for Inland Waters:
History of glacial Lake Algonquin, 1964-74.

989. Karrow, P.F., White, O.L., Univ. Waterloo:
Urban geology, Kitchener-Waterloo, Ontario, 1959-.

990. Lewis, C.F.M., Geol. Surv. Can.:
Postglacial uplift of Huron Basin, 1965-.

991. Quaternary geology, Great Lakes, 1968-.

992. McAndrews, J.H., Royal Ontario Museum:
Palynology of the Great Lakes, 1958-73.

993. Minning, G.V., Geol. Surv. Can.:
Quaternary geology, Arnprior, Ontario-Quebec, 1969-.

QUATERNARY GEOLOGY

994. Mirynech, E., Brock Univ.:
Mineralogical and sedimentological analysis of the surficial deposits of the Belleville-Picton-Kingston-Tweed area, Ontario, 1961-.

995. Morgan, A.V., Univ. Waterloo:
Quaternary geology of the Parkhill-Lucan area, southwestern Ontario. Evaluation of techniques for the location of patterned ground in southern Ontario, 1971-73.

See Late Wisconsinan ice-wedge polygons near Kitchener, Ontario, Canada; Can. J. Earth Sci., vol.9, no. 6, pp. 607-617, 1972.

996. Rust, B.R., Romanelli, R., Univ. Ottawa:
Pleistocene sediments of the Ottawa-Hull area, 1970-74.

A study of marine Pleistocene sediments in the Gatineau Valley, and south of Ottawa including fossils, structures, sedimentary textures and paleogeography with the aim of diagnosing Pleistocene environments.

997. Skinner, R.G., Geol. Surv. Can.:
Glacial-interglacial stratigraphy, James Bay Lowland, Ontario-Quebec, 1969-.

998. Terasmae, J., Brock Univ.:
Quaternary geochronology, paleoecology and dendroclimatology in Ontario, 1969-.

See Quaternary stratigraphy and geomorphology of the eastern Great Lakes region of southern Ontario; 24th Intern. Geological Congr., Guidebook Excursion A42, 1972.

999. Vagners, U.J., Ontario Division of Mines:
Quaternary geology, St. Mary's area, southern Ontario, 1973-75.

Quaternary geology, Lucan area, southern Ontario, 1971-74.

See Quaternary geology, Lucan areas, southern Ontario; Summ. Field Work, 1972, Ontario Division of Mines, Misc. Paper 53.

1000. Walker, R.G., Eynon, G., McMaster Univ.:
Sedimentology of Pleistocene outwash gravels, southern Ontario, 1970-73; M.Sc. thesis (Eynon).

The facies relationships of stoss side, bar top, bar front and side channel deposits can be seen, and a model for bar evolution is being constructed.

Quebec

1001. Craig, B.G., Geol. Surv. Can.:
Surficial geology, Sept-Iles-Cap Chat area, Quebec, 1971-.

1002. DiLabio, R., Univ. Western Ontario:
Indicator tracing in the Lac-Mistassini-Lac Waconichi area, Quebec, 1971-74; Ph.D. thesis.

1003. Dionne, Jean-Claude, Laurentian Forest Research Centre, Québec:
Surficial deposits mapping, Saguenay and Lake Saint-Jean areas, Québec.

The deformational structures in unconsolidated Quaternary deposits in Québec.

Investigations on Quaternary ice-wedges casts in southern Québec and southeastern Canada.

Investigations on ice-drift processes (erosion and sedimentation) in the St. Lawrence Estuary.

Investigations on Quaternary shorelines in the lower St. Lawrence Estuary.

The Quaternary of the Rivière-du-Loup / Trois-Pistoles area, south shore of the St. Lawrence Estuary.

Studies on beaches and shores features in Québec.

1004. Gadd, N.R., Geol. Surv. Can.:
Quaternary geology, Chaudière River region, Quebec, 1962-.

To map, describe and explain the Quaternary deposits and landforms in order to: (1) contribute to knowledge of glacial history and other aspects of Quaternary chronology of the area, and (2) elucidate the nature and origin of placer gold deposits applicable to engineering, agriculture, forestry and groundwater.

1005. Distribution of marine deposits, Ottawa-St. Lawrence Basin, 1971-.

To delimit the occurrence of deposits of the Champlain Sea of the St. Lawrence Lowlands and the equivalent Laflamme Sea of the Lac St-Jean area with particular reference to the distribution of marine clays within these areas; to investigate the stratigraphic and physical parameters and geomorphology of the deposits to aid in the evaluation of the causes and occurrence of landslides, particularly of the mud-flow type.

1006. LaSalle, P., Ministère des Richesses Naturelles du Québec:
Géologie et stratigraphie des sédiments meubles de la Région de Québec, 1969-74.

1007. Lebuis, J., Ministère des Richesses Naturelles du Québec:
Géologie du Quaternaire de la Gaspésie, 1971-76.

1008. Mayr, F., Univ. Montréal:
Boulder counting in the Gaspé Peninsula, Québec, 1972-74.

Fieldwork in 1972 was in the area between Cap Chat and the southern border of the Parc Matane (80 mi^2), with occasional trips to the East and Southeast. Precambrian rocks have been found beyond the limits given in previous publications; on the other hand, erratics from the central basin have been found at the northern edge of the Shick-Shocks, at Lac de la Tête, and in the Cap Chat valley.

Evidence has been found for a local ice-cap, centered some 15 miles SSW of Mt. Albert, and for a readvance of small ice-caps in some parts of the Shick-Shocks. Evidence for a remarkable readvance on an ice-cap has been found at the head of Rivière Pierre (valley of Mont St. Pierre), the outwash of which forms the topsets of deltaic deposits, about 100' above present sea level. Another readvance of an older Gaspé-ice-cap was found south of les Méchins.

1009. Prest, V.K., Geol. Surv. Can.:
Quaternary geology, Montreal Island, Quebec, 1951-.

1010. Shilts, W.W., Geol. Surv. Can.:
Quaternary geology, Sherbrooke area, Quebec, 1966-.

1011. Tremblay, G., Ministère des Richesses Naturelles du Québec:
Géologie des dépôts meubles; régions d'Amos-Taschereau, La Sarre-Macamic, Gemini Hills, Kanasuta-Cléricy Palmarolle-La Motte, comtés d'Abitibi est et Abitibi Ouest, 1971-74.

Saskatchewan

1012. Klassen, R.W., Geol. Surv. Can.:
Quaternary geology and geomorphology of the Assiniboine River valley and its tributaries, Saskatchewan and Manitoba, 1966-.

1013. Westgate, J.A., Christiansen, E.A., Boellstorff, J., Univ. Alberta, Saskatchewan Research Council, Univ. Nebraska:
Distribution, age, and source of the Wascana Creek Ash, southern Saskatchewan, 1971-74.

Yukon Territory

1014. Hughes, O.L., Geol. Surv. Can.:
Project Klondike, Quaternary geology and geomorphology phase, Yukon, 1960-.

To determine the stratigraphy, geomorphology and distribution of Tertiary to Recent deposits of the Klondike district and surrounding area in order to provide background information for heavy mineral phase and to elucidate Quaternary and late Tertiary history of the region.

1015. Lerbekmo, J.F., Smith, D.G.W., Westgate, J.A., Denton, G.H., Univ. Alberta:
Compositional and stratigraphic studies of the White River Ash, Yukon Territory, 1973.

Electron microprobe analysis has been used to supplement radiometric and stratigraphic studies in distinguishing lobes of the Ash.

1016. Rampton, V., Geol. Surv. Can.:
Quaternary geology, Snag-Kluane Lake, Yukon, 1965-.

1017. Rutter, N.W., Geol. Surv. Can.:
Soils in glaciated and unglaciated terrain, Yukon, 1969-.

To characterize soils (pedology) in the central Yukon, with particular reference to the contrast between soils in glaciated and unglaciated regions; develop a technique for differentiating soils developed in situ from those developed on transported material.

1018. Westgate, J.A., Hughes, O.L., Rampton, V., Univ. Alberta and Geol. Surv. Can.:
Quaternary tephrochronology of the Yukon Territory, 1970-75.

General

1019. Craft, J.L., Univ. Western Ontario:
Late-Wisconsin glaciation in the Adirondack Mountains, New York, 1965-73; Ph.D. thesis.

1020. Dreimanis, A., May, R.W., Stankowski, W., Vagners, U.J., Univ. Western Ontario:
Lithologic, granulometric and fabric investigations of tills, aimed at establishing general rules on their formation, 1962-.

See The effect of lithology upon texture of tills (pp. 66-82) and The application of linear discriminant analysis to the investigation of till (pp. 135-147); 2nd Guelph Symp. on Geomorphology, 1972. The dependence of the composition of till upon the rule of bimodal distribution, in Etudes sur le Quaternaire; VIII^{e} Congrès Inqua, vol. 2, pp. 787-789, 1972.

1021. Erickson, W., Queen's Univ.:
Environmental studies for a proposed wild life refuge near Clayton, New York, 1973-74.

1022. Schafer, C.T., Geol. Surv. Can.:
Distribution and paraecology of benthonic Foraminifera in the eastern Canadian nearshore, 1970-76.

1023. Shilts, W.W., Geol. Surv. Can.:
Properties and provenance of till, 1969-.

1024. Westgate, J.A., Univ. Alberta:
Quaternary tephrochronology of western Canada, 1966.

SEDIMENTOLOGY AND SEDIMENTARY PETROLOGY

Recent and Unconsolidated

1025. Bartlett, G.A., Hamdan, Abdul, Slessor, D.K., Queen's Univ.:
Ecology, paleoecology, biostratigraphy and reconstruction of post-Wisconsin sediments of the Atlantic Provinces, 1962-; Ph.D. thesis (Hamdan), M.Sc. thesis (Slessor).

1026. Bartlett, G.A., Reid, C., Jones, P., Queen's Univ.:
Ecology and identification of environmental pollutants in marginal marine areas, 1972-.

Several marginal marine environments adjacent to the Atlantic Provinces have been monitored during the past 10 years. Biomass - watermass, biomass-substrate and watermass-substrate characteristics have been analyzed. The previous history of these environments was investigated by coring.

1027. Bartlett, G.A., Robertson, J., Molinsky, Linda, Jones, P., Queen's Univ.:
A geologic history of the MacKenzie River delta, 1970-.

1028. Bartlett, G.A., Smith, L., Queen's Univ.:
Biostratigraphy and tectonic history of Canadian Atlantic continental margins, 1966-.

See The Canadian Atlantic continental margin-biostratigraphy, paleoecology and paleooceanography from Cretaceous to Recent; 24th Internat. Geol. Congr., sec. 8, pp. 3-15, 1972.

1029. Bartlett, G.A., Smith, R., Queen's Univ.:
Ecostratigraphy and biostratigraphy of waters and sediments adjoining the Mid-Atlantic Ridge, 1966-.

Ecostratigraphy and biostratigraphy of the North Atlantic, South Atlantic, Antarctic South Pacific, North Pacific and Arctic Oceans, 1968-.

1030. Bartlett, G.A., Wilson, D., Queen's Univ.:
Manganese nodules in freshwater lakes, 1971-.

1031. Beales, F.W., Watson, R.I., Scott, S.D., Univ. Toronto:
Microtopographics of sand grains, 1969-.

1032. Coakley, J.P., Rukavina, N.A., Canada Centre for Inland Waters:
Sediment Transport Tracers, 1972-74.

To develop the capability to trace and qualify amounts and direction of nearshore sediment drift, using artificial tracers.

1033. Coakley, J.P., Rukavina, N.A., Haras, W., Canada Centre for Inland Waters:
Shore erosion summary, Lakes Ontario and Erie, 1973-75.

To present in a concise form a summary of shoreline erosion rates based on data now on file and to classify such shorelines in terms of their proneness to wind/wave erosion (erodability); to relate these rates to wave refraction, diffraction and reflection patterns.

1034. Coakley, J.P., Rukavina, N.A., Thomas, R.L., Dell, C.I., Henry, J.B., Canada Centre for Inland Waters:
Point Pelee platform workshop, 1973.

Systematic collection of the following data: thickness and stratigraphy of the Point Pelee deposits using geophysics, coring and jetting, and other methods; details of surface structures, their origin and significance, using side-scan sonar, conventional echo-sounders, underwater T.V. and photography, and divers; surficial sediment distribution; rates and direction of sediment transport using appropriate sediment tracers; and collection of time series data on bottom currents, wave climatology and water level fluctuations.

1035. Damiani, V., Thomas, R.L., Canada Centre for Inland Waters:
Sedimentology and geochemistry of the sediments of the Bay of Quinte, Lake Ontario, 1972-75.

To elucidate the distribution of the surface sediments of the Bay of Quinte; to understand sediment movement in the system; to quantify major and minor elements and to estimate the retention and release of nutrients to the overlying waters.

1036. Gorman, W.A., Bowlby, J., Queen's Univ.:
Recent sediments in the Kingston basin, Ontario, 1971-73; M.Sc. thesis (Bowlby).

1037. Hesse, R., Preda, M., McGill Univ.:
Pelagic sedimentation in West-Pacific, 1971-.

1038. Keen, M.J., Piper, D.J.W., Dalhousie Univ.:
St. Margaret's Bay, Nova Scotia.

1039. Kor, P., Teller, J., Univ. Manitoba:
Identification and interpretation of rock fragments and "heavy" minerals in tills of southeastern Manitoba, 1971-73.

1040. MacGeachy, K., Stearn, C.W., McGill Univ.:
Carbonate budget of the Bellairs reef, Barbados, 1972-; Ph.D. thesis (MacGeachy).

1041. Martini, I.P., Univ. Guelph:
Quantitative studies of sands and sandstones: I, The Pleistocene sediments of southwestern Ontario and modern analogs, 1970-75.

As a modern analog, the sedimentology of the recent Grand River system is studies, with particular emphasis on the analysis of the process of early weathering.

Quantitative studies of sands and sandstones: II The Pleistocene barrier - island system of Wasaga Beach, Ontario, 1972-74.

Detail mapping and sedimentological analysis of the sub-environments of a well developed lacustrine barrier-island.

1042. McDonald, B.C., Geol. Surv. Can.:
Sedimentology and morphology of eskers, 1966-.

Equilibrium bed forms and sedimentary structures in coarse glaciofluvial sand.

SEDIMENTOLOGY AND SEDIMENTARY PETROLOGY

1043. Middleton, G.V., Knight, R.J., Dalrymple, R.W., McMaster Univ.:
Intertidal sediments, Cobequid Bay, 1971-75; Ph.D. theses.

To determine the relation of sand movement to tidal and other currents, to relate the sedimentary structures, textures and mineralogical composition of the sand to its movement within the bay, and to determine the rates and patterns of movement of the dunes, bars and other medium to large scale sedimentary bed forms in response to hydrodynamic factors.

1044. Muhammad, Mir Jan, Teller, J., Univ. Manitoba:
Geology of the till in a part of southeastern Manitoba; 1971-72.

1045. Owens, E.H., Geol. Surv. Can.:
A reconnaissance of the coastal geomorphology of the southern Gulf of St. Lawrence.
Coastal geomorphology and sediment dispersal in the Magdalen Islands, 1972-77.

See The coastal geomorphology of the southern Gulf of St. Lawrence: A reconnaissance; Maritime Sediments, vol. 8, no. 2, pp. 61-64, 1972.

1046. Pelletier, B.R., Geol. Surv. Can.:
Bottom studies in the Beaufort Sea, 1970-73.

Involves studies in sedimentation and submarine geomorphology including such features as sea-floor scouring by ice, and the occurrence of submarine pingos.

See Sea bottom scouring in the Beaufort Sea of the Arctic Ocean; 24th Internat. Geological Congr., sec. 8, 1972.

1047. Pelletier, B.R., Monahan, D., Geol. Surv. Can. and Marine Science Directorate:
Marine Science Atlast of the Beaufort Sea, 1970-73.

Involves a compilation of the known marine aspects of the Beaufort Sea including oceanography, biology, bathymetry, ice, sediments,geomorphology, geology and geophysics, and will contain maps, illustrative material (photos, sketches, graphs) and data.

1048. Piper, D.J.W., Edgar, D.C., Herb, G., von Borstel, B., Dalhousie Univ.:
Modern marine sediments; Ph.D. and M.Sc. theses.

Areas under investigation are trench sedimentation, inactive-continental - margin sedimentation, physical behaviour of oil on beaches, and beach and tidal flat studies.

See Sediments and growth pattern of Navy deep sea fan, San Clement Basin, California Borderland; J. Geol., vol. 80, pp. 198-223, 1972.

1049. Rukavina, N.A., Canada Center for Inland Waters:
MOSES (Monitor Sediment Survey), western Lake Ontario, 1971-73.

MOSES is a one-year program of monitor surveys of bottom sediment properties in the nearshore zone of western Lake Ontario, to determine the seasonal variations and net annual change in the

sediment distribution and bathymetry of a representative portion of the nearshore zone.

1050. Rukavina, N.A., LaHaie, G.G., Canada Centre for Inland Waters: Nearshore sediment geometry and stratigraphy, 1972-.

To measure and interpret the three dimensional geometry and stratigraphy of Lake Ontario and Lake Erie nearshore sediments and to integrate this data with sediment distribution in the nearshore zone as derived from the nearshore inventory program. In 1972, jetting was used successfully to establish the thickness and geometry of the major nearshor sediment bodies in Lake Ontario. In 1973-74 it is proposed to extend the jetting programme to the Lake Erie nearshore sediments and to begin coring to the 3-metre level in Lake Ontario.

1051. Rukavina, N.A., St. Jacques, D.A., Canada Centre for Inland Waters: Nearshore sediment inventory: Lakes Ontario, Erie, 1968-.

A program of sedimentological studies in the nearshore zone (depth 0-20 m) of the Canadian Great Lakes to identify and classify the materials, morphology, and processes of the zone and to develop a comprehensive model of the mechanics of nearshore sedimentation and provide the information fundamental to any nearshore study concerned with problems of erosion, deposition, dumping, structures, dredging, reclamation, etc.

Progress to date includes coverage of the Lake Ontario shoreline from Niagara to Main Duck Island and of the Lake Erie shoreline from Fort Erie to Port Burwell. In 1973 the Lake Erie survey will be extended from Port Burwell to Rondeau.

1052. Rust, B.R., Univ. Ottawa:
Bottom sediments and pollutants in the Ottawa River, 1972-76.

1053. Rust, B.R., Koster, E.H., Univ. Ottawa:
Alluvial sediments of the Donjek Valley, southwestern Yukon, 1968-74.

1054. Slatt, R.M., Memorial Univ.:
Marine sedimentological studies on the Newfoundland and Labrador continental shelves and in Newfoundland bays, 1971-.

A study of texture, mineralogy, and chemistry of Quaternary sediments on the Newfoundland and Labrador continental shelves and in Newfoundland bays to determine sediment distribution patterns, types of sedimentary deposits, mode of sediment deposition, provenance, and extent of sediment transport.

See Glauconite in surficial sediment as an indicator of underlying Cretaceous/Tertiary bedrock on the northeast Newfoundland continental shelf; Can. J. Earth Sci., vol. 9, pp. 1441-1446, 1972.

1055. Slaymaker, O., Gilbert, R., Teversham, J., Univ. British Columbia:
River erosion and sedimentation in the Coast Mountains of British Columbia, 1969-75; Ph.D. thesis (Gilbert), M.A. thesis (Teversham).

SEDIMENTOLOGY AND SEDIMENTARY PETROLOGY

The data on rates of landscape transformation via rates of erosion in alpine and sub-alpine rivers are supplemented by slope erosion studies, braided stream environment studies and lake delta studies.

See Geomorphic processes and land use changes in the Coast Mountains of B.C., Proc. Internat. Geomorphological Symp., Liege-Caen, 1971, 1972.

1056. Sly, P.G., Sandilands, R., Canada Centre for Inland Waters:
Lake bottom studies - grid sampling, 1968-74.

To establish the spatial variations of sediment parameters in different environmental regions in the Great Lakes.

1057. Smith, L., Queen's Univ.:
Interrelations of carbonate and terrigenous sediments, 1968-.

Analysis of modern environments of mixed sediment deposition, and an integration with past examples, leading to a regional synthesis interrelating carbonate and carbonate/terrigenous depositional environments, so that regionally contemporaneous facies relationships can be more closely predicted. Areas of study are the Western Canadian and Offshore Eastern Canada subsurface, the eastern Ontario and Nova Scotia surface carbonate areas and the Grenadines Bank, West Indies.

See Sphalerite as related to the tectonic movements, deposition, diagenesis and karstification of a carbonate platform; 24th Internat. Geol. Congr., Sec. 6, pp. 208-215, 1972.

1058. Thomas, R.L., Kemp, A.L.W., Lewis, C.F.M., Canada Centre for Inland Waters:
Regional lake sedimentology and geochemistry, 1968-75.

To determine the regional distribution and variation of sediment types, and sedimentological and geochemical parameters of lake sediments with emphasis on the Laurentian Great Lakes.

See The surficial sediments of Lake Huron; Can. J. Earth Sci., vol. 10, no. 2, pp. 226-271, 1973.

1059. Thomas, R.L., Sly, P.G., Kemp, A.L.W., Gray, C.B., Canada Centre for Inland Waters:
Suspended sediment studies, 1970-74.

1060. Walker, R.G., Hein, F.J., McMaster Univ.:
Sedimentology of braid bars in the Kicking Horse River, Field, British Columbia, 1973-75; M.Sc. thesis (Hein).

1061. Walker, R.G., Eynon, G., McMaster Univ.:
Sedimentology of Pleistocene outwash gravels, southern Ontario, 1970-73; M.Sc. thesis (Eynon).

The facies relationships of stoss side, bar top, bar front and side channel deposits can be seen and a model for bar evolution is being constructed.

Sedimentary Rocks

1062. Beales, F.W., Lozej, G.P., Dence, M.R., Univ. Toronto and Earth Physics Br.:
Sediments of the Brent meteorite crater, Ontario, 1965-73.

1063. Bell, R.T., Brock Univ.:
Study of Aphebian sediments, 1969-74.

The Rankin-Emnadai belt and northern Manitoba were visited in 1972, for the purpose of correlation studies.

Survey of Archean sediments in the Midwest Superior geotraverse, 1972-76.

1064. Belyea, H.R., Geol. Surv. Can.:
Devonian of Alberta, British Columbia and southern District of Mackenzie, 1950-.

To publish a series of papers on the Devonian, discussing rock types, their diagenesis and depositional environments, correlations, facies changes, disconformities, faults, etc. in an attempt to elucidate the reasons for Devonian facies distribution and hence designate general areas of potential hydrocarbon reservoir rocks.

1065. Busson, G., Geol. Surv. Can.:
Sedimentology of evaporite and carbonate lithofacies in selected areas of the Elk Point Basin, Middle Devonian of western Canada, Alberta and Saskatchewan, 1972-.

1066. Campbell, F.H.A., Geol. Surv. Can.:
Sedimentary rocks of the Prince Albert belt, Districts of Franklin and Keewatin, 1972-.

To determine the structure, stratigraphy, sedimentology and petrology of the sedimentary rocks of the Prince Albert Group and their relationship to the adjacent gneisses and to the enclosed basic and ultrabasic rocks.

1067. Chown, E.H., Caty, J.L., Loyola Univ. and Univ. du Québec à Chicoutimi:
Stratigraphy and sedimentology of the Mistassini Group, Mistassini Territory, Quebec, 1972-75.

Sedimentological, stratigraphic and structural studies as they relate to control of Pb/Zn and Ca mineralization, and an investigation of the pre-Mistassini weathering profile.

1068. Christopher, J.E., Saskatchewan Dept. Mineral Resources:
The Vanguard (Upper Jurassic) and Mannville (basal Cretaceous) Groups of southwestern Saskatchewan, 1968-73.

1069. Clague, J., Univ. British Columbia:
Aspects of surficial geology in the Rocky Mountain Trench, southeastern British Columbia, 1969-73; Ph.D. thesis.

Involves sedimentology, palynology and deformation of the St. Eugene formation (Miocene), ice-flow patterns and the origin of Late Wisconsinan till and sedimentology and paleohydrology of Late Wisconsinan outwash.

SEDIMENTOLOGY AND SEDIMENTARY PETROLOGY

1070. Davies, G.R., Geol. Surv. Can.:
Sedimentological studies of carbonate rocks, 1971-.

The reinterpretation of the origin of Devonian "laminites" in northern Alberta, and facies analysis of Upper Paleozoic carbonates in the northern Yukon Territory.

Sedimentology of selected Upper Paleozoic carbonates and evaporites, Queen Elizabeth Islands, Arctic Archipelago, 1972-

1071. Dunn, C.E., Saskatchewan Dept. Mineral Resources:
The Duperow Formation (Upper Devonian) of southeastern Saskatchewan, 1972-73.

1072. Fuzesy, L.M., Saskatchewan Dept. Mineral Resources:
Geology and hydrocarbon potential of the Winnipegosis Formation in southern Saskatchewan, 1972-74.

1073. Glaister, R.P., Nelson, H.W., Imperial Oil Ltd.:
Grain size analysis of sandstones as an aid in environmental analysis, 1972-73

To define criteria by which environmental information can be obtained through a sophisticated analysis of grain size data obtained from point-counting.

1074. Goulet, N., Ministère des Richesses Naturelles du Québec:
Relations lithologiques, stratigraphiques et tectoniques des formations dans la region de Rouyn-Noranda, 1971-74.

1075. Greggs, R.G., Queen's Univ.:
Physical conditions of carbonate lithification and deposition, 1968-.

1076. Harrison, R.S., Univ. Manitoba:
Dynamic relationships between the stratigraphy and diagenetic over-print of the Pleistocene carbonates of Bermuda.
Near-surface diagenesis in the uplifted Pleistocene reef tracts of Barbados, West Indies, 1971-73.

1077. Harrison, R.S., Steinen, R.P., Univ. Manitoba and Univ. Connecticut:
Facies patterns, diagenesis, and porosity modification of a cyclic, shallow-marine, Mississippian carbonate sequence in northeastern Kentucky.

1078. Hartlein, A.J., Univ. Toronto:
Basal Huronian sediments at the Silverfields mine, Cobalt, Ontario, 1969-73; M.Sc. thesis.

1079. Henderson, J.B., Geol. Surv. Can.:
Sedimentology of the Yellowknife Group, 1967-.

To provide a paleoenvironmental interpretation of the Yellowknife Group sediments; to increase understanding of depositional mechanism of turbidites and associated sediments; to study the transition from vulcanism to sedimentation in Archean times.

See Sedimentology of Archean turbidites at Yellowknife, Northwest Territories; Can. J. Earth Sci., vol. 9, no. 7, pp. 882-902, 1972.

1080. Hendry, H.E., Univ. Saskatchewan:
Sedimentology of conglomerates in turbidite sequences, Lower Ordovician rocks of eastern Quebec, 1970-73.

See Sedimentation of deep water conglomerates in Lower Ordovician rocks of Quebec - Composite bedding produced by progressive liquefaction of sediment?; J. Sed. Petrol., vol. 43, no. 1, pp. 125-136, 1973.

Sedimentological studies in Cretaceous and Tertiary rocks of southern Saskatchewan, 1972-.

1081. Héroux, Y., Ministère des Richesses Naturelles du Québec:
Etude sédimentologique de la formation de Sayabec, Région de Témiscouata-Matapédia, Québec, 1969-74.

1082. Hesse, R., McGill Univ.:
Diagenesis of greywackes, 1971-.

See Selective silicification of ooids in greywackes of Gault Formation, Early Cretaceous, East Alps; Bull. Am. Assoc. Petrol. Geol., vol. 56, no. 3, p. 626 (abstract), 1972.

Pelagic and non-pelagic mudstones of flyschysections, 1971-.

See Turbiditic and non-turbiditic mudstones of flysch section; 24th. Internat. Geol. Congr., Abstracts, Sec. 6., pp. 188, 1972.

1083. Hesse, R., McGill Univ., King, A.F., Memorial Univ., Reading, H.G., Oxford Univ.:
Sandstone dikes and sills, 1972-.

1084. Hoffman, P.F., Geol. Surv. Can.:
A sedimentological and stratigraphic study of the Great Slave and Et-Then Groups in the East Arm fold belt, Great Slave Lake, District of Mackenzie, 1966-.

See Aphebian supracrustal rocks of the Athapuscow aulacogen east arm of Great Slave Lake, District of Mackenzie, Geol. Surv. Can., Paper 73-1A, pt. A, pp. 151-156, 1973.

A stratigraphic, sedimentological and paleontological study of the Epworth Group, north-central District of Mackenzie, 1969-.

1085. Howie, R.D., Geol. Surv. Can.:
Compilation of geoscience data in the Paleozoic basins of eastern Canada, and stratigraphy and Sedimentology of the Carboniferous and Permian rocks of the Atlantic Provinces, Gulf of St. Lawrence and Bay of Fundy, 1971-.

Studies based largely on the microscopic examination of samples and cores from wells drilled for oil and gas in various parts of the Maritime Provinces and adjacent offshore areas.

1086. Jansa, L.F., Geol. Surv. Can.:
Stratigraphy and sedimentology of the Mesozoic and Tertiary rocks of the Atlantic Shelf, 1972-.

Drill cuttings, conventional cores and mechanical log studies are used to establish petrographic parameters of rocks in wells, to establish lithostratigraphic units and to provide

their lateral correlations of units over the area off Nova Scotia and southern part of Newfoundland presently under study.

1087. Knight, I., Geol. Surv. Can.:
The stratigraphy and sedimentology of the Ramah Group between Nachvak Fiord and Saglek, Newfoundland, 1972-.

1088. Kramers, J.W., Research Council of Alberta:
Wabasca oil sand deposit, northeastern Alberta, 1972-74.

Involves a lithofacies and petrographic study of the heavy oil-bearing Grand Rapids Formation in the area of tps. 75-90, rge. 20W4 to 5W5.

1089. Lajoie, J., Univ. Montréal:
Feldspar composition in the Cambrian conglomerate-sandstone beds of the Quebec flysch sequences, 1971-73.

1090. Lajoie, J., Chevalier, J., Univ. Montréal:
Sandstone diagenesis in Cambrian flysch sequences of Quebec, 1972-74; M.Sc. thesis (Chevalier).

1091. Lajoie, J., Payette, F., Univ. Montréal:
Trace elements in the red and green claystones, Cambrian flysch sequences, Quebec, 1972-74; M.Sc. thesis (Payette).

1092. Lerand, M.M., Gulf Oil Canada Ltd.:
Sedimentology of Mesozoic sandstones, 1972-73.

Sedimentology of existing and potential sandstone reservoirs in the Arctic.

1093. Long, D.G.F., Univ. Western Ontario:
Stratigraphy and sedimentation of the Early Proterozoic Chibougamau Formation, Quebec, 1970-73.

Stratigraphy and sedimentation of the Early Proterozoic Mississagi and Serpent Formations, north shore of Lake Huron, Ontario, 1972-75.

1094. Macqueen, R.W., Geol. Surv. Can.:
Studies of evaporite-carbonate-clastic suite, Souris River Formation (Devonian), Saskatchewan, 1967-.

1095. Magara, K., Imperial Oil Ltd.:
Compaction of fine-grained clastics, 1970-74.

The development of techniques to determine state of compaction of fine-grained clastics, to interpret their compaction history, and relate these to primary migration of hydrocarbons.

1096. Martini, I.P., Univ. Guelph:
Quantitative studies of sands and sandstones: IV, The environments of deposition and weathering of calcareous sands and sandstones, 1972-76.

Sedimentological and paleoecological analysis will be made and computer simulation of the processes active in a modern small tidal lagoon in Bermuda and an ancient marine environment of the Trenton Limestone in Ontario.

Quantitative studies of sands and sandstones: III, The Medina Formation (Silurian) and its environments of sedimentation, Ontario and New York, 1969-75.

See Selected facies of the Alexandrian rocks exposed along the Niagara Escarpment, in Niagaran stratigraphy: Hamilton Ontario; Michigan Basin Geological Soc. Ann. Field Excursion, pp. 57-65, 1972.

1097. McIlreath, I.A., Geol. Surv. Can.:
Stratigraphic relationships of the western edge of the Middle Cambrian facies carbonate belt, Field, British Columbia, 1972-.

1098. Middleton, G.V., Gonzales-Bonorino, G., McMaster Univ.:
Sedimentology of the Punta Negra Formation, a flysch of the Argentine Precordillera, 1971-73.

1099. Mossop, G., Geol. Surv. Can.:
Evaporites of the Arctic Islands, 1971-.

1100. Noble, J.P.A., Howells, K., Roulston, B., Univ. New Brunswick:
Silurian-Devonian stratigraphy and paleoenvironments, New Brunswick, 1970-75; M.Sc. theses (Howells, Roulston).

1101. Ollerenshaw, N.C., Geol. Surv. Can.:
Cretaceous and Tertiary conglomerates and sandstones of the eastern Cordillera, 1969-.

1102. Parviainen, A.E.U., Univ. Western Ontario:
Stratigraphy and sedimentation of the Huronian Ramsay Lake and Bruce Formations, north shore of Lake Huron, Ontario, 1969-73.

1103. Patel, I.M., Gordon, A.J., Univ. New Brunswick (Saint John):
The provenance of Lower Cambrian and Lower Carboniferous conglomerates of Saint John area, New Brunswick, 1969-73.

The two basal conglomerates are of continental origin and were deposited in a number of basins with a northeast structural trend. Both of the polymict conglomerates appear to be derived from local source, remanence of these assumed rocks are exposed as structurally bounded inlier.

1104. Pocock, S.A.J., Staplin, F.L., Imperial Oil Ltd.:
Organic matter in sedimentary rocks, 1963-.

Diagenesis and metamorphism of organic matter deposited in the sediments.

1105. Pounder, D.A., Chevron Standard Ltd.:
Sedimentology, diagenesis and stratigraphy of carbonate rocks, 1959-.

1106. Rahmani, R.A., Lerbekmo, J.F., Univ. Alberta:
Upper Cretaceous and Paleocene heavy mineral provinces of Alberta, 1970-73; Ph.D. thesis (Rahmani).

1107. Rosenstein, E.S., Queen's Univ.:
Depositional environments and diagenesis of the Ottawa and Chazy Formations near Cornwall, 1971-73; M.Sc. thesis.

SEDIMENTOLOGY AND SEDIMENTARY PETROLOGY

1108. Schenk, P.E., Jensen, L., Lane, T., Dalhousie Univ.:
Paleozoic sediments in Nova Scotia; M.Sc. theses (Jensen, Lane).

Detailed work on the pre-orogenic Meguma and post-orogenic Windsor Groups.

1109. Schmidt, V., Mobil Oil Canada Ltd.:
Reef Growth and Diagenesis of Middle Devonian Keg River reefs, Rainbow Field, Alberta, 1969-73.

1110. Schmidt, V., Davies, G., Mobil Oil Canada and Geol. Surv. Can.:
Electronluminescence microscopy of Blue Mountains reefs, Ellesmere Island, Arctic Canada, 1972-73.

1111. Schmidt, V., Klement, K., Mobil Oil Canada Ltd. and Univ. Texas:
Reef growth and diagenesis of Permian Capitan reef complex in Texas and New Mexico, 1971-73.

1112. Simpson, F., Saskatchewan Dept. Mineral Resources:
Sedimentology, palaeoecology and economic geology of Lower Colorado (Cretaceous) sediments, west-central Saskatchewan, 1969-72.

1113. Smith, L., Queen's Univ.:
Depositional and erosional history, and sequence correlations, of Offshore Eastern Canada, 1969-.

Various Middle Paleozoic and Tertiary successions are being analyzed to the area - time interrelations in each of both deposition and erosion, and their faunal and lithic parameters. They were selected widely in area and time to test the sequence concept of Sloss and Wheeler in relation to basic stratigraphic and sedimentologic principles. These in turn may be applied to both large and small-scale tectonic behaviour patterns of continental masses.

See Late Mesozoic and Cenozoic of the Sable Island Bank and Grand Banks; Geol. Surv. Can., Paper 71-23, pp. 267-283, 1973.

1114. Trettin, H.P., Geol. Surv. Can.:
Stratigraphy and sedimentology of lower Paleozoic clastic formation, Canon Fiord region, Ellesmere Island, District of Franklin, 1972-.

1115. Vecsey, G.E., Gulf Oil Canada Ltd.:
Carbonate rocks - diagenesis, porosity development and facies associations in reefs and bank complexes.

1116. Vigrass, L.W., Univ. Saskatchewan (Regina):
Stratigraphy and depositional environments of Saskatchewan detrital and carbonate-evaporite sequences, 1970-73.

1117. Walker, R.G., Cant, D., McMaster Univ.:
Devonian braided streams in Gaspé, Quebec, 1972-74; M.Sc. thesis (Cant).

1118. Walker, R.G., Hyde, R.S., McMaster Univ.:
Paleocurrents determined from grain fabrics in Archean sediments, 1972-75; Ph.D. thesis (Hyde).

In massive Archaean sandstones which have not suffered isoclinal folding, it is possible to demonstrate a preferred grain fabric which is sedimentary in origin. Effects of structural deformation are being removed in the hope of using the original fabric as a paleoflow indicator.

1119. Walker, R.G., Johnson, B.A., McMaster Univ.:
Resedimented conglomerates of the Cap Enragé Formation, Gaspé, Quebec, 1972-74; M.Sc. thesis (Johnson).

A study is being made of lateral facies changes and paleocurrent directions within the resedimented conglomerates, in order to resolve controversy on the depositional environment of the conglomerates.

1120. Walker, R.G., Teal, P.R., McMaster Univ.:
Archaean sedimentology, northwestern Ontario, 1972-75; Ph.D. thesis (Teal).

To investigate different depositional environments in Archean greenstone belts. In the Manitou belt, it appears that alluvial fan and braided fluvial deposits are overlain by turbidites. There are transitions from agglomerates into tuffs (ash flows) and into cross-bedded tuffs which have been reworked in fluvial environments.

1121. Williams, B.P.J., Univ. Bristol:
Sedimentology of Devonian alluvial and lacustrine rocks, Chaleur Bay Coast, Gaspé Peninsula, Quebec, 1972-75.

1122. Williams, B.P.J., Rust, B.R., Univ. Bristol, Univ. Ottawa:
Alluvial sedimentology of Devonian - Carboniferous rocks in eastern and southern Gaspé, Quebec, 1972-75.

1123. Young, G.M., Univ. Western Ontario:
Stratigraphic and sedimentologic studies of Hadrynian (Upper Proterozoic) rocks of the Arctic Archipelago, 1971-.

Stratigraphic and sedimentologic studies of Early Proterozoic rocks, 1964-.

See Origin of carbonate-rich, Early Proterozoic Espanola Formation, Ontario, Canada; Bull. Geol. Soc. Amer., vol. 84, no. 1, pp. 135-160, 1973 .

1124. Young, H., Queen's Univ.:
Stratigraphy and carbonate petrology of the Virden Member, Lodgepole Formation (Mississippian) in southern Manitoba, 1968-73; Ph.D. thesis.

1125. Young, H.R., Brandon Univ.:
Petrographic study of the Virden Member, Lodgepole Formation, southwestern Manitoba, 1965-72.

Carbonate petrology, facies distribution and environment of deposition of the Virden Member, a Mississippian oil-producing horizon in southwestern Manitoba.

SEDIMENTOLOGY AND SEDIMENTARY PETROLOGY

General

1126. Davies, G.R., Geol. Surv. Can.:
Comparative studies of ancient and modern sedimentary environments, 1970-.

1127. Peach, P.A., Brock Univ.:
Solving some geological measurement problems with the Quantimet 720, 1970-72.

1128. Shilts, W.W., Geol. Surv. Can.:
Mineral indicator tracing, southern Keewatin, 1970-.

To determine the dispersion pattern of rock, mineral and chemical components of eskers and till relative to their source in the bedrock.

1129. Sly, P.G., Canada Centre for Inland Waters:
Equipment design, test and evaluation, 1967-.

To develop better and more reliable particle sizing, data recording and sampling equipment.

1130. Snowdon, L.R., Geol. Surv. Can.:
The organic content of sediments from the Beaufort Sea, 1971-.

1131. Walker, R.G., McMaster Univ.:
Development of facies models for clastic depositional environments, 1971-76.

To improve the predictive power of some of the existing clastic facies models. Those being worked on currently are the turbidite models (particularly submarine fan models), and braided fluvial models.

STRATIGRAPHY AND PALEONTOLOGY

Precambrian

1132. Bell, R.T., Brock Univ.:
Study of Aphebian sediments, 1969-74.

The Rankin-Emnadai belt and northern Manitoba were visited in 1972, for the purpose of correlation studies.

1133. Campbell, R.B., Geol. Surv. Can.:
Stratigraphy and structure of the Mount Ida Group, southern British Columbia, 1972-.

See Stratigraphy and structure of the Mount Ida Group, Vernon (82L), Adams Lake (82M W½), and Bonaparte (92P) map-areas; Geol. Surv. Can., Paper 73-1A, pt. A, pp. 21-23, 1973.

1134. Card, K.D., Ontario Divison of Mines:
Stratigraphic sections, Huronian Supergroup, Panache Lake area, Ontario, 1972-73.

1135. Chown, E.H., Caty, J.L., Loyola Univ. and Univ. du Québec à Chicoutimi:
Stratigraphy and sedimentology of the Mistassini Group, Mistassini Territory, Quebec, 1972-75.

Sedimentological, stratigraphic and structural studies as they relate to control of Pb/Zn and Ca mineralization, and an investigation of the pre-Mistassini weathering profile.

1136. 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-.

1137. Donaldson, J.A., Jones, B.G., Macey, G., Cecile, M., Kurt, V., Peeling, G., Carleton Univ.:
Comparative studies of Proterozoic sedimentary rocks of Canada, 1963-.

Components of the study include:
1. Assessment of volcanic v.s. granitoid provenance of greywackes in greenstone belts of the Superior and Slave Provinces.
2. Stratigraphic study of the Hornby Bay and Rae Groups of the Great Bear - Coppermine Region, with emphasis on utility of stromatolites for interbasinal correlation.
3. Stratigraphic study of the Gowganda Formation at Cobalt, Ontario.
4. Paleocurrent study of the Dubawnt Group, Northwest Territories.

See Conical-columnar stromatolites and subtidal environment (Abstract); Bull. Am. Assoc. Petrol. Geol., vol. 56, no. 3, p. 614. 1972.

1138. Hofmann, H.J., Univ. Montreal:
Precambrian paleontology, 1969-.

See Precambrian remains in Canada: fossils, dubiofossils, and pseudofossils; 24th Internat. Geol. Congr., sec. 1, pp. 20-30, 1972.

STRATIGRAPHY AND PALEONTOLOGY

1139. McGlynn, J.C., Geol. Surv. Can.:
Stratigraphy, sedimentology and correlation of Nonacho Group, Northwest Territories, 1965-.

1140. Morgan, W.C., Geol. Surv. Can.:
Study of the Ramah Group and of Proterozoic-Archean relationships in northern Labrador, 1971-.

See Ramah Group and the contact between Archean and Proterozoic in northern Labrador; Geol. Surv. Can., Paper 73-1A, pt. A, p. 162, 1973.

1141. 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

1142. Aitken, J.D., Geol. Surv. Can.:
Lower Paleozoic stratigraphy, southern Rocky Mountains, 1972-.

1143. Barnes, C.R., Univ. Waterloo:
Ordovician conodonts from the Canadian Arctic, 1969-.

Lower and Middle Ordovician conodonts from the southern Canadian Rocky Mountains, 1970-74.

Ordovician conodonts from Europe (Spitzbergen, Scotland, Ireland, Wales, Turkey), 1972-.

Conodont biostratigraphy and paleoecology of Black River and lower Trenton groups (Middle Ordovician), northeastern North America, 1965-74.

See North American Middle and Upper Ordovican conodont faunas; Geol. Soc. Amer., Mem. 127, p. 163-193, 1972.

1144. Barnes C.R., Munro, Ildi, Univ. Waterloo:
Middle and Upper Ordovician conodonts from Hudson Bay and Manitoba, 1970-73.

1145. Barnes, C.R., Poplawski, M.L.S., Univ. Waterloo:
Lower and Middle Ordovician conodonts from the Mystic Conglomerate, Quebec, 1970-72.

1146. Bond, I.J., Queen's Univ.:
Lower Ordovician conodont biostratigraphy of southeastern Ontario and northern New York State, 1970-73; Ph.D. thesis.

1147. Bourque, Pierre-André, Ministère des Richesses Naturelles du Québec:
Stratigraphie du Silurien et du dévonien basal de L'est de la Gaspésie, 1969-74.

1148. Chatterton, B.D.E., Univ. Alberta:
Taxonomy and ontogeny of trilobite faunas in western Canada, 1971-.

Taxonomy and ontogeny of late Middle Ordovician to Late Ordovician

trilobites from the Southern Mackenzie Mountains, N.W.T., and taxonomy of some trilobites from the Middle Devonian Headless Formation, southern Mackenzie Mountain, N.W.T.

1149. Christie, R.L., Geol. Surv. Can.:
Operation Peel Sound: stratigraphy and structure of Prince of Wales Island and adjacent small islands, District of Franklin, 1970-.

1150. Czurda, K., Univ. Western Ontario:
Stratigraphy and mineralogy of the Meaford-Dundas (Upper Ordovician) in southern Ontario, 1972-74.

The Meaford-Dundas is part of a huge clastic wedge which was deposited under marine conditions. Ther vertical and lateral variation in the clays, quartz and heavy minerals are a principal objective.

1151. Dean, W.T., Geol. Surv. Can.:
Lower and Middle Paleozoic biostratigraphy Gaspé, Quebec, and Maritime provinces, 1969-.

1152. Dixon, O.A., Univ. Ottawa:
Ordovician-Silurian faunal studies, Anticosti Island, Quebec,

1153. Fritz, W.H., Geol. Surv. Can.:
Cambrian biostratigraphy of the Canadian Cordillera, 1965-.

See Lower Cambrian trilobites from the Sekwi Formation type section, Mackenzie Mountains, Northwestern Canada; Geol. Surv. Can., Bull. 212, 1972. Cambrian biostratigraphy Mackenzie Mountains and Labrador; Geol. Surv. Can., Paper 73-1A, pt. A, pp. 254-259, 1973.

1154. Giles, P., Univ. Western Ontario:
Stratigraphy and geochemistry of the Beekmantown Group (Lower Ord.), southeastern Ontario, 1968-73; Ph.D. thesis.

Depositional history of the dolostones with minor evaporites.

1155. Globensky, Y., Ministère des Richesses Naturelles du Québec:
Revision of the Sorel map-area, Maskinong, Berthier and Joliette Counties, 1972-73.

1156. Greiner, H.R., Univ. New Brunswick:
Ordovician-Silurian stratigraphy and contact relations in northern New Brunswick, 1972-74.

See Ordovician-Silurian stratigraphy and contact relations in northern New Brunswick, N.E. sec. Geol. Soc. Amer. Abstracts, 1973.

1157. Greiner, H.R., Howells, K., Univ. New Brunswick:
Silurian-Devonian contact relationships and faunas of northern New Brunswick, 1959-74; M.Sc. thesis (Howells).

1158. Greggs, R.G., Queen's Univ.:
Conodont faunas of the Gull River Formation, southeastern Ontario, 1969-.

STRATIGRAPHY AND PALEONTOLOGY

1159. Gregs, R.G., Bond, I.J., Queen's Univ.:
Lower Paleozoic stratigraphy of southeastern Ontario, 1970-.

See A principal reference section proposed for the Nepean Formation of probable Tremadocian age near Ottawa, Ontario; Can. J. Earth Sci., vol. 9, no. 9, pp. 933-941, 1972.

1160. Logan, A., Porter, R.A., Univ. New Brunswick:
The sedimentology, paleontology and paleoecology of the Jones Creek and Long Reach Formations (Upper Silurian), southern New Brunswick, 1971-73; M.Sc. thesis (Porter).

1161. Munro, Ildi, Barnes, C.R.,Univ. Waterloo:
Ordovician conodonts from the Lake Timiskaming outlier, Ontario and Quebec, 1970-73; M.Sc. thesis (Munro).

1162. Noble, J.P.A., Howells, K., Roulston, B., Univ. New Brunswick:
Silurian-Devonian stratigraphy and paleoenvironments, New Brunswick, 1970-75; M.Sc. theses (Howells, Roulston).

1163. Norford, B.S., Geol. Surv. Can.:
Faunal study of Late Ordovician and Silurian rocks of southeast British Columbia and adjacent Alberta, 1960-.

Description of faunas of Beaverfoot and Tegart Formations, lithologic and biostratigraphic correlation of these units, positioning of the Ordovician-Silurian boundary, establishment of sequence of biochronological zones.

Ordovician and Silurian biostratigraphy of British Columbia, Alberta, Yukon, Mackenzie, and Franklin, 1961-.

1164. Pugh, D.C., Geol. Surv. Can.:
Subsurface Cambrian stratigraphy and "Granite wash" in northern and central Alberta, 1969-.

Subsurface Cambrian stratigraphy in northeastern British Columbia, 1972-.

1165. Risk, M.J., McMaster Univ.:
Importance of the "minor phyla" in the Paleozoic, 1972-.

Trace fossils in the Thorold are almost certainly the result of feeding activity of echiuroid worms, raising the question of the existence and relative importance in the Paleozoic of other minor phyla, such as sipunculids, priapulids, nemerteans and poebioids. Each of these possesses some type of preservable hard part; conodont workers in the area report mysterious, unassignable microfossils.

1166. Uyeno, T.T., Geol. Surv. Can.:
Conodont biostratigraphy of Upper Ordovician to Devonian rocks of the Arctic Islands, 1968-.

1167. Whiteway, P.B., Univ. Manitoba:
The stratigraphy of the ordovician of Northern Manitoba, 1973-75; M.Sc. thesis.

1168. Williams, S.R., Dixon, J., Jones, B., Univ. Ottawa:
Silurian and older sedimentary rocks and faunas on Somerset and Prince of Wales Islands, Northwest Territories, 1968-74; Ph.D. theses.

Current studies concern the Silurian Read Bay Formation and underlying Cambrian to Silurian rocks adjacent to the Boothia Arch (Williams and Dixon), and the Read Bay Formation on northern Somerset Island (Jones). Objectives include accurate dating of the rocks, definition or refinement of local stratigraphical boundaries and interpretation of the sedimentary and faunal facies in the region in terms of the history of sedimentary environments and paleogeography.

See Stratigraphical setting of the Silurian thelodonts from Prince of Wales Island, Northwest Territories; Lethaia, vol. 5, pp. 281-282, 1972.

1169. Winder, C.G., Univ. Western Ontario:
Paleozoic geology of southern Ontario, 1951-.

Carbonate petrology and the conodont distribution of the Upper Trenton Group.

See Stratigraphy and paleontology of the Paleozoic rocks of southern Ontario; 24th Internat. Geol. Congr., Fieldguide A45, 1972.

Devonian to Permian

1170. Bamber, E.W., Geol. Surv. Can.:
Carboniferous and Permian biostratigraphy and coral faunas, western and northern Canada, 1971-.

See Description of Carboniferous and Permian stratigraphic sections, northern Yukon Territory and northwestern District of Mackenzie; Geol. Surv. Can., Paper 72-19, 1972.

1171. Barss, M.S., Geol. Surv. Can.:
Palynological zonation of the Carboniferous and Permian rocks of Atlantic Provinces, Gulf of St. Lawrence and northern Canada, 1968-.

To determine the biostratigraphic zonation of the Carboniferous and Permian rocks to establish local, regional and world wide correlations and to reconstruct depositional and paleoclimatic environments.

1172. Brooke, M.M., Braun, W.K., Univ. Saskatchewan:
Jurassic microfaunas and biostratigraphy of western Canada, 1965-75. Devonian microfaunas and biostratigraphy of western Canada, 1965-75.

To describe and illustrate all microfossils found in Jurassic and Devonian rocks of western Canada, establish their stratigraphic and geographic distribution and establish a zonation which forms the basis for local, regional and international biostratigraphic correlations.

STRATIGRAPHY AND PALEONTOLOGY

See Microfaunas and biostratigraphy of the Jurassic rocks in southern Saskatchewan and north-central Montana; Saskatchewan Dept. Mineral Res., Geol. Sci. Branch, Rept. 161, 1973.

1173. Caldwell, W.G.E., Barlow, D.L., Lomenda, M.G., McNeil, D.H., North, B.R., Wright, E., Univ. Saskatchewan:
Biostratigraphic studies in western Canada, 1959-; M.Sc. and Ph.D. theses.

1174. Chatterton, B.D.E., Univ. Alberta:
Taxonomy and biostratigraphy of conodont microfossils in western and northwestern Canada, 1970-.

Study of conodont faunas from rocks of Ordovician to Mississippian age in the following three areas:
(1) southeastern British Columbia and southwestern Alberta;
(2) northeastern British Columbia and southern N.W.T.; and
(3) southern Mackenzie and Franklin Mountains between 62° and 65°N.

1175. Davis, Mary W., Bredwell, H.D., Univ. Windsor:
Carboniferous depositional environments in central Michigan-a field guide to the Grand Ledge area, 1972-73.

Investigation is designed to provide detailed descriptive data, and a revised interpretation of the Carboniferous rocks in the region.

1176. Ferguson, L., Mount Allison Univ.:
Stratigraphic and faunal study of the Permo-Pennsylvanian of north-central Ellesmere Island, Northwest Territories, 1961-76.

1177. Greiner, H.R., Univ. New Brunswick:
Paleoecology of the Albert (Mississippian) palaeoniscids, New Brunswick, 1958-74.

1178. Jull, R.K., Univ. Windsor:
Corals of the Upper Devonian Ancient Wall carbonate complex, Jasper National Park, Alberta, 1972-74.

The significance of corals in the development of the Ancient Wall Carbonate Complex is being studied, with particular emphasis being placed on the apleoecology of the south-west margin of the complex.

1179. Klovan, J.E., Embry, A.F., Univ. Calgary:
Devonian stratigraphy, Queen Elizabeth Islands, N.W.T., 1969-74; Ph.D. thesis (Embry).

1180. Kobluk, D.P., Stearn, C.W., McGill Univ.:
Paleoecology and stromatoporoid faunas of the margin of the Miette carbonate complex; 1970-73; M.Sc. thesis (Kobluk).

1181. Lespérance, P.J., Ministère des Richesses Naturelles du Québec:
Stratigraphie des formations de Cap Bon Ami et de Grande Grève dans le nord-est de la Gaspésie, 1973-77.

1182. Mackenzie, W.S., Geol. Surv. Can.:
Devonian and older Paleozoic rocks, southern and central District of Mackenzie, 1970-.

1183. Macqueen, R.W., Geol. Surv. Can.:
Mississippian physical stratigraphy, sedimentology and correlation, British Columbia and Alberta, 1963-.

1184. McCabe, H.R., Manitoba Mines Branch:
Devonian stratigraphy of southwestern Manitoba, 1970-74.

Special emphasis on distribution of Devonian reefs and associated structures.

1185. McGregor, D.C., Geol. Surv. Can.:
Biostratigraphy study of Paleozoic palynomorphs of Arctic Islands, 1968-.

1186. Monger, J.W.H., Geol. Surv. Can.:
Atlin Horst project, Yukon and British Columbia, 1966-.

To establish a reference section for Late Paleozoic rocks in northern British Columbia; to determine relationships between Permian, pre-Permian and post-Permian rocks in this area; and to determine the structural style of these rocks in the 'Atlin Horst'.

Upper Paleozoic rocks of western Canadian Cordillera, 1972-.

To determine the stratigraphy, facies, structural style and external relationships of Upper Paleozoic rocks in the western Canadian Cordillera and to establish reference sections typical of the various facies belts.

1187. 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.

1188. 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-.

1189. Pedder, A.E.H., Geol. Surv. Can.,
Devonian biostratigraphy, western and northern Canada, 1968-.

See Species of the tetracoral genus Temnophyllum from the Givetian/Frasnian boundary beds of the District of Mackenzie, Canada; J. Paleontology, vol. 46, no. 5, pp. 696-710, 1972.

1190. Procter, R.M., Geol. Surv. Can.:
Subsurface study of Mississippian, Pennsylvanian and Permian stratigraphy of Northeastern British Columbia and adjacent areas, 1960-.

STRATIGRAPHY AND PALEONTOLOGY

1191. Risk, M.J., McMaster Univ.:
Species diversity of Middle Devonian brachiopod clusters, 1971-73.

Modern ecological methods of estimating species diversity using biomass measures are being applied to the fossil lenses, in order to evaluate any vertical changes in species diversity.

1192. Rowland, Anan-Yorke, Univ. Alberta:
Palynology of offshore wells of Ghana, 1971-73; Ph.D. thesis.

Devonian acritarchs, chitinozoa, and spores.

1193. Sweet, A.R., Geol. Surv. Can.:
Palynological studies of Upper Jurassic and Cretaceous coal measures in western Canada, British Columbia and Alberta, 1971-.

To establish a palyno-stratigraphic zonation of the coal measures, as an aid to coal petrological, sedimentological and structural interpretations of coal basins, and to correlate coal seams of suitable rank (exceeding 25% volatile matter) by means of spore and pollen histograms.

1194. 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-.

1195. Uyeno, T.T., Geol. Surv. Can.:
Conodont biostratigraphy of Lower and Middle Devonian strata of southwestern Ontario, 1966-.

Conodont biostratigraphy of Middle and Upper Devonian strata of southern and central Manitoba, 1967-.

1196. von Bitter, P.H., Royal Ontario Museum:
Pennsylvanian and Permian conodont biostratigraphy of strata at the type locality of the Ettrain Formation, Ogilvie Mountains, Yukon Territory, 1972-73.

Correlation and conodont biostratigraphy of the Windsor Group (Lower Carboniferous), Atlantic Provinces, Canada, 1971-76.

Geographic distribution of conodont faunas in parts of the Lower Shawnee Group (Upper Pennsylvanian) of the Mid-continent Region, U.S.A., 1972-73.

See Environmental control of conodont distribution in the Shawnee Group (U. Pennsylvanian) of Eastern Kansas; Univ. Kansas Paleont. Contr., Art. 59, 1972.

1197. Waterhouse, J.B., Univ. Toronto:
Permian - Carboniferous boundary in Ogilvie Mountains, Yukon, 1972-74.

Paleoecology of Permian brachiopods in Yukon and Canadian Arctic, 1972-73.

1198. Wilson, D.W.R., Univ. Alberta:
Biostratigraphy of Siluro-Devonian of the Northwest Territories and Yukon, 1960-.

Tentaculitid / graptolite zonation; biostratigraphic correlation; sedimentation with special reference to turbidites.

Mesozoic

1199. Ascoli, P., Geol. Surv. Can.:
Biostratigraphic zonation (Foraminifera) of the Mesozoic and Cenozoic rocks of the Atlantic Shelf, 1971-75.

To determine the biostratigraphic zonation (by means of Foraminifera, Ostracoda and other microfossils) of the Mesozoic and Cenozoic rocks in the wells drilled off-shore Nova Scotia and Newfoundland, to form the basis of local, regional and world wide correlation, and to accurately reconstruct geological events and paleo-ecological environments.

1200. Brooke, M.M., Braun, W.K., Univ. Saskatachewan:
Jurassic microfaunas and biostratigraphy of western Canada, 1965-75. Devonian microfaunas and biostratigraphy of western Canada, 1965-75.

To describe and illustrate all microfossils found in Jurassic and Devonian rocks of western Canada, establish their stratigraphic and geographic distribution and establish a zonation which forms the basis for local, regional and international biostratigraphic correlations.

See Microfaunas and biostratigraphy of the Jurassic rocks in southern Saskatchewan and north-central Montana; Saskatchewan Dept. Mineral Res., Geol. Sci. Branch, Rept. 161, 1973.

1201. Brookfield, M., Univ. Guelph:
The stratigraphy and palaeontology of the Jurassic rocks of Harrison Lake, British Columbia, 1970-74.

1202. Caldwell, W.G.E., Barlow, D.L., Lomenda, M.G., McNeil, D.H., North, B.R., Wright, E., Univ. Saskatchewan:
Biostratigraphic studies in western Canada, 1959-; M.Sc. and Ph.D. theses.

See Stratigraphy of the Upper Cretaceous Judith River Formation in the Canadian Great Plains; Sask. Research Council, Geol. Div., Report 11, 1971.

1203. 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-.

1204. Clark, D.F., Geol. Surv. Can.:
Nannoplankton biostratigraphy of the eastern Continental Shelf of Canada, 1972-.

Biostratigraphic analysis of the Cretaceous and Tertiary of the Nova Scotian Shelf. Potential for Jurassic zonation exists on the Grand Banks of Newfoundland.

STRATIGRAPHY AND PALEONTOLOGY

1205. Craig, J.H., Imperial Oil Ltd.:
Zonation of Upper Cretaceous nannofossils in the eastern Canadian offshore, 1971-75.

1206. Gibson, D.W., Geol. Surv. Can.:
Triassic stratigraphy and petrology between Smoky River and Crowsnest Pass, British Columbia - Alberta, 1962-.

To provide data on the stratigraphic relationships and correlation of the Triassic strata; their mega- and microfaunal content; their megascopic and petrographic features; conditions of deposition; their potentialities as source rocks for oil and gas and possible suitability as reservoirs for hydrocarbons; and assess the potentialities of the gypsum occurrences.

1207. Gordon, W.A., Univ. Saskatchewan (Regina):
Biostratigraphic and related studies of Jurassic Foraminifera. Biogeography of fossil organisms, 1972-75.

1208. Hopkins, W.S., Jr., Geol. Surv. Can.:
Mesozoic palynology and biostratigraphy, Arctic Islands, 1968-.

1209. Jeletzky, J.A., Geol. Surv. Can.:
Mesozoic and Tertiary on the west coast of Vancouver Island and in Quatsino Sound, British Columbia, 1949-.

A stratigraphic-paleontological study with special attention to the Lower Cretaceous-Jurassic contact and possibilities of Tertiary strata with respect to oil and gas.

See Age and depositional environments of Tertiary rocks of Nootka Island, British Columbia (92-E): Mollusks versus foraminifers; Can. J. Earth Sci., vol. 10, no. 3, pp. 331-365, 1973.

Cretaceous and Jurassic of Richardson Mountains, Porcupine Plains, and Eagle Plains, Yukon Territory and District of Mackenzie, 1955-.

To study the stratigraphy and paleontology of Cretaceous and Jurassic formations of the region in order to understand the most essential features of the facies pattern, sequence, and lateral extent of lithological units, paleogeography and geological history.

Cretaceous and uppermost Jurassic biostratigraphy of western Cordillera, 1967-.

1210. Lerbekmo, J.F., Tizzard, P., Evans, M.E., Univ. Alberta:
Correlation of continental Upper Cretaceous and Paleocene sediments in central and western Alberta.

1211. McGugan, A., Univ. Calgary:
1) Organic remains, Paleozoic, Canadian Rockies.
2) Cretaceous Foraminifera, Vancouver Island, British Columbia.
3) Cretaceous and Tertiary foraminiferal taxonomy and zonation.

1212. Norris, D.K., Geol. Surv. Can.:
Non-marine Lower Cretaceous of the southeastern Canadian Cordillera, 1968-.

1213. Price, L.L., Geol. Surv. Can.:
Studies of Cretaceous stratigraphy of the Plains of Saskatchewan, Manitoba, and eastern Alberta, 1964-.

See Stratigraphy of Cominco potash shaft No. 1 Vanscoy, Saskatchewan; Geol. Surv. Can., Paper 72-11, 1973.

1214. Rosene, R., Sutherland, G., Stelck, C.R., Univ. Alberta:
Formation of the Cretaceous of the Canadian interior, 1950-; M.Sc. thesis (Rosene).

See Foraminifera from the Cretaceous Neogastroplites zone, Moberly Lake, British Columbia; Bull. Can. Petrol. Geol., vol. 20, no. 3, pp. 549-582, 1972.

1215. Sarjeant, W.A.S., Bradford, M.R., Harker, S.D., Wilson, M.A., Univ. Saskatchewan:
Dinoflagellates and acritarchs of the Mesozoic; stratigraphical application in Western and Arctic Canada and use in intercontinental correlation, 1972-.

Research on the palaeoecological significance and stratigraphical application of dinoflagellate cysts, acritarchs and Tasmanitids, involving:

a.) Organisation of documentation and summarising of data.
b.) Comparison of assemblages from known present-day environments in the Persian Gulf area and from comparable Mesozoic environments.
c.) Examination of their palaeoecology and palaeogeographic distribution in the Jurassic of Canada, western Europe, North Africa and Iran and in the Cretaceous of Canada, the United States and western Europe.
d.) Study of the vertical distribution of stratigraphically significant species in the Mesozoic.
e.) Examination of the bases for the classification of these organisms.

1216. Singh, C., Research Council of Alberta:
Late Cretaceous-Tertiary microfloras, west-central Alberta, 1970-.

Cenomanian-Turonian microfloras of the Peace River district, Alberta, 1969-.

To supplement outcrop material, about 238 subsurface samples from the upper Shaftesbury, Dunvegan, and Kaskapau Formations were collected from the cored intervals in the Imperial Spirit River No. 1, Imperial Clairmont No. 1, and Imperial Wembley No. 1 wells in northwestern Alberta. The 150 samples processed so far have yielded a varied and well-preserved megaspore assemblage but no identifiable microspore, pollen and microplankton species.

1217. Sliter, W.V., Geol. Surv. Can.:
Mesozoic Foraminifera of Arctic Island, 1972-.

To assess the assemblage composition, paleoecology and biochronological significance of Mesozoic Foraminifera in the Arctic Islands, in order to better define Mesozoic subsurface and outcrop stratigraphy.

STRATIGRAPHY AND PALEONTOLOGY

Upper Cretaceous benthic Foraminifera and biostratigraphy of JOIDES core samples from Rio Grande Rise, south Atlantic, 1972-.

1218. Stott, D.F., Geol. Surv. Can.:
Cretaceous subsurface studies in northeastern British Columbia, 1962-.

To establish the stratigraphic relationships of surface and subsurface Cretaceous successions; to describe the subsurface stratigraphic succession and to provide data on their lateral variations and for an evaluation of the economic potential.

1219. Wade, J.A., Geol. Surv. Can.:
Regional subsurface geology of Mesozoic and Cenozoic rocks of the Atlantic Continental Shelf, 1972-.

A regional study, from seismic and well data, of the subsurface geology of the sedimentary basins on the Atlantic shelf and slope and their potential for generation and entrapment of hydrocarbon.

1220. Wall, J.H., Anan-Yorke, R., Rosene, R., Singh, C., Research Council of Alberta:
Bearpaw microfaunal studies, 1966-; M.Sc. theses (Anan-Yorke, Rosene).

See Paleogeographic significance of Late Cretaceous microfossil assemblage from Buffalo Head Hills, northern Alberta (abstract); Bull. Am. Assoc. Petrol. Geol., vol. 56, no. 3, p. 660, 1972.

1221. Williams, G.K., Geol. Surv. Can.:
Geology of the Milk River Formation, southern Alberta, 1972-.

Cenozoic

1222. Bartlett, G.A., Molinsky, Linda, Queen's Univ.:
A history of the Gulf of St. Lawrence, 1968-.

Palaeclimatology and paleogeography of the Gulf of St. Lawrence and reconstructure of the history of the area during, and immediately after Wisconsin glaciation.

See Foraminifera and the Holocene history of the Gulf of St. Lawrence; Can. J. Earth Sci., vol. 9, no. 9, pp. 1204-1215, 1972.

1223. Cameron, B.E.B., Geol. Surv. Can.:
Tertiary foraminiferal succession of Western Cordillera and Pacific Margin, 1969-.

See Tertiary stratigraphy and microfaunas from the Pacific Margin, west coast Vancouver Island; Geol. Surv. Can., Paper 73-1A, pt. A, pp. 19,20, 1973.

1224. Dell, C., Lewis, C.F.M., Anderson, T., Canada Centre for Inland Waters:
Pleistocene and Holocene stratigraphy of the Laurentian Great Lakes, 1972-78.

To determine the stratigraphy of Great Lakes deposits, to define lake evolution and history with particular reference to recent sedimentation; to establish a zonation scheme and to determine the spatial extent of such zones using integrated geophysical data.

1225. Gradstein, F.M., Imperial Oil Ltd.:
Offshore Eastern Canada micropaleontology and paleoecology, 1972-.

1226. Hills, L.B., McCaffery, B., Univ. Calgary:
Stratigraphy, mineralogy, paleogeography, macropaleobotany and palynology of the Beaufort Formation, Arctic Canada, 1968-74.

See Fossil wood from the Beaufort Formation (Tertiary), northwestern Banks Island, Arctic Canada; Can. J. Botany, vol. 50, nos. 1-2, 1972.

1227. Hooper, K., McNally, K., Carleton Univ.:
Microfaunas of the Eastern Canadian continental margin. Element analysis of foraminiferal tests. Recent Foraminifera of the continental slope.

1228. Jansonius, J., Imperial Oil Ltd.:
Lower Tertiary palynology, Beaufort Sea region, 1970-74.

A stratigraphic framework is developed on the basis of selected plant spores (mosses, ferns), fungal spores and mycelia, angiosperm pollen, and dinoflagellates. Both a Quantitative approach (counts of spore-groups, their relative abundance reflecting major climatological fluctuations) and a qualitative approach (recognition of short-ranged species) are applied. Species and occurrences are coded and the data inserted in a computer, from which various forms of results can be retrieved (range charts, abundance curves, geographic distribution, etc.) Coded species are described on manual file cards, and systematically grouped and illustrated in a coding atlas.

1229. Jenkins, W.A.M., Sulek, J.A., Imperial Oil Ltd.:
Biostratigraphical correlations of subsurface sections on the Grand Banks and Scotian Shelf, Canada, 1972-.

To date and correlate isolated sections from borings on the Grand Banks and Scotian Shelf by means of dinoflagellates and plant spores.

1230. Langhus, B.G., Gulf Oil Canada Ltd.:
Foraminiferal biostratigraphy and paleoenvironments of the Mesozoic and Tertiary strata, Arctic Canada, 1970-
Mesozoic and Tertiary calcareous nannoplankton, eastern offshore Canada, 1972-.

1231. Molinsky, Linda, Queen's Univ.:
Biostratigraphy and paleoecology of the Miocene strata in the western Atlantic and Caribbean area, 1971-73; M.Sc. thesis.

Detailed taxonomic and paleoecologic study of Miocene faunas in sediments from Trinidad, Scotian Shelf, Gulf of St. Lawrence and Grand Banks. Benthonic faunas are utilized to interpret

the environment of deposition; planktonic faunas are utilized for intercontinental correlation.

1232. Souaya, F.J., Gulf Oil Canada Ltd.:
Biostratigraphy - Canadian Eastcoast Offshore, 1972-.

Using mainly representative of the Order Foraminiferida, a biostratigraphic framework is being worked out for the Tertiary-Mesozoic section.

1233. Wilson, D.W.R., Univ. Alberta:
Preservation of frozen Pleistocene Elephants, 1969-74.

General

1234. Bartlett, G.A., Robertson, J., Molinsky, Linda, Jones, P., Queen's Univ.:
A geological history of the MacKenzie River delta, 1970-.

1235. Risk, M.J., Mills, E., McMaster Univ.:
Algal colonizing communities developed on artificial sandstones of varying grain size, 1972-73.

A casting technique has been developed to produce replicate cold-cure acrylic settling plates from latex molds. In the present study, replicates were made of artifically - lithified sandstones of varying grain size, and anchored underwater at Catalina Island, California.

STRUCTURAL GEOLOGY AND TECTONICS

Alberta

1236. Babcock, E.A., Univ. Alberta:
Regional jointing in the western Canada sedimentary basin, 1971-74.

Mapping of regional joint patterns; relationships between joints and regional geology, regional tectonics and subsurface structures; origin of regional joints.

1237. Bielenstein, H.U., Mines Branch, Dept. of Energy Mines and Resources:
Structure of the Cascade coal basin, Alberta, 1971-.

1238. Havard, C.J., Geol. Surv. of Can.:
Stratigraphy and structure of Lower Cretaceous sedimentary rocks of the Waterton-Castle River area, Alberta, 1967-.

Clarification of the differences in mechanical behaviour of the Mesozoic clastic succession and the Paleozoic carbonate skeleton.

British Columbia

1239. Balkwill, H.R., Geol. Surv. of Can.:
Structural analysis, western main ranges, Rocky Mountains, British Columbia, 1971-.

1240. Campbell, R.B., Geol. Surv. Can.:
Geology of the Cariboo Mountains, British Columbia, 1968-.

To determine the tectonic development of the Cariboo Mountains, and their relation to the development of the Rocky Mountains. Pub Sca 1":4 mi.

1241. Chase, R.L., Thomlinson, A.G., Macdonald, R.D., McGee T., Barr, Sandra M., Murray, J.W., Luternauer, J., Univ. British Columbia:
Geology of inland waters of British Columbia and continental margin and adjacent oceanic floor west of Canada, 1965-.

See The Queen Charlotte fault, British Columbia; 24th Internat. Geol. Congr., Sec. 8, pp. 17-27, 1972.

1242. Eisbacher, G., Geol. Surv. Can.:
Tectonic framework of Sustut and Sifton Basins, British Columbia.

See Geol. Surv. Can., Paper 78-1A, pt. A, pp. 24-26, 1973.

1243. Grove, E.W., British Columbia Dept. Mines Petrol. Resources:
The South Unuk cataclasite zone - structural study, 1971-73.

The South Unuk cataclasite zone is one of four regional structures of late Lower Jurassic age which deform Lower Jurassic and older rocks in these Unuk R. - Salmon R. - Anyox map areas. These cataclasite zones are up to 1 mile wide x 40 miles long and are intruded by Middle Jurassic and younger plutons and overlain by early Middle Jurassic sediments. Late Lower Jurassic folding, related to uplift of the Coast Range geanticline was essentially completed prior to cataclastic deformation which crudely parallels major fold axes.

STRUCTURAL GEOLOGY AND TECTONICS

1244. Lambert, R. St J., McKerrow, W.S., Univ. Alberta:
Tectonic evolution of British Columbia, 1972-74.

1245. Lis, M., Price, R.A., Queen's Univ.:
Tectonic analysis of the Kootenay arc between Crawford Bay and Creston, British Columbia, 1972-74.

1246. Pigage, L.C., Bremner, T.J., Nagel, J., Eisbacher, G., Univ. British Columbia and Geol. Surv. Can.:
Structure and metamorphism in Southern British Columbia, 1971-75; M.Sc. theses.

Investigation includes:
(a) structural and metamorphic evolution of the Custer Gneiss and adjacent units;
(b) structure and stratigraphy of the Lardeau Group and Broadview Formation;
(c) alteration and low grade metamorphism of volcanogenic rocks of particularly the Intermontane belt.

1247. Simony, P., Univ. Calgary:
Geology of the Rocky Mountain Trench, 1969-73.

A segment of the Trench 100 miles long, between Golden and Big Bend of the Columbia, has been mapped in detail with particular emphasis on structure and metamorphism. Evidence for an echelon normal faulting and against strike-slip faulting is accumulating.

1248. Taylor, G.C., Geol. Surv. Can.:
Operation Liard, 1963-.

To establish the stratigraphic framework of the northern Rocky Mountains and in conjunction to establish a conceptual model of the structural deformation of these rocks.

1249. Thompson, R.I., British Columbia Dept. Mines Petrol. Resources:
Geology of the Akolkolex River area, near Revelstoke, British Columbia, 1969-73.

A detailed structural analysis of the Akolkolex River area and its relationship to the changes in structural style of the Kootenay Arc and the eastern margin of the Shuswap Metamorphic Complex; an analysis of the influence of structure on the distribution of lead-zinc mineralization within the Akolkolex River area.

1250. Zwanzig, H.V., Price, R.A., Queen's Univ.:
The Illecillewaet synform, 1970-73.

An investigation of structural geometry and of the nature and significance of changes in fabric and metamorphic grade in the transition zone along the eastern margin of the Shuswap metamorphic complex, Rogers Pass area, British Columbia.

Manitoba

1251. Bailes, A.H., Brisbin, W.C., Univ. Manitoba:
Stratigraphic relationships between, and tectonic evaluation of the Kisseynew metasedimentary gneiss belt and the Flin Flon - Snow Lake greenstone belt, 1971-74; Ph.D. thesis (Bailes).

1252. Beakhouse, G., Brisbin, W.C., Univ. Manitoba:
Structural analysis of domal-form structures in the gneissic rocks of Nelson Lake, Churchill Province, Manitoba, 1972-73; M.Sc. thesis (Beakhouse).

1253. Brisbin, W.C., Univ. Manitoba:
Deformational history of greenstone belts in the Superior Province of the Precambrian Shield, 1968-.

Study of sequence, geometry, strain characteristics and causes of polyphase defomation in layered sequences of Archean metasedimentary and meta-volcanic rocks.

See Archean geology and metallogenesis of the western part of the Canadian Shield; 24th Internat. Geological Congr., Guidebook A33-C33, 1972.

Gravity studies of greenstone belts and diapiric plutons in the Superior Province Precambrian Shield, 1970-.

To determine subsurface configuration of greenstone belts and intruding plutons, in Gods Lake, Munroe Lake, Knee Lake, Oxford Lake areas.

1254. Freeze, A.C., Jr., Brisbin, W.C., Univ. Manitoba:
Shock metamorphic features of the Lake St. Martin Centre, Manitoba, 1971-73; M.Sc. thesis (Freeze).

1255. Humiski, R.N., Brisbin, W.C., Univ. Manitoba:
Deformation history of the Munroe Lake greenstone belt, Superior Province, Manitoba, 1972-73; M.Sc. thesis (Humiski).

1256. McRitchie, W.D., Frohlinger, T.G., Baldwin, D.A., Zwanzig, H.V., Manitoba Mines Branch:
Burntwood project, Manitoba, 1971-74.

Regional study of an upper ambphibolite facies metasedimentary gneissic belt as a means of defining the structural, metamorphic and plutonic relations in the Churchill structural Province between Lynn Lake, Flin Flon, and Thompson.

See Burntwood project; Field Work, Manitoba Mines Branch, Geol. Paper 3/72.

1257. Stauffer, M.R., Burnett, A., Univ. Saskatchewan:
Strain analysis of the Missi Group, 1972-73; M.Sc. thesis (Burnett).

1258. Stauffer, M.R., Reynolds, J., Univ. Saskatchewan:
Stratigraphic and structural synthesis of the Missi Group in the Flin Flon, Amisk Lake, Lake Athapapusko region, 1971-73; M.Sc. thesis (Reynolds).

STRUCTURAL GEOLOGY AND TECTONICS

New Brunswick

1259. Helmstaedt, H., Geol. Surv. Can.:
Structural evolution of rocks of the Bathurst-Newcastle district, New Brunswick, 1969-.

1260. Luff, W.M., McAllister, A.L., Univ. New Brunswick:
Structural geology of the Brunswick No. 12 Mine area, Bathurst, New Brunswick, 1971-73; M.Sc. thesis (Luff).

Oriented primarily to the solution of structural problems imposed by polyphase folding, the establishment of a stratigraphic sequence and examination of possible facies changes.

1261. Stringer, P., Univ. New Brunswick:
Correlation of polyphase deformation in the Paleozoic rocks of New Brunswick, 1970-74.

Preliminary structural mapping in selected areas of New Brunswick indicates:
(1) polyphase deformation of Acadian (Middle Devonian) age in the Silurian rocks along the coast north of Bathurst can be matched with deformation in graptolitic Middle Ordovician in the Tetagouche River. Late phases in the structurally complex Bathurst Camp can be correlated with the Acadian deformation.
(2) early phases of deformation in the Bathurst Camp may be correlated with Upper Cambrian deformation in Newfoundland. Rocks in the Bathurst Camp are probably Cambrian or older.
(3) none of the deformation in Bathurst Camp is Taconic (Middle Ordovician).
(4) deformation in the Ordovician of northwestern New Brunswick is Acadian, and can be matched with deformation in the Siluro-Devonian rocks.
(5) recumbent schistosity and polyphase deformation in supposed Carboniferous rocks in southern New Brunswick southeast of Saint John indicate Appalachian Orogeny (Upper Carboniferous or later) in this area.
(6) polyphase deformation is present in the Precambrian and Lower Paleozoic rocks of Grand Manan Island. The later phases may be correlated with structures along the south coast of New Brunswick recently recognized as Appalachian deformation.

Newfoundland & Labrador

1262. Poole, W.H.,Geol. Surv. Can.:
Hare Bay klippe, Newfoundland, 1972-.

1263. Williams, H., Kennedy, M.J., Neale, E.R.W., Memorial Univ.:
Tectonic synthesis of the Newfoundland Appalachians, 1968-75.
See The Appalachian structural province; Geol. Assoc. Canada, Sp. Paper 11, pp. 181-262, 1972.

1264. Williams, H., York, J., Memorial Univ.:
Transported sequences in western Newfoundland, 1970-73; M.Sc. thesis (York).

Transported rocks of western Newfoundland consist of a group of structurally lower slices composed of Cambrian and Ordovician mainly clastic sedimentary rocks, overlain by higher structural slices of igneous and metamorphic rocks. In both the Humber Arm and Hare Bay areas, the highest structural slice consists of a typical ophiolite suite of rock units. The geology of the transported rocks is interpreted in terms of an evolving continental margin in the Early Paleozoic.
See Sheeted dikes and brecciated dike rocks within transported igneous complexes, Bay of Islands, western Newfoundland; Can. J. Earth Sci., vol. 9, pp. 1216-1229, 1972.

1265. Upadhyay, H.D., St. Francis Xavier Univ.:
A geological study of the Betts Cove - Tilt Cove ophiolite suite, Newfoundland with special reference to stratigraphy, volcanism and metallogeny in terms of Ordovician sea-floor spreading, 1969-73.

Ultramafic pillow lava has been found in the Betts Cove ophiolite suite. Its implications on magmatic differentiation in ophiolitic, perhaps oceanic, environments is being investigated.

See Geological setting of the Betts Cover copper deposits, Newfoundland: An example of ophiolite sulfide mineralization; Econ. Geol., vol. 68, pp. 161-167, 1973.

Northwest Territories

1266. Balkwill, H.R., Geol. Surv. Can.:
Structure and stratigraphy, Ringnes Island and nearby smaller islands, District of Franklin, 1971-.

1267. Charlesworth, H.A.K., Lambert, R. St J., Hoffman, G., Univ. Alberta:
Structure of the Giant Yellowknife ore body, Northwest Territories, 1972-73; M.Sc. thesis (Hoffman).

1268. 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-.

1269. Eade, K.E., Geol. Surv. Can.:
Structural and stratigraphic study of the Precambrian rocks of southwestern Keewatin, Northwest Territories, 1968-.

To determine: (1) the relationships of the known Hurwitz group rocks to other metasedimentary units, and the extent and characteristics of the original basin of deposition in order to assess their potential for mineral occurrences; (2) the petrology and mineral potential of the post-kinematic fluorite-bearing porphyritic rocks.

STRUCTURAL GEOLOGY AND TECTONICS

1270. Fyson, W.K., Univ. Ottawa:
Structural studies in Archean rocks of the Slave Province, Ross Lake area, Northwest Territories, 1971-.

1271. Lambert, R. St J., Univ. Alberta:
Geotectonics of the Canadian Arctic continental shelf, 1972-74.

1272. MacKenzie, W.S., Geol. Surv. Can.:
Northern basin analysis program: Great Bear River map-area (Paleozoic part), District of Mackenzie, 1971-.

1273. Meijer-Drees, N.C., Geol. Surv. Can.:
Northern basin analysis program: Redstone River map-area, District of Mackenzie, 1971-.

1274. Norris, D.K., Geol. Surv. Can.:
Structural and paleomagnetic fabric of the Mackenzie Arc, Yukon and District of Mackenzie, 1966-.

Structural geology of northern Yukon Territory and northwestern District of Mackenzie, 1969-.

1275. Rector, R.J., Gulf Oil Canada Ltd.:
Tectonic framework - Mackenzie Delta-Beaufort Sea, 1970-.

1276. Roy K.J., Geol. Surv. Can.:
Northern basin analysis program: Belcher Channel map-area, District of Franklin, 1971-.

Northern basin analysis program: Ballantyne Strait map-area, District of Franklin, 1961-.

Northern basin analysis program: Jones Sound map-area, District of Franklin, 1971-.

Northern basin analysis program: Thomsen River map-area, District of Franklin, 1972-.

1277. Williams, G.K., Geol. Surv. Can.:
Northern basin analysis program: Slave River map-area, District of Mackenzie, 1971-.

1278. 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, 1971-.

1279. Young, F.G., Geol. Surv. Can.:
Basin analysis of exposed Mesozoic and Territory in relation to the subsurface stratigraphy of Mackenzie Delta - Beaufort Sea areas, 1970-.

Northern basin analysis program: Peel River map-area, District of Mackenzie and Yukon, 1971-.

Nova Scotia

1280. Helmstaedt, H., Geol. Surv. Can.:
Structural evolution of eastern Cape Breton Island, Nova Scotia, 1971-.

1281. Keating, B.J., St. Francis Xavier Univ.:
Structural analysis of the pre-carboniferous formations of Cape Breton Island, Nova Scotia, 1971-73.

In the present project the data assembled to date will be assessed in the light of a broader statistical structural analysis (Schmidt Net) utilizing data recorded on the maps of the Geological Survey of Canada and from other sources.

Ontario

1282. Baer, A.J., Francoeur, D., Raynal, M., Univ. Ottawa:
Structural studies in the Grenville Province, 1972-; M.Sc. thesis (Francoeur), Ph.D. thesis (Raynal).

A study of the front-like structure marking the northwestern limited of extent of marbles of the Grenville Group in Monmouth Twp. and an examination of similar structures south of Chibougamau, Quebec.

1283. Brigham, R.J., Univ. Western Ontario:
Structural geology of Paleozoic sediments in southwestern Ontario, 1964-72.

See Structural geology of southwestern Ontario and southeastern Michigan; Ontario Mines Northern Affairs, Petrol. Sec., Paper 71-2, 1972.

1284. Clifford, P.M., McNutt, R.H., Walker, R.G., McMaster Univ.:
Evolution of Archean greenstone belts, 1972-.

Involves integrated field and laboratory studies of the volcanology, sedimentology, structural geology, geochemistry, economic geology and other aspects of greenstone belts, especially those of Northwestern Ontario.

1285. Clifford, P.M., Westerman, C.J., McMaster Univ.:
Studies of strain variation in greenstone belts adjacent to granitic batholiths and gneissic belts, northwestern Ontario, 1966-; Ph.D. thesis (Westerman).

See Behaviour of an Archaean granitic batholith; Can. J. Earth Sci., vol. 9, no. 1, pp. 71-77, 1972.

1286. Currie, J.B., Fawcett, J.J., Schwerdtner, W.M., Bau, A.F.S., Univ. Toronto:
Midwest Superior Geotraverse: metamorphism, structural geometry and paleostrain analysis, 1972-76; Ph.D. thesis (Bau).

Five distinct belts are intersected in the field area from Shebandowan northward to Pickle Crow. Three of these belts are dominated by low-grade metavolcanic rocks and diapiric granitic

plutons; this contrasts with the remaining two belts which consist mainly of gneissic metasediments. Involves study of variation in metamorphic grade across one greenstone belt, with particular emphasis being placed on the nature of contacts with adjacent belts of metasediments. Close structural study is also being devoted to these margins with a view to establishing with certainty their significance in the regional history of structural development. Structural studies are also attempting to reconstruct the nature of tectonic evolution at these regional boundaries and within the belts through use of paleotectonic strain indicators. Strain analysis can also be expected to provide information concerning the emplacement of some granitic bodies found within the volcanic belts.

1287. Kehlenbeck, M.M., Lakehead Univ.:
Tectonic evolution of an Archean crustal segment, 1972-75.

1288. Rivers, C., Univ. Ottawa:
Structures and textures in metamorphic rocks of the Grenville Province, Ompah area, Ontario, 1972-74; Ph.D. thesis.

Quebec

1289. Beland, J., Mamet, B., Brisbebois, D., Univ. Montréal:
Tectonique diapirique dans les formations salifères (Windsor) du Carbonifère aux Iles-de-la-Madeleine, Golfe du Saint-Laurent, Québec, 1971-74.

1290. Biron, S., Ministère des Richesses Naturelles du Québec:
Etudes structurales du Cambro-Ordovicien, de la côte Nord de la Gaspésie, 1971-74.

See Géologie de Marsoui; 24e Cong. Géol. Int. de Montréal, Excursion S-56 et C-56, 1972.

1291. de Romer, H.S., Sir George Williams Univ.:
Geology and age of some leucocratic stocks in north-central Gaspé. Intrusion and deformation in north-central Gaspé, Quebec. Structural geology of the Pre-Cordillera in the Uspallata area, Province of Meudoza, Argentina. Soil structures of Mt. Jacques Cartier, Co. Gaspé North, Quebec, 1972-73.

1292. Dimroth, E., Boivin, P., Boivin, M., Ministère des Richesses Naturelles du Québec:
Structure in Abitibi Rouyn - Noranda area, Quebec, 1971-.

1293. Fyson, W.K., Robinson, S., Univ. Ottawa:
Relationship of small-scale to large-scale structures in Paleozoic rocks, Nova Scotia, Gaspé Peninsula, and Eastern Townships, 1962-.

1294. Hubert, C., Beriault, A., Univ. Montréal:
Stratigraphy and structural geology of the Rosaire Group in the St-Malachie area, Dorchester County, Quebec, 1970-73; M.Sc. thesis (Beriault).

1295. Hubert, C., Granger, B., Univ. Montréal:
Stratigraphy and strucutral geology of the Bennett schists in the St-Malachie area, Dorchester County, Quebec, 1969-73; M.Sc. thesis (Granger).

1296. Martignole, J., Univ. Montréal:
Recherches pétrologiques et structurales dans le sud de la province tectonique de Grenville, 1965-.

Etude des anorthosites, de granulites, du métamorphisme et de la tectonique catazonale.

Voir Pétrologie et structure de l'Anorthosite de Moir; Congrès Géologique International, Livret-guide B-01, 1972.

1297. Roy, W., Univ. du Québec à Chicoutimi:
Etudes tectoniques dans la région du Haut-Saguenay, 1972-76.

Minéralisation et problèmes d'exploitation de gisements dans la région de Chibougamau - structures associées aux gisements, 1972-75.

Origin and evolution of the Charlevoix crypto-explosion structure, 1968-73.

See Livret-guide de la région de Charlevoix; 24^{e} Congrès géologique International, 1972.

1298. Robinson, S., Univ. Ottawa:
Structures in Paleozoic rocks, Stoke Mountain and vicinity, Eastern Townships, Quebec, 1971-73; M.Sc. thesis.

1299. Wynne-Edwards, H.R., Univ. British Columbia:
Geological evolution of the Grenville province, 1965-73.

See The Grenville province; Geol. Soc. Can., Sp. Paper 11, pp. 263-334, 1972.

Saskatchewan

1300. Lewry, J.F., Univ. Saskatchewan (Regina):
Structural and metamorphic problems in the Precambrian of Northern Saskatchewan, with particular reference to relations between linear and non-linear structural domains and the relative importance of diapiric tectonics, 1969-.

General

1301. Brown, R., Carleton Univ.:
Analysis of rock fabrics, 1967-.

Includes (a) structural history of southern New Brunswick (Appalachians);
(b) structural studies in the Grenville; and
(c) structure of the northern Selkirks.

STRUCTURAL GEOLOGY AND TECTONICS

See Appalachian structural style in Southern New Brunswick; Can. J. Earth Sci., vol. 9, pp. 43-53, 1972.

1302. Clifford, P.M., Cosgrove, J., Westerman, C.J., Eggertson, B., Wallace, P., McMaster Univ.:
Field and experimental deformation of rocks, 1967-.

Current work includes (i) experimental deformation of sulphide-bearing greenstones (Eggertson, Clifford); (ii) constant-load deformation of stylolitic limestones (Cosgrove, Westerman); (iii) model studies of fold development in media of variable anisotrophy (Wallace).

1303. Currie, J.B., Reik, G.A., Das Gupta, U., Univ. Toronto:
Mechanics and development of fractures in sedimentary strata, 1969-74; Ph.D. theses (Reik, Das Gupta).

1304. Fyson, W.K., Univ. Ottawa:
Structural patterns in metamorphic rocks, 1970-.

1305. Kumarapeli, P.S., Sir George Williams Univ.:
St. Lawrence Valley system and its tectonic significance, 1966-73.

1306. Lambert, R. St J., Univ. Alberta:
Comparison of Californian and Caledonian faults, 1972-73.

1307. Lambert, R. St J., McKerrow, W.S., Univ. Alberta:
Deep earthquakes and surface subsidence, 1972-73.

See Deep earthquakes, surface subsidence and mantle phase changes; J. Geol., vol. 81, no. 2, pp. 157-175, 1973.

1308. Norris, D.K., Geol. Surv. Can.:
Structural prototypes, scale models and stress analysis, 1970-.

1309. Picklyk, D.D., Price, R.A., Queen's Univ.:
Mathematical models for the structural evolution of the southern Canadian Rockies, 1969-73.

The deformation of simplified models of the wedge of inhomogeneous layered supracrustal rocks along the foreland margin of the southeastern Canadian Cordillera is investigated for various types of boundary conditions using principles of continuum mechanics and computer-based, finite-element analytical techniques.

1310. Price, R.A., Queen's Univ.:
Tectonic evolution of the southeastern Canadian Cordillera and the nature and significance of variations in tectonic style, 1968-.

See The distinction between displacement and distortion in flow, and the origin of diachronism in tectonic overprinting in orogenic belts; 24th Internat. Geol. Congr., sec. 3, pp. 545-551, 1972.

1311. Ranalli, G., Carleton Univ.:
Global tectonics and the rheology of the earth, 1970-.

See Geodynamic implications of rock creep and creep rupture (Abstract); Proc. 6th Int. Congress of Rheology, vol. IV, pp. 243-244, 1972.

1312. Rychener, M., Price, R.A., Queen's Univ.:
Structure and paleotectonic significance of roof pendants in the south-central part of the Idaho Batholith, 1966-73; Ph.D. thesis (Rychener).

1313. Smith, R., Bartlett, G.A., Queen's Univ.:
Geotectonics and paleooceanography, 1971-73.

1314. Stanton, M.S., Chevron Standard Ltd.:
Geotectonics, 1967-.

1315. Starkey, J., Univ. Western Ontario:
The study of the preferred orientation in deformed rocks by X-ray diffraction, 1960-.

See The application of X-ray diffraction to petrofabric analysis; Trans. American Geophys. Union, vol. 52, p. 344, 1971.

1316. Stauffer, M.R., Univ. Saskatchewan:
Geometry of folds, 1962-.

1317. Wilson, D.W.R., Univ. Alberta:
Influence of coriolis effect upon crustal plate motion, 1960-.

1318. Wilson, J. Tuzo, Univ. Toronto:
Plate tectonics and plume mechanics.

The implication of the hypothesis that plumes rising from deep in the mantle at fixed locations are the primary driving mechanism for plates is being examined. Fixed and moving plates have been identified. Their different properties seem able to explain major differences in ocean basins, in continents and in coastal mountains.

Apparently plates tend to split into three rifts 120° over rising plumes. If the situation is favourable two rifts from each of a line of plumes may join, opening an ocean. Over each plume the third rift may be left as an aulacogen striking inland from the coast of the continent. These are of great significance in geology. They include many important river valleys such as the Mackenzie, Mississippi, Amazon and Niger valleys. Many carry economic deposits.

INDEX

INDEX

INDEX

INDEX

INDEX

INDEX