NATIONAL ADVISORY COMMITTEE ON RESEARCH IN THE GEOLOGICAL SCIENCES

CURRENT RESEARCH IN THE GEOLOGICAL SCIENCES IN CANADA 1965-66

Compiled by J. F. Henderson

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INTRODUCTION

The research projects listed in this bibliography have been obtained from the universities, federal and provincial departments of mines, and other non-industrial institutions carrying on research in the geological sciences in Canada. With the exception of a few projects, the bibliography does not include research by mining and oil company geologists. The survey was made between December 1965 and April 1966 and records research in progress for about the period June 1965 to May 1966.

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

Success in assembling project titles for a bibliography such as this depends on the response of institutions and research workers. Acknowledgment is made in particular to those who assembled and forwarded the data on the research projects in the institutions under their direction. However in spite of general excellent cooperation, many projects on which no information was received have not been included. So that succeeding compilations may be more complete, any reader doing research projects or knowing of projects that have been omitted, is requested to send information on them to the Secretary, National Advisory Committee on Research in the Geological Sciences, 601 Booth Street, Ottawa.

Use of the Bibliography

In the bibliography, projects are grouped under main headings that cover the different branches of the geological sciences. The reader can thus find out readily the research in progress in any field in which he is interested. Many projects that seem to fall equally well under more than one heading are repeated under those headings. An author index lists after each author the numbers of projects, as listed in the bibliography, on which he is currently engaged. Thus by reference to the author index, the fields of research and the projects of any worker may be found.

AREAL GEOLOGY

Alberta

1. Akehurst, A.J., Charlesworth, H.A.K., Univ. of Alberta:
   Precambrian geology of the Lake Louise area, Alberta, 1963-66; Ph.D. thesis (Akehurst).

2. Godfrey, John D., Research Council of Alberta:
   Study of an area in the Precambrian Shield of northeastern Alberta, 1957-67.
   A quantitative description of about 650 square miles of the Shield in northeastern Alberta is being developed in terms of its principal mineralogy, rock types, heavy mineral suite, major chemistry, trace elements, specific gravity, and magnetic susceptibility.

3. Mountjoy, E.W., McGill Univ., Geol. Surv. Can. (part time):
   Mount Robson southeast map-area 83E SE, Alberta and British Columbia, 1959-.
   Study includes regional study and mapping of structures and stratigraphy. See Mount Robson (southeast) Geol. Surv. Can., Preliminary Map 47-1963.

4. Ollerenshaw, N.C., Geol. Surv. Can.:
   Limestone Mountain (West Half) map-area, 1 inch to 1 mile, 1964-65.
   See Geol. Surv. Can., Paper 65-1, 1965, pp. 81-82.
   Marble Mountain and Fallentimber (West Half) map-area, 1 inch to 1 mile, 1965-.
   See Geol. Surv. Can., Paper 66-1, 1966, p. 115.

5. Weiner, J.L., Charlesworth, H.A.K., Univ. of Alberta:
   Precambrian geology of the Jasper area, 1960-66; Ph.D. thesis (Weiner).

British Columbia

6. Baer, A.J., Geol. Surv. Can.:
   Bella Coola, 1 inch to 4 miles, 1962-.
   See Geol. Surv. Can., Paper 65-1, 1965, pp. 39-42 and 66-1, 1966, pp. 80-85.

7. Campbell, R.B., Geol. Surv. Can.:
Canoe River map-area, 1 inch to 4 miles.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 51-52 and Paper 65-2, 1965, pp. 47-50.
McBride map-area, British Columbia, 1 inch to 4 miles, 1965-66.

8. Carr, J.M., British Columbia Dept. of Mines and Petroleum Resources:
Mapping of Topley intrusives and examination of molybdenum deposits in an area of 370 square miles extending north of and east of the eastern end of Francois Lake, British Columbia.
See Rept. of the Minister of Mines and Petroleum Resources 1964, pp. 58-61.

9. Carter, N.C., British Columbia Dept. of Mines and Petroleum Resources:
Mapping McDonald Island, Newman Peninsula and nearby shoreline of Babine Lake and study of copper mineralization, British Columbia, 1965-66.
Property examination and local mapping, Alice Arm-Illiance River area, 1965.
See Rept. of the Minister of Mines and Petroleum Resources, 1964, pp. 24-44.

10. Coates, J.A., Geol. Surv. Can. (part time):
Structural studies in the Manning Park and adjacent areas of the Cascades Mountains, 1964-66.
See Geol. Surv. Can., Paper 66-1, 1965, pp. 55-57.

11. Fyles, J.T., British Columbia Dept. of Mines and Petroleum Resources:
Jordan property and Mt. Copeland area, N.W. of Revelstoke, 1964-66.

12. Grove, E.W., British Columbia Dept. of Mines and Petroleum Resources:
Geological study of area including Bear River, Leduc Glacier, and Unuk River, 1964-.
Much of Bear River Ridge has been mapped at 1 inch to 1/4 mile; reconnaissance has extended easterly to the Bowser basin and has extended northwesterly into the Leduc-Unuk area.
See Rept. of the Minister of Mines and Petroleum Resources 1964, pp. 21-23.

13. Haimila, N., British Columbia Dept. of Mines and Petroleum Resources (part time):
Extension of mapping in Buttle Lake - Great Central Lake area, Vancouver Island, 1963-66.
See Rept. of the Minister of Mines and Petroleum Resources 1964, pp. 157-166.

14. Hutchison, W.W., Geol. Surv. Can.:
Port Essington and Prince Rupert, 1 inch to 4 miles, 1962-.
See Geol. Surv. Can., Paper 65-1, 1965, pp. 50-54 and Paper 66-1, 1966, pp. 80-85.

15. Kirkham, R.V., British Columbia Dept. of Mines and Petroleum Resources (part time):
Geological study on Hudson Bay Mountain, with particular attention to Glacier Gulch, 1963-1966; Ph.D. thesis.
See Rept. of the Minister of Mines and Petroleum Resources 1964, p. 51.

16. Leech, G.B., Geol. Surv. Can.:
Kananaskis Lakes and Canal Flats, 1 inch to 4 miles, 1962-65.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 65-66.

17. Little, H.W., Monger, J.W.H., Geol. Surv. Can.:
Greenwood map-area, 1 inch to 1 mile, 1963-65.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 67-71.

18. McMillan, W.J., Geol. Surv. Can.:
Seymour Arm vicinity, Ratchford Creek map-area, 1 inch to 1 mile, 1965-66.
See Geol. Surv. Can., Paper 66-1, p. 74.

19. Muller, J.E., Geol. Surv. Can.:
Pine Pass map-area, 1 inch to 4 miles, 1959-66.
Alberni map-area, British Columbia, 1 inch to 4 miles, 1963-65.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 74-75.

20. Preto, V.A., Geol. Surv. Can.:
Grand Forks, West Half, British Columbia, 1 inch to 1 mile, 1965-66; Ph.D. thesis.
See Geol. Surv. Can., Paper 66-1, 1966, p. 78.

21. Roddick, J.A., Baer, A.J., Hutchison, W.W., Geol. Surv. Can.:
Reconnaissance of Coast Mountains, 1963-71.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 80-85.

22. Ross, J.V., Geol. Surv. Can. (part time), Univ. of British Columbia:
Geology of the Mt. Revelstoke area, 1 inch to 1 mile, 1964-65.
A detailed investigation of the relations between the metamorphic Shuswap Complex and the supposedly overlying non-metamorphic Palaeozoic rocks.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 85-86.

23. Simony, P.S., Ellison, A.H., Wind, G., Univ. of Calgary:
Geology of the Dogtooth Mountains, 1965-68; M.Sc. theses (Ellison, Wind).
Includes the study of the structural geology, stratigraphy and low grade metamorphism of the Dogtooth Mountains.

24. Souther, J.G., Geol. Surv. Can.:
Telegraph Creek, 1 inch to 1 mile, 1965-66.
Study of recent volcanic centres and their relation to regional tectonics.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 87-89.

25. Taylor, G.C., Geol. Surv. Can.:
Northeast British Columbia, 1 inch to 4 miles, 1963-65.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 92-93.

26. Taylor, G.C., Bamber, E.W., Bell, E.T., MacKenzie, W.S., Norford, B.S., Stott, D.F., and Tozer, E.T., Geol. Surv. Can.:
Operation Liard, Northeastern British Columbia.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 92-93.

27. Tipper, H.W., Geol. Surv. Can.:
Prince George map-area, 1 inch to 4 miles, 1959-65.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 95-96.
Bonaparte River map-area, 1 inch to 4 miles, 1963-65.
See Geol. Surv. Can., Paper 66-1, 1966, p. 94.
Taseko Lakes map-area.
See Geol. Surv. Can., Paper 65-1, 1965, pp. 75-76.

28. Tipper, H.W., Campbell, R.B., Geol. Surv. Can.:
Bonaparte River (East Half), 1 inch to 4 miles, 1964-65.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 52-53.

29. Wheeler, J.O., Geol. Surv. Can.:
Lardeau West, 1 inch to 4 miles, 1965-66.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 102-103.

Manitoba

30. Bell, C.K., Geol. Surv. Can.:
Sipiwesk, Nelson House, Cross L., and Wekusko map-areas, 1963-.
See Geol. Surv. Can., Paper 65-1, 1965, pp. 94-95.

31. Davies, J.F., Manitoba Dept. of Mines and Natural Resources, Wilson, H.D.B., University of Manitoba and government and university staff and graduate students:
Project Pioneer, an integrated geological, geophysical and geochemical study of a Precambrian volcanic-sedimentary belt, 1965-71.
Integrated with detailed re-mapping of 1,500 square miles along the Rice Lake-Beresford Lake volcanic-sedimentary belt will be a series of laboratory projects and geophysical studies designed to reveal as much as possible about the geologic character and history, both at surface and at depth, of a typical Precambrian "greenstone belt". Various phases of Project Pioneer will include: complete photogeologic interpretation; 4-inch-to-the mile mapping; interpretation of aeromagnetic data utilizing techniques for separating various levels of magnetism; study of rock magnetism; determinations of gravity; seismic studies; regional and detailed structural analyses, including petrofabric where applicable; investigation of metamorphism; detailed petrofabric and modal analysis of all rocks on a statistical basis; determination of chemical character of all rock types, and distribution of minor elements; petrographic and chemical study of wall-rock alteration and of regional alteration; distribution of radioactivity in rocks; age determinations; trace elements in surficial deposits and streams; study of gold-bearing and barren quartz veins.

32. Davison, W.L., Geol. Surv. Can.:
Munroe Lake, 1 inch to 4 miles, 1962-65.
See Geol. Surv. Can., Paper 66-1, 1966, p. 141.
Tadoule Lake, 1 inch to 4 miles, 1961-65.
See Geol. Surv. Can., Paper 66-1, 1966, p. 141.
Nejanilini Lake, Caribou River, 1 inch to 4 miles, 1964-65.
See Geol. Surv. Can., Paper 65-1, 1965, p. 97.

33. Haugh, I., Cranstone, D.A., Gibbins, W., Manitoba Dept. of Mines and Natural Resources:
Preliminary re-study of geology around Split and Assea Lakes, 1965-67.

This area lies along the northeast extension of the Thompson structure. Preliminary work has indicated that 2 major structures intersect at Split Lake - the Thompson deformation zone and a northwest-trending deformed zone. Both are characterized by wide bands of highly mylonitized rocks (originally granites or gneisses which had previously been mapped as Assean Sediments).

34. Hunt, G.H., Manitoba Dept. of Mines and Natural Resources (part time):
Geology of the Iskwasum Lake area (West Half), 2 inches to 1 mile, 1965-67.
Of special interest is an arcuate, elongated zone of serpentinite intrusions.

Newfoundland and Labrador

35. Anderson, F.D., Geol. Surv. Can.:
Belleoram map-area, Newfoundland, 1 inch to 4 miles, 1960-65.
See Geol. Surv. Can., Paper 66-1, 1966, p. 176.

36. Anderson, F.D., Williams, H., Geol. Surv. Can.:
Gander Lake (West Half), 1 inch to 4 miles, 1963-65.
See Geol. Surv. Can., Paper 66-1, 1966, p. 176.

37. Brueckner, W.D., Memorial Univ. of Newfoundland:
Geology of St. John's, Newfoundland, 1964-67.
With the assistance of senior undergraduate students the area of the City of St. John's and its surroundings is gradually being mapped in detail.

38. Church, W.R., Univ. of Western Ontario:
Geology of the White Bay-Green Bay districts, northeast Newfoundland, 1963-.
See Structural evolution of northeast Newfoundland: comparison with that of the British Caledonides. Maritime Sediments, vol. 1, pp. 10-14.

39. Gillis, J.W., Geol. Surv. Can.:
Great Northern Peninsula, Newfoundland, 1 inch to 4 miles, 1965-66.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 178-179.

40. Lilly, H.D., Memorial Univ. of Newfoundland:
Geological and palaeomagnetic examination of the high shoals of the Great Bank off Newfoundland and geological examinations of the shoals of the Gulf of St. Lawrence, 1964-.

The Ballard Bank, 10 miles east of Cape Race, Newfoundland, the Virgin Rock shoals, Bucksport shoal 100 miles east of Cape Race and the Eastern Shoals, 120 miles east of Cape Race have been examined by diving with the aqualung. Seismic sparker studies and magnetometer work where possible will be used to add to the present structural and lithological data. See Submarine examination of the Virgin Rocks area – Grand Banks, Newfoundland; Geol. Society of America Bull., vol. 76, pp. 131-132, Jan. 1965.

41. Stevenson, I.M., Geol. Surv. Can.:
Northwest River map-area, Labrador, 1 inch to 4 miles, 1965-66.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 182-183.

42. Williams, H., Geol. Surv. Can.:
Red Indian Lake E 1/2 map-area, Newfoundland, 1 inch to 4 miles, 1965-66.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 183-185.

New Brunswick, Nova Scotia and Prince Edward Island

43. Benson, D.B., Geol. Surv. Can.:
Merigomish, Nova Scotia, 1 inch to 1 mile, 1964-65.
See Geol. Surv. Can., Paper 66-1, 1966, p. 170.

44. Gillis, J.W., Geol. Surv. Can.:
Northwestern Pictou county, Nova Scotia.
See Geol. Surv. Can., Paper 65-2, 1965, pp. 55-57.

45. Kelley, D.G., Geol. Surv. Can.:
Cobequid Mountains, 1 inch to 1 mile, 1961-.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 172-173.

46. Marlowe, J.I., Geol. Surv. Can. and Bedford Institute of Oceanography:
Geology of part of continental slope off eastern Canada, 1964-.
See Geol. Surv. Can., Paper 65-1, 1965, pp. 148-149.

47. Prest, V.K., Geol. Surv. Can.:
Surficial and bedrock mapping of Prince Edward Island, 1953-66.

48. Williamson, D.H., Mount Allison Univ.:
Geology of the metamorphic basement complex of the northeastern part of Caledonia Mountain, southeastern New Brunswick, 1962-67.
A comprehensive geological study to establish the stratigraphic sequence and determine the relation of the igneous plutons to the metamorphism.

Northwest Territories

49. Blackadar, R.G., Taylor, F.C. and Blake, W., Geol. Surv. Can.:
Reconnaissance mapping, southern Baffin Island.
See Geol. Surv. Can., Paper 66-1, 1966, p. 2.

50. Bostock, H.H., Geol. Surv. Can.:
Contwoyto Lake (West Half), Point Lake (East Half), 1 inch to 4 miles, 1964-65.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 25-28.

51. Christie, R.L., Geol. Surv. Can.:
Northeast Ellesmere Island, 1 inch to 8 miles, 1963-67.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 3-4.

52. Clarke, B., Wilson, J.T., Upton, B.G.J., Univ. of Toronto:
Expedition to East Baffin Island, 1964-67; Ph.D. thesis (Clarke).
The hypothesis of continental drift suggests that the little known lavas near Cape Dyer, Baffin Island should correspond closely to those at Disco, W. Greenland. In two seasons' field work, Mr. Clarke and his supervisors collected lavas for petrological study, found Late Cretaceous to Eocene floras and established this relationship. See Geological Expedition to Capes Dyer and Searle, Baffin Island, Canada, Nature, vol. 205, pp. 349-350, 1965.

53. Dineley, D.L., Rust, B.R., and others, Univ. of Ottawa:
Geology of the Boothia Arch area, Somerset Island, Northwest Territory, 1964-67.
This project concerns the detailed geology and geomorphology of the northern end of the Boothia Arch, ranging from the Precambrian crystalline basement to Quaternary deposits. Structural, stratigraphical and sedimentological studies are included. See notes on the scientific results of the University of Ottawa Expedition to Somerset Island, 1964, Arctic 18, 55, 1965.

54. Fraser, J.A., Geol. Surv. Can.:
Rocknest Lake, Mackenzie district, 1 inch to 4 miles, 1964-65.
See Geol. Surv. Can., Paper 66-1, 1966, p. 29.

55. Frisch, Thomas, Geol. Surv. Can.:
Metamorphic rocks, northern Ellesmere Island, Northwest Territories.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 4-5.

56. Green, David, Univ. of Alberta:
Precambrian geochronology of Yellowknife area, Northwest Territories, 1965-68; Ph.D. thesis.

57. Jackson, G.D., Geol. Surv. Can.:
Baffinland Iron Mines, Northwest Territories, 1 inch to 1 mile, 1965-66.
Detailed regional investigation in the vicinity of the iron deposits.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 14-15.

58. McGlynn, J.C., Hoffman, P.F., Geol. Surv. Can.:
Thekulthili Lake area, Northwest Territories, 1 inch to 1 mile, 1965-66; Ph.D. thesis (Hoffman), John Hopkins Univ.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 32-33.

59. Reinhardt, E.W., Geol. Surv. Can.:
Geological investigations south of the McDonald fault, Great Slave Lake, Northwest Territories, 1965-66.
A regional study of gneisses and mylonites between the fault and the Nonacho basin.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 34-36.

60. Thorsteinsson, R., Geol. Surv. Can.:
Reconnaissance geological survey of Cornwallis Island, Northwest Territories, 1965.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 16-18.

61. Tremblay, L.P., Geol. Surv. Can.:
Contwoyto Lake, 1 inch to 1 mile, 1964-65.
See Geol. Surv. Can., Paper 66-1, 1966, p. 37.

62. Trettin, H.P., Geol. Surv. Can.:
Precambrian to Carboniferous rocks of M'Clintock Inlet region, northeastern Ellesmere Island, Northwest Territories.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 7-11.

63. Yole, R.W., Arctic Institute of North America and Carleton Univ. with support from the Polar Continental Shelf Project:
Investigation of the geology in the vicinity of Mould Bay, N.W.T., with reference to the seismic behaviour of the Mould Bay seismological observatory, 1965.

Ontario

64. Ayres, L.D., Ontario Dept. of Mines:
Setting Net Lake area, District of Kenora, 1 inch to 1/2 mile, 1964-66.
See Ont. Dept. Mines, Prelim. Rept. 1963-5, pp. 3-6.

65. Bennett, G., Ontario Dept. of Mines:
Belford-Strachan area, District of Cochrane, 1 inch to 1/2 mile, 1964-65.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 43-44.

66. Card, K.D., Ontario Dept. of Mines:
Merritt and Foster townships, District of Sudbury, 1 inch to 1/2 mile, 1964-66.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 36-39.
Sudbury Mining area, 1965-67.

67. Card, K.D., Meyn, H.D., Ontario Dept. of Mines:
Leinster-Bowell area, District of Sudbury, 1 inch to 1/2 mile, 1964-65.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 36-41.

68. Card, K.D., Thomson, R., Lumbers, S.B., Ontario Dept. of Mines:
Sudbury-Cobalt compilation sheet, 1 inch to 4 miles, 1963-66.

69. Carlson, H.D., Ontario Dept. of Mines:
Ogden-Shaw area, District of Cochrane, 1 inch to 1/2 mile, 1964-65.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 45-47.

70. Carlson, H.D., Donovan, J.F., Ontario Dept. of Mines:
Chapleau-Foleyet compilation sheet, 1 inch to 4 miles, 1963-65.

71. Carmichael, D.M., Geol. Surv. Can.:
Structural studies, Hastings area, Ontario, 1 inch to 1 mile, 1965-66; Ph.D. thesis.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 148-150.

72. Coates, M.E., Ontario Dept. of Mines (part time):
Stevens-Kagiano Lake area, District of Thunder Bay, 1 inch to 1 mile, 1964-65; M.Sc. thesis.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 27- .

73. Davies, J.C., Ontario Dept. of Mines:
Fort Frances area, District of Rainy River, 1 inch to 1/2 mile, 1964-65.
See Ont. Dept. of Mines, Prelim. Rept. 1965-3, pp. 11-12.

74. Davies, J.C., Pryslak, A.P., Ontario Dept. of Mines:
Kenora-Fort Frances compilation sheet, 1 inch to 4 miles, 1962-65.

75. Davies, J.C., Ferguson, S.A., Brown, D.D., Ontario Dept. of Mines:
Red Lake-Birch Lake compilation sheet, 1 inch to 4 miles, 1964-67.

76. Davies, J.C., Pye, E.G., Pryslak, A.P., Ontario Dept. of Mines:
Sioux Lookout-Armstrong compilation sheet, 1 inch to 4 miles, 1965-67.

77. Donovan, J.F., Ontario Dept. of Mines:
Halcrow-Ridout Lakes area, District of Sudbury, 1 inch to 1/2 mile, 1964-65.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 41-42.

78. Fenwick, K.G., Ontario Dept. of Mines:
Fredart-Whitemud Lakes area, District of Kenora, 1 inch to 1/2 mile, 1964-66.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 7-8.

79. Frarey, M.J., Geol. Surv. Can.:
Lake Panache, Ontario, 1 inch to 1 mile, 1964-65.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 152-153.

80. Giblin, P.E., Armbrust, G.A., Ontario Dept. of Mines:
Batchewana area, District of Algoma, 1 inch to 1/2 mile, 1964-65; Ph.D. thesis (Armbrust), Univ. of Colorado.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 29-32.

81. Giblin, P.E., Leahy, E.J., Ontario Dept. of Mines:
Sault Ste. Marie-Elliot Lake compilation sheet, 1 inch to 4 miles, 1962-65.

82. Giblin, P.E., Milne, V.G., Ontario Dept. of Mines:
Manitouwadge-Wana compilation sheet, 1 inch to 4 miles, 1964-66.

83. Gittins, J., Ontario Dept. of Mines (part time); Univ. of Toronto;
Townships of Glamorgan and Monmouth, County of Haliburton, 1955-65.

84. Harris, F.R., Ontario Dept. of Mines:
Saganagons Lake area, District of Thunder Bay, 1 inch to 1/2 mile, 1964-65.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 14-17.

85. Hewitt, D.F., Ontario Dept. of Mines:
Madoc area, County of Hastings, 1 inch to 1/2 mile, 1964-66.
See Ont. Dept. Mines, Prelim. Rept. 1964-6, pp. 48-49.
Geological Guidebook to the Peterborough-Bancroft-Madoc areas, 1965-67.

86. Johnston, F.J., Ontario Dept. of Mines:
Vermilion Lake area, District of Kenora, 1 inch to 1/2 mile, 1964-66.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 9-11.

87. Kaye, L., Ontario Dept. of Mines:
Eayrs-Starnes Lakes area, District of Thunder Bay, 1 inch to 1 mile, 1964-66.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 17-19.

88. Leahy, E.J., Ontario Dept. of Mines:
Nighthawk Lake area, District of Cochrane, 1 inch to 1/2 mile, 1963-66.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 47-50.

89. Lovell, H.L., Ontario Dept. of Mines:
Tolstoi, Black and Benoit townships, District of Timiskaming, 1 inch to 1/2 mile, 1964-65.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 50-51.

90. Lumbers, S.B., Ontario Dept. of Mines:
Lake Nipissing area, Districts of Sudbury, Nipissing and Parry Sound, 1 inch to 1 mile, 1964-66.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 53-57.

91. McIlwaine, W.H., Ontario Dept. of Mines:
South Lorrain township, District of Timiskaming, 1 inch to 1/2 mile, 1963-65.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 51-53.

92. Meyn, H.D., Ontario Dept. of Mines:
Hutton and Parkin townships, District of Sudbury, 1 inch to 1/2 mile, 1964-66.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 39-41.

93. Milne, V.G., Ontario Dept. of Mines:
Black River area, District of Thunder Bay, 1 inch to 1/2 mile, 1964-65.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 24-26.

94. Pye, E.G., Ontario Dept. of Mines:
Nipigon-Schreiber compilation sheet, 1 inch to 4 miles, 1964-66.

95. Pye, E.G., Harris, F.R., Ontario Dept. of Mines:
Tashota-Geraldton compilation sheet, 1 inch to 4 miles, 1963-65.

96. Robertson, J.A., Ontario Dept. of Mines:
Cutler area, District of Algoma, 1 inch to 1/2 mile, 1964-65.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 32-35.

97. Satterly, J., Brown, D.D., Bennett, G., Ontario Dept. of Mines:
Coral Rapids-Cochrane compilation sheet, 1 inch to 4 miles, 1965-66.
Hearst-Kapuskasing compilation sheet, 1 inch to 4 miles, 1965-66.

98. Skinner, R., Geol. Surv. Can.:
Sioux Lookout map-area.
See Geol. Surv. Can., Paper 66-1, 1965, p. 159.

99. Shklanka, R., Ontario Dept. of Mines:
Steep Rock Lake Iron area, District of Rainy River, 1 inch to 1,000 feet, 1964-65.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 12-14.

100. Skinner, R., Geol. Surv. Can.:
Geology of part of Moose River area, Ontario, 1965-66.
To determine cause of aeromagnetic anomaly.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 158-159.

Quebec

101. Archambault, Ginette, Quebec Dept. of Natural Resources:
Geology of Trois-Pistoles area, Co. Rimouski Rivière-du-Loup, 1965.

102. Chown, E.H., Quebec Dept. of Natural Resources:
Reconnaissance geology of the Savane River area, Quebec, 1 inch to 4 miles 1965-66.

103. Clark, T.H., Quebec Dept. of Natural Resources:
Geology of the St. Lawrence Lowlands.
Core logging of cores of wells of the St. Lawrence Lowlands and Seaway including water wells.

104. Clarke, P.J., Quebec Dept. of Natural Resources:
Geology of the Mt. Reed - Lac Jeannine area, Quebec, 1964-67.
In addition a compilation of the geology between Mt. Wright and Mt. Reed should show the relation between the stratigraphy, structure, and iron ore deposits of the region. It is also hoped to establish the relationships between the Petit Manicouagan anorthosite mass and the metamorphosed equivalents of the Labrador Trough rocks. See The geology of the Silicates Lake area (1965), Prelim. Rept. 539, Que. Dept. Nat. Res.

105. Depatie, J., Quebec Dept. of Natural Resources:
Geology of the Lac a L'Ours area, Duplessis county, Quebec 1964-67; Ph.D. thesis.

106. Dugas, J., Quebec Dept. of Natural Resources:
Compilation of the geology of the Rouyn-Noranda district, Quebec, 1 inch to 1,000 feet - a continuing program.
This compilation covers the following townships: Aiguebelle, Manneville, Villemontel, Cléricy, La Pause, Preissac, Joannes, Bousquet, Cadillac. See Geological compilation in the Rouyn-Noranda district - Map B-849.

107. Duquette, G., Quebec Dept. of Natural Resources:
Compilation of the geology of the Chibougamau district, Quebec, 1 inch to 1,000 feet - a continuing program.
See Preliminary report on the northeast quarter of Roy township, Abitibi-East county - Prelim. Rept. 553, 1966.

108. Emslie, R.F., Geol. Surv. Can.:
Val Morin vicinity, Quebec, 1 inch to 1 mile, 1964-65.
A study of Morin anorthosite. See Geol. Surv. Can., Paper 66-1, 1966, p. 161.

109. Girard, P., Quebec Dept. of Natural Resources:
Mount Richardson area, LaPotardière township, Gaspé-North county, 1965- ; Ph.D. thesis.
Folded Ordovician rocks and a zone of hornfels, skarns and silicate-rich rocks are present on the north side of the Shickshock metavolcanic basic flows.

110. Jacoby, R.S., Quebec Dept. of Natural Resources:
Geology of Piscatosin Lake area, Labelle and Montcalm counties, 1965-67.
Study of Grenville rocks such as paragneisses and granitic and syenitic granites all of which are amphibolite facies.

111. Kelly, R., Quebec Dept. of Natural Resources:
Northwest quarter of Poirier township and southwest quarter of Joutel township - Abitibi-East county; 1 inch to 1,000 feet, 1965-66; Ph.D. thesis, Université Laval.
A three year program of detailed mapping in an area containing base metal deposits.

112. Latulippe, M., Quebec Dept. of Natural Resources:
Compilation of the geology of the Val d'Or district, Quebec, 1 inch to 1,000 feet.
See Amos-Barraute area; Que. Dept. Nat. Res., P.R. No. 109, 1964.

113. Laurin, A.F., Quebec Dept. of Natural Resources:
Reconnaissance mapping of Mistassini River area; 1 inch to 4 miles, 1965-66.
The area is northeast of Chibougamau between latitudes 50°00' and 51°00' north and longitudes 72°00' and 74°00' west.

114. Mathieu, A., Quebec Dept. of Natural Resources:
Northwest quarter of McKenzie township, Abitibi-East county, 1 inch to 1,000 feet, 1965.
Part of a program which aims at mapping in detail an economically important section of the Chibougamau greenstone belt.

115. Mills, P.J., Quebec Dept. of Natural Resources:
Geology of Sakami Lake area, New Quebec, 1965-67; Ph.D. thesis.

116. Murtaugh, J.G., Quebec Dept. of Natural Resources:
Geology of Mont Babel area, 1965-67; Ph.D. thesis.
Reconnaissance mapping of the Manicouagan-Mouchalagan Rivers Basin.

117. Newham, W.D.N., McGill Univ.:
The geology of the LaDaumonot map-area, Quebec, 1961-66.

118. Osborne, F.F., Université Laval:
Geology near Quebec City.

119. Pyke, D.R., McGill Univ.:
The geology of Montauban area, Quebec, 1962-66; Ph.D. thesis.

120. Remick, J.H., Quebec Dept. of Natural Resources:
Benoit-Ruette area, 1 inch to 1 mile, 1965-66.

121. Robert, Jean-Louis, Quebec Dept. of Natural Resources:
Geology of the Lesseps brook area, Lesseps township, Gaspe-North county, 1 inch to 1,000 feet, 1963-66.
Part of a 4-year program in the central part of the Gaspe Peninsula entailing the detailed mapping of an Ordovician-Devonian assemblage and the study of areas of metallic mineralization. See Mount Hog's Back area (Prelim. Rept. No. 540) and Mount Vallieres-de-St.-Réal area (Prelim. Rept. No. 549), Que. Dept. Nat. Res., 1966.

122. Rondot, J., Quebec Dept. of Natural Resources:
Geology of L'Anse St.-Jean and Baie St.-Paul areas, 1965-66.
A study of the border of the Laurentides charnockitic massif.

123. Sabourin, R.J.E., Université Laval:
Geology of the Bourbonnais-Mitchell area, Québec.
See Geology of the Bourbonnais-Limousin area, Dept. Nat. Res., Quebec, Prelim. Rept. 509, 1963.

124. Schryver, K., Quebec Dept. of Natural Resources (part time):
Gauthier-Joliette-Houde area, Berthier, Joliette, and Maskinonge counties, 1 inch to 1 mile; Ph.D. thesis McGill Univ.

125. Wolhuter, L.E., McGill Univ.:
The Opemisca region - a study of the petrology structure and ore deposits in parts of Levy and Daubree townships, Abitibi, Quebec, 1958-66; Ph.D. thesis.

126. Wynne-Edwards, H.R., Jacoby, R.S., Queen's Univ.:
Geology of Baskatong Reservoir (31J 13E), Quebec, 1965-67; Ph.D. thesis (Jacoby).

Saskatchewan

127. Chadwick, B., Saskatchewan Dept. of Mineral Resources:
Geology of the Nekweaga Bay area (West Half), 1965-66.
Areal mapping study, particularly directed at tracing stratigraphical successions. See Summary Report of Geological Surveys conducted in the Precambrian area of Saskatchewan, 1965.

128. Coleman, L.C., Gaskarth, J.W., Smith, J.R., Univ. of Saskatchewan:
Geology and bedrock geochemistry of the Hanson Lake area, Saskatchewan, 1962-68; Ph.D. thesis (Gaskarth).
Geological mapping at 1" = 500' is being conducted in the Hanson Lake area. Bedrock samples collected at approximately 200' intervals are being analyzed by X-ray fluorescence techniques for Cu, Zn, Ni, Pb. The relationship of the distribution of these metals to known sulphide deposits and to the geological structures and rock units in the area is being investigated as is the relationship of Amisk-type and Kisseynew-type rocks.

129. Forsythe, L.H., Saskatchewan Dept. of Mineral Resources:
Geology of the MacKay-Sulphide Lakes areas, 1 inch to 1/2 mile, 1964-67.
A detailed study to determine the geology and structure in this key area, where a number of gold occurrences are known. See Summary of Field Work in Precambrian of Saskatchewan, 1964.

130. Gracie, A.J., Saskatchewan Dept. of Mineral Resources:
Geology of the Maribelli Lake area (West Half), 1965-66.
Areal mapping study. See Summary Report of Geological Surveys conducted in the Precambrian area of Saskatchewan, 1965.

131. Johnson, R.L., Saskatchewan Dept. of Mineral Resources:
Geology of the Nemei Lake area (West Half), 1965-66.
Areal mapping study. Particular reference to Kisseynew-gneiss problems. See Summary Report of Geological Surveys conducted in the Precambrian area of Saskatchewan, 1965.

132. Johnston, W.G.Q., Saskatchewan Dept. of Mineral Resources:
Geology of the Kelly Lake area (West Half), 1 inch to 1 mile, 1964-65.
See Summary of Field Work in Precambrian of Saskatchewan, 1964, Sask. Dept. Mineral Resources.

133. King, L.H., Byers, A.R., Univ. of Saskatchewan:
Geology of Precambrian basement, southern Saskatchewan, 1964-66; M.Sc. thesis (King).

134. Koster, F., Saskatchewan Dept. of Mineral Resources:
Geology of the Harper Lake area (South Half), 1965-66..
Areal studies in the Uranium City area. See Summary Report of Geological Surveys conducted in the Precambrian area of Saskatchewan, 1965.

135. Padgham, W.A., Saskatchewan Dept. of Mineral Resources:
Geology of the Oskikebuk Lake area (West Half), 1 inch to 1 mile, 1964-66.
See Summary Work in Precambrian of Saskatchewan, 1964, Sask. Dept. Mineral Resources.

Yukon Territory

136. Blusson, S.L., Geol. Surv. Can.:
Sekwi Mountain, Nahanni and Frances Lake map-area, Yukon Territory, 1 inch to 4 miles.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 38-41.

137. Gabrielse, H., Blusson, S.L., Handfield, R.C., Upitis, U., Geol. Surv. Can.:
Operation Selwyn - Wrigley and Watson Lakes, Jennings River, Sekwi Mountains, Nahanni and Frances Lake, Northwest Territories, Yukon and British Columbia, 1 inch to 4 miles, 1965-66.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 42-45.

138. McLeod, C.R., Geol. Surv. Can.:
Mineralogy of Keno Hill and surrounding areas, Yukon, 1964-66.

139. Poole, W.H., Geol. Surv. Can.:
Mt. Haldane Dublin Gulch, Yukon Territory, 1 inch to 1 mile, 1964-65.
The continuation of detailed study of Keno Hill silver mining district.
See Geol. Surv. Can., Paper 65-1, 1965, pp. 32-35.

140. Price, R.A., Aitken, J.D., Geol. Surv. Can., Mountjoy, E.W., McGill Univ.:
Operation Bos-Athabasca, Alberta and British Columbia, 2 miles and 4 miles to the inch, 1965-66.
A reconnaissance study of 12,000 square miles of the Rocky Mountains south from Jasper, Alberta.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 116-121.

141. Tempelman-Kluit, D., Geol. Surv. Can.:
Tombstone, Yukon Territory, 1 inch to 1 mile, 1964-65; Ph.D. thesis.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 48-49.

ENGINEERING GEOLOGY

142. Barron, K., Mines Branch, Dept. of Mines and Technical Surveys:
Structural modelling, 1961-65.
Work has been carried out on the method of applying biaxial stress or deformation conditions to the model constructed to examine the stress and failure conditions around rooms and pillars. The effects on the stress distribution in the simulated layered formations of applying a uniform horizontal deformation was also examined. It was found that with the existing model the stresses measured depended more upon errors inherent in the system than upon the differing conditions so that although much was learned about designing such a system, the project as it stood was abandoned. See Loading Tests on the Wabana Model - 11, Final Report, Mines Branch, DR-FMP 65/108 MRL.

143. Barron, K., Toews, N., Parsons, R., Coates, D.F., Van Heerden, W.L., Mines Branch, Dept. of Mines and Technical Surveys:
Time-dependent deformation of geological materials, 1962-.
The measurements that were made of the variation of deformation with time in salt around a shaft were successfully correlated with general theoretical concepts of visco-elastic materials. A similar study is being conducted on the

deformation around mine openings in potash. In addition, laboratory studies are being conducted to determine if it is possible to describe these materials in terms of a coefficient of viscosity, an elastic modulus and a yield point with tests that have a duration of no more than one or two days. Such tests and those on other rock substances continue in connection with a study on rock classification. A differential transformer compressometer is being developed for use on rock specimens to measure strain in place of strain gauges.

144. Bayrock, L.A., Berg, T.E., Research Council of Alberta:
Geology of City of Edmonton, Alberta, 1965-70.

A detailed drilling program is underway to determine the preglacial topography and extent and thickness of the overlying Saskatchewan sand and gravel, till and Glacial Lake Edmonton sediments.

145. Brown, R.J.E., Division of Building Research, National Research Council:
Permafrost distribution in Canada, 1953-.

Observations on the occurrence of permafrost throughout the permafrost region of Canada, with emphasis on the southern fringe area, are being collected continuously by direct field observations, review of the technical literature, reports from other individuals and agencies, and questionnaire; this information is recorded on punch cards and plotted on 8 miles to 1 inch maps of Canada. Accompanying this collection of information is the study of the climatic and terrain factors comprising the permafrost environment as a means of improving the understanding of and ability to predict the distribution and occurrence of permafrost.

See Permafrost investigations in Saskatchewan and Manitoba; Division of Building Research Technical Paper 193, September 1965, 36 p. (NRC 8375).

146. Brueckner, W.D., Memorial Univ. of Newfoundland:
Geology of St. John's, Newfoundland, 1964-67.

With the assistance of senior undergraduate students the city of St. John's and surroundings is gradually being mapped in detail.

147. Burn, K.N., Crawford, C.B., Eden, W.J., and Jarrett, P., Division of Building Research, National Research Council:
Geotechnical properties of Eastern Marine Clay, 1951-.

Both field and laboratory studies are being conducted on the "Champlain Sea" clay of the St. Lawrence Lowlands. Field studies are concerned with the investigation of several landslide occurrences, the observation of settlements due to highway

embankments and the effect of volume changes due to seasonal moisture changes. Laboratory investigations are in progress on the stress-deformation characteristics of the clay, the compressibility and the effect of sampling operations. See Resistance of soil structure to consolidation, Canadian Geotechnical Journal, vol. 2, No. 2, pp. 90-115, May 1965.

148. Chagnon, J.Y., Quebec Dept. of Natural Resources:
Landslides and quick clays, 1965-.

A general investigation of the landslides which occur in the marine clays of the Champlain Sea. The geological and engineering aspects of the slides and the mineralogical physical and mechanical aspects of the clays will be considered. Initially, the work will be confined to the compilation of data and to investigation of local problems.

149. Coates, D.F., Gyenge, M., Mines Branch, Dept. of Mines and Technical Surveys:
Rock slope stability, 1960-.

A number of projects are being conducted to determine the mechanics of failure in rock slopes. Basic studies are being pursued into the stress distribution occurring in typical slope geometries. Mathematical and photoelastic techniques are being used for this work. In addition, field measurements are being conducted on a number of mining properties to determine deformation, groundwater regime and microseismic activity associated with deep cut slopes in open pits. Both hard and soft rock formations are being studied. See The Stability of Slopes in Open Pits, Mines Branch, DR FMP 64/72 MRL.

150. Coates, D.F., Larocque, G.E., Sassa, K., Terada, M., Darling, A., Aslam, M., Mines Branch, Dept. of Mines and Technical Surveys:
Shock wave propagation, 1963-.

A research project is in process for studying the coupling of explosive energy with rock and the propagation of the resultant shock into the rock both for surface explosions and underground explosions. A laboratory project has been completed on measuring particle velocities and propagation velocities within the crater zone from a surface explosion. This laboratory work has been conducted using two different types of explosive and one type of hard rock. Laboratory work is continuing on aquarium experiments for the determination of explosive detonation velocities and on bar experiments to study shock wave shape and tensile strength of the rock substance. Field experiments have been conducted on ground motion acceleration due to explosives. See Progress Report, 1965 Blasting Research, Mines Branch, DR FMP 65/131 - MRL.

151. Cochrane, T.S., Mines Branch, Dept. of Mines and Technical Surveys:
Sonic studies of rock competency, 1961-.
A portable, transistorized sonic unit developed in the laboratory has been subjected to field trials for the determination of the elastic uniformity of rock masses. With this equipment transit time measurements are made between two bore-holes. Measurements of a few hundred microseconds to many milliseconds can be made with an accuracy of 5 per cent. The unit has been effective in delineating fracture zones and their growth with time and has been used in a number of different locations.

152. Cochrane, T.S., Coates, D.F., Parsons, R., Mines Branch, Dept. of Mines and Technical Surveys:
Rock burst research, 1962-.
Studies are being conducted on mining properties that are experiencing rock bursts. These events are seemingly caused in some cases by mining induced stresses but in other cases by inherent residual stresses, e.g. in one case serious bursts are occurring at the shallow depth of 400 ft. Tests are being conducted on the rock substances in the laboratory, on the rock formation for their seismic velocities, on deformations associated with mining operations and on microseismic activities emanating from the surrounding ground.

153. Elson, J.A., and students, McGill Univ.:
Surficial deposits exposed in Montreal subway and related excavations, 1963-.
Excavations are examined and samples taken as the opportunity affords. When enough data has accumulated an attempt will be made to interpret the Pleistocene events.

154. Grant, F., Barron, K., Coates, D.F., Van Heerden, W.L., Mines Branch, Dept. of Mines and Technical Surveys:
Measurements of stress in situ, 1951-.
Field trials have been conducted using a bore-hole deformation meter designed by the US Bureau of Mines and modified for use in hard rocks. The instrument is used with an over-coring technique to obtain measurements of field stresses and induced by mining. Some cooperative work has been done with Dalhousie University on this project. Some unexpectedly high horizontal stresses have been detected in these trials. Laboratory tests have been conducted to assess the performance of a glass biaxial stressmeter. The instrument has been found to have many favourable aspects, and field trials may be conducted at a later date. See The Mines Branch Stressmeter, Mines Branch, DR FMP 65/172-MRL.

155. Grice, R.H., Kumarapeli, P.S., McGill Univ.:
Engineering geology of Montreal subway and engineering properties of Utica Shale, 1965-67; Ph.D. thesis (Kumarapeli).
The exploratory geological work carried out by the engineering staff of the City of Montreal's Control and Research Laboratory is being reviewed. The geology exposed in the last part of the project is being mapped, especially joint patterns and their effect on tunnel shape and stability. See Engineering geology of the Montreal Metro (subway), Association of Engineering Geologists, meeting in Denver (1965), (abstract).

156. Hamilton, J.J., Gardiner, R.T., Division of Building Research, National Research Council:
Western Canada soil studies, 1960-.
Long-term studies of environmental influences on ground movements are being continued at special open field sites and by level observations on buildings. Soil movements are being compared with weather factors. Local groundwater studies in urban areas have been initiated. The occurrence of sulphate soils is being correlated with pedological maps.

157. Hardy, H.R. Jr., Mines Branch, Dept. of Mines and Technical Surveys:
Time-dependent deformation of geologic materials, 1961-.
Incremental creep experiments are being conducted on a number of "simple" geologic materials. These are naturally occurring materials that are basically monomineralic and macroscopically isotropic and homogeneous. The present work includes further studies on Wombeyan marble and initial experiments on Solenhofen limestone and Hasmark dolomite. Work has also been initiated on another suite of relatively homogeneous rocks including Missisquoi and Delbo marble, Sienna Red Syenite and, Scots Grey and Peribonka granite. See Inelastic Behaviour of Geologic Materials, Part I - Experimental and Analytical Techniques and Initial Studies on Wombeyan Marble: Mines Branch, FMP 65/155-P.

158. Imrie, A.S., Charlesworth, H.A.K., Univ. of Alberta:
Jointing in the Bullhead Group at the Portage Mountain damsite, 1964-67; M.Sc. thesis (Imrie).

159. Johnston, G.H., Division of Building Research, National Research Council:
Kelsey Generating Station – dyke studies.
The performance of dykes constructed on permafrost in the southern fringe area of the permafrost region in northern Manitoba is being studied by means of ground temperature and dyke

movement observations. See Permafrost studies at the Kelsey Hydro-Electric Generating Station - Research and Instrumentation, by G.H. Johnston, Division of Building Research Technical Paper 178 (NRC 7943) March, 1965.

Observations at Inuvik, Northwest Territories.

The evaluation of the performance of various engineering facilities, e.g. building foundations, airstrip, roads, utilidors, etc. constructed on permafrost were continued by means of ground temperature and pile movement surveys. Depth of thaw surveys at sites having different soil and surface cover conditions in undisturbed areas and under buildings were carried out.

160. Johnston, G.H., Brown, R.J.E., Division of Building Research, National Research Council:

Investigation of the distribution of permafrost under bodies of water.

Ground temperature observations were continued at a lake near Inuvik, N.W.T. to determine the effect of bodies of water on permafrost. A major drilling program was carried out at this site in 1964 to install instrumentation and sample the materials to depths up to 300 feet under and adjacent to the lake.

161. Kumarapeli, P.S., McGill Univ.:

Engineering geology of Montreal area with special reference to the geotechnics of Utica Shale, 1965-67; Ph.D. thesis.

162. LeComte, P., Mines Branch, Dept. of Mines and Technical Surveys:

Properties of rocks by dynamic methods, 1960-.

A study using the resonance method of factors affecting internal friction in a number of rock types with the object of developing the usefulness of internal friction measurements for rock testing.

163. Ledoux, R.L., Université Laval:

Mineralogical and physico-chemical character of quick clays in Quebec, 1965-67.

To determine the clay minerals in several size fractions and see if application of electrolytes affects properties of the quick clays.

164. Lyall, K.D., N.R.C. Post-doctoral Fellow, Mines Branch, Dept. of Mines and Technical Surveys:

Internal friction in rock salt, 1965-67.

A study of dislocation damping in single crystals of rock salt after different amounts of cold work in different orientations.

Plastic deformation of galena, 1961-.

See Plastic Deformation of Galena, Acta Metallurgica (1965).

165. MacFarlane, I.C., Division of Building Research, National Research Council:

Muskeg research, 1954-.

See The consolidation of peat: a literature review: Division of Building Research Technical Paper 195 (NRC 8393) Ottawa, 1965.

166. Mackay, J. Ross, Univ. of British Columbia:

Geomorphology of the Lower Mackenzie River, 1963-67.

A study of the terraces; glaciated terraces; post-glacial drowning; rate of sedimentation.

Permafrost temperatures, Mackenzie Delta area, 1964-.

A 200' deep hole west of Ft. McPherson, N.W.T. and a 250' hole near Arctic Red River have already been instrumented for permafrost measurements. New holes will be instrumented in 1966. Winter and summer deformation changes in the ground associated with the growth of ice-wedge polygons, 1965-.

Precise surveying of tubes inserted into the ground to a depth of 4' has been done for 25 tubes. The deformation of these tubes will be measured in March, 1966, summer 1966, and in the future to obtain ground movement changes. Temperatures are also being measured.

167. Mondoloni, Guy, McGill Univ.:

Engineering geology of the Kaniapiskau (Lac Dusterlo) Reservoir Division, Quebec, 1963-65; M.Sc. thesis.

168. Owen, E.B., Geol. Surv. Can.:

Engineering geology investigations of dam sites in the Yukon and Northwest Territories, 1959-.

See Geol. Surv. Can., Paper 66-1, 1966, p. 47.

Engineering geology investigations, Welland Canal area.

See Geol. Surv. Can., Paper 66-1, 1966, p. 157.

169. Penner, E., Division of Building Research, National Research Council:

Ground temperatures and frost action, a continuing study.

Sensitivity in Leda clay, 1962-65.

See A study of sensitivity in Leda clay; Canadian Journal of Earth Sciences, vol. 2, No. 5, October 1965, pp. 421-441.

170. Scott, J.S., Geol. Surv. Can.:

Slope stability, Saskatchewan, Alberta and Manitoba, 1962-65.

Study of geological and hydrogeological factors affecting the stability of slopes. See Geol. Surv. Can., Paper 66-1, 1966, pp. 130-132.

Till characterization, 1962-65.

Preparation of a booklet listing engineering parameters of till.

171. Toews, N.A., Mines Branch, Dept. of Mines and Technical Surveys:
Mathematical methods for the study of stress distributions in stressed geologic materials, 1958-.

Previous work analyzing convergence in a long horizontal opening of ovaloid cross-section excavated in a linear visco-elastic material has been extended to the case when the material is anisotropic. The analytical work is complete but computational difficulties have thus far prevented the assessment of the applicability of the new model to experimental data from a potash mine. The stress distribution associated with a finite slope in a solid under gravity loading has been investigated by means of a conformal mapping on a unit circle. A solution has been obtained in terms of complex integrals and a computer program has been written to calculate the parameters of the mapping. The feasibility of a power-series expansion of the mapping in the unit circle is being studied.

172. van Everdingen, R.O., Geol. Surv. Can.:
Groundwater of the Prairie Provinces and southern Saskatchewan Dam, 1962-.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 124-127.

GEOCHEMISTRY

173. Aarden, H.M., Van Loon, J.C., Gittins, J., Brooker, T., Univ. of Toronto:
The development of schemes of analysis for rare earth bearing rocks and minerals, 1965- ; Ph.D. thesis (Aarden).

174. Ahmed, S.M., Mines Branch, Dept. of Mines and Technical Surveys:
Investigation of hydrogen adsorption on surfaces of silica, thoria and zirconia, 1963-65.

The objective is to study the mechanism of adsorption of hydrogen and hydroxyl ions on silica, thoria and zirconia at various pH values. See Studies of the Dissociation of the Oxide-Surfaces of the Liquid-Solid Interface, Can. J. of Chemistry (in press).

175. Ambrose, J.W., Cowan, M.F., Queen's Univ.:
A study of elemental distribution in mill head samples, 1964-66; M.Sc. thesis (Cowan).

A study essentially of trace elements in mill head samples from areas from the Copperbelt, Northern Rhodesia, in an attempt to determine the origin of the ores.

176. Anderson, D. T., Skinner, R., Fortescue, J. A. C., Gaucher, E. H., Hobson, G. D., Geol. Surv. Can.:
Moose River Project - evaluation of geophysical anomalies crossing Superior rocks, Ontario, 1965-.
Geological, biogeochemical, and geophysical studies to evaluate the aeromagnetic and gravity anomalies. See Geol. Surv. Can., Paper 66-1, 1966, p. 144.

177. Anderson, G. M., Univ. of Toronto:
P-V-T relations in the systems H_2S and H_2S-H_2O at high temperatures and pressures, 1966-68.

178. Anderson, P. A. M., McMaster Univ.:
Phase equilibria of system $NaAlSiO_4$ - NaOH - H_2O, 1963-66; Ph. D. thesis.

179. Beaton, W. D., McGill Univ.:
Trace elements variations in some sulphides, 1962-66; Ph. D. thesis.

180. Billings, G. K., Williams, H., Univ. of Calgary:
Sedimentary geochemistry, 1965-; M. Sc. thesis (Williams).
The primary concern is the details of the sedimentary geochemical cycle. This will be approached by studying the rock-water system in various stratigraphic units.

181. Blais, R. A., Ecole Polytechnique:
Geochemical study of volcanic rocks of Noranda area, 1965-68.
Determination of elements in rocks of the volcanic units for discovering tracers to volcano-exalative copper-zinc deposits.

182. Boorman, R. S., Univ. of Toronto:
Subsolidus equilibria in the system ZnS-FeS, 1961-66; Ph. D. thesis.
Data on the equilibrium solubility of FeS in cubic ZnS, when the sulphur activity is buffered with FeS, have been obtained and processed statistically.

183. Boyle, R. W., Geol. Surv. Can.:
Geochemistry of the Bathurst-Newcastle district, 1957-65.
To provide information on the geochemistry of the gossans, supergene, and primary phases of the base metal deposits of the district. See Geol. Surv. Can., Paper 65-1, 1965, p. 123 and 66-1, 1966, p. 168.
Silver in Canada, 1962-65.
Geochemistry of gold and its deposits, 1965-68.

184. Boyle, R. W., Wanless, R. K., Geol. Surv. Can.:
Lead and sulphur isotope geology of Keno and Galena Hills, Yukon, 1958-.
To determine the isotopic abundances of lead and sulphur in the lead-zinc-sulphur deposits and their host rocks, and from data to determine, if possible, the source of the elements in the deposits and the processes that have led to their concentration.

185. Burley, B. J., McMaster Univ.:
Phase equilibria in alkali alumino silicate systems - a continuing program.

186. Burwash, R. A., Univ. of Alberta:
Average crustal composition of western Churchill Province, 1965-67.
X-ray fluorescence analysis of 200 samples will be used to give average composition of the Precambrian basement underlying the western Canada basin. Variations of individual elements will be plotted for possible interpretation.

187. Cabri, L. J., Mines Branch, Dept. of Mines and Technical Surveys:
Phase equilibrium studies in the Cu-Fe-S and related systems, 1965-.
To closely determine equilibrium relations, stability fields and conditions for metastable relations in sulphide systems, and thereby to further our knowledge of sulphide ore deposits.
Sulphide synthesis, 1964-.
Sulphide minerals of closely controlled compositions are synthesized to provide material for other investigations, and to provide fundamental data on phase equilibrium relationships in certain sulphide systems.

188. Cameron, E. M., Geol. Surv. Can.:
Geochemistry of sediments, 1963-.
Geochemistry of reef and off-reef sediments and in particular to determine trends useful to petroleum industry in exploration for reef structures. See Geol. Surv. Can., Paper 66-1, 1966, p. 186.

189. Carlson, E. H., McGill Univ.:
The solid-vapor system HgS-HCl between 250°C and 450°C, 1963-66; Ph. D. thesis.

190. Chesworth, W., Shaw, D. M., McMaster Univ.:
Geochemical history of part of the Glamorgan granite complex, Glamorgan township, Ontario, 1961-66; Ph. D. thesis (Chesworth).

A field petrographic major element and trace element study has been made of the northeastern part of this complex which outcrops in Glamorgan township. Interpretation of the petrology, which includes both igneous and metasomatic processes has been written up in final form.

191. Chiang, M.C., Shaw, D.M., McMaster Univ.:
Trace element partition in minerals of the Loon Lake pluton contact aureole, Ontario, 1963-65; M.Sc. thesis (Chiang).
Schists and gneisses surrounding the Loon Lake pluton have been raised to pyroxene hornfels facies in a contact aureole. Coexisting biotite-hornblende pairs are being extracted and analyzed for major and trace elements to study equilibrium processes and geothermometry.

192. Church, W.R., Univ. of Western Ontario:
Geochemistry of eclogites and ariegites, 1961-.
See Eclogites, in Hess, H.H., editor, Basalts, Wiley and Sons, New York (in press).

193. Coats, A.W., N.R.C. Post-doctorate Fellow and Bright, N.F.H., Mines Branch, Dept. of Mines and Technical Surveys:
The thermal decomposition of pyrite.
The decomposition of pyrite to give pyrrhotite and sulphur vapour was studied in a dynamic argon atmosphere. The nucleation process proved unamenable to study but the kinetics of the gross mass rate of decomposition was investigated over a convenient temperature range and the appropriate activation energies determined by these independent techniques. See The Thermal Decomposition of Pyrite, Can. J. Chemistry (in press).

194. Coleman, L.C., Gaskarth, J.W., Smith, J.R., Univ. of Saskatchewan:
Geology and bedrock geochemistry of the Hanson Lake area, Saskatchewan, 1962-68; Ph.D. thesis (Gaskarth).
Geological mapping at 1" = 500' is being conducted in the Hanson Lake area. Bedrock samples collected at approximately 200' intervals are being analyzed by X-ray fluorescence techniques for Cu, Zn, Ni, Pb. The relationship of the distribution of these metals to known sulphide deposits and to the geological structures and rock units in the area is being investigated, as is the relationship of Amisk-type and Kisseynew-type rocks.

195. Crocket, J.H., Keays, R.R., Hsieh, S.S., McMaster Univ.:
Precious metal geochemistry, 1961- ; Ph.D. thesis (Keays), M.Sc. thesis (Hsieh).
Concerns the distribution of Pt, Pd, Ir, Os, Ru and Au in basalts, ultrabasics and the rocks of the Sudbury irruptive. The

analytical method used is neutron activation analysis. The most concerted effort at present is on analysis of sulphide and silicate minerals from the Sudbury irruptive. See Radioactivation determination of palladium in basaltic and ultrabasic rocks; Geochim. et Cosmochim. Acta (in press).

196. Crocket, J.H., McNutt, R.H., McMaster Univ.:
Improvements on chemical procedure in sample preparation for mass spectrometry; special attention to be applied to basic/ultrabasic rocks, 1966-.
Rb-Sr Isotopic study of the Mt. Albert dunite, Quebec, 1965-.
The study was undertaken to see if an Rb^{87}/Sr^{86} - Sr^{87}/Sr^{86} isochron could be experimentally determined on such ultrabasic rock types.

197. Currie, K.L., Geol. Surv. Can.:
Diffusion studies, 1962-.
To conduct hydrothermal experimentation aimed at discovering the importance of diffusion in supercritical water under geological conditions. See Geol. Surv. Can., Paper 65-2, 1965, pp. 36-37.

198. Dave, S.N., McGill Univ.:
Thermo-chemical studies of calcite and aragonite, 1962-66; M.Sc. thesis.

199. Davies, J.F., Manitoba Dept. of Mines and Natural Resources, Wilson, H.D.B., University of Manitoba and government and university staff and graduate students:
Project Pioneer, an integrated geological, geophysical and geochemical study of a Precambrian volcanic-sedimentary belt, 1965-71.
Integrated with detailed re-mapping of 1,500 square miles along the Rice Lake-Beresford Lake volcanic-sedimentary belt will be a series of laboratory projects and geophysical studies designed to reveal as much as possible about the geologic character and history, both at surface and at depth, of a typical Precambrian "greenstone belt". Various phases of Project Pioneer will include: complete photogeologic interpretation; 4-inch-to-the mile mapping. Interpretation of aeromagnetic data utilizing techniques for separating various levels of magnetism; study of rock magnetism; determinations of gravity; seismic studies; regional and detailed structural analyses, including petrofabric where applicable; investigation of metamorphism; detailed petrofabric and modal analysis of all rocks on a statistical basis; determination of chemical character of all rock types, and distribution of minor elements; petrographic and chemical study of wall-rock alteration and of regional alteration;

distribution of radioactivity in rocks; age determinations; trace elements in surficial deposits and streams; study of gold-bearing and barren quartz veins.

200. Davies, J.L., New Brunswick Mines Branch:
Geology and geochemistry of the rocks of the Bathurst-Newcastle area, New Brunswick, 1963-.

201. Dawson, K.R., Maxwell, J.A., Geol. Surv. Can.:
Compilation of Canadian rock and mineral analyses, 1957-.
To collect, evaluate and publish in appropriate form all Canadian rock and mineral analyses made in the Geological Survey and then to extend the compilation to include similar data from other sources. See Geol. Surv. Can., Bull. 115.

202. Dibbs, H.P., McMahon, C., Mines Branch, Dept. of Mines and Technical Surveys:
Neutron activation analysis of minerals and metals, 1960-.
The objective is to develop methods for the analysis of trace elements and major components in minerals and metals by neutron activation. See Activation Analysis with a Neutron Generator, Mines Branch Research Report R 155, February 1965.

203. Doig, R., McGill Univ.:
The use of isotopes in the solution of geological problems, 1964-.
The laboratory equipment includes a gas source mass spectrometer and a solid source instrument. These are used mainly for Rb/Sr and K/Ar dating of rocks in conjunction with a number of field projects, and for basic research in mass spectrometry and geochronology.

204. Douglas, G. (Mrs.), McGill Univ.
Effects of ion concentrates on the force field controlling the transmission through clay soils, 1964-66; M.Sc. thesis.

205. Douglas, J.A.V., Maxwell, J.A., Dawson, K.R., Geol. Surv. Can.:
Study of meteorites.

206. Dyck, W., Geol. Surv. Can.:
Radioactive nuclides in meteorites, 1964-.

207. Edgar, A.D., Univ. of Western Ontario:
Phase relations in the system $NaAlSiO_4$-$KAlSiO_4$, 1964-66.
Spodumene transition with studies on leaching of petalite and spodumene, 1965-66.

208. Edgar, A.D., Sood, M.K., Univ. of Western Ontario:
Hydrothermal investigations of melilites and other feldspathoidal minerals, 1963-67; M.Sc. thesis (Sood).
See Lattice parameters of melilite solid solutions and a reconnaissance of phase relations in the system gehlenite-akermanite-soda melilite at 1,000 Kg/cm^2 water vapour pressure. Can. J. of Earth Sciences, 1965.

209. Edgar, A.D., Viterbo, C. (Post-doctoral Fellow), Univ. of Western Ontario:
Geochemistry of eclogites, 1966-70.

210. Erdosh, G., McGill Univ.:
Modal analysis of rocks by infrared spectroscopy, 1964-67; Ph.D. thesis.

211. Fahrig, W.F., Eade, K.E., Maxwell, J.A., Geol. Surv. Can.:
Composition of the Canadian Shield, 1962-65.
To determine the average composition of the Canadian Shield; to determine the composition of individual cratonic segments of the Shield; to map aerial chemical variation within cratonic segments; to relate chemical abundances to mapped lithology. See Geol. Surv. Can., Paper 65-2, 1965, pp. 39-40.

212. Fawcett, J.J., Univ. of Toronto:
Studies of chemical reactions involved in low grade metamorphism, 1962-.
High temperature and pressure studies of phase relations of important mineral assemblages and electron probe analyses of coexisting minerals in low grade metamorphic rocks. See The upper stability limits of magnesian chlorites; Annual report Director of the Geophysical Laboratory, 1963-64, vol. 63, p. 136.

213. Ferguson, Laing, Mount Allison Univ.:
Studies of a Lower Carboniferous marine transgression, 1957-67.
A geochemical study of shale is at present being undertaken with a view of correlating geochemical palaeosalinity data with already published palaeontological, palaeosalinity data. See The palaeoecology of Lingula squamiformis Phillips (PS) during a Scottish Mississippian Marine transgression; J. of Paleontology, vol. 37, May 1963, pp. 669-681.

214. Folinsbee, R.E., Univ. of Alberta:
The Revelstoke meteorite, 1965-66.
Two research papers on this interesting carbonaceous chrondrite are being prepared, one in association with Drs. Douglas and Maxwell of the Geological Survey of Canada and the

other with Drs. Galt and Argyle of the Dominion Astrophysical Laboratory, Penticton, and L.A. Bayrock of the Research Council of Alberta. See Revelstoke Meteorite, Meteoritical Bulletin No. 34, November 1965.

215. Fortescue, J.A.C., Geol. Surv. Can.:
Biogeochemical investigations, 1963-68.
To develop and evaluate techniques for exploring for minerals by sampling trees and other plants. See Geol. Surv. Can., Paper 66-1, 1966, p. 187 and Paper 65-2, 1965, pp. 111-112.

216. Gill, J.E., Kranck, E.H., Saull, V.A., and graduate students, McGill Univ.:
Silicate and sulphide phase relations, 1955-.
See Recent research on sulphides at McGill Univ., Bull. Can. Inst. Mining Met., 1965, pp. 994-997.

217. Gittins, J., Univ. of Toronto:
Phase equilibrium studies in systems that bear on problems of carbonatite petrogenesis, 1962-.
An investigation of calcium and alkali carbonate systems up to 10 kilobars with and without water.
See The system CaF_2-$Ca(OH)_2$ - $CaCO_3$ at 1,000 bars; American Journal of Science, 1964, vol. 262, pp. 66-75.

218. Goodman, R.H., Mines Branch, Dept. of Mines and Technical Surveys:
The Mössbauer effect in (Zn, Fe)S solid solutions, 1964-66.
The objectives are to study the electric and magnetic environment of iron nuclei in (Sn, Fe)S solid solutions as a function of temperature, concentration of impurities and the effects of surface ions, using the Mössbauer effect in Fe-57.
See The Use of an On-Line Computer for Mössbauer Effect Experiments, Rev. Sci. Inst. (in press).

219. Govett, G.J., Research Council of Alberta:
Sedimentary geochemistry - origin of Clear Hills iron deposits, 1965-66.

220. Hornbrook, E.W., Geol. Surv. Can.:
Biogeochemical studies near Timmins, Ontario.
See Geol. Surv. Can., Paper 66-1, 1966, p. 155.

221. Jongejan, A., Mines Branch, Dept. of Mines and Technical Surveys:
High temperature phase equilibrium studies in the system CaO-Nb_2O_5-TiO_2, 1962-66.

Study of the range of temperature and compositional stability leading to the formation of niobium-bearing perovskites, titanium-bearing pyrochlores, etc. The binary system CaO-Nb_2O_5 and Nb_2O_5-TiO_2 are known from outside work. There is the indication of the formation of at least one ternary compound in the CaO-Nb_2O_5-TiO_2 system.

222. Kahn, M., Polar Continental Shelf Project, supporting programs of the National Research Council and the Univ. of the Sorbonne:
Study of fluctuating non-traditional variables or space-variables affecting chemical reactions, as evidenced by the speed of standard chemical reactions on and within ice-caps at different geomagnetic latitudes, 1965-.

A series of many thousand standard chemical reactions were carried out on Penny Ice-Cap (May), Meighen Ice-Cap (June and July) and White Glacier (August) at synoptic hours to determine the effect of geomagnetic and geographic latitude on chemical reactions. The same reactions were carried out within the glacier under different thicknesses of ice, to discover the screening effect of ice on these still unknown factors that control the rate and completeness of reactions. The relation between the fluctuations on rate of chemical reactions, and the simultaneous fluctuations of electrical resistivity (see work of Andrieux reported separately) are being studied. The large, physically and chemically nearly homogeneous, crystalline mass of cold polar ice-cap is proving to be an admirable environment in which to study subtle aspects of physical and chemical behaviour that are completely masked in the laboratory or in other parts of the earth by extraneous local influences.

223. King, L.H., Geol. Surv. Can., and Bedford Institute of Oceanography:
Organic geochemistry of marine sediments - Scotian Shelf, 1963-.

Studies of the constitution of the organic component of marine sediments and the relation of the chemical nature of the organic matter to the depositional environment. See Geol. Surv. Can., Paper 65-1, 1965, pp. 147-148.

224. Kish, L., Quebec Dept. of Natural Resources:
Lake Otelnuk area, Ungava, 1965-.

Detailed study of geochemically anomalous areas in the Labrador Trough detected in 1964 in the course of routine sampling of stream sediments.

225. Langford, F.F., Univ. of Saskatchewan:
Evaluation of geochemical data, 1964-66.
See A method to evaluate the probability of success of a geochemical survey, Economic Geology, vol. 60, pp. 360-372, 1965.

226. Lapointe, C., Maksimov, D., Mines Branch, Dept. of Mines and Technical Surveys:
Investigation of the adsorption and desorption of oleic acid in hematite as a function of pH and acid concentrations, 1964-66.

227. Lee, P.J., McMaster Univ.:
Application of various multivariate statistical methods to geology, 1965-68; Ph.D. thesis.
See Statistical studies on scapolites; Can. J. Earth Sciences, vol. 1, 1964, pp. 23-34.

228. Lerbekmo, J.F., Campbell, F.A., Univ. of Alberta:
Chemical composition of shales and carbonate rocks in Alberta.
See Chemical composition of carbonate rocks from Thornton Creek, Alberta; Bull. Can. Petroleum Geol., No. 13, vol. 2, 1965, pp. 229-237.

229. Lin, Szu-Bin, McMaster Univ.:
Phase equilibria of system $CaMgSi_2O_6$ - CaF_2, 1965-67; M.Sc. thesis.

230. Macdonald, J.A., McGill Univ.:
A geochemical study of the surficial behaviour of uranium in northwest Saskatchewan, 1964-67; Ph.D. thesis.

231. MacLean, W.H., McGill Univ.:
Melting relations in parts of the Fe-O-S-Si system, 1965-66; Ph.D. thesis.
An investigation of the liquidus and solidus phase relations of $Fe_{1-x}S$ with $Fe_{1-x}O$ and Fe_3O_4, and the influence of the addition of SiO_2 to this system.

232. Mallick, K.A., McGill Univ.
Weathering of rocks and mobility of elements in soil profiles of Mont. St. Hilaire, Quebec, 1964-67; Ph.D. thesis.

233. Maxwell, J.A., Geol. Surv. Can.:
Investigation of field sampling errors, 1956-67.
To determine magnitude of error on composition of replicate samples taken in the field for subsequent compositional analysis.

234. McNutt, R.H., McMaster Univ.:
Rb-Sr isotopic study on anorthosites, 1966-.

235. Montgomery, D.S., Millson, M., Mines Branch, Dept. of Mines and Technical Surveys:
Infrared absorption spectra of bituminous substances, 1951-.
A continuing program to improve the methods of classifying bituminous substances. See A study of sedimented organic matter and its natural derivatives, Mines Branch Report R114.

236. Moore, J.C.G., Mount Allison Univ.:
Rock geochemistry as an aid in the search for orebodies in New Brunswick, 1963-67.
Study of the distribution of trace elements around base metal sulphide deposits in northern New Brunswick; as yet no useful pattern has been detected.

237. Nickel, E.H., Forman, S.A., Rowland, J.F., Mines Branch, Dept. of Mines and Technical Surveys:
The crystal structure of sulphides, 1965-.
The crystal structures of sulphide minerals, particularly those containing copper, iron and zinc, are being studied with a view to providing information on bonding. Refinement of the crystal structures of some sulphides will be undertaken in the near future.

238. Paquet, R., Quebec Dept. of Natural Resources:
Study of mineral waters in the province of Quebec, 1965-.
Study of the physical and chemical properties of the mineral waters in Quebec was started in 1965; 4 springs were examined. See Preliminary study of the mineral waters of Quebec, Que. Dept. of Nat. Res., S-85, 1965.

239. Paul, G., Yong, R., Elson, J.A., McGill Univ.:
The effect of chemical additives on the permeability of clay soils, 1963-66; M.Sc. thesis (Paul).
Water containing certain cations in various concentrations is passed through a special permeameter that allows a wide range of pressure gradients, controlled spacing and orientation of clay minerals and measurement of electric potentials. Factors influencing threshold gradients and flow rates are being studied.

240. Payne, J.G., Shaw, D.M., McMaster Univ.:
Geochemical and petrological studies of the Blue Mountain nepheline gneisses, Methuen township, Ontario 1962-66, Ph.D. thesis (Payne).

Field studies and geochemical and petrological investigations are being used to interpret the history and character of the nepheline syenite and associated syenites.

241. Perrault, G., Ecole Polytechnique:
Analytical methods for trade element studies of rocks, 1965-66.
Four analytical methods of determination of trace element constitution of rocks are being tested in studying lavas of the Doublet Group in Labrador; atomic absorption spectrophotometry, X-ray fluorescence, colorimetric and emission spectrography.

242. Philpotts, A.R., McGill Univ.:
Investigation of phase equilibria in systems related to rocks of the anorthosite-mangerite suite, 1965-.
The system magnetite-apatite is being investigated to obtain evidence bearing on the origin of magnetite-apatite deposits associated with anorthosites. This work has shown that there is a eutectic at 66 per cent magnetite and 33 per cent apatite which corresponds very closely to natural rocks consisting of these two minerals.

243. Phipps, D., McGill Univ.:
Geochemistry of clays, 1964-66; Ph.D. thesis.

244. Piotrowski, J.M., Edgar, A.D., Univ. of Western Ontario:
Melting relations in alkaline rocks, 1964-68; Ph.D. thesis (Piotrowski).
See Investigation of the petrology and melting relations of the Blue Mountain, Ontario, litchfieldites, Can. Min. 8.
Phase relations in the system spodumene-eucryptite-quartz-albite-H_2O at 2 K bars, 1965-67; Ph.D. thesis (Piotrowski).

245. Prince, A.T., Rowland, J.F., Wilkins, A.L., Mines Branch, Dept. of Mines and Technical Surveys:
High-temperature phase equilibrium studies in the system CaO-Nb_2O_5-SiO, 1956-66.
The quench technique for silicate equilibrium studies, together with hot-stage microscopy techniques for liquidus temperature determinations have been used to find the fields of primary crystallization in the ternary system. X-ray diffraction studies on natural and synthetic calcium niobates have been conducted. See Two papers on the Nb_2O_5-SiO_2 and CaO-Nb_2O_5 systems in J. of the Amer. Ceram. Soc., vol. 45, pp. 221-222 and 329-334 (1962). Publication on ternary system will follow shortly.

246. Roeder, P.L., Queen's Univ.:
The effect of oxygen partial pressure on the crystallization of basaltic magma, 1965-67.
See Fractional crystallization trends in the system Mg_2SiO_2-$CaAl_2Si_2O_8$-FeO-Fe_2O_3-SiO_2 over the range of oxygen partial pressure of 10^{-11} to 10^{-07} atm., Int. Assoc. Vulcanologists meeting, New Zealand, 1965.

247. Roeder, P.L., Campbell, F., Queen's Univ.:
Stability of Ni-Mg olivine as a function of oxygen partial pressure and temperature, 1964-66, M.Sc. thesis (Campbell).

248. Roeder, P.L., Hill, R., Queen's Univ.:
Olivine-pyroxene equilibria in the Mg-Fe-Si-O system, 1965-66; M.Sc. thesis (Hill).

249. Sakrison, H.C., McGill Univ.:
Variations in rock compositions around the Lake Dufault orebody, Noranda district, Quebec, 1962-66; Ph.D. thesis.

250. Sangster, D.F., Geol. Surv. Can.:
A geochemical study of magnetite, 1965-68.
Geochemistry of lead-zinc deposits in carbonate rocks, 1965-.
See Geol. Surv. Can., Paper 66-1, 1966, p. 207.

251. Saull, V.A., McGill Univ.:
The application of calorimetric methods in geological studies, 1954-.
The use of solution calorimetry to determine energy changes and rates of important reactions of minerals. See A thermochemical study of calcite and aragonite, M.Sc. thesis by S.D. Dave, McGill Univ., 1965.

252. Saull, V.A., Clark, T.H., McGill Univ.:
Stable isotope ratios in Ordovician rocks of Quebec, 1963-66.
Use of O^{16}/O^{18} ratios to infer paleotemperature changes in Ordovician time. See Paleotemperature studies on Ordovician rocks, M.Sc. thesis by F.C. Tan, McGill Univ., 1965.

253. Schwarcz, H.P., Bower, F.E., McMaster Univ.:
Uranium isotope equilibrium in tektites, 1965-66; M.Sc. thesis (Bower).
Australasian tektites are sufficiently young that if their parent material had contained uranium with a non-equilibrium isotopic composition ($A(U^{238}) \neq A(U^{234})$) this feature should be still recognizable today. Such a feature would provide an

important clue to the origin of tektites. Oxygen isotope studies of sulphates, 1965-68; M. Sc. thesis (Bower).

A study will be made of the O^{18}/O^{16} ratio in ancient, recent and synthetic sulphates to attempt to determine any secular variation in the O^{18}/O^{16} ratio in sea water and whether sulphate minerals are in isotopic equilibrium with the solutions from which they precipitate.

254. Schwarcz, H.P., Prasad, N., Gwinn, V.E., McMaster Univ.:
Carbon and oxygen isotope variations during formation of dolomite, 1963-66; M.Sc. thesis (Prasad).

Comparison is being made of carbon and oxygen isotope variations in diagenetic versus syngenetic dolomites, to see if any record of primary dolomitization process can be recognized and if an isotopic criterion for recognition of syngenetic dolomite can be evolved. Samples from the Silurian of Ontario and Pennsylvania are being compared.

255. Schwarcz, H.P., Sheppard, S.M.F., McMaster Univ.:
Carbon and oxygen isotope fractionation in metamorphosed dolomite-calcite assemblages, 1962-66; Ph.D. thesis (Sheppard).

Measurements are being made on both natural and hydrothermally synthesized pairs of dolomite and calcite to determine the effect of temperature on C^{13}/C^{12} and O^{18}/O^{16} fractionations and the extent of isotopic homogenization during metamorphism.

256. Scott, J.D., Univ. of Toronto:
Studies in the ternary system Ag_2S-PhS-Bi_2S_3, 1965-66; M.Sc. thesis.

Reconnaissance study of the subsolidus phases in the system will be done by equilibrating in salt melts in sealed glass envelopes.

257. Scott, Susan A., McGill Univ.:
Sulphur isotope and trace element study of ore from the Temagami mine, Temagami, Ontario, 1965-67; M.Sc. thesis.

An attempt to determine the source of the ore, and possible mode of emplacement.

258. Sears, P., McMaster Univ.:
Phase equilibria of system $NaAlSiO_4$-$LiAlSiO_4$, 1965-67; M.Sc. thesis.

259. Sen Gupta, J.G., Geol. Surv. Can.:
Platinum metals in meteorites, 1964-65.

Chemical study of the abundances of platinum metals in meteorites. See Geol. Surv. Can., Paper 65-2, 1965, p. 42.

260. Shaw, D.M., McMaster Univ.:
Composition of the Apsley paragneiss, Chandos township, Ontario, 1958-.
The Apsley paragneiss has chemical features resembling both greywackes and intermediate volcanic rocks. The research begun by P.S. Simony to evaluate the most likely origin is being continued, and the chemical changes of the formation in the aureole of the Loon Lake pluton are being studied.
Composition of the Canadian Precambrian Shield, 1962-.
Estimates are being made of elemental abundances in different segments of the Shield. Extensive use is being made of rocks collected and made available by the Dominion Observatory. Trace element analyses will be used for regional and secular variations; some major element data will be obtained also.

261. Shewman, R.B., McGill Univ.:
Phase relations in the pentlandite region of the Fe-Ni-S system, 1965-66; M.Sc. thesis.
This research is conducted to explore, (1) the limits of pentlandite solid solution at 400°C and 500°C, (2) the limits of monosulphide solid solution at 400°C and 500°C, and (3) the upper stability limit of the pyrite-pentlandite assemblage.

262. Sims, W.A., Mount Allison Univ.:
Study of heavy minerals of recent stream sediments, Eastern Gaspé, Quebec, 1965-67.

263. Sirois, L.L., Dept. of Mines and Technical Surveys:
Determination of electrical characteristics of metallic oxides and silicate minerals by electrophoresis and streaming potential, 1966-67.

264. Smith, F.G., Univ. of Toronto:
Storage and retrieval of liquidus data on systems of binary salts, 1963-73.
Storage will be on tape, using the KWIC indexing method and an IBM 7094 computer for execution.
Computation and plotting of crystal-liquid equilibria in multi-component systems, 1963-73.
Computer-controlled plotting of isotherms on liquidus boundaries is now programmed for systems of binary salts of any complexity, and for systems of silicates of any complexity. Papers giving details of the method and preliminary test drawings are being prepared for publication. See Computation of liquidus relationships in multicomponent binary salt systems. Can. Mineralogist, 8, 1965, pp. 141-148.

265. Smith, M.E., Univ. of Ottawa:
Distribution of elements between coexisting feldspars of high grade metamorphic rocks, 1962-67.

266. Smitheringale, W.G., de Zoysa, T.H., Memorial Univ. of Newfoundland:
The distribution of trace elements in the mineralized volcanic rocks of the Notre Dame Bay area of northeastern Newfoundland, 1965-68; M.Sc. thesis (de Zoysa).
The trace element distribution in and around four or five mineral showings representative of those in the Notre Dame Bay area that are similar to the Whaleback deposit will be studied. Thin section and polished section studies, which will provide a background for the analytical work are currently being undertaken by Mr. de Zoysa.

267. Tupper, G.M. (Mrs.), Tupper, W.M., Carleton Univ.:
Morbidity and mortality distribution patterns in Canada and their relation to trace elements in soils and waters, 1964-66.
The purpose is to relate morbidity and mortality rates for certain diseases to areas with excesses or deficiencies of various trace metals in the soils and water supplies.

268. Tupper, W.M., Carleton Univ.:
Geology and geochemistry of copper deposits, Murdockville, Quebec, 1966-68.
Includes examination and study of the geology, mineralogy, and wall-rock alteration, the chemistry of the wall-rock alteration, and the isotopic composition of the sulphides. Geology and geochemistry of massive sulphide deposits, Bathurst, New Brunswick, 1960-66.
See Geology in the vicinity of the Brunswick No. 6 - No. 12 deposits, Bathurst, N.B., Geol. Surv. Can., Paper (in press).

269. Turnock, A.C., Univ. of Manitoba:
Melting relations of pyroxene systems, 1965-67.

270. Turnock, A.C., Bright, N.F.H., Mines Branch, Dept. of Mines and Technical Surveys:
Phase equilibrium studies in the system Mn-Ta-O, 1964-65.
A study of the range of temperature and compositional stability of tantalate and related minerals and of their synthetic analogues. See Mn-Ta oxides: Phase relationships at 1,200°C, J. Amer. Ceram. Soc. (in press).
Phase equilibrium studies in the system Fe-Ta-O, 1962-65.
A study of the range of temperature and compositional stability of tantalate minerals of the types tantalite, wodginite, tapiolite, xiolite, etc., and their synthetic analogues. See

Non-stoichiometric tantalian magnetites, J. Amer. Ceram. Soc. (in press).

Phase equilibrium studies in the system Fe-Nb-O, 1962-65.

A study of the range of temperature and compositional stability of niobate minerals such as columbite, pyrochlore and related niobium- and tantalian-bearing minerals and their synthetic analogues. See Phase Relationships in the Fe-Nb-O System at 1180°C, J. Amer. Ceram. Soc. (in press).

271. Van Loon, J.C., Univ. of Toronto:

A study of the methods of determination of the major elements in silicates especially iron II and aluminum, 1964-.

See Titrimetric determination of iron II oxide contents of silicates using potassium iodate. Talanta, vol. 12, 599, 1965.

Application of atomic absorption to major element determination in silicate rocks, 1965-.

272. Wanless, R.K., Loveridge, W.D., Boyle, R.W., Stevens, R.D., Peters, C., Leech, G.B., Roscoe, S.M., Geol. Surv. Can.:

Isotopic study of Canadian ore leads, 1965-.

The purpose is to determine the lead (and possibly sulphur) isotope distribution in lead ores; to investigate possible isotope variations with geological environment; to determine the direction and magnitude of isotopic fractionation of lead isotopes as a result of chemical and physical processes in nature; and to establish the age employing the "common lead" method of dating.

273. Wardlaw, N.C., Univ. of Saskatchewan:

Rubidium and bromine in the potash ore beds, of the Middle Devonian Prairie Evaporite Formation, Saskatchewan, 1965-66.

See Bromide in some Middle Devonian salt rocks of Alberta and Saskatchewan: Third International Williston Basin Symposium Volume, Billings Geol. Soc., Montana, 1964, pp. 270-273.

274. Webber, G.R., McGill Univ.:

Application of instrumental methods of analysis to geological materials, 1959-.

See Comparison of chemical composition of soils and bedrock of Mount St. Hilaire, Quebec. Can. J. Earth Sciences, vol. 2, No. 2, pp. 44-58, 1965.

275. Wolfe, W.J., New Brunswick Mines Branch:

Regional geochemistry of stream sediments and waters in southwestern New Brunswick, 1965-69.

Samples of stream sediments and waters will be collected and analyzed for trace elements and heavy minerals. Systematic sampling of streams and springs in southwestern New Brunswick will be carried out on a regional scale initially, with detailed examination of specific areas or problems to follow.

276. Wynne-Edwards, H.R., Ermanovics, I.F., Queen's Univ.:
The Perth road syenite, 1964-67; Ph.D. thesis (Ermanovics).
A geochemical investigation of the origin of the syenite in cooperation with Dr. K.L. Currie, Geol. Surv. Can.

277. Wynne-Edwards, H.R., Jen, Lo-sun, Queen's Univ.:
Metamorphic geochemistry, 1965-66, M.Sc. thesis (Jen).

278. Wynne-Edwards, H.R., Sauerbrei, J.A., Queen's Univ.:
Origin and relationship of granitic rocks in the Frontenac axis, 1963-66; M.Sc. thesis (Sauerbrei).
A geochemical study of granites and monzonites.

279. Wynne-Edwards, H.R., Smith, M.E., Queen's Univ.:
Distribution of elements in metamorphic feldspars, 1963-65; Ph.D. thesis (Smith).
A geochemical study involving 20 plagioclase-potash feldspar pairs from granulite and mid-almandine amphibolite facies.

280. York, D., Wells, J., Univ. of Toronto:
Isotopic studies of lead extracted from sulphides in the Superior province, 1962-66; M.A. thesis (Wells).

GEOCHRONOLOGY

281. Baadsgaard, H., Univ. of Alberta, Godfrey, J., Research Council of Alberta:
Geochronology of Precambrian Shield, northeastern Alberta, 1959-.
See Structural pattern of the Precambrian Shield in northeastern Alberta and mica age-dates from the Andrew Lake district; Roy. Soc. Can., Spec. Publ. IV, pp. 30-39, 1962.

282. Cormier, R.F., Saint Francis Xavier Univ.:
Rubidium-strontium dating of rocks and minerals, 1960-.
At present whole rock Rb/Sr ages are being measured for several suites of volcanic rocks collected from the Precambrian Coldbrook Group which underlies much of the Caledonian massif of southern New Brunswick. Concurrently, a program of

whole-rock age measurement is being carried out on the granites of Cape Breton Island. See Absolute age of the Fisset Brook Formation and the Devonian-Mississippian boundary, Cape Breton Island, Nova Scotia; Can. J. Earth Sciences, 1, pp. 159-166, (1964).

283. Crocket, J.H., McNutt, R.H., McMaster Univ.:
Strontium isotopic studies, 1965-.
A solid source mass spectrometer for Rb-Sr geochronology studies is under construction. It will be used for studies of ultrabasic rocks, anorthosites and Grenville geology. A study on the significance of the isotopic composition of Sr in the Mt. Albert dunite (Gaspé, P.Q.) in cooperation with the Isotope Geology Branch of the Geological Survey is currently in progress.

284. Doig, R., McGill Univ.:
The use of isotopes in the solution of geological problems, 1964-.
The laboratory equipment includes a gas source mass spectrometer and a solid source instrument. These are used mainly for Rb/Sr and K/Ar dating of rocks in conjunction with a number of field projects, and for basic research in mass spectrometry and geochronology.

285. Dyck, Willy, Geol. Surv. Can.:
Radiocarbon variation in plants, 1962-65.
To determine how C^{14} content of plants has varied, and is varying with time. See Geol. Surv. Can., Paper 64-2, 1964, pp. 60-61.

286. Fitzpatrick, M., Queen's Univ.:
Argon age determinations.
Upon completion of the construction of the argon-line considerable time will be devoted to calibrating and evaluating the equipment before specific projects can be attempted.

287. Folinsbee, R.E., Baadsgaard, H., Univ. of Alberta:
Geochronology of the Precambrian Shield - Slave Province, 1963-.

288. Folinsbee, R.E., Baadsgaard, H., Nascimbene, J., Shafiqullah, M., Univ. of Alberta:
Geochronology of the Bearpaw Formation, 1957-.
See Late Cretaceous radiometric dates from the Cypress Hills of Western Canada: Alberta Soc. Pet. Geol., 15th Annual Field Conference Guidebook, Part 1, Cypress Hills Plateau, pp. 162-174.

289. Folinsbee, R.E., Cumming, G.L., Manasewich, E., Krouse, R.H., Sasaki, A., Univ. of Alberta:
Isotopic evidence on the origin of lead-zinc deposits in the Western Canada basin, 1965-66.
Galenas from the Pine Point orebody yield ordinary leads that came from deep-seated sources 100-300 million years ago. Intrusive rocks in Liard basin and Cordillera also yield radiometric dates of 100-300 million years and might be a source of heat and solutions required by hydrothermal theory. However, sulphur in sulphides is so enriched in the heavy isotope that derivation directly from magmatic sources is unlikely; furthermore, leads around basinal intrusives are anomalous. Perhaps lead, zinc, and sulphur trapped in connate waters heated by igneous activity 100-300 million years ago moved upward and outwards into basin margins to form the ore deposit.

290. Ford, D.C., Schwarcz, H.P., Goodchild, M., McMaster Univ.:
Dating of cave materials by use of radioactive disequilibrium, 1965-68; M.Sc. thesis (Goodchild).
Thorium and uranium isotopic disequilibrium will be studied in both cave calcite and aragonite and in modern cave waters to see if such disequilibria can be used to date cave deposits in the 30,000 – 500,000 year age range.

291. Gertner, B. (Mrs.), Farquhar, R.M., Univ. of Toronto:
Age data compilation, 1959-.
Age data is being compiled from the literature and stored on IBM punched cards. All ages are being recalculated using a common set of decay constants.

292. Green, David, Univ. of Alberta:
Precambrian geochronology of Yellowknife area, Northwest Territories, 1965-68; Ph.D. thesis.

293. Harper, C.T., (Post-doctoral Fellow), Univ. of Toronto:
K-Ar studies of the Grenville Province, 1965-.

294. Hayatsu, A., Farquhar, R.M., Univ. of Toronto:
Strontium isotope measurement using simultaneous collection methods of mass spectrometry, 1961-.
The high accuracy obtainable makes this technique particularly suitable for resolving the very small differences in Sr^{87}/Sr^{86} ratios produced in rocks by orogenic mixing processes. The method is also useful for measurement of the gradual change with time in this ratio in rocks having very low Rb/Sr ratios. See Significance of strontium isotope ratios in theories of carbonatite genesis, vol. 207, pp. 625-626, 1965.

295. Johnson, A. A., Univ. of Alberta:
Petrology and geochronology of gabbro-syenite intrusives, east arm of Great Slave Lake, Northwest Territories, 1965-66; M. Sc. thesis.

296. Knight, C. J., Allman, N. J. (Miss), Moorhouse, W. W., Univ. of Toronto:
Age of basal Huronian sediments and uranium mineralization at Blind River - Elliot Lake - Sudbury - Timiskaming area, 1965-68; Ph. D. thesis (Knight).
Knight is embarked on a program of isotopic dating of volcanics in the Mississagi Formation, North Shore area, and possible correlatives in the other areas mentioned. Miss Allman and Moorhouse are investigating the feasibility of a parallel study of the heavy minerals and other petrographic features.

297. Koeppel, V., N. R. C. Post-doctorate Fellow, Wanless, R. K., Geol. Surv. Can.:
Relative ages of various generations of pitchblende, Beaverlodge area, Saskatchewan, 1964-66.

298. Lowdon, James A., Geol. Surv. Can.:
Age of carbonaceous materials using radiocarbon dating techniques, 1959-.

299. Nga, Vo Ngoe, Univ. of Alberta:
The Rb-Sr dating of bentonites, 1965-66.

300. Norris, D. K., Wanless, R. W., Stevens, R. D., Geol. Surv. Can.:
Age and source of igneous pebbles in the Lower Cretaceous Blairmore Group, 1964-65.
To determine the isotopic age of selected igneous pebbles in conglomerates in the Blairmore Group with a view to elucidating the physical history of the southern Canadian Cordillera during Albian time.

301. Rimsaite, J. H. Y. (Miss), Wanless, R. K., Geol. Surv. Can.:
Investigation of relative argon retentivity in suites of primary potassium bearing minerals and associated alteration products, 1964-65.

302. Wanless, R. K., Rimsaite, J. H. Y. (Miss), Paris, J. C., Stevens, R. D., Lachance, G. R., Hunt, C., Geol. Surv. Can.:
Age determinations of rocks and minerals.
See Geol. Surv. Can., Paper 65-17, 1965.

303. Wanless, R.K., Stevens, R.D., Geol. Surv. Can.:
Isotopic study of mica bearing rocks yielding anomalous K/Ar "ages", 1965-66.

304. York, D., Farrar, E., Univ. of Toronto:
Investigation of argon retentivity of basalts, 1963-; Ph.D. thesis (Farrar).

305. York, D., Gittins, J., MacIntyre, R.M., Univ. of Toronto:
Investigation of argon retentivity of feldspathoids, 1962-; Ph.D. thesis (MacIntyre).
See The argon retentivity of nephelines, Nature (in press).

306. York, D., Purdy, J., Univ. of Toronto:
Rb-Sr whole-rock dating of Superior Province of Canadian Shield, 1963-; Ph.D. thesis (Purdy).
See A geochronometric study of the Superior Province near Red Lake, northwestern Ontario, Can. J. Earth Sciences (in press).

307. York, D., Watkins, N., Baksi, A., Univ. of Toronto:
Establishment of a time scale for reversal of the earth's magnetic field by the K-Ar dating of basalts, 1965-; M.A. thesis (Baksi).

308. York, D., Wells, J., Univ. of Toronto:
Isotopic studies of lead extracted from sulphides in the Superior Province, 1962-66; M.A. thesis (Wells).

GEOPHYSICS

Electrical

309. Andrieux, P., Polar Continental Shelf Project, Dept. of Mines and Technical Surveys, supporting programmes of University of the Sorbonne (Paris, France), and the National Research Council, with the Observatories Branch:
Measurements of the electrical resistivity of polar ice masses, 1965.
Careful measurement of the electrical resistivity of ice in two and three dimensions, and its variability with time, temperature, and physical or crystallographic character of the material, have been made as follows: May - Penny Icecap, Baffin Island (supported by Gravity Division, Dominion Observatories); June, July - Meighen Icecap, Meighen Island (supported by Polar Continental Shelf Project); August - White Glacier, Axel Heiberg Island (supported by McGill University and Polar

Continental Shelf Project). The work has provided important fundamental information on the electrical properties of large crystalline masses.

310. Collett, L.S., Geol. Surv. Can.:
Electrical rock properties, 1963-.
DC resistivity and induced polarization on rocks, clays, sulphides in rocks, serpentinized diorites, sericites, etc. and correlation between electrical conductivity and magnetic susceptibility, e.g. Muskox specimens.

311. Collett, L.S., and others, Geol. Surv. Can.:
Pulse scale model studies, 1963-.

312. Collett, L.S., Ahrens, R.A., and others, Geol. Surv. Can.:
Radiation resistance equipment, 1961-.
To develop field equipment to measure the radiation resistance of a loop.

313. Collett, L.S., Ahrens, R.A., Gauvreau, C., Geol. Surv. Can.:
Very low frequency induced polarization equipment, 1962-.
To develop very low frequency transmitter and receiver equipment for field use to measure change of resistivity with frequency and phase shift for geophysical investigation of Pleistocene deposits. See Geol. Surv. Can., Paper 65-1, 1965, pp. 96-97.

314. Collett, L.S., Gauvreau, C., Geol. Surv. Can.:
Measurement of the resistivity of surficial deposits by airborne pulsed electromagnetic equipment, 1965-68.

315. Garland, G.D., Hermance, J., Univ. of Toronto:
Investigation of electrical conductivity in tectonically active areas, 1963-.
To determine if anomalies in electrical conductivity within the earth, as revealed by measurements of variations in the earth's magnetic field, are related to temperature differences (as has been suggested). Measurements have been made at stations across Iceland and the Azores.

316. Keys, J.D., Baleshta, T.M., Mines Branch, Dept. of Mines and Technical Surveys:
Electrical properties of iron-containing ZnS, 1965-66.
The objective is to determine the mechanism of electrical conductivity in semi-insulating ZnS containing iron.

317. Lennox, D.H., Carlson, V.A., Bukhari, A., Research Council of Alberta:
Geophysics in groundwater exploration, 1957-66.
An investigation of the application of a numerical method of resistivity analysis to shallow exploration. A paper and a bulletin are in preparation describing the method and presenting tables of numerical factors necessary for its application.

318. Peach, P.A., Univ. of Toronto:
Anomalous electrical conductivity of serpentine bearing rocks.
Determination of the causes of electrical conductivity in serpentine.

319. Wyder, J.E., Geol. Surv. Can.:
Resistivity groundwater surveys, southern Saskatchewan and Manitoba, 1961-.
To develop and test resistivity equipment in cooperation with the Saskatchewan Research Council and undertake experimental resistivity surveys for groundwater. See Geol. Surv. Can., Paper 65-1, 1965, pp. 92-93 and Paper 66-1, 1966, p. 132.

Gravity

320. Brisbin, W.C., Univ. of Manitoba:
Gravity studies in the Rice Lake area, Manitoba, 1965-67.
The area lies along the north boundary of the English River gneissic belt; it presents an opportunity to study the changes in composition and structure of the upper crust which take place across the boundary. Other objectives are to determine the form and size of a greenstone belt just north of the gneissic zone, and of granite diapirs which have intruded the greenstones. The gravity investigations form part of a detailed geological and geophysical study (undertaken by the Department of Geology, Univ. of Manitoba, in this area) similar to the study of the Kenoran greenstone belt immediately south of the gneissic zone.

321. Carlson, V.A., Research Council of Alberta:
Gravity exploration for a buried channel near High Prairie, Alberta, 1962-66.
A large, negative gravity anomaly has been found near High Prairie. It was thought to be connected with a deeply buried preglacial channel. Test drilling has been carried out to determine the accuracy of the gravity results and to determine the density of the bedrock and overburden materials encountered.

322. Colin, W.T., Saskatchewan Dept. of Mineral Resources:
Value of gravity data in solving problems related to the Middle Devonian salt formations, 1965-66.

323. Fitzpatrick, M.M., Berkhout, A., Queen's Univ.:
Gravity interpretation of Somerset, Prince of Wales and Baffin Islands, 1965-67; Ph.D. thesis (Berkhout).

324. Goodacre, A.K., Weber, J.R., Dominion Observatory:
Reconnaissance gravity survey of Hudson Bay, 1965.
Underwater gravimeter observations were supplemented in some areas by measurements with a surface sea gravimeter. The results and preliminary analysis of this work are being prepared for publication in the Gravity Map Series, Dominion Observatory.

325. Grant, F., Hastie, L., Univ. of Toronto:
Investigation of central Quebec gravity anomaly, 1964-.
A study of the causes of the very large negative gravity anomaly in central Quebec. One detailed traverse has been made (1964) and another is scheduled in 1966. Some seismic work may follow.

326. Innes, M.J.S., Argun-Weston, A., Dominion Observatory:
Isostasy and vertical movements of the crust.
A free air anomaly for central Canada has been compiled between latitudes 48°N. and 60°N. and longitudes 72°W. and 104°W. Statistical analyses of the gravity and elevation data for approximately 10,000 stations evenly distributed around Hudson and James Bays have been carried out to examine trends that may be related to crustal depression from glacial loading.

327. Innes, M.J.S., Dence, M.R., Hornal, R.W., Dominion Observatory:
Fossil crater investigations, Pilot and Nicholson Lakes, Northwest Territories, 1965.
At Nicholson Lake a gravity survey outlined a circular negative Bouguer anomaly similar to those recorded at other Canadian craters of probable meteoric origin.

328. McConnell, R.K., Hornal, R.W., Dominion Observatory:
Regional gravity studies, northern Manitoba and Ontario, 1965.
A large scale survey established a total of 6,100 gravity stations in 1965. Approximately 4,000 of these stations were observed in northern Manitoba between latitudes 54°N. and 60°N. and longitudes 92°W. and 104°W. and in northern Ontario in the Ignace-Fort William, Chapleau Sudbury and Michipicoten-Sault-Ste-Marie areas. The remainder were observed in a study of the boundary of the Churchill-Superior geological provinces, in

connection with investigations of certain acid intrusive bodies north of Lake Superior and post-orogenic carbonate and alkaline intrusions along the Kapuskasing High; and in the Stoney Rapids area of northern Saskatchewan in an investigation of norite intrusions there.

329. Weaver, D.F., Tanner, J.G., Dominion Observatory:
Regional Gravity Studies, Quebec and Newfoundland, 1965.
A comprehensive structural interpretation of the gravity anomalies in Quebec and Labrador is underway by Mr. Tanner and a study of the gravity variations over the Appalachian regions of Canada with particular attention to Newfoundland is nearing completion by Mr. Weaver.

330. Weber, J.R., Sobczak, L.W., Berkhout, A., Dominion Observatory:
Regional gravity studies, Queen Elizabeth Islands, Northwest Territories, 1965.
Regional gravity studies in cooperation with the Polar Continental Shelf Project were continued during 1965. About 750 stations were observed over Somerset and Prince of Wales Islands as part of a geophysical investigation of the Boothia Arch and neighbouring sedimentary basins; and 500 stations were observed on the sea ice of the Arctic Ocean and Ballantyne Strait. A comprehensive and structural interpretation of all gravity data for the Queen Elizabeth Islands is in progress by Mr. Sobczak.

Heat Flow

331. Beck, A.E., Anglin, F.M., Univ. of Western Ontario:
Terrestrial heat flow patterns in Western Canada, 1957-; Ph.D. thesis (Anglin).
Underground temperature data from Western Canada has been collected from several thousand boreholes. After much sifting, only about 70 boreholes yielded data that was reliable. Sea-level isotherms and isogradients correlate very well with the known regional geology. On the basis of a suspected correlation between the thermal data and two basement intrusions, a third basement intrusion has been predicted. On a more local scale some of the thermal data appear to indicate that a group of four reservoirs at present thought to be independent, may in fact be inter-connected. See Regional Heat Flow pattern in Western Canada, Can. Jour. Earth Sciences, vol. 2, p. 176, 1965.

332. Beck, A.E., Judge, A.S., Univ. of Western Ontario:
Terrestrial heat flow patterns in southwestern Ontario, 1957-; Ph.D. thesis (Judge).

With the cooperation of a number of companies, temperature measurements are being made in a number of boreholes in south-western Ontario: concurrently, thermal conductivity measurements are being made on various core samples. With the borehole at the University of Western Ontario being used as a sort of base station, and the core from this hole being used as a key for conductivity comparison, it is hoped that any regional variation in the conductivity of a given stratum can be found and that some structural information can eventually be obtained from the isoflux lines obtained from this work. Already it seems that the Algonquin Arch is reflected in the thermal data. See Terrestrial flow of heat in the Brent Crater, Nature, 201, 383, 1964.

333. Beck, A.E., Mustonen, E., Univ. of Western Ontario:
Detailed thermal measurements in the vicinity of an orebody, 1957-; M.Sc. thesis (Mustonen).

Temperature measurements have been made in 85 holes, between 1,000 and 2,000 feet deep, in a small region a few miles square near Lake Dufault Mines, P.Q. In addition to obtaining the value for the terrestrial heat flow it is hoped that the thermal data will give some structural information about the orebody. Conductivities have been measured on 150 core samples from 12 surface holes. See Lightweight borehole temperature measuring equipment for resistance thermometers, J. Sci. Inst., vol. 40, p. 142, 1963.

334. Beck, A.E., Sass, J.H. (Post-doctoral Fellow), Anglin, F.M., Judge, A.S., Univ. of Western Ontario:
Terrestrial heat flow instrumentation, 1957-; Ph.D. theses (Anglin and Judge).

The normal cylindrical probe technique of determining the thermal conductivity of rocks 'in situ' is being reviewed with the idea of using this technique in cased boreholes. Laboratory tests have been completed and a field probe is under construction. An instrument that will give a direct reading of the thermal conductivity of a disc of rock on a meter has been built and a new set of temperature measuring equipment using the thermistor as part of an RC circuit has been developed with a lightweight, battery-operated counter for measuring frequency. See Terrestrial flow of heat in the Brent Crater, Nature, 201, p. 383, 1964.

335. Beck, A.E., Sass, J.H. (Post-doctoral Fellow), Judge, A.S., Univ. of Western Ontario:
Terrestrial heat flow at the Muskox Intrusion, 1963-65; Ph.D. thesis (Judge).

Temperature measurements were made shortly after the completion of the drilling of one of the boreholes in the Muskox Intrusion. The holes were filled with oil when the drilling was completed and another series of measurements was made in 1965. Conductivities are now being measured and a heat-flow result should be published shortly.

336. Garland, G.D., Wright, J., Weaver, J., Univ. of Toronto:
Methods of measuring heat flow, 1964-.

An investigation of possible improvements in the measurement both of temperature gradients, and of the thermal conductivities of rocks in place. Measurements of heat flow at new localities are being made in the course of this investigation.

337. Jessop, A.M., Lewis, T., Dominion Observatory:
Heat flow, 1962-.

A programme to measure heat flow in Canada using special purpose holes, and commercial holes drilled originally for other purposes. To date some fifteen thermal gradients have been measured, and final heat flow values for three locations are expected soon. See Heat flow in a System of Cylindrical Symmetry, Can. J. Phys. (in press, 1965).

338. Paterson, W.S.B., Polar Continental Shelf Project, Dept. of Mines and Technical Surveys:
Investigation of the thermal structure and dynamic behaviour of a "cold" polar icecap, 1963-.

Study of the detailed vertical temperature profile from top to bottom of an ice mass 122 metres thick, and below the pressure-melting temperature; investigation of the flow of geothermal energy into the base of the mass, and of the strain rate and plasticity of ice at depth. The measurements may help to define the flow law of ice at particular temperatures, pressures and crystal sizes, and may give an indication of the energy balance at the surface of this part of the earth and its relation to geothermal heat flow, present and past climate, and effect of changes of sea-level. See Annual report in Canadian Geophysical Bulletin No. 17, pp. 130-132.

339. Saull, V.A., Clark, T.H., McGill Univ.:
Terrestrial heat flow in the St. Lawrence Lowland of Quebec, 1958-.

Determination of terrestrial heat flow from measurements in boreholes.

340. Smylie, D.E., McFadden, C., Univ. of Western Ontario:
Thermal convection under a central force, 1965-; M.Sc. thesis (McFadden).

A series of model experiments are planned in which an intense electric field gradient is applied to a dielectric fluid to produce a central force. The convection induced by simultaneously applying a temperature gradient is to be studied. The first working model is currently being tested. Ultimately, the objective is to study thermal convection under both rotation and a central force in an effort to understand flows in the core and atmosphere more fully. Studies of convective flows in regions of variable stiffness with distributed heat sources and various rheological behaviours is planned using the computer.

Magnetic

341. Bhattacharyya, B.K., Aubin, M., Geol. Surv. Can.:
Automatic contouring of aeromagnetic data, 1964-65.
Development of a computer method for analysis of gridded values of aeromagnetic data to determine the (x, y) coordinates at which specified magnetic field values occur and then to use the computer results for contouring aeromagnetic data by an x-y plotter.

342. Bhattacharyya, B.K., Morley, L.W., and others, Geol. Surv. Can.:
Aeromagnetic map of Canada, 1964-70.
To prepare regional, residual and filtered magnetic maps, maps showing depths to magnetized bodies in the crust and showing the trends in orientation of bodies of both shallow and deep-seated origin for the whole of Canada.

343. Bhattacharyya, B.K., Morley, L.W., and others, Geol. Surv. Can.:
Computer reduction of aeromagnetic data, 1963-.
The possible use of available methods of interpretation of aeromagnetic data by a computer and to carry out research in more precise and suitable methods of data reduction and interpretation by a high speed digital computer.

344. Bhattacharyya, B.K., Spector, A., Geol. Surv. Can.:
Power and amplitude spectra of the total field of magnetized bodies, 1964-.

345. Bhattacharyya, B.K., Thatcher, W., Geol. Surv. Can.:
Interpretative curves and formulae for prismatic bodies, 1964-.
To study the expression for the total field of a magnetized prismatic body in detail and to obtain interpretative curves and formulae for determining the depth and dimensions of the body.

346. Black, R.F., Freda, G.N., Geol. Surv. Can.:
Palaeomagnetic study of Whitehorse and Laberge map-areas, Yukon, 1964-.
The study of oriented samples for palaeomagnetic pole position determinations and palaeomagnetic correlation of rock units of uncertain age.

347. Carmichael, C.M., Univ. of Western Ontario:
Effect of remanent magnetization on aeromagnetic anomalies, 1958-.
This is a continuing study which forms a part of all aeromagnetic interpretive projects.
Composition of substituted magnetites, 1962-.
The compositions of natural magnetites containing other ions in the lattice are determined by microscopic, X-ray, Curie point and electron probe methods. A magnetite with a unit cell smaller than pure magnetite and a Curie point of 150°C has been found in Triassic lavas of Nova Scotia. It is probable that this is a magnesium substituted magnetite.

348. Carmichael, C.M., Lilley, F.E.M., Univ. of Western Ontario:
Optimum aeromagnetic flight line directions, 1965; Ph.D. thesis (Lilley).
Theoretical aeromagnetic anomalies for an induced dipole were drawn using a computer for latitudes from 0 to 90° at 10° intervals. From these, optimum flight line directions were computed as a function of latitude.
Magneteo-elastic interaction in conductors, 1965-67; Ph.D. thesis (Lilley).
The effect of strong magnetic field gradients on the attenuation of elastic waves in conductors is being studied.

349. Carmichael, C.M., Palmer, H.C., (Post-doctoral Fellow), Univ. of Western Ontario:
Palaeomagnetic studies of the Precambrian of Canada, 1963-.
Rocks units studied include the Nipissing Diabase, the Gowganda Formation, and lavas and sills of Keweenawan age from the Lake Superior region. A number of gabbro-syenite intrusives, from the Grenville and Superior provinces have also been studied.
Palaeomagnetic studies of Palaeozoic and Mesozoic rocks from Eastern Canada, 1964-.
The rock units studied include Late Triassic basalts from Nova Scotia and Mississippian-Devonian andesites from Cape Breton, N.S.

350. Gaucher, E., Larochelle, A., Fahrig, W.F., Geol. Surv. Can.:
Palaeomagnetic study of diabase dykes in the Canadian Shield, 1963-.

An attempt to classify the different dyke swarms throughout the Canadian Shield; and to date some of these swarms. See Geol. Surv. Can., Paper 64-2, 1964, pp. 41-43.

351. Hall, D.H., McGrath, P., Univ. of Manitoba:
Crustal structure from magnetic anomalies, 1964-67; Ph.D. thesis (McGrath).

Regional magnetic anomalies are being analyzed in the area bounded by lats. 49° and 51°, and longs. 93° and 96°20' (bounded by Lake Winnipeg on the west and Red Lake, Ontario on the east), in an attempt to determine some features of crustal structure. In addition, local anomalies and the induced and remanent magnetization of surface samples are being studied in the light of the geochemical and physical history of the various geologic units.

352. Hood, P.J., Bower, M.E. (Miss), Sawatzky, P., Geol. Surv. Can.:
Aeromagnetic reconnaissance of the Flemish Cap off Newfoundland.

See Geol. Surv. Can., Paper 66-1, 1966, p. 205.

353. Hood, P.J., Bower, M.E. (Miss), Geol. Surv. Can.:
NAE-RCAF airborne magnetometer project.

See Geol. Surv. Can., Paper 65-1, 1965, pp. 144-146.

354. Hood, P.J., Bower, M.E. (Miss), Dicaire, A., Sawatzky, P., Knapp, H.W., Geol. Surv. Can.:
Aeromagnetic survey of Hudson Bay, Northwest Territories, 1965.

See Geol. Surv. Can., Paper 66-1, 1966, pp. 19-21.

355. Hood, P.J., McClure, D.J., Geol. Surv. Can.:
Magnetic vertical gradient measurements, 1963-.

Development of technique of making measurement and interpretation of resultant data.

356. Horwood, J.L., Keys, J.D., Mines Branch, Dept. of Mines and Technical Surveys:
The magnetic susceptibility of (Zn, Fe)S solid solutions, 1964-66.

Objectives are to measure the magnetic susceptibility due to unpaired electron spins and to relate this information to the cohesive forces of Fe in (Zn, Fe)S.

357. Larochelle, A., Geol. Surv. Can.:
Palaeomagnetic studies near Rouyn, Val d'Or and Sudbury.
See Geol. Surv. Can., Paper 66-1, 1966, p. 198.
Palaeomagnetism of Sudbury irruptive norite, Sudbury, Ontario, 1965.
A joint project with International Nickel Co. of Canada.

358. Lilly, H.D., Memorial Univ. of Newfoundland:
Geological and palaeomagnetic examination of the high shoals of the Great Bank off Newfoundland and geological examinations of the shoals of the Gulf of St. Lawrence, 1964-.
The Ballard Bank, 10 miles east of Cape Race, Newfoundland, the Virgin Rock shoals, Bucksport shoal 100 miles east of Cape Race and the Eastern Shoals, 120 miles east of Cape Race have been examined by diving with the aqualung. Seismic sparker studies and magnetometer work where possible will be used to add to the present structural and lithological data. See Submarine examination of the Virgin Rocks area - Grand Banks, Newfoundland. See Geol. See Geol. Soc. of Amer. Bull., vol. 76, pp. 131-132, Jan. 1965.

359. MacLaren, A.S., Geol. Surv. Can.:
Magnetic susceptibility measurements, 1962-65.

360. MacLaren, A.S., Bhattacharyya, B.K., Owens, K.H., Dods, S.D., Zebarth, A.L., Geol. Surv. Can.:
Aeromagnetic interpretation of an area north of Lakes Superior and Huron, 1964-66.

361. Morley, L.W., and Bhattacharyya, B.K., Geol. Surv. Can.:
Analysis of aeromagnetic data over Ontario.
To study the aeromagnetic data over a large area covering about 370 miles by 330 in northern Ontario and to determine the depth and extent of magnetized bodies in the crust of the earth.

362. Palmer, H.C., (Post-doctoral Fellow), Univ. of Western Ontario:
Palaeomagnetic investigations of Mesozoic and Cenozoic rocks from Chile, South Africa, 1966-.

363. Petruk, W., Mines Branch, Dept. of Mines and Technical Surveys:
Relationship between the magnetic susceptibility and composition of chlorite, 1963-65.
A correlation between the specific magnetic susceptibility and the iron plus manganese content of chlorite was established. See Relationship between the Specific Magnetic Susceptibility and the Iron Plus Manganese Content of Chlorite, Canadian Mineralogist, vol. 8, pt. 3, pp. 373-376 (1965).

364. Skinner, R., Geol. Surv. Can.:
Geology of part of Moose River area, Ontario, 1965-66.
To determine cause of aeromagnetic anomaly. See Geol. Surv. Can., Paper 66-1, 1966, pp. 158-159.

365. Spector, A., Univ. of Toronto:
Power spectral analysis of aeromagnetic data, 1965-.
It is proposed to use generalized Fourier techniques (power spectrum analyses) to try to determine the depths of sources contributing to aeromagnetic anomalies, and thus discover a method of distinguishing among the many overlapping effects which commonly occur in aeromagnetic maps.

366. York, D., Watkins, N., Baksi, A., Univ. of Toronto:
Establishment of a time scale for reversal of the earth's magnetic field by the K-Ar dating of basalts, 1965-; M.A. thesis (Baksi).

Radioactive

367. Carmichael, C.M., Killeen, P.G., Univ. of Western Ontario:
Gamma-ray spectrometer field survey, 1965-66; M.Sc. thesis (Killeen).
In cooperation with the Geological Survey of Canada, a portable gamma-ray spectrometer is being tested over radioactive mineral areas near Elliot Lake, Ontario.

368. Killeen, P.G., Gregory, A.F., Geol. Surv. Can.:
Geophysical investigations, Elliot Lake area, Ontario.
See Geol. Surv. Can., Paper 66-1, 1966, p. 156.

Seismic

369. Bancroft, A.M., Basham, P., Ellis, R.M., Whitham, K., Yole, R.W., Dominion Observatory and Arctic Institute of North America:
Effect of site on seismograph recordings, and character of P-wave signals, 1962-66.
A study of the influence of velocity structure under a station on the character of the P-wave teleseismic signal, and its influence on magnitude residuals. The features responsible for the overall seismic performance of a station have been assessed. See Variations in short-period records from Canadian Seismograph Stations, Can. Jour. Earth Sciences, vol. 2, 1965.

370. Barr, K.G., Tyrlik, W.T., Dominion Observatory:
Crustal studies in Yellowknife area, 1965-66.

An experiment to determine the sub-Moho velocity and time terms at points inside and outside the Slave Province, and to shoot a profile through Yellowknife at distances bracketing the cross over distances across the Bear-Slave provincial boundary and across the McDonald fault. Particular attention is being made to the calibration of the Yellowknife area and to an evaluation of digital processing techniques.

371. Beck, A.E., Stevens, A., Univ. of Western Ontario:
Earthquake mechanism determination with S-waves, 1963-65; Ph.D. thesis (Stevens).

The thesis shows how force mechanism operating at the foçus of an earthquake may be determined objectively using S data alone without a prior knowledge of the P nodal planes. See Earthquake Mechanism Determination with S Waves, Ph.D. thesis, Univ. of Western Ontario, 1965.

372. Blanchard, J.E., Keen, M.J., Dalhousie Univ.:
Seismic studies on the eastern seaboard of Canada, 1962-.

See Seismic studies on the eastern seaboard of Canada: the Appalachian system, Can. Jour. Earth Sciences (vol. 1, No. 3, 1966).

373. Dunn, D., Research Council of Alberta (part time); Univ. of Alberta:
Groundwater resources of the Stettler area, 1965-66.

Analysis of the hydrological parameters of the Edmonton Formation in the Stettler area from pump-test data; mapping of the bedrock topography from water-well and seismic-shothole data; hydrology of a buried channel aquifer located in the area.

374. Fitzpatrick, M.M., Stephens, L.E., Queen's Univ.:
Seismic and/or resistivity surveying in vicinity of Kingston, Ontario, 1965; M.Sc. thesis (Stephens).

The main interest is in evaluating the Precambrian-Palaeozoic interface as a possible control in the quality and quantity of groundwater in the area.

375. Gabert, G.M., Research Council of Alberta:
Groundwater-level fluctuations in Alberta, Canada, caused by the Prince William Sound, Alaska Earthquake of March, 1964, 1964-65.

See Groundwater-level fluctuations in Alberta, Canada, caused by the Prince William Sound, Alaska Earthquake of March, 1964, Can. J. Earth Sciences, vol. 2, No. 2, pp. 131-139, 1965.

376. Hall, D.H., Brisbin, W.C., Hajnal, Z., Univ. of Manitoba:
Deep seismic sounding of the Precambrian Shield, 1962-.
Seismic crustal work in the Kenora district was extended to include stations along the road from Vermilion to Red Lake, Ontario, and at Eton and Hudson, Ontario. The work in 1965, following that in two previous years, completes seismic coverage in an area bounded by lat. 49° and 51° and long. 93° and 96°30'. See Crustal structure from converted head waves in central western Manitoba; Geophysics V.30, December, 1965.

377. Hobson, G.D., Geol. Surv. Can.:
Experimental hydrosonde seismic survey, Arrow, Shuswap and Kamloops Lakes, British Columbia.
See Geol. Surv. Can., Paper 66-1, 1966, p. 61.

378. Hobson, G.D., Hunter, J.M., Clarke, J.G., Geol. Surv. Can.:
Hammer refraction seismic surveys, Suffield, Alberta, 1965.
See Geol. Surv. Can., Paper 66-1, 1966, p. 111.

379. Hobson, G.D., Killeen, P.G., MacLachlan, I., Geol. Surv. Can.:
Hammer refraction seismic investigation, Moose River area, Ontario, 1965.
See Geol. Surv. Can., Paper 66-1, 1966, p. 155.

380. Hobson, G.D., MacAulay, H.A., Hodge, R.A., Geol. Surv. Can.:
Marine refraction seismic survey, Gaspé to Cape Breton Island, Gulf of St. Lawrence, 1964.
To determine thickness and nature if possible of sedimentary strata overlying crystalline basement using marine seismic techniques from two ships. See Geol. Surv. Can., Paper 66-1, 1966, pp. 196-198.
Seismic refraction and reflection surveys, Hudson Bay, 1963-66.
To determine depth and contour of the surface of the basement rocks underlying the Palaeozoic sediments of the Hudson Bay Lowlands. See Geol. Surv. Can., Paper 66-1, 1966, pp. 193-196.

381. Lennox, D.H., Carlson, V., Research Council of Alberta:
The seismic method in exploring for buried channels near Stavely, Alberta, 1958-66.
Extensive refraction seismic data in the Stavely area will be compared with subsequent geologic control in order to better establish the limitations of the method. A test-drilling program has been conducted as an aid in the evaluation.

382. Manchee, E.B., Weichert, D., Whitham, K., Dominion Observatory:
Array seismology, 1962-.

The continuous processing of seismic signals recorded on a medium aperture crossed array of nineteen seismometers in order to study small magnitude events, criteria to distinguish explosion and earthquakes, and lateral and vertical upper mantle discontinuities. A primary purpose is to increase the signal-to-noise ratio in order to study propagation paths, the earthquake signal at the focus and crustal reverberation. See The Yellowknife seismological array, Pub. Dom. Obs., V. 32, No. 2, 1965.

383. Mansinha, L., Univ. of Western Ontario:
Elastic wave radiation from fractures in two-dimensional models, 1965-.

A number of studies involving fractures and elastic wave radiation from fractures have been started. Of particular interest is the determination of tensile and shear fracture velocities in transversely isotropic media. The Rayleigh wave into shear wave conversion phenomenon from the end of fractures is being studied in two dimensional ultrasonic models. An attempt is being made to determine the elastic wave radiation pattern from shear fracture in glass plates.

384. Mansinha, L., Mereu, R.F., Thapar, M.R., Univ. of Western Ontario:
Study of dispersion of surface waves by a thickening of a crustal layer, 1965-; Ph.D. thesis (Thapar).

Model experiments are being carried out to study the dispersion of surface waves. Of particular interest are the cases where there is thickening of the crustal layer. A parallel theoretical study is also being performed.

385. Mereu, R.F., Univ. of Western Ontario:
Operation Longshot, 1965-66.

The Operation Longshot nuclear explosion was recorded successfully on a three component array of seismometers at a site approximately 20 miles north of Wawa, Ontario. A digital analysis of the record will be made so that amplitude and cross-correlation studies can be carried out.

The Lake Superior crustal experiment, 1963-67.

Forms part of the Lake Superior crustal experiment of 1963-64 and 1966. Research is being carried out on the records using the time-term, amplitude, and angle emergence studies. The aim is to determine the structure of the crust and upper mantle in shield areas and to improve the methods of research using digital techniques. See A study of the apparent angles of emergence at Marathon, Ontario from the Lake Superior data.

Bull. Seism. Soc. Am. vol. 55, 1965, pp. 405-416.
Shallow seismology, 1965-67.

Experiments are under way which are designed to test the feasibility of applying the time-term method to a grid system so that bedrock contour maps can be drawn. Seismic signal enhancement methods on digitized records are also under investigation in an effort to improve the range of the weight-drop method.

386. Mereu, R.F., Hunter, J.A., Univ. of Western Ontario:
The Hudson Bay crustal study, 1965-66; M.Sc. thesis (Hunter).

A three component array was operated at Eskimo Point in the summer of 1965. An analysis of the records is under way to determine the structure of the crustal and upper mantle under Hudson Bay.

387. Mereu, R.F., Dubey, A.C., Univ. of Western Ontario:
The generation of seismic energy from impact sources, 1960-66; M.Sc. thesis (Dubey).

The generation of seismic waves in rock-like materials is under investigation in one dimensional model experiments using plaster of paris as the medium. Efforts are being made to determine how the dynamic yield point and the acoustical impedence of the material in the vicinity of the source determines the shape and energy content of the seismic pulse. See The attenuation of high amplitude waves in rocks, Can. J. Phys. 42, 526, 1964.

388. Milne, W.G., Smith, W.E.T., Dominion Observatory:
Seismic regionalization of Canada, a continuing project.

Seismicity of Canada including epicentral and magnitude determinations, strain release maps, earthquake recurrence relations and extreme value theorem estimates of ground accelerations. In addition strong motion studies are being conducted on the west coast. See Earthquakes of Eastern Canada, 1928-1959, Pub. Dom. Obs., V. 32, No. 3, 1965.

389. Overton, A., Barr, K.G., Whitham, K., Dominion Observatory (Polar Continental Shelf Project):
Crustal studies in Canadian Arctic.

Refraction seismic profiles in the Arctic Archipelago with special interest in anomalous features in the Western Arctic Islands. Attempts are being made to relate the seismic refraction results to other geophysical results in the same area. See Deep seismic refraction investigations in the Canadian Arctic Archipelago, Geophysics, 30, 87, 1965.

390. Piche, W.T., Smith, W.E.T., Whitham, K., Dominion Observatory:
Micro-earthquakes in Canadian Archipelago, 1965-.

A study of micro-earthquakes in the Prince Patrick Island region of the Arctic Archipelago using Mould Bay seismic observatory, and the AFTAC LRSM small aperture array.

391. Uffen, R.J., Milne, W.G., Davenport, A.G., Univ. of Western Ontario:
Probability map of Western Canada, 1963-65; Ph.D. thesis (Milne).
The thesis shows how a prediction of the probability of earthquake damage in various areas of Canada can be made. The return period of earth movements of given magnitude in an area was estimated by means of the extreme value theorem of statistics. A new seismic zoning map was drawn. See Earthquake risk in Canada, Ph.D. thesis, Univ. of Western Ontario, 1965.

392. West, G.F., Halls, H., Univ. of Toronto:
Structure of the Keweenawan Basin and the earth's crust in the vicinity of Lake Superior, 1963-67; Ph.D. thesis (Halls).
The results of the 1963 Lake Superior Seismic experiment showed that the crust of the earth is abnormally thick under the eastern part of Lake Superior, and that the late Keweenawan sedimentary basin (in which the lake lies) is much deeper than was expected. Much additional geophysical data are now available and a much improved picture of the structure of the region should be obtained. Combined geological and geophysical studies are being undertaken to this end.

393. White, W.R.H., Bone, M., Dominion Observatory:
Crustal studies in the Cordillera.
A program of seismic refraction studies to outline the major crustal and upper mantle features of the Cordilleran region. Observations parallel to the West Coast have been published, and a reversed profile from Merrit to Quesnell completed. See A seismic refraction and gravity study of the earth's crust in British Columbia, Bull. Seism. Soc. Am., 55, 463, 1965.

394. Wickens, A.J., Buchbinder, G.G.R., Dominion Observatory:
Surface wave studies, 1962-.
A study of mean crustal and upper mantle structure for all major geological units in Canada using the seismic network of long period instruments. See Crustal structure in Arctic Canada from Rayleigh waves, Trans. Roy. Soc. Can. VI, Series IV, June, 1963.

395. Wickens, A.J., Stevens, A.E., Hodgson, J.H., Dominion Observatory:
Earthquake mechanisms from P and S waves, a continuing project.
Computer re-evaluation of fault plane solutions is underway for all major earthquakes from 1922-62. The machine solutions have been found, and their significance vis-a-vis the older graphical solutions is being examined. The practical use of shear wave polarization angles in determining point source mechanisms of earthquakes is being investigated; particular attention is being made to the combination of P and S data to strengthen solutions and remove mechanism ambiguities. See Computer re-evaluation of mechanism solutions, 1922-62, Pub. Dom. Obs., V. 33, No. 1 (in press) and Seismicity and earthquake mechanism, Res. in Geophys. V. 2, Solid Earth and Interface Phenomena, 1964.

396. Yole, R., Arctic Institute of North American and Carleton Univ., with support from the Polar Continental Shelf Project:
Investigation of the geology in the vicinity of Mould Bay, N.W.T. with reference to the seismic behaviour of the Mould Bay seismological observatory, 1965.

General Problems

397. Anderson, D.T., Skinner, R., Fortescue, J., Gaucher, E., Hobson, G.D., Geol. Surv. Can.:
Moose River Project - anomalies crossing Superior rocks, Ontario, 1965-.
Geological, geophysical and biogeochemical studies to evaluate the aeromagnetic and gravity anomalies. See Geol. Surv. Can., Paper 66-1, 1966, p. 144.

398. Blanchard, J.E., Keen, M.J., and graduate students, Dalhousie Univ.:
Absolute measurement of stress in the crust of the earth, and measurement of earth tides, 1960-.
See Measurement of Stress in Boreholes, Upper Mantle Symposium on Deep Drilling, Ottawa, 1965. See Geol. Surv. Can., Paper 66-13, 1966, pp. 85-93.

399. Burke, K.B.S., Wyder, J.E., Univ. of Saskatchewan:
Application of geophysical methods to the problems of ground-water location in the Canadian prairies, 1963-67; Ph.D. thesis (Wyder).

400. Carmichael, C.M., Gurkan, T., Univ. of Western Ontario:
Geophysical survey of Univ. of Western Ontario observatory site, 1965-66; M.Sc. thesis (Gurkan).
A survey of the site is being made using ground magnetometer, gravity and shallow seismic methods.

401. Davies, J.F., Manitoba Dept. of Mines and Natural Resources, Wilson, H.D.B., University of Manitoba and government and university staff and graduate students:
Project Pioneer, an integrated geological, geophysical and geochemical study of a Precambrian volcanic-sedimentary belt, 1965-71.
Integrated with detailed re-mapping of 1,500 square miles along the Rice Lake-Beresford Lake volcanic-sedimentary belt will be a series of laboratory projects and geophysical studies designed to reveal as much as possible about the geologic character and history both at surface and at depth, of a typical Precambrian "greenstone belt". Various phases of Project Pioneer will include: complete photogeologic interpretation; 4-inch-to-the-mile mapping; interpretation of aeromagnetic data utilizing techniques for separating various levels of magnetism; study of rock magnetism; determinations of gravity; seismic studies; regional and detailed structural analyses, including petrofabrics where applicable; investigation of metamorphism; detailed petrofabric and modal analysis of all rocks on a statistical basis; determination of chemical character of all rock types, and distribution of chemical variations; distribution of minor elements; petrographic and chemical study of wall-rock alteration and of regional alteration; distribution of radioactivity in rocks; age determinations; trace elements in surficial deposits and streams; study of gold-bearing and barren quartz veins.

402. Garland, G.D., Clarke, G., Univ. of Toronto:
Numerical treatment of seismic and magnetic records, 1964-66.
An investigation of filtering and other methods of extracting signals from geophysical records which are available in digital form.

403. Gaucher, E., Geol. Surv. Can.:
Elsas-Kapuskasing-Moosonee magnetic and gravity highs, Ontario, 1965.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 189-191.

404. Gregory, A.F., Killeen, P.G., Geol. Surv. Can.:
Spectrometric methods on sediments, 1965-; M.Sc. thesis (Killeen).

To determine whether the spectrometric methods developed for denser crystalline rocks are applicable to less dense sedimentary rocks and to relate the spectrometer measurements to the geology.

405. Jones, G.H.S., Diehl, C.H.H., Suffield Experimental Station, Defence Research Board:
Morphology and mechanism of crater formation, 1957-.

During the past year the effort of the cratering group, has been directed towards the detailed excavation of the Snowball Crater, produced by the detonation of 500 tons of TNT on the surface of the prairie. This work is now virtually complete, and the task of formulating a final report is in hand. This crater is of exceptional importance due to the fact that it models very closely the classical type of large scale astrobleme, including central mound, ring folds, circumferential and radial cracking, and "secondary vulcanism" in the form of sand and mud volcanoes. See A tracer technique for cratering studies; J. Geophy. Res., vol. 70, No. 2, pp. 305-309, and A scale model study of the Bosomtwe Crater; Sky and Telescope, vol. 20, No. 1, 1965.

406. Lennox, D.H., Carlson, V.A., Research Council of Alberta:
Geophysical exploration for buried valleys in an area north of Two Hills, 1961-66.

Extensive field data have been collected within the area of about one township using three geophysical methods: Gravity, Seismic and Resistivity. An evaluation of these three methods as an aid in groundwater exploration will be made using borehole control.

407. Morley, L.W., Washkurak, S., Geol. Surv. Can.:
Infrared and microwave surveys, 1965-.

To determine the feasibility of detecting old buried river channels by infrared and microwave methods; to determine whether infrared surveys will outline the extent of rock outcrop areas from areas covered by bush or overburden.

408. Uffen, R.J., Univ. of Western Ontario:
Palaeoaeronomy, 1962-.

A hypothesis of the thermal history of the earth is presented which correlates the formation of the crust, mantle and core of the earth with palaeontological events. It is suggested that the crust, mantle and core have evolved from a protoplanet and the volcanic activity, seismic activity, and orogenesis have a common origin in the thermal stresses within the mantle; that the radius of the Outer Core has controlled geological and geomagnetic events; and that there is a possible common explanation

for such diverse phenomena as geomagnetic reversals, continental drift and the origin and evolution of life. See Evolution of the Earth's Interior and its Effects on Biological Evolution, Proceedings International Geologic Congress, 1964.

GEOMORPHOLOGY AND GLACIOLOGY

409. Andrieux, P., Polar Continental Shelf Project, supporting programmes of Univ. of the Sorbonne (Paris, France), and the National Research Council, with the Observatories Branch, Dept. of Mines and Technical Surveys:
Measurements of the electrical resistivity of polar ice masses, 1965.
Careful measurement of the electrical resistivity of ice in two and three dimensions, and its variability with time, temperature, and physical or crystallographic character of the material, have been made as follows: May - Penny Ice-cap, Baffin Island (supported by Gravity Division, Dominion Observatories); June, July - Meighen Ice-cap, Meighen Island (supported by Polar Continental Shelf Project); August - White Glacier, Axel Heiberg Island (supported by McGill University and Polar Continental Shelf Project). The work has provided important fundamental information on the electrical properties of large crystalline masses.

410. Barr, W., McGill Univ.:
Geomorphic studies on northern Devon Island, Northwest Territories, 1965-68; Ph.D. thesis.

411. Bird, J.B., Adams, P. and Subarctic Research Station Staff, McGill Univ.:
Permafrost and periglacial studies in the Knob Lake area, Quebec, 1960-.
Summaries of progress are contained in the Annual Reports of the McGill University Subarctic Laboratory.

412. Bird, J.B., Morrison, A., McGill Univ.:
Planetary surface interpretation, 1963-.
An examination of the earth's surface as it appears from satellites with particular reference to landforms. Emphasis has been on imagery from TIROS and NIMBUS satellites and is now concentrating on photographs from the Gemini series.

413. Broscoe, A.J., Clissold, R.J., Univ. of Alberta:
A quantitative study of Alpine landforms, Canadian Rocky Mountains near Jasper, Alberta, 1965-; M.Sc. thesis (Clissold).

Preliminary studies indicate the presence of active rock glaciers and solifluction features in the Maligne Range, Alberta. Detailed mapping of these features is under way. Field work will consist of surveying positions of markers on rock glaciers and solifluction lakes to permit determination of rate of motion and nature of motion of these features.

414. Dineley, D.L., Rust, B.R., and others, Univ. of Ottawa:
Geology of the Boothia Arch area, Somerset Island, Northwest Territories, 1964-67.

This project concerns the detailed geology and geomorphology of the northern end of the Boothia Arch, ranging from the Precambrian crystalline basement to Quaternary deposits. Structural, stratigraphical and sedimentological studies are included. See notes on the scientific results of the Univ. of Ottawa Expedition to Somerset Island, 1964, Arctic 18, 55, 1965.

415. Dubé, Jean-Claude, Quebec Dept. of Natural Resources:
Pleistocene geology of Inverness area, Eastern Townships, Quebec, 1965-66; Ph.D. thesis.

Studies of the unconsolidated deposits of the Pleistocene and Recent, and of the Quaternary geomorphology of parts of the St. Lawrence Lowlands and Appalachians Uplands.

416. Everett, K.R., Polar Continental Shelf Project, Dept. of Mines and Technical Surveys, supporting Polar and Mountain Laboratory, U.S. Army Natick Laboratories:
Study of mass-wastage of sedimentary rocks under a high arctic environment, 1965.

Detailed study of mass wastage with quantitative measurement of soil movement and the relation of the amount and distribution of precipitation and the development of the thawed layer in soils of various chemical, physical and mechanical characteristics, in various aspects of exposure, slope and vegetative cover.

417. Gardner, J., McGill Univ.:
Mass wasting processes in the alpine zone of the Canadian Rockies, 1965-68; Ph.D. thesis.

418. Kahn, M., Polar Continental Shelf Project, Dept. of Mines and Technical Surveys, supporting programmes of the National Research Council and the Univ. of the Sorbonne:
Study of fluctuating non-traditional variables or space-variables affecting chemical reactions, as evidenced by the speed of standard chemical reactions on and within ice-caps at different geomagnetic latitudes, 1965.

A series of many thousand standard chemical reactions were carried out on Penny Ice-cap (May), Meighen Ice-cap (June and July) and White Glacier (August) at synoptic hours to determine the effect of geomagnetic and geographic latitude on chemical reactions. The same reactions were carried out within the glacier under different thicknesses of ice, to discover the screening effect of ice on these still unknown factors that control the rate and completeness of reactions. The relation between the fluctuations in rate of chemical reactions, and the simultaneous fluctuations of electrical resistivity (see work of Andrieux reported separately) are being studied. The large, physically and chemically nearly homogeneous, crystalline mass of cold solar ice-cap is proving to be admirable environment in which to study subtle aspects of physical and chemical behaviour that are completely masked in the laboratory or in other parts of the earth by extraneous local influences.

419. Keeler, C.M., McGill Univ.:
The metamorphism of snow at high altitudes, 1964-66; Ph.D. thesis.

420. Kerfoot, D.E., Univ. of British Columbia:
Geomorphology of Garry Island, Northwest Territories, 1964-66; Ph.D. thesis.
Includes study of raised beaches, ice segregation, patterned ground, rate of coastal retreat, solifluction.

421. Mackay, J.R., Univ. of British Columbia:
Geomorphology of the Lower Mackenzie River, 1963-67.
A study of the terraces; glaciated terraces; postglacial drowning; rate of sedimentation.
Permafrost temperatures, Mackenzie Delta area, 1964-.
A 200' deep hole west of Ft. McPherson, N.W.T. and a 250' hole near Arctic Red River have already been instrumented for permafrost measurements. New holes will be instrumented in 1966. Winter and summer deformation changes in the ground associated with the growth of ice-wedge polygons, 1965-.
Precise surveying of tubes inserted into the ground to a depth of 4' has been done for 25 tubes. The deformation of these tubes will be measured in March, 1966, summer 1966, and in the future to obtain ground movement changes. Temperatures are also being measured.

422. Mackay, J.R., Stager, J.K., Univ. of British Columbia:
The origin of tilted beds of massive segregated ice in the Mackenzie Delta area, Northwest Territories, 1963-.
See Thick tilted beds of segregated ice, Mackenzie Delta area, N.W.T.; Biuletyn Peryglacjalny (in press).

423. Macpherson, Joyce C., McGill Univ.:
The post-Champlain evolution of the drainage pattern of the Montreal lowland, 1958-66; Ph.D. thesis.
See The St. Faustin-St. Narcisse moraine and the Champlain Sea, Rev. Geogr. de Montreal, vol. 18, 1965, pp. 235-248, No. 2, (1964).

424. Meistrell, F.J., Univ. of Alberta:
Development and dynamics of a simple spit, 1965-66; M.Sc. thesis.
A wave tank study the results of which will be compared with known characteristics of actual spits as determined from field study and hydrographic charts.

425. Müller, F., McGill Univ.:
Movement analysis of a polar glacier with special reference to glacial erosion and formation of a push moraine, 1960-68.
See Surveying of glacier movement and mass changes, Preliminary Report 1961-1962, Axel Heiberg Island Research Reports, McGill Univ., Montreal, pp. 65-80.

426. Parry, J.T., Heginbottom, J.A., McGill Univ.:
Terrain evaluation, 1962-; M.Sc. thesis (Heginbottom).
Aspects of off road mobility problems in the Canadian Shield and elsewhere, as related to landforms and surficial deposits. See Environmental analysis, Proceedings 4th Quadripartite Standing Working Group on Ground Mobility - 1965.

427. Paterson, W.S.B., Polar Continental Shelf Project, Dept. of Mines and Technical Surveys:
Investigation of the thermal structure and dynamic behaviour of a "cold" polar ice-cap, 1965.
Study of the detailed vertical temperature profile from top to bottom of an ice mass 122 metres thick, and below the pressure-melting temperature; investigation of the flow of geothermal energy into the base of the mass, and of the strain rate and plasticity of ice at depth. The measurements may help to define the flow law of ice at particular temperatures, pressures and crystal sizes, and may give an indication of the energy balance at the surface of this part of the earth and its relation to geothermal heat flow, present and past climate, and effect of changes of sea level. See Annual report in Canadian Geophysical Bulletin No. 17, pp. 130-132.

428. Pissart, A., Universite de Liege, in cooperation with Polar Continental Shelf Project, the Canada Council, the Geographical Branch, and the Geological Survey of Canada:
Study of periglacial features on the Arctic Coastal Plain, 1965.

Included study of pingoes; evolution of slopes and terraces in a periglacial climate; wind action on the Arctic coastal plain; development of periglacial soils on Prince Patrick Island.

429. Raudsepp, J.J., McGill Univ.:
Lithology and altitude in the Gaspé Peninsula, Quebec, 1963-65; M.Sc. thesis.

430. Tipper, H.W., Geol. Surv. Can.:
Glacial geomorphology of central British Columbia, 1963-65.
A description of the features with discussion of their origin and an interpretation of the glacial history of the region.

MINERAL DEPOSITS

Base Metals

431. Ambrose, J.W., Brown, A.S., Queen's Univ.:
Geology of Opemiska Mine, Quebec, 1958-67; Ph.D. thesis (Brown).
An intensive study of all structural elements in the Opemiska mine and surrounding area.

432. Ambrose, J.W., Cowan, M.F., Queen's Univ.:
A study of elemental distribution in mill-head samples, 1964-66; M.Sc. thesis (Cowan).
A study essentially of trace elements in mill-head samples from areas from the Copperbelt, Northern Rhodesia, in an attempt to determine the origin of the ores.

433. Bachinski, D., Whitmore, D.R.E., Geol. Surv. Can.:
Studies of sulphide deposits, Whalesback Mine area, Newfoundland.
See Geol. Surv. Can., Paper 65-1, 1965, p. 132.

434. Beaton, W.D., McGill Univ.:
Trace element variations in some sulphides, 1962-66; Ph.D. thesis.

435. Beck, A.E., Mustonen, E., Univ. of Western Ontario:
Detailed thermal measurements in the vicinity of an ore body, 1957-; M.Sc. thesis (Mustonen).
Temperature measurements have been made in 85 holes, between 1000 and 2000 ft. deep, in a small region a few miles square near Lake Dufault Mines, P.Q. In addition to obtaining the value for the terrestrial heat flow it is hoped that the thermal data will give some structural information about the ore body.

Conductivities have been measured on 150 core samples from 12 surface holes. See Lightweight borehole temperature measuring equipment for resistance thermometers, J. Sci. Inst. vol. 40, p. 142, 1963.

436. Bertrand, C.M., McGill Univ.:
The geology of the Normetal mine, Desmeloises township, Quebec, 1964-66; Ph.D. thesis.

437. Blais, R.A., Ecole Polytechnique:
Geochemical study of volcanic rocks of Noranda area, 1965-68.
Determination of elements in rocks of the volcanic units for discovering tracers to volcano-exalative copper-zinc deposits.

438. Blais, R.A., Machairas, G., (Post-doctorate Fellow), Ecole Polytechnique and Purdie, J., Lake Dufault Mines Ltd.:
Metallogeny of the Lake Dufault deposit, 1964-67.
Detailed mineralogical, chemical and structural study of this massive sulphide deposit and detailed geological study of its wall-rocks.

439. Blecha, M., McGill Univ.:
A study of chemical composition of certain dykes at Campbell-Chibougamau Mines, Quebec, 1961-66; M.Sc. thesis.

440. Boyle, R.W., Geol. Surv. Can.:
Geochemistry of the Bathurst-Newcastle district, 1957-64.
To provide information on the geochemistry of the gossans, supergene, and primary phases of the base metal deposits of the district. See Geol. Surv. Can., Paper 65-1, 1965, p. 123 and 66-1, 1966, p. 168.

441. Boyle, R.W., Wanless, R.K., Geol. Surv. Can.:
Lead and sulphur isotope geology of Keno and Galena Hills, Yukon, 1958-.
To determine the isotopic abundances of lead and sulphur in the lead-zinc-sulphur deposits and their host rocks, and from the data to determine, if possible, the source of the elements in the deposits and the processes that have led to their concentration.

442. Cabri, L.J., Mines Branch, Dept. of Mines and Technical Surveys:
Phase equilibrium studies in the Cu-Fe-S and related systems, 1965-.
To closely determine equilibrium relations, stability fields and conditions for metastable relations in sulphide systems, and thereby to further our knowledge of sulphide ore deposits. Sulphide synthesis, 1964-.

Sulphide minerals of closely controlled compositions are synthesized to provide material for other investigations, and to provide fundamental data on phase equilibrium relationships in certain sulphide systems.

443. Carter, N.C., British Columbia Dept. of Mines and Petroleum Resources:
Mapping McDonald Island, Newman Peninsula and nearby shoreline of Babine Lake and study of copper mineralization, British Columbia, 1965-66.

444. Chamberlain, J.A., Geol. Surv. Can.:
Geology of Canadian nickel deposits, 1963-.
See Geol. Surv. Can., Paper 66-1, 1966, p. 186.

445. Chisholm, I.R., Carleton Univ.:
Geology of the Wedge Deposit, Bathurst, New Brunswick, 1964-66; M.Sc. thesis.
A study of the geological setting and mineralogy of the deposit with special emphasis on the nature of the associated acid volcanics and their trace element content.

446. Clark, L.A., McGill Univ.:
Geological and geochemical evidence bearing on the genesis of stratiform base metal ore deposits of volcanic affinity, 1965-68.
Ore mineralogy and sphalerite iron contents, New Calumet Mine, Quebec, 1961-66.
Variations of iron content in sphalerite throughout the deposit do not appear to be systematic.

447. Crocket, J.H., Lusk, J., McMaster Univ.:
Some aspects of the genesis of strata bound sulphide deposits, 1964-; Ph.D. thesis (Lusk).
An application of sulphur isotope studies to the origin of the Heath Steele deposit (a conformable pyritic Cu-Pb-Zn deposit) near Newcastle, N.B. Both an epigenetic igneous-hydrothermal replacement origin and a syngenetic volcanic exhalative sedimentary origin have been suggested for this type of ore. It is hoped to establish discriminating criteria by studying the variation in sulphur isotope composition.

448. Davies, J.L., New Brunswick Mines Branch:
Geology and geochemistry of the rocks of the Bathurst-Newcastle area, New Brunswick, 1963-.

449. Descarreaux, J., Blais, R.A., Ecole Polytechnique:
Geology of Lorraine Mine, Témiscamingue County, Quebec, 1964-66; M.Sc. thesis (Descarreaux).
Detailed geological and geostatistical evaluation of this small copper-nickel deposit.

450. Dugas, Jean, Quebec Dept. of Natural Resources:
Examination of mining properties and development work in the Rouyn-Noranda district, Quebec - a continuing programme.
See Description of mining properties examined in 1961 and 1962, Que. Dept. Nat. Res., P.R. No. 529, 1964.

451. Eastwood, G.E.P., British Columbia Dept. of Mines and Petroleum Resources:
Detailed study of parts of the Giant Mascot nickel property, Choate, British Columbia, 1964-66.
See Rept. of the Minister of Mines and Petroleum Resources 1964, pp. 137-142.

452. Fergus, R.F., Univ. of Western Ontario:
Mineralogy and textural relationships of sulphide ores from the Willroy Mine, Manitouwadge, Ontario, 1965-67.
Sulphide mineralogy and textural relations will be investigated and contrasted in ores of differing composition from the various orebodies of the Willroy Mine.

453. Fleming, J.M., Memorial Univ. of Newfoundland:
Petrology of the Whalesback mine near Springdale, Newfoundland, 1964-66; M.Sc. thesis.
Detailed petrology of Ordovician volcanic rocks, the host-rocks of copper mineralization in the Whalesback Mine.

454. Folinsbee, R.E., Cumming, G.L., Kanasewich, E., Krouse, R.H., Sasaki, A., Univ. of Alberta:
Isotopic evidence on the origin of lead-zinc deposits in the western Canada basin, 1965-66.
Galenas from the Pine Point ore body yield ordinary leads that came from deep-seated sources 100-300 million years ago. Intrusive rocks in Liard Basin and Cordillera also yield radiometric dates of 100-300 million years and might be a source of heat and solutions required by hydrothermal theory. However, sulphur in sulphides is so enriched in the heavy isotope that derivation directly from magmatic sources is unlikely; furthermore, leads around basinal intrusives are anomalous. Perhaps lead, zinc, and sulphur trapped in connate waters heated by igneous activity 100-300 million years ago moved upwards and outwards into basin margins to form the ore deposit.

455. Franklin, J.M., Carleton Univ.:
A study of the pyritic ore at Temagami Copper Mine, Temagami, Ontario, 1965-66; M.Sc. thesis.
The pyritic copper-nickel sulphide mineralization at Temagami is found in Archaean rocks along a contact between metadiorite and massive rhyolite. The mineralogy and chemistry of the sulphides and wall-rocks will be studied with a view to finding out more about the origin of the sulphides.

456. Fyles, James T., British Columbia Dept. of Mines and Petroleum Resources:
Structure of the Jordan River area, Monashee Mountains, British Columbia, and its bearing on exploration for lead-zinc deposits in the Shuswap Terrain, 1964-67.

457. Gill, J.E., Kranck, E.H., Saull, V.A., and graduate students, McGill Univ.:
Silicate and sulphide phase relations, 1955-.
See Recent research on sulphides at McGill Univ., Bull. Can. Inst. Mining Met. 1965, pp. 994-7.

458. Grenier, J., Blais, R.A., Ecole Polytechnique:
Geology of Mine de Poirier, Abitibi East County, Quebec, 1964-66; M.Sc. thesis (Grenier).
Geochemical, petrographical and geostatistical study of typical ore lenses in this copper-zinc deposit of the Joutel area.

459. Hutchinson, R.W., Univ. of Western Ontario:
Origin of base metal massive sulphide ore deposits, 1964-.
Initial work suggests that Canadian ores of this type are primary, syngenetic, volcanic-exhalative deposits formed during volcanism in Keewatin igneous complexes. They have subsequently been deformed, metamorphosed, re-mobilized and re-emplaced as epigenetic bodies. See Genesis of Canadian Massive Sulphides Reconsidered by Comparison to Cyprus Deposits: Bull. CIMM, vol. 58, No. 641, pp. 972-986, 1965.

460. Hutchinson, R.W., Starkey, J., Fleet, M.E.L.F., Univ. of Western Ontario:
Types, distribution and relationships of pyrrhotite in Canadian massive sulphide ores, 1965-.
Initial studies suggest that much pyrrhotite in Canadian massive sulphide ores is generated by thermal metamorphism from breakdown of primary pyrite.

461. Jackson, S.A., Univ. of Toronto:
Palaeoecological aspects of lead-zinc mineralization in carbonate rocks, 1964-66; M.A. thesis.

Particular emphasis on Presqu'ile Dolostone and Pine Point mineralization, Northwest Territories.

462. Jeffrey, W.G., British Columbia Dept. of Mines and Petroleum Resources:
Geological mapping and study of copper mineralization, Galore Creek area - Stikine River, British Columbia, 1965.
Map to be published, supplemented by notes on properties in 1965 Report of the Minister of Mines and Petroleum Resources. See also Rept. of Minister of Mines and Petroleum Resources 1964, p. 15.

463. Johnson, A.E., Univ. of Western Ontario:
Mineralogical and textural investigation of sulphide ores from the Lake Dufault mine, northwestern Quebec, 1965-66.
The study will identify the sulphide minerals, describe and document the textures and attempt to explain them.

464. Juhas, A.P., Wilson, H.D.B., Univ. of Manitoba:
Origin of the nickel-copper sulphide deposits associated with the Bird River Sill, Manitoba, 1965-68; Ph.D. thesis (Juhas).
An M.Sc. thesis dealing with the mineralography of some sulphide deposits in the Bird River area will be completed in 1965.

465. Kelly, Rémi, Université Laval:
A study of the Joutel township ore bodies, Quebec, 1964-67; Ph.D. thesis.
A petrological and geochemical investigation of copper and zinc sulphide deposits in Kéewatin rhyolites.

466. Kindle, E.D., Geol. Surv. Can.:
Studies of copper deposits, Yukon Territory and northern British Columbia.
See Geol. Surv. Can., Paper 66-1, 1966, p. 62.

467. Krishnamurthy, P., McGill Univ.:
Experimental deformation of sulphide ores, 1963-66; M.Sc. thesis.

468. Larochelle, A., Geol. Surv. Can.:
Palaeomagnetism of Sudbury irruptive norite, Sudbury, Ontario, 1965.
A joint project with International Nickel Co. of Canada.

469. Maniw, J.G., Univ. of Toronto:
Critical study of the exsolution texture of chalcopyrite in sphalerite, 1965-66; M.Sc. thesis.

470. Mendelsohn, F., Queen's Univ.:
Behaviour of algae in aqueous solutions containing small amounts of metal, 1964-67.
Geologic environment and origin of stratiform ore deposits in sedimentary rocks, 1964-.
See The Geology of the Northern Rhodesian Copperbelt, MacDonald & Co., London, 1961.

471. Mendelsohn, F., Ostensoe, E.A., Queen's Univ.:
Mineralogy of Granduc Mine, British Columbia, 1964-65; M.Sc. thesis (Ostensoe).

472. Moore, J.C.G., Mount Allison Univ.:
Rock geochemistry as an aid in the search for orebodies in New Brunswick, 1963-67.
Study of the distribution of trace elements around base metal sulphide deposits in northern New Brunswick; as yet no useful pattern has been detected.

473. Ogura, Y., (Post-doctorate Fellow), Wilson, H.D.B., Univ. of Manitoba:
Textures of nickel-sulphide ores in peridotite, 1964-66.
Net-texture is a distinctive feature of the disseminated sulphides in the Manitoba nickel belt and it is assumed that the presence of the net-texture is the result of magmatic segregation.

474. Procyshyn, E.L., Wilson, H.D.B., Univ. of Manitoba:
Geometry, and orientation of sulphide deposits in Canada, 1965-67; M.Sc. thesis (Procyshyn).
The project is concerned primarily with the geometry, orientation, size, and nature of sulphide ore deposits in Canada and their conformation with local structural trends.

475. Raham, G., Univ. of Calgary:
Mineralogy of the Big Ledge zinc deposit - Central British Columbia, 1965-66; M.Sc. thesis.
Detailed study of this strata bound lead-zinc deposit in the Shuswap terrain should contribute to the understanding of the sequence of mineralization and metamorphism in the area.

476. Roberts, R.G., McGill Univ.:
Geology and geochemistry of Mattagami Lake Mine, Galinee township, Quebec, 1962-66; Ph.D. thesis.

477. Sakrison, H.C., McGill Univ.:
Variations in rock compositions around the Lake Dufault orebody, Noranda District, Quebec, 1962-66; Ph.D. thesis.

478. Sangster, A.L., Carleton Univ.:
Metamorphism of sulphides at New Calumet, Quebec, 1964-65; M.Sc. thesis.
Involves study of polished section, polished thin sections and trace element distributions.

479. Sangster, D.F., Geol. Surv. Can.:
Geochemistry of lead-zinc deposits in carbonate rocks, 1965-.
See Geol. Surv. Can., Paper 66-1, 1966, p. 207.

480. Sauvé, P., Université Laval:
Study of the massive sulphide deposits of Joutel and Poirier townships, Abitibi, Quebec, 1964-68.
The first phase consists of a study of the mineralogy of the sulphide deposits and of the petrography of the surrounding volcanic rocks.

481. Scott, Susan A., McGill Univ.:
Sulphur isotope and trace element study of ore from the Temagami mine, Temagami, Ontario, 1965-67; M.Sc. thesis.
An attempt to determine the source of the ore, and possible mode of emplacement.

482. Shea, F.S., Bingley, J.M., Nova Scotia Dept. of Mines:
Economical appraisal of the Gabarus area, Cape Breton county, 1964-66.
During 1964 and 1965, soil sampling for base metals, magnetometer surveying, geological mapping and geophysical surveys were undertaken by Dept. of Mines. Diamond drilling is in progress to test the interesting areas outlined from the above mentioned surveys.

483. Sherwood, H.G., Wilson, H.D.B., Univ. of Manitoba:
The qualitative and quantitative mineralogy of some Canadian base metal sulphide deposits, 1963-67; Ph.D. thesis (Sherwood).
Involves determination of the qualitative and quantitative sulphide and silicate mineralogies, plus the cobalt, nickel, copper, lead, zinc, iron, gold, and silver contents of composite mill feed samples of approximately 45 Canadian base metal sulphide deposits. Metal and mineral ratios will be determined and analyzed for genetic indications.

484. Simpson, P., Geol. Surv. Can.:
Sulphides of St. Stephen area, New Brunswick, 1965; Ph.D. thesis.
See Geol. Surv. Can., Paper 66-1, 1966, p. 169.

485. Sims, W.A., Quebec Dept. of Natural Resources (part time), McGill Univ.:

Study of the distribution of heavy minerals, Holland and Lemieux townships, Gaspé-North county, 1964-65; Ph.D. thesis, McGill Univ.

The purpose of this study is to retrace skarn zones in the vicinity of the Gaspé Copper and Federal Metals Mining Camps. At Gaspé Copper the skarns are mineralized and contain abundant heavy minerals such as garnets and pyroxenes.

486. Stevenson, J.S., McGill Univ.:

Comprehensive petrological and mineralogical study of the Sudbury Basin Irruptive, Ontario, 1951-.

See Sudbury in Terms of Upper-Mantle Petrology, Proceedings of the Geol. Soc. Amer. 1965, p. 18.

487. Smitheringale, W.G., de Zoysa, T.H., Memorial Univ. of Newfoundland:

The distribution of trace elements in the mineralized volcanic rocks of the Notre Dame Bay area of northeastern Newfoundland, 1965-68; M.Sc. thesis (de Zoysa).

The trace element distribution in and around four or five mineral showings which are representative of those in the Notre Dame Bay area and similar to the Whalesback deposit will be studied. Thin section and polished section studies will provide a background for the analytical work currently being undertaken by Mr. de Zoysa.

488. Suffel, G.G., Univ. of Western Ontario:

Comparison of massive sulphide deposits in younger volcanics with those of the Canadian Shield, 1964-.

See Remarks on some sulphide deposits in volcanic extrusives: Can. Inst. Min. Met. Bull., v. 58, No. 642, pp. 1057-1063.

Nature and genesis of Ontario iron formations, 1960-66.

See Types of iron formation in Western Ontario and their original environment: Dept. of Geology, Univ. of Western Ontario, Contribution No. 40, 1961.

489. Tupper, W.M., Carleton Univ.:

Geology and geochemistry of copper deposits, Murdockville, Quebec, 1966-68.

Includes examination and study of the geology, mineralogy, and wall-rock alteration, the chemistry of the wall-rock alteration, and the isotopic composition of the sulphides.

Geology and geochemistry of massive sulphide deposits, Bathurst, New Brunswick, 1960-66.

See Geology in the Vicinity of the Brunswick No. 6-No. 12 Deposits, Bathurst, N.B., Geol. Surv. Can., Paper 65-13, 1966.

490. Wanless, R.K., Loveridge, W.D., Boyle, R.W., Stevens, R.D., Peters, C., Leech, G.B., Roscoe, S.M., Geol. Surv. Can.:
Isotopic study of Canadian ore leads, 1956-.
The purpose is to determine the lead (and possibly sulphur) isotope distribution in lead ores; to investigate possible isotope variations with geological environment; to determine the direction and magnitude of isotopic fractionation of lead isotopes as a result of chemical and physical processes in nature; and to establish the age, employing the "common lead" method of dating.

491. Whitmore, D.R.E., Geol. Surv. Can.:
Base metal deposits, 1962-.
A study of the relationship of base metal deposits to one another and to the regional geology, in the light of concepts developed during the Coronation Mine study. The initial investigations are being undertaken in the Flin Flon, Lynn Lake, and Snow Lake area.

Ferrous Metals

492. Ambrose, J.W., Park, F.B., Queen's Univ.:
Geology of the Marmoration iron deposit; Ph.D. thesis (Park).

493. Beales, F.W., Edhorn, A.S., and Moorhouse, W.W., Univ. of Toronto:
Precambrian fossils of Animikie and related rocks, 1960-.
An investigation of macro- and microfossils, with particular reference to their role in the origin of iron formations. See Fossils from the Animikie, Port Arthur, Ontario; Trans. Roy. Soc. Can., vol. LVI, series III, section III, 1962, p. 97.

494. Blais, R.A., Ecole Polytechnique:
Geostatistical evaluation of the Baffinland iron deposits, 1965-66.
Use of CDC-3400 computer and various geostatistical techniques to analyze in detail the geological parameters of these deposits.

495. Clarke, P.J., Quebec Dept. of Natural Resources:
Geology of the Mt. Reed - Lac Jeannine area, Quebec, 1964-67.
In addition a compilation of the geology between Mt. Wright and Mt. Reed should show the relation between the stratigraphy, structure, and iron ore deposits of the region. It is also hoped

to establish the relationships between the Petit Manicouagan anorthosite mass and the metamorphosed equivalents of the Labrador Trough rocks. See the geology of the Silicates Lake area (1965), P.R. No. 539, Quebec Dept. of Natural Resources.

496. Govett, G.J., Research Council of Alberta:
Sedimentary geochemistry - Origin of Clear Hills iron deposits, 1965-66.

497. Gross, G.A., Geol. Surv. Can.:
Geology of Baffin Island iron deposits, Northwest Territories, 1965.
See Geol. Surv. Can., Paper 66-1, 1966, p. 19.
Iron deposits of Canada, 1957-.
To provide information on the size, composition, mode of occurrence, origin, potentialities, and other geological features of the main known iron deposits of Canada. See Geol. Surv. Can., Bull. 82, 1963 and Paper 66-1, 1966, pp. 192-193.

498. Jackson, G.D., Geol. Surv. Can.:
Baffinland Iron Mines, Northwest Territories, 1 inch to 1 mile, 1965-66.
Detailed regional investigation in the vicinity of the iron deposits. See Geol. Surv. Can., Paper 66-1, 1966, pp. 14-15.

499. Mendelsohn, F., Riley, R.A., Queen's Univ.:
Character and origin of Steeprock bauxite, 1965-66; M.Sc. thesis (Riley).

500. Moorhouse, W.W., Univ. of Toronto:
Petrography of the Gunflint iron formation, 1950-.
The texture and mineralogy of the Gunflint iron formation and their significance in its origin. See Gunflint Iron Range in the vicinity of Port Arthur; Ont. Dept. of Mines Ann. Report Vol. LXIX, pt. 7, 1960.

501. Philpotts, A.R., McGill Univ.:
Investigation of phase equilibria in systems related to rocks of the anorthosite-mangerite suite, 1965-.
The system magnetite-apatite is being investigated to obtain evidence bearing on the origin of magnetite-apatite deposits associated with anorthosites. This work has shown that there is a eutectic at 66 per cent magnetite and 33 per cent apatite which corresponds very closely to natural rocks consisting of these two minerals.

502. Sangster, D.F., Geol. Surv. Can.:
Contact metasomatic magnetite deposits of southwestern British Columbia.
See Geol. Surv. Can., Paper 65-2, 1965, p. 41.

503. Stevenson, J.S., McGill Univ.:
Study of worldwide occurrences of colloform magnetite, 1962-.
See Colloform magnetite in a contact metasomatic iron deposit, Vancouver Island, British Columbia, Economic Geology, vol. 59, No. 7, 1964, pp. 1298-1305.

504. Wilton, H.P., Univ. of Manitoba, Geol. Surv. Can. (part time):
Geology of iron-formations and associated volcanic rocks, Lake Timagami area, Ontario, 1963-68; Ph.D. thesis.
An attempt to determine the origin of the iron-formations by clarifying the relationship of their deposition to the volcanic history of the area. See. Geol. Surv. Can. Paper 65-1, 1965, pp. 111-112.

505. Zajac, I.S., Geol. Surv. Can. (part time):
Stratigraphy of Superior-type iron formation in the Schefferville-Knob Lake area, Quebec and Labrador; Ph.D. thesis, Univ. of Chicago.

Radioactive Deposits

506. Beck, L.S., Saskatchewan Dept. of Mineral Resources:
Radioactive Occurrences in the Athabasca Region, northern Saskatchewan, 1962-66; Ph.D. thesis, Univ. of Leeds, England.
Includes studies of origin, time relationships, and structure. See Paper published Can. Mining Journal, vol. 85, No. 4.

507. Chamberlain, J.A., Wanless, R.K., Geol. Surv. Can.:
Absolute age and isotope geology of uranium deposits at Port Radium, Northwest Territories, 1960-.

508. Koeppel, V., N.R.C. Post-doctorate Fellow, Wanless, R.K., Geol. Surv. Can.:
Relative ages of various generations of pitchblende, Beaverlodge area, Saskatchewan, 1964-66.

509. Knight, C.J., Allman, N.J. (Miss), Moorhouse, W.W., Univ. of Toronto:
Age of basal Huronian sediments and uranium mineralization at Blind River-Elliot Lake-Sudbury-Timiskaming area, 1965-68; Ph.D. thesis (Knight).
Knight is embarked on a program of isotopic dating of volcanics in the Mississagi Formation, North Shore area, and possible correlatives in the other areas mentioned. Miss Allman and Moorhouse are investigating the feasibility of a parallel study of the heavy minerals and other petrographic features.

510. Macdonald, J.A., McGill Univ.:
A geochemical study of the surficial behaviour of uranium in northwest Saskatchewan, 1964-67; Ph.D. thesis.

Other Metals

511. Armstrong, C.A., Edgar, A.D., Hutchinson, R.W., Univ. of Western Ontario:
Comparative studies on lithium bearing pegmatites, 1965-69; Ph.D. thesis (Armstrong).

512. Barning, D., Harris, I.M., Newfoundland Dept. of Mines, Agriculture and Resources:
Chromite in Newfoundland, 1961-; Ph.D. thesis (Barning).

513. Bird, Gordon, Univ. of Alberta:
Paragenesis of geochemistry of vanadium and molybdenum mineralization near Andrew Lake, Alberta, 1965-67; M.Sc. thesis.

514. Boyle, R.W., Geol. Surv. Can.:
Geochemistry of gold and its deposits, 1965-68.
Silver in Canada, 1962-65.

515. Brown, A.S., British Columbia Dept. of Mines and Petroleum Resources:
Study of mercury prospects, Pinchi Lake fault zone and of prospects in part of the Omineca Mining Division, B.C.; and check for mercury related to deposits of Mo and Cu. Notes on mineral prospects will be published in 1965, Report of the Minister of Mines and Petroleum Resources, B.C.

516. Carr, J.M., British Columbia Dept. of Mines and Petroleum Resources:
Mapping of Topley intrusives and examination of molybdenum deposits in an area of 370 square miles extending north of and east of the eastern end of François Lake, British Columbia.
See Report of the Minister of Mines and Petroleum Resources, 1964, pp. 58-61.

517. Carter, M.W., Carleton Univ.:
Biogeochemistry of Silver Mine Deposit, Cape Breton, Nova Scotia, 1964-65; M.Sc. thesis.
The investigation involved the development of a chemical-spectrographic method of trace analysis and evaluating its applicability in biogeochemical prospecting. This was done by comparing biogeochemical with pedogeochemical results, using the same method, over a known drift covered ore body.

518. Crocket, J.H., Keays, R.R., Hsieh, S.S., McMaster Univ.:
Precious metal geochemistry, 1961-; Ph.D. thesis (Keays), M.Sc. thesis (Hsieh).
Concerns the distribution of Pt, Pd, Ir, Os, Ru and Au in basalts, ultrabasics and the rocks of the Sudbury irruptive. The analytical method used is neutron activation analysis. The most concerted effort at present is on analysis of sulphide and silicate minerals from the Sudbury irruptive. See Radioactivation determination of palladium in basaltic and ultrabasic rocks; Geochim. et Cosmochim. Acta (in press).

519. Ferguson, S.A., Geological Branch, Ontario Dept. of Mines:
Geology of deep developments at some gold mines in northwestern Ontario, 1964-66.
See Ont. Dept. Mines, P.R. 1965-3, pp. 20-23.

520. Gregg, Roger, Univ. of Alberta:
Paragenesis of geochemistry of stibnite deposits, 1965-68; Ph.D. thesis.

521. Hay, Peter W., New Brunswick Mines Branch:
Petrology of five granitic outliers northwest of the St. George Batholith, New Brunswick, 1965-66.
Studies have been undertaken to compare and contrast petrology of the plugs to the nearby batholith and the volcanic rocks of the Mount Pleasant area.

522. Holland, S.S., British Columbia Dept. of Mines and Petroleum Resources:
Study of molybdenum prospects at Rossland, British Columbia, 1965-66.
Study of selected mineral properties, central and northern British Columbia, 1965.

523. Hutchinson, R.W., Edgar, A.D., Armstrong, C.A., Univ. of Western Ontario:
Comparative study of lithium pegmatites, 1965-.
An investigation of the factors that lead to development of internal structure (zoning) in certain lithium pegmatites as contrasted with other homogeneous (unzoned) lithium pegmatites.

524. Jolliffe, A.W., George, P., Queen's Univ.:
Distribution of elements in ore deposits of the Porcupine area, Ontario, 1965-66; M.Sc. thesis (George).
The trace and major element content of mill-head and wall-rock samples from gold mines of the Kirkland Lake-Val d'Or and Timmins mining districts.

525. Mulligan, R., Geol. Surv. Can.:
Beryllium and lithium deposits, northern Saskatchewan and Manitoba.
See Geol. Surv. Can., Paper 66-1, 1966, p. 201.
Metallogenic study of beryllium-tin province of Cassiar batholith, British Columbia, 1965-66.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 46-47.
Tin deposits in Canada, 1961-.
To study and compile the geology of tin deposits and occurrences to help mineral exploration.
See Geol. Surv. Can., Paper 65-1, 1965, pp. 151-52.

526. Petruk, W., Mines Branch, Dept. of Mines and Technical Surveys:
Mineralogy of the silver deposits in the Cobalt and Gowganda areas, Ontario, 1964-67.
A systematic study is being made of the deposits in the Cobalt and Gowganda areas in order to obtain detailed information on their mineralogical and chemical characteristics. It is hoped that this will lead to a better understanding of ore deposition processes and will serve as a useful aid in exploration and ore utilization.

527. Prochnau, J.F., McGill Univ.:
The relationship between gold and base metal deposits in Chibougamau, Quebec, 1965-67; M.Sc. thesis.

528. Rose, E.R., Geol. Surv. Can.:
Geology of vanadium deposits of Canada, 1963-.
See Geol. Surv. Can., Paper 66-1, 1966, p. 204.

529. Streeton, D.H., Wardlaw, N.C., Univ. of Saskatchewan:
Distribution and origin of carnollite in the Prairie Evaporite Formation, Saskatchewan, 1965-67; M.Sc. thesis (Streeton).

Industrial Minerals

530. Bannatyne, B.B., Manitoba Dept. of Mines and Natural Resources:
Clay and shale deposits of Manitoba, 1961-66.
As part of this study, a set of isopach and structure contour maps for each Cretaceous formation or member is being prepared for separate publication as part of a series of stratigraphic maps of Manitoba, Manitoba Mines Branch publication 62-5 (1963).

531. Bourret, P.E., Quebec Dept. of Natural Resources:
Industrial minerals investigations.
A continuing program of investigation, with the purpose of advising owners as to the value of industrial mineral deposits and to furnish information regarding the extraction and marketing of their product.

532. Brady, J.G., Dean, R.S., Bell, K.E., Mines Branch, Dept. of Mines and Technical Surveys:
Mineralogical constitution and physical and chemical properties of Canadian clays, 1958-.
A continuing program in which unfired and fired properties and compositions of clays and clay bodies are studied. The work involves numerous processing problems. See Ceramic Clays and Shales of British Columbia, Mines Branch Technical Bulletin TB 54, January 1964.

533. Carlson, V.A., Research Council of Alberta:
Bedrock topography and sand thickness maps of the Edmonton area, 1961-66.
A bedrock topography map of townships 49-55, ranges 20-27, W. 4th Meridian with 25-foot contours has been constructed using information from oil company shot hole logs and other sources. A map of the thickness of sand encountered in the overburden using the same sources of information has also been constructed.

534. Dreimanis, A., Gunn, C.B., Univ. of Western Ontario:
Provenance of diamonds in glacial drift, Great Lakes region, 1964-66; M.Sc. thesis (Gunn).

535. Fogwill, W.D., Fletcher, K., Newfoundland Dept. of Mines, Agriculture and Resources:
Diatomaceous earth in Newfoundland, 1964-.

536. Guillet, G.R., Ontario Dept. of Mines:
Diatomite, marl and peat moss in Ontario, 1964-66.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 59-60.
Ceramic industry in Ontario, 1963-67.
Clay and shale products in Ontario, 1961-66.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 59-60.

537. Halferdahl, L.B., Research Council of Alberta:
Clay below the McMurra Formation, 1964-66.
Some stream deposits in Alberta, 1957-66.
The characteristics of gravel and sand in some Alberta Rivers are being studied to learn their economic possibilities and factors bearing on their transportation.

538. Hamilton, J.B., New Brunswick Mines Branch:
Limestone in New Brunswick, 1961-64.
See Limestone in New Brunswick: Mineral Resources Report No. 2, Mines Branch, Dept. Lands and Mines, New Brunswick.

539. Harris, I.M., Gale, G., Newfoundland Dept. of Mines, Agriculture and Resources:
Silica assessment, 1965-.

540. Hewitt, D.F., Ontario Dept. of Mines:
Industrial mineral resources of the Markham-Newmarket area, 1965.
See Ont. Dept. of Mines, Prelim. Rept. 1965-3, pp. 57-59.

541. Hoque, M., Wardlaw, N.C., Univ. of Saskatchewan:
Gypsum - anhydrite rocks of the Gypsumville area, Manitoba, 1965-66; M.Sc. thesis (Hoque).
An objective of this study is to determine the age and origin of this deposit. The petrography of the rocks is being investigated and some complex fold structures in the gypsum mapped and described.

542. Hutchinson, R.W., Holwerda, J.G., Univ. of Western Ontario:
Origin of potash deposits in the Danakil area, Eritrea, Ethiopia.

The deposits occur in relatively recent Pleiocene (?) strata that are little disturbed. The purpose is to describe and illustrate the geology of these deposits and to compare them with other similar deposits.

543. Jones, B., Nova Scotia Dept. of Mines:
Investigation of silica deposits in Nova Scotia, 1962-65.
An assessment of the economic potential of silica occurrences in the Province for production of lump silica, silica sand and silica flour.

544. Maurice, O.D., Quebec Dept. of Natural Resources:
Investigations of industrial mineral and building stone occurrences in Quebec.

545. McCammon, J.W., British Columbia Dept. of Mines and Petroleum Resources:
Examination and mapping of limestone deposits, Clinton, Kunga Island, Terrace, Prince George, Fort McLeod, Creston, Duncan; silica deposits, Rose Prairie, Longworth, Sicamous, Ymir, Sheep Creek; barite deposits, Mi. 547, Mi. 397 and Liard Hot Springs, Alaska Highway, Parson, Brisco; fluorite deposits, Liard Hot Springs and Quesnel Lake; talc deposits at Northbend and Illecillewaet; gypsum at Windermere, Lussier River; mica schist at Chemainus; and mercury at Tyax Creek.

546. McIntosh, R.A., Wardlaw, N.C., Univ. of Saskatchewan:
"Salt-horses" in potash ore beds of Saskatchewan, 1965-66; M.Sc. thesis (McIntosh).
This study has involved the mapping of eight halite bodies in the International Minerals mine at Esterhazy and one halite body at the Potash Company of America mine near Saskatoon. Geochemical petrographic and structural studies are being conducted with the objective of providing information on the origin of these local halite masses.

547. McKillop, J.H., Harris, I.M., Newfoundland Dept. of Mines, Agriculture and Resources:
Limestones in Newfoundland, 1953-66.
See Limestone potential of Newfoundland; Can. Min. Jour., April, 1962.

548. Shea, F.S., Murray, D.A., Crowell, D., Nova Scotia Dept. of Mines:
Inventory of limestone and dolomite deposits in Cape Breton, 1962-65.

Assessment by surface sampling, geological study and diamond drilling of deposits of economic importance.

549. Tater, J., Gale, G., Newfoundland Dept. of Mines, Agriculture and Resources:
Pegmatite minerals assessment, 1964-.
Important minerals such as beryllium-bearing minerals, feldspar, mica, garnet and others in pegmatites are the object of the study.

550. Wardlaw, N.C., Univ. of Saskatchewan:
Rubidium and bromine in the potash ore-beds, of the Middle Devonian Prairie Evaporite Formation, Saskatchewan, 1965-66.
See Bromide in some Middle Devonian salt rocks of Alberta and Saskatchewan: Third Internat. Williston Basin Symposium Volume, Billings Geol. Soc., Montana, 1964, pp. 270-273.

Petroleum

551. Carrigy, M.A., Research Council of Alberta:
Geology of the Athabasca Oil Sands, 1957-.
See Athabasca Oil Sands Bibliography (1789-1964), Res. Coun. Alberta, Prelim. Rept. 65-3, 91 pages.

552. Draper, R.G., Millson, M., Montgomery, D.S., Mines Branch, Dept. of Mines and Technical Surveys:
Study of Melville Island bituminous sand, 1965-66.

553. Howie, R.D., Geol. Surv. Can.:
Structure and stratigraphy of Stony Creek Field, New Brunswick.
See Geol. Surv. Can., Paper 65-2, 1965, p. 71.

554. Lerbekmo, J.F., and graduate students, Univ. of Alberta:
Carbonate reservoir rocks in Alberta, 1962-.
See Petrology of a Permo-Carboniferous section in northern Jasper National Park, Alberta; Edmonton Geological Soc. 6th Annual Field Trip Guidebook, 1964, pp. 35-60.

555. Martin, H.L., Geol. Surv. Can.:
Mississippian subsurface geology in the Pembina area, Alberta, 1965.

556. Stelck, C.R., Warren, P.S., Univ. of Alberta:
Cretaceous stratigraphy of western Canada, 1941-.

See Gas from the Alberta Mesozoic, Alberta Assoc. Pet. Geol., special volume on Occurrences of Natural Gas (in press).

557. Usher, John L., Mothersill, J.S., Queen's Univ.:
The Discontinuous Halfway Sand of N.E. British Columbia, 1965-66; Ph.D. thesis (Mothersill).

558. Usher, John L., Sawford, E.C., Queen's Univ.:
The Beaverhill Lake Reef of Carson Creek Oil Field, 1965-66; M.Sc. thesis (Sawford).

Coal and Peat

559. Cameron, A.R., Hacquebard, P.A., Babu, S.K. (NRC Post-doctorate Fellow), Geol. Surv. Can.:
Petrographic examination of coking coal blends from Michel, British Columbia, 1961-.
To determine, by means of detailed petrographic studies of mined coal and seams in situ, the most suitable coking coal blends of this area. This program is carried out in cooperation with the Fuels Division of the Mines Branch. See Geol. Surv. Can., Paper 65-2, 1965, pp. 65-66.

560. Hacquebard, P.A., Cameron, A.R., Donaldson, J.R., Birmingham, T.F., Barss, M.S., Geol. Surv. Can.:
Research on the petrography and spore analysis of coal and associated clastic sediments.
Investigations of the character and correlation of the various coal seams in Nova Scotia and Western Canada coal fields. See Geol. Surv. Can., Paper 65-2, 1965, pp. 65 and 70-71.

561. Latour, B.A., Geol. Surv. Can.:
Coal reserves of Canada, 1950-.
Collection of data necessary for estimation of Canada's coal reserves; collection of coal samples for qualitative spectrographic analysis.

562. Pollett, F., Newfoundland Dept. of Mines, Agriculture and Resources:
Peat moss (quarryable) in Newfoundland, 1960-.
Assessment of bogs accessible by ground transport with calculation of volumes of harvestable peat moss.

563. Shea, F.S., Autherland, D.R., Nova Scotia Dept. of Mines:
Assessment of peat moss occurrences, Guysborough county, Nova Scotia, 1964-.

Maps of each bog show surface and subsurface contours, sounding and sampling points and the extremities of the bog. Chemical and physical analyses are tabulated at the end of the report. See Peat Moss Project - Assessment of peat moss occurrences, Guysborough, Nova Scotia; N.S. Dept. of Mines, Stellarton, 1965.

General Problems

564. Card, K.D., Ontario Dept. of Mines:
Sudbury mining area, 1965-67.

565. Carson, D.J.T., Geol. Surv. Can.:
Metallogenic study, Vancouver Island, British Columbia, 1964-65; Ph.D. thesis.
See Geol. Surv. Can., Paper 65-1, 1965, p. 47.

566. Carter, N.C., British Columbia Dept. of Mines and Petroleum Resources:
Property examination and local mapping, Alice Arm-Illiance River area, British Columbia, 1965.
See Report of the Minister of Mines and Petroleum Resources, 1964, pp. 24-44.

567. Chamberlain, J.A., Geol. Surv. Can.:
Sulphide phase study of Muskox Intrusion, 1962-65.
To provide information that will help to explain the genesis of the ore mineral phases of the Muskox Intrusion relative to the history of the entire igneous body. See Geol. Surv. Can., Paper 65-2, 1965, p. 36.

568. Coleman, L.C., Gaskarth, J.W., Smith, J.R., Univ. of Saskatchewan:
Geology and bedrock geochemistry of the Hanson Lake area, Saskatchewan, 1962-68; Ph.D. thesis (Gaskarth).
Geological mapping at 1" = 500' is being conducted in the Hanson Lake area. Bedrock samples collected at approximately 200' intervals are being analyzed by X-ray fluorescence techniques for Cu, Zn, Ni, Pb. The relationship of the distribution of these metals to known sulphide deposits and to the geological structures and rock units in the area is being investigated as is the relationship of Amisk-type and Kisseynew-type rocks.

569. Davies, J.F., Manitoba Dept. of Mines and Natural Resources, Wilson, H.D.B., University of Manitoba, and government and university staff and graduate students:

Project Pioneer, an integrated geological, geophysical and geochemical study of a Precambrian volcanic-sedimentary belt, 1965-71.

Integrated with detailed re-mapping of 1,500 square miles along the Rice Lake-Beresford Lake volcanic-sedimentary belt will be a series of laboratory projects and geophysical studies designed to reveal as much as possible about the geologic character and history, both at surface and at depth, of a typical Precambrian "greenstone belt". Various phases of Project Pioneer will include: complete photogeologic interpretation; 4-inch-to-the mile mapping; interpretation of aeromagnetic data utilizing techniques for separating various levels of magnetism; study of rock magnetism; determinations of gravity; seismic studies; regional and detailed structural analyses, including petrofabrics where applicable; investigation of metamorphism; detailed petrofabric and modal analysis of all rocks on a statistical basis; determination of chemical character of all rock types, and distribution of chemical variations; distribution of minor elements; petrographic and chemical study of wall-rock alteration and of regional alteration; distribution of radioactivity in rocks; age determinations; trace elements in surficial deposits and streams; study of gold-bearing and barren quartz veins.

570. Duquette, G., Quebec Dept. of Natural Resources:
Examination of mining properties and development work in Chibougamau district.

A continuing program of investigation of mining properties and development work being carried out from year to year in the Chibougamau district. See Description of mining properties examined in 1961 and 1962; Que. Dept. Nat. Res., Prelim. Rept. No. 529, 1964.

571. Fortescue, J.A.C., Geol. Surv. Can.:
Biogeochemical investigations, 1963-68.

To develop and evaluate techniques for exploring for minerals by sampling trees and other plants. See Geol. Surv. Can., Paper 66-1, 1966, p. 187 and Paper 65-2, 1965, pp. 111-112.

572. Grove, E.W., British Columbia Dept. of Mines and Petroleum Resources:
Structural stratigraphic study of the western side of the Bowser Basin and eastern margin of the Coast Range batholith, and the relation of mineral deposits to the structure, 1964-65.

573. Hay, P.W., New Brunswick Mines Branch:
Stratigraphy and structure of Silurian rocks in southern New Brunswick, 1965-.

Detailed geological studies of the Mascarene Group, an undivided series of volcanic and sedimentary rocks of Silurian age, to determine their stratigraphic relations, structural features, and economic potential.

574. Hewitt, D.F., Ontario Dept. of Mines:
Pegmatite mineral resources of Ontario, 1964-66.

575. Hornbrook, E.W., Geol. Surv. Can.:
Biogeochemical studies near Timmins, Ontario.
See Geol. Surv. Can., Paper 66-1, 1966, p. 155.

576. Kish, L., Quebec Dept. of Natural Resources:
Lake Otelnuk area, Ungava, 1965-.
Detailed study of geochemically anomalous areas in the Labrador Trough detected in 1964 in the course of routine sampling of stream sediments.

577. Langford, G.B., Univ. of Toronto:
Structural classification of metalliferous deposits, 1950-66.

578. Latulippe, M., Quebec Dept. of Natural Resources:
Examination of mining properties and development work in the Val d'Or district, Quebec - a continuing program.
See Description of mining properties examined in 1961 and 1962, Que. Dept. Nat. Res., Prelim. Rept. 529, 1964.

579. McCartney, W.D., Geol. Surv. Can.:
Metallogenic study, Canadian Appalachians.
See Geol. Surv. Can., Paper 66-1, 1966, p. 199.

580. McCartney, W.D., Geol. Surv. Can.:
Appalachian metallogenetic studies.
A study of the relationships of mineral distribution in the Appalachian geological region to the tectonic evolution (regional) and resultant lithologies, stratigraphy and structures. See Geol. Surv. Can., Paper 64-29, 1964 and Paper 65-1, 1965, pp. 149-51.

581. McKechnie, N.D., British Columbia Dept. of Mines and Petroleum Resources:
Property examinations with local detailed mapping, Vancouver Island and southern mainland, British Columbia.
See Report of the Minister of Mines and Petroleum Resources, 1964,

582. McLeod, C.R., Geol. Surv. Can.:
Heavy mineral studies in Nova Scotia, 1965.
See Geol. Surv. Can., Paper 66-1, 1966, p. 173.

583. Mendelsohn, F., Harju, H.O., Queen's Univ.:
Use of statistics in calculating ore reserves, 1965-66; M.Sc. thesis (Harju).

584. Netolitzky, R., Campbell, F.A., Univ. of Calgary:
A study of the geometry and mineralization in an ultrabasic plug south of Kipahigan Lake, Saskatchewan and of the age relations of the plug to two fold episodes in the country rock.

585. Nickel, E.H., Petruk, W., Cabri, L.J., Mines Branch, Dept. of Mines and Technical Surveys:
Mineralogical investigation of Canadian ores in conjunction with mineral processing research, 1953-.
A wide range of ores is currently being studied mineralogically; much of the data are also useful in the fields of economic geology.

586. Potter, R.R., New Brunswick Mines Branch:
Metallogenic studies of New Brunswick, 1965-70.
The known mineral deposits of the Province will be examined and evaluated in order to determine their spatial and temporal relationships to the structural and stratigraphic development of this part of the Appalachian folded zone. Deposits will be classified mainly on mineralogy, morphology and age, with special emphasis on their relationship to regional fault-joint systems within structural-metallogenic zones.

587. Pye, E.G., Ontario Dept. of Mines:
Mineral deposits of the Thunder Bay district, 1964-65.
See Ont. Dept. Mines, Prelim. Rept. 1965-3, pp. 19-20.

588. Robert, Jean-Louis, Quebec Dept. of Natural Resources:
Geology of the Lesseps Brook area, Lesseps township, Gaspé-North county, 1,000 feet to 1 inch, 1963-66.
Part of a 4-year program in the central part of the Gaspé Peninsula entailing the detailed mapping of an Ordovician-Devonian assemblage and the study of areas of metallic mineralization. See Mount Hog's Back area (P.R. No. 540) and Mount Vallières-de-St. Réal area (P.R. No. 549), Que. Dept. Nat. Res., 1966.

589. Roscoe, S.M., Geol. Surv. Can.:
Metallogenetic studies of Huronian rocks, Ontario and Quebec, 1961-65.
A study of the stratigraphy and geochemistry of Huronian rocks with special attention to basal contact and metalliferous concentrations related thereto. See Geol. Surv. Can., Paper 65-1, 1965, pp. 153-56 and Paper 66-1, 1966, p. 203.

590. Sims, W.A., Mount Allison Univ.:
Study of heavy minerals of recent stream sediments, Eastern Gaspé, Quebec, 1965-67.

591. Wolfe, W.J., New Brunswick Mines Branch:
Regional geochemistry of stream sediments and waters in southwestern New Brunswick, 1965-69.
Samples of stream sediments and waters will be collected and analyzed for trace elements and heavy minerals. Systematic sampling of streams and springs in southwestern New Brunswick will be carried out on a regional scale initially, with detailed examination of specific areas or problems to follow.

MINERALOGY

Specific Minerals

592. Berry, L.G., Queen's Univ.:
X-ray study of hatchite, 1965-66.

593. Carmichael, C.M., Univ. of Western Ontario:
Composition of substituted magnetites, 1962-.
The compositions of natural magnetites containing other ions in the lattice are determined by microscopic, X-ray, Curie Point and electron probe methods. A magnetite with a unit cell smaller than pure magnetite and a Curie Point of 150°C has been found in Triassic lavas of Nova Scotia. It is probable that this is a magnesium substituted magnetite.

594. Dave, S.N., McGill Univ.:
Thermo-chemical studies of calcite and aragonite, 1962-66; M.Sc. thesis.

595. Ferguson, R.B., Gait, R.I., Univ. of Manitoba:
Electrostatic charge calculations of feldspar mineral structures, 1965-67; Ph.D. thesis (Gait).
Calculations are being carried out on the electrostatic charge distributions in all of the main feldspar structures taking account of the cation-anion distances, and making reasonable

assumptions regarding pure Si-O and Al-O distances, large cation coordinations, etc. Computer programs for the IBM 1620 are being used. First results on low albite and primitive anorthite look promising. If reasonable results for all the members are obtained, this should provide strong evidence for the ionic character of these structures. This in turn holds important implications for the phase relationships of the feldspars.

596. Forman, S.A., Rowland, J.F., Mines Branch, Dept. of Mines and Technical Surveys:
The crystallography and structure of sphalerite, 1964-66.
Includes a study of the effect of iron on the lattice parameters of sphalerite, elucidation of the problem of interstitial versus substitutional incorporation of the iron, and a study of the sphalerite-wurtzite transition.

597. Frueh, A.J., Jr., McGill Univ.:
The crystal chemistry and crystal structure of minerals, 1960-.
The crystal structure of Dawsonite, $NaAl(CO_3)(OH)_2$, has been completed. Several synthetic polymorphs of $Hg_3Cl_2S_2$ are being investigated. See Fourier Projections of Twinned Crystals, Nature 193, 1172 (1962).

598. Goodman, R.H., Mines Branch, Dept. of Mines and Technical Surveys:
The Mössbauer effect in (Zn, Fe)S solid solutions, 1964-66.
The objectives are to study the electric and magnetic environment of iron nuclei in (Zn, Fe)S solid solutions as a function of temperature, concentration of impurities and the effects of surface ions, using the Mössbauer effect in Fe-57. See The Use of an On-Line Computer for Mössbauer Effect Experiments, Rev. Sci. Inst. (in press).

599. Horwood, J.L., Keys, J.D., Mines Branch, Dept. of Mines and Technical Surveys:
The magnetic susceptibility of (Zn, Fe)S solid solutions, 1964-66.
Objectives are to measure the magnetic susceptibility due to unpaired electron spins and to relate this information to the cohesive forces of Fe in (Zn, Fe)S.

600. Kasowski, Ann (Mrs.), Univ. of Ottawa:
Soda Pyroxenes from Hull and Templeton townships, Quebec, 1964-66; M.Sc. thesis.

601. Keys, J.D., Baleshta, T.M., Mines Branch, Dept. of Mines and Technical Surveys:
Electrical properties of iron-containing ZnS, 1965-66.

The objective is to determine the mechanism of electrical conductivity in semi-insulating ZnS containing iron.

602. Lyall, K.S., N.R.C., Post-doctoral Fellow, Mines Branch, Dept. of Mines and Technical Surveys:
Internal friction in rock salt, 1965-67.
A study of dislocation damping in single crystals of rock salt after different amounts of cold work in different orientations.
Plastic deformation of Galena, 1961-.
See Plastic Deformation of Galena, Acta Metallurigca (1965).

603. Maniw, J.G., Univ. of Toronto:
Critical study of the exsolution texture of chalcopyrite in sphalerite, 1965-66; M.Sc. thesis.

604. Manning, P.G., Mines Branch, Dept. of Mines and Technical Surveys:
Optical absorption of iron-containing ZnS, 1965.
The objective is to relate the optical absorption spectrum of iron-containing ZnS to the sites occupied by the iron in this structure.

605. Perrault, G., Ecole Polytechnique:
The structure of eucolite, 1965-67.
A sphere of X-ray diffraction data should be available in May 1966. Preparation of Patterson maps is the next step under consideration.
Diffractometry of feldspars, 1957-70.
This work is centred on the application of diffractometer techniques to identification and quantitative measurement of feldspars in very fine-grained rocks. See La structure atomique des feldspaths, par Guy Perrault, L'Ingénieur 1957.
Spectrophotometric measurement of the reflectivity for common ore minerals, 1964-67.
It is planned to investigate the usefulness of reflectivity versus lambda for identification of minerals.
Diffractometry of clinopyroxenes, 1962-68.

606. Petruk, W., Mines Branch, Dept. of Mines and Technical Surveys:
Relationship between the magnetic susceptibility and composition of chlorite, 1963-65.
A correlation between the specific magnetic susceptibility and the iron plus manganese content of chlorite was established. See Relationship between the Specific Magnetic Susceptibility and the Iron Plus Manganese Content of Chlorite, Canadian Mineralogist, vol. 8, pt. 3, pp. 373-376 (1965).

607. Radcliffe, D., Berry, L.G., Queen's Univ.:
Electron probe and crystallographic study of loellingite-safflorite, 1965-66; Ph.D. thesis (Radcliffe).

608. Rao, S.V.L.N., (Post-doctorate Fellow), Berry, L.G., Queen's Univ.:
Refinement of crystal structure of enargite, emplectite, bismuthinite, 1964-66.

609. Roeder, P.L., Campbell, F., Queen's Univ.:
Stability of Ni-Mg olivine as a function of oxygen partial pressure and temperature, 1964-66; M.Sc. thesis (Campbell).

610. Roeder, P.L., Hill, R., Queen's Univ.:
Olivine - Pyroxene Equilibria in the Mg-Fe-Si-O system, 1965-66; M.Sc. thesis (Hill).

611. Rimsaite, J.H.Y. (Miss), Geol. Surv. Can.:
Study of micas, 1959-.
The study of the mica family of rock-forming minerals so as to correlate physical, optical and X-ray properties with chemical composition and crystal structure and to relate these data to the origin, paragenesis, mode of occurrence and history of micas in rocks. See Geol. Surv. Can., Paper 64-2, 1964, pp. 82-86.

612. Shewman, R.W., McGill Univ.:
Phase relations in the pentlandite region of the Fe-Ni-S system, 1965-66; M.Sc. thesis.
This research is conducted to explore, (1) the limits of pentlandite solid solution at 400°C and 500°C, (2) the limits of monosulphate solid solution at 400°C and 500°C, and (3) the upper stability limit of the pyrite-pentlandite assemblage.

613. Starkey, J., Univ. of Western Ontario:
X-ray studies of deformed quartz crystals and polycrystalline quartz aggregates, 1963-67.
See X-ray analysis of preferred orientation of quartz crystals in three lineated quartzites. Proceedings of the National Academy of Science, vol. 52, 1964, pp. 817-823.

614. Stevenson, J.S., McGill Univ.:
Study of worldwide occurrences of colloform magnetite, 1962-.
See Colloform magnetite in a contact metasomatic iron deposit, Vancouver Island, British Columbia. Economic Geology, vol. 59, No. 7, 1964, pp. 1298-1305.
Mineralogical studies of ashed lung tissue, 1950-.
Research continues as medical material becomes available.

615. Streeton, D.H., Wardlaw, N.C., Univ. of Saskatchewan:
Distribution and origin of carnollite in the Prairie Evaporite Formation, Saskatchewan, 1965-67; M.Sc. thesis (Streeton).

616. Van Loan, P.R., McGill Univ.:
A crustal structure analysis of aenigmatite, 1960-66; Ph.D. thesis.

General Problems

617. Aarden, H.M., Van Loon, J.C., Gittins, J., Brooker, T., Univ. of Toronto:
The development of schemes of analysis for rare earth bearing rocks and minerals, 1965-; Ph.D. thesis (Aarden).

618. Brooker, E.J., Univ. of Toronto:
X-ray spectrographic analysis of rocks and minerals with particular attention to rare earth mineral analysis, 1964-. See X-ray spectrographic analysis of minute mineral samples; Canadian Mineralogist (in press).

619. Ferguson, Laing, Mount Allison Univ., O'Brien, N.R., New York State College:
Origin of fissility in shale, 1964-67.
Involves the correlation of X-ray data on the nature and orientation of the clay particles of the shale with palaeontological and palaeoecological data from the same bed. See A comparison of two techniques for measuring shale compaction; J. Sedimentary Petrology, vol. 34, No. 3, Sept. 1964, pp. 694-695.

620. Folinsbee, R.E., Univ. of Alberta:
The Revelstoke meteorite, 1965-66.
Two research papers on this interesting carbonaceous chondrite are being prepared, one in association with Drs. Douglas and Maxwell of the Geological Survey of Canada and the other with Drs. Galt and Argyle of the Dominion Astrophysical Laboratory, Penticton, and L.A. Bayrock of the Research Council of Alberta. See Revelstoke Meteorite, Meteoritical Bulletin No. 34, November 1965 (in press).

621. Forman, S.A., Butterill, J., Mines Branch, Dept. of Mines and Technical Surveys:
An evaluation of the Brewster Angle method of determining the refractive indices of ore minerals, 1965-.
A procedure has been devised for measuring Brewster's angle of polished mineral sections using a modified optical

goniometer. The method shows promise in determining the refractive index of ore minerals, but appears to be very sensitive to surface effects.

622. Friedlaender, C.G.I., Dalhousie Univ.:
Contributions to the mineralogy and petrology of Nova Scotia.

623. Golightly, J.P., McGill Univ.:
An investigation into the cause of pleochroism in certain silicates, 1963-66.

624. Kaiman, S., Hughson, M.R., Mines Branch, Dept. of Mines and Technical Surveys:
Mineralogical investigation of ore samples.
Determination of the mineralogical composition of ores and mill products. The object is to provide mineralogical information in connection with ore treatment studies.

625. Kingston, P., Univ. of Toronto:
Mineralogical study of a new ore mineral from Alice Arm, British Columbia, 1965-66; M.Sc. thesis.

626. Ledoux, R., Université Laval:
Mineralogical and physico-chemical character of quick clays in Quebec, 1965-67.
To determine the clay minerals in several size fractions and see if application of electrolytes affects properties of the quick clays.

627. Mendelsohn, F., Ostensoe, E.A., Queen's Univ.:
Mineralogy of Granduc Mine, British Columbia, 1964-65; M.Sc. thesis (Ostensoe).

628. Nickel, E.H., Mines Branch, Dept. of Mines and Technical Surveys:
The fundamental properties of sulphide minerals, 1964-.
The investigation of the fundamental properties of sulphide minerals, including structure, bonding, and optical and physical properties to provide basic information of value in the utilization of sulphide ores. See Metallic Lustre and the Forbidden Energy Gap, Can. Mineralogist, vol. 8, 399 (1965).
Reflectivity of ore minerals, 1963-.
This work is directed toward the quantitative measurement of the reflectivity of ore minerals to assist in their characterization and to determine their optical constants. See Report on the Cambridge International Summer School for Quantitative Methods in Reflected-Light Microscopy, Mines Branch Information Circular IC 156 (1963).

629. Nickel, E.H., Petruk, W., Cabri, L.J., Mines Branch, Dept. of Mines and Technical Surveys:
Mineralogical investigation of Canadian ores in conjunction with mineral processing research, 1953-.
A wide range of ores is currently being studied mineralogically; much of the data are also useful in the field of economic geology.

630. Pajari, G.E., Trembath, L.T., Gunter, W.D., Univ. of New Brunswick:
The mineralogy and petrochemistry of Rapakivi type granites in the St. George Complex, New Brunswick, 1965-; M.Sc. thesis (Gunter).
The mineralogy and petrochemistry of Triassic volcanics of Grand Manan, New Brunswick, 1965-; M.Sc. thesis (Gunter).

631. Perrault, G., Boissonnault, J., Machairas, G., Ecole Polytechnique:
Mineralogy of Mont St. Hilaire, 1964-70; M.A.Sc. thesis (Boissonnault).
Data on serandite, eucolite, catapleite and a number of other minerals are being prepared for publication. See Catapleite from St. Hilaire (abstract), Canadian Mineralogist, vol. 8, pt. 3, p. 398, 1965.

632. Perrault, G., Gélinas, L., Chouinard, R., Ecole Polytechnique:
Mineralogy and petrology of Oka alkaline intrusives, 1957-70; M.A.Sc. thesis (Chouinard).
See Notes sur la précision des analyses quantitatives du niobium par fluorescence des rayons X, par Guy Perrault, L'Ingénieur, No. 188, 1961.

633. Perrault, G., Richard, P., Ecole Polytechnique:
A comparison of X-ray diffraction intensities by crystalline substances as measured by diffractometer and densitometer, 1965-66; M.A.Sc. thesis (Richard).
This method should prove interesting in gauging the influence of μ/ρ and diameter of spherical specimens investigated by the Debye Scherrer technique.

634. Petruk, W., Mines Branch, Dept. of Mines and Technical Surveys:
Mineralogy of the silver deposits in the Cobalt and Gowganda areas, Ontario, 1964-67.
A systematic study is being made of the deposits in the Cobalt and Gowganda areas in order to obtain detailed information on their mineralogical and chemical characteristics. It is hoped that this will lead to a better understanding of ore deposition processes and will serve as a useful aid in exploration and ore utilization.

635. Raham, G., Univ. of Calgary:
Mineralogy of the Big Ledge zinc deposit - Central British Columbia, 1965-66; M.Sc. thesis.
Detailed study of this strata bound lead-zinc deposit in the Shuswap terrain should contribute to the understanding of the sequence of mineralization and metamorphism in the area.

636. Stevenson, J.S., Stevenson, L.S., McGill Univ.:
Mineralogical study of teeth from Carboniferous land animals, Joggins, Nova Scotia, from the Dawson collection, 1962-.

637. Traill, R.J., Lachance, G.R., Geol. Surv. Can.:
Electron microanalysis, 1962-.
Research and development studies on electron probe instrumentation and applications of electron microanalysis to geological specimens.

638. Traill, R.J., Sabina, Miss A.P., Jambor, J.L., Geol. Surv. Can.:
Reference collection of X-ray powder photographs of minerals, 1949-.
The preparation of a collection of X-ray photographs of material identified accurately by chemical or other means. Lists are published from time to time of minerals for which such powder patterns are available.

PALAEONTOLOGY

639. Bamber, E.W., Geol. Surv. Can.:
Palaeontology and stratigraphy of the Carboniferous and Permian of northern Yukon, 1963-65.
See Geol. Surv. Can., Paper 65-1, 1965, pp. 42-43.
Mississippian correlations in the Jasper area, Alberta, 1963-65.
A study of the fauna in the Rundle Formation.

640. Bartlett, G.A., Geol. Surv. Can., and Bedford Institute of Oceanography:
Marine geology - benthonic foraminiferal ecology in nearshore environments of the Atlantic provinces; 1962-66.
Investigation of the distribution of living foraminifera and transportation of dead tests in nearshore waters of the Atlantic provinces. This enables a check on the validity of living total foraminiferal ratios for sedimentation rates, areas and period of growth of foraminifera, cause and effect of transportation of death assemblages, and the effects of various interrelated factors on the distribution of living and dead foraminiferal tests.
See Benthonic foraminiferal ecology in the Margaret's Bay and Mahone Bay, southeast Nova Scotia, Report B.I.O., 64-8 and Geol. Surv. Can., Paper 65-1, 1965, p. 138.

641. Bayrock, L.A., Research Council of Alberta:
Pleistocene vertebrate palaeontology of Alberta, 1959-.
See Late Pleistocene mammals from Central Alberta Vertebrate Palaeont. in Alta., rept. of conference Aug. 29-Sept. 3, 1963, Univ. of Alta., pp. 53-63, 1965.

642. Beales, F.W., Edhorn, A.S., Moorhouse, W.W., Univ. of Toronto:
Precambrian fossils of Animikie and related rocks, 1960-.
An investigation of macro- and microfossils, with particular reference to their role in the origin of iron formations. See Fossils from the Animikie, Port Arthur, Ontario; Trans. Roy. Soc. of Can., vol. LVI, Ser. III, Sec. III, 1962, p. 97.

643. Beerbower, J.R., McMaster Univ.:
Study of evolution in fossil assemblages of the Devonian Hamilton Group, western New York State, 1965-70.

644. Berry, M., McGill Univ.:
Variation in the Middle Ordovician stromatoporoid, Stromatocerium, at Crabtree Mills, Quebec, 1965-66; M.Sc. thesis.
A single bed in the upper part of the Black River Group has been sampled systematically for Stromatocerium which is present in great abundance. Variations within the individual coenostea are to be compared with variations between coenostea to determine the range of variability of structural features of this fossil and to interpret its paleoecology.

645. Bolton, T.D., Geol. Surv. Can.:
Silurian coral faunas of Canada, 1952-.
Includes coral faunas from the Silurian system of Manitoulin Island, Anticosti Island and Western Canada.
Silurian Bryozoa from Anticosti Island, Quebec, 1959-.
Late Silurian trilobites from Arctic Canada, 1962-.

646. Bray, R.G., McMaster Univ.:
Analysis of faunal structure in brachiopod 'nests', 1965-66; M.Sc. thesis.
A paleoecologic analysis may reveal that 'nests' are fossil communities and that their three-dimensional structure bears some relation to several properties.

647. Caldwell, W.G.E., Frison, E.H., Fischbuch, N.R., Jordan, D.L., Univ. of Saskatchewan:
Devonian faunas of northern Canada, 1959-; Ph.D. thesis (Frison and Fischbuch); M.Sc. thesis (Jordan).
See The nomenclature of the Devonian Formation in the Lower Mackenzie River valley; Bull. Canadian Petroleum Geology, vol. 12, No. 3, 1964, pp. 611-622.

648. Chamney, T.P., Herron, D.L., Geol. Surv. Can.:
Lower Cretaceous Neocomian micropalaeontology, Aklavik Range, District of Mackenzie, 1962-65.

649. Churcher, C.S., Royal Ontario Museum:
Canadian Pleistocene mammals, 1965-.
See A flake tool and a worked antler fragment from Lake Agassiz; Can. J. of Earth Sciences, vol. 2, pp. 237-246, 1965.

650. Churcher, C.S., Kisko, L., Edmund, A.G., Royal Ontario Museum:
Mammals of the Talaran Tar-seeps: Revision of the genus Smilodon and identification of other forms, 1959-.
To date publications on the deposition and geology of the deposit, a preliminary generic list of the fauna, and papers on the dire wolf (Aenocyon), deer (Palaeodocoileus, Mazama), skunks (Conepatus) and llamas (Palaeolama) have appeared. Edmond is revising the giant ground sloths, Churcher the sabre-tooth cats and Kisko is working on the metapodials of the dire wolf. See Camelid material of the Genus Palaeolama Gervais from the Talara Tar-seeps, Peru, with a description of a new subgenus, Astylolama; Proc. Zool. Soc. London, 145 (2), pp. 161-205, 1965.

651. Copeland, M.J., Geol. Surv. Can.:
Middle Devonian ostracoda from drill cores, southwestern Ontario, 1962-.
Canadian fossil Ostracoda, Conchostraca, 1962-.

652. Cox, Raymond L., Geol. Surv. Can.:
Biostratigraphy of the Sooke and Carmanah Formations, Vancouver Island, British Columbia, 1963-65.

653. Cumming, L.M., Geol. Surv. Can.:
Graptolite faunas, Gaspé Peninsula, 1961-.

654. Dineley, D.L., Univ. of Ottawa:
Ostracoderm faunas of Somerset Island, N.W.T. and Western Canada, 1964-.
The rich ostracoderm faunas obtained from Somerset Island include cyathaspidids, traquairaspidids and other heterostraci. From Alberta and the Yukon, Upper Silurian ostracoderm faunas include similar forms, sometimes preserved in unusual completeness. Many new species may be present.
See Ostracoderms from the Siluro-Devonian of Somerset Island, Arctic Canada, Proc. Geol. Soc. Lond., 1624, 97, 1965.
Silurian-Devonian fish, Alberta, Quebec and Nova Scotia, 1964.
Collection of fossil fish on Somerset Island, Northwest Territories, 1965.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 12-13.

655. Edmund, A.G., Royal Ontario Museum, Univ. of Toronto:
Osteology and evolutionary history of Late Pleistocene edentates, 1959-70.

This project is based on the large collections from Peru and Ecuador. Field trips to museums in Europe and the Americas have given immense amounts of data in the form of measurements, photos, notes and casts, permitting revision and detailed description of three subfamilies; Chlamytheriinae, Scelidotheriinae and Megatheriinae. Several publications will result.

Dinosaur footprints from the Lower Cretaceous Gething Formation on the Peace River, British Columbia, 1965-66.

Latex moulds were made of several well-preserved dinosaur trackways uncovered during construction of the Portage Mt. Power Project near Hudson Hope, British Columbia. The most interesting is of a large hadrosaur or iguanodont with a pes impression 68 cm long.

656. Ferguson, L., Mount Allison Univ.:
A study of the Scottish Carboniferous ostracod genera Bairdia and Paraparchites, 1965-67.

Growth series of both Bairdia and Paraparchites from restricted vertical intervals are being compared with the type specimens of numerous "species" of these genera which have been previously recorded from the same locality. The object is to reduce the number of spurious species within each genus by "lumping" together those forms which are obvious instars of one species.

Compacting-distortion of fossil brachiopods and its bearing on taxonomy, 1959-66.

The study is at present concentrated on the distortion of productids. See Distortion of Crurithyris urei (Fleming) from the Visean rocks of Fife, Scotland, by compaction of the containing sediments. J. of Palaeontology, vol. 35, No. 1, pp. 115-119, 1962.

A stratigraphic and palaeoecologic study of the Permo-Pennsylvanian productid genus Waagenoconcha Chao from the Yukon and Northwest Territories.

Involves the correlation of shell size stage at which geniculation occurs and coarseness of ornament with stratigraphic position and sediment types.

657. Fong, C.C., Memorial Univ. of Newfoundland:
Palaeoecology of the Lower Cambrian Archaeo-cyathid 'reefs' of northwestern Newfoundland and southern Labrador: 1965-67; M.Sc. thesis.

658. Fox, R., Univ. of Alberta:
Lower vertebrates of the Early Tertiary and Upper Cretaceous, 1960-65; Ph.D. thesis, Univ. of Kansas.
See Osteology and relationships of Captorhinus aguti (Cope) (Reptilia: Captorhinomorpha); Ph.D. thesis, Univ. of Kansas, 1965.

659. Frebold, H., Geol. Surv. Can.:
The Jurassic faunas of the Canadian Arctic, 1963-.
Jurassic faunas of Taseko Lakes area, British Columbia, 1965.
Lower Jurassic ammonite faunas from Queen Charlotte Islands and Rocky Mountains, 1965.

660. Fritz, M.A. (Miss), Univ. of Toronto:
A new bryozoan species, Diplotrypa schucherti from the Long Point Formation in western Newfoundland, 1964-66.

661. Fritz, M.A. (Miss), Rolfe, W.D.I., Univ. of Toronto:
Fossils from the Parisholm conglomerate in Lanark, Scotland, 1965.
Recently discovered limestone pebbles with included fossils, found in the Parisholm conglomerate from Lanarkshire in Scotland were identified and their age determined. The research provided information as to the age of the conglomerate and its possible derivation.

662. Fritz, Wm. H., Geol. Surv. Can.:
Cambrian palaeontology of Western Canada, 1965-.
To increase biostratigraphic control, up-date systematic descriptions and describe new species.

663. Getty, T.A., McMaster Univ.:
Taxonomic study of certain Jurassic ammonites from New Guinea, 1965-66; M.Sc. thesis.

664. Globensky, Y., Quebec Dept. of Natural Resources:
Microfauna from the St. Lawrence Lowlands of Quebec, 1964-.
A survey of the sedimentary rocks to find out about the presence of microfossils, with special emphasis on the conodonts.

665. Greggs, R. G., Queen's Univ.:
Upper Cambrian trilobite faunas; Upper Cambrian stratigraphy, 1957-.
See Upper Cambrian formations, southern Rocky Mountains of Alberta (abstract), Geol. Surv. Can., Paper 65-2, pp. 62-63, 1965.

666. Greiner, H.R., Univ. of New Brunswick:
Pennsylvanian microfossils of the Maritime Provinces, 1963-66.
Facies, palaeoecology, and faunal zonation of the Precambrian of the Atlantic Provinces, 1966-67.
Cyrtospirifer, Cyrtiopsis, and related genera, and their zonation and evolution in the Canadian Cordillera, 1965-66.

667. Guliov, Paul, Saskatchewan Dept. of Mineral Resources:
Foraminifera in the Lower Cretaceous Joli Fou Formation of southern Saskatchewan, 1963-65.

668. Harris, D.W.C., Univ. of Calgary:
Lower Palaeozoic Favosites, 1960-66; Ph.D. thesis.

669. Hueber, F.M., Geol. Surv. Can.:
Morphologic and taxonomic study of the Devonian megafossil floras of Eastern Canada, 1962-65.
A taxonomic and morphologic revision of Gaspé and related megafossil floras of Eastern Canada.

670. Jansonius, J., Imperial Oil Ltd., Calgary, Alberta:
Systematics of some Chitinozoa.

671. Jeletzky, J.A., Geol. Surv. Can.:
Monograph of Canadian belemnites, 1959-.
A comprehensive description of the Canadian belemnite faunas with special attention to the stratigraphic value of the Canadian belemnite species and genera.
Monograph of the Canadian Buchia.
To present a comprehensive description of the Canadian Buchia faunas. Special attention will be paid to the zonal value of all Buchia.
Study of Geological Survey collections of Scaphites faunas from the Bearpaw Formation of Alberta and Saskatchewan and its equivalents in Manitoba, 1949-.
The Upper Volgian (latest Jurassic) ammonites and buchias of Arctic Canada.
See Geol. Surv. Can., Paper 64-2, 1964, pp. 104-105.
Cretaceous index fossils of Western Canada, 1961-65.
See Geol. Surv. Can., Paper 64-11, and Bull. 103.
Coleoidea (= Dibranchiata) volume for treatise on invertebrate palaeontology, 1960-65.
Preparation of a summary of the present state of knowledge of this subclass of mollusks. See Geol. Surv. Can., Paper 65-2, 1965, pp. 72-77.

672. Jenik, A.J., Univ. of Alberta:
Paleoecologic study of the Swan Hills Member at the Goose River reef complex, 1964-65; M.Sc. thesis.

673. Legault, Jocelyne, Univ. of Ottawa:
Conodont fauna of the Stonehouse Formation (Silurian?), Arisaig, Nova Scotia, 1964-66; M.Sc. thesis.
A sparse conodont fauna has been obtained from limestones in the Stonehouse section in the cliffs of Northumberland Strait. It is accompanied by thelodont denticles and other phosphatic microfossils. A comparision with Upper Silurian/Lower Devonian faunas is being made.

674. Lenz, A.C., Univ. of Western Ontario:
Upper Silurian and Lower Devonian graptolites of the Yukon; Silurian-Devonian brachiopods of Royal Creek, Yukon, 1965-67.
A richly fossiliferous sequence in northern Yukon exhibits an interbedded sequence of graptolite and shelly faunas which should permit intercontinental correlation and add further data on the palaeogeography of Upper Silurian and Lower Devonian faunas. A study of the youngest graptolite bearing beds in Yukon (and Northwest Territories) will help correlate the graptolite sequence with that of Bohemia and aid in the correlation of the Royal Creek shelly faunas. See New occurrences of graptolites from the South Nahanni region, N.W.T. and Yukon: Bull. Can. Petrol. Geol., vol. 12, No. 4, 1964, pp. 892-900.

675. Mason, G.D., Chevron Standard Ltd., Calgary, Alberta:
Mississippian endothyroid foraminiferal investigations and research into Western Canadian conodont faunas.

676. Mayr, Ulrich, Univ. of Ottawa:
Conodont faunas of the Tully limestone with special reference to the Middle/Upper Devonian boundary problem in North America and Western Europe, 1963-66; Ph.D. thesis.
The Tully limestone has been extensively sampled throughout its vertical and lateral extent and the conodont faunas prepared for comparison with material from the European Devonian type sections. The Givetian-Frasnian type conodont succession is being studied for the first time.

677. McGill, P., Imperial Oil Ltd., Calgary, Alberta:
Middle Givetian ostracods from the Northwest Territories.

678. McGregor, D.C., Geol. Surv. Can.:
Study of Devonian plant microfossils of Eastern Canada, 1960-. Includes a palynological study of the Gaspé sandstone.

See Geol. Surv. Can., Paper 65-2, 1965, pp. 76-78.
Reference slide collection of small spores, 1960-.
A reference slide collection and photographic record of small spores of known geological age.

679. McGugan, A., Univ. of Calgary:
Agglutinated Cretaceous foraminifera from Vancouver Island.
See Upper Cretaceous zone foraminifera Vancouver Island, B.C. J. of Palaeontology, vol. 38, No. 5, 1964.

680. McIntyre, D.J., Chevron Standard Ltd., Calgary, Alberta:
Upper Mesozoic palynology, Western Canada.

681. Mehrotra, P., McGill Univ.:
Middle Devonian stromatoporoids from the Yukon, 1965-67; M.Sc. thesis.

682. Mott, R.J., Geol. Surv. Can.:
Palynological studies in central Saskatchewan, 1965.
See Geol. Surv. Can., Paper 66-1, 1966, p. 129.

683. Nelson, S.J., Univ. of Calgary:
Permo-Carboniferous brachiopods of Western Canada, 1955-.
See Mississippian faunas of Western Canada, Geol. Surv. Can., Sp. Paper 2, pp. 1-39, 1961.
Palaeozoic corals, 1955-.
See Permo-Carboniferous tabulate corals from Western Canada, J. of Palaeontology, vol. 36, No. 5, pp. 953-964, 1962.
Stratigraphy and petroleum possibilities of Hudson Bay area, 1950-66.
See Ordovician Palaeontology of the northern Hudson Bay Lowland, G.S.C. Mem. 90, pp. i-x, 1-152, 1963.

684. Norford, B.S., Geol. Surv. Can.:
Faunal study of Late Ordovician and Silurian rocks of southern British Columbia, 1960-67.

685. Petryk, A.A., Braun, W.K., Univ. of Saskatchewan:
Mississippian foraminifera of the Rocky Mountains, Western Canada, 1965-68; Ph.D. thesis (Petryk).

686. Rice, H.M.A., Geol. Surv. Can. (retired):
Study of Geological Survey collection of fossil insects, 1955-.

687. Russell, Loris S., Royal Ontario Museum:
Vertebrate palaeontology of the Swan Hills area, northern Alberta, 1964-65.
The project involves a detailed study of the Paleocene mammalian fauna and associated fossils, identification as far as possible of the fragmentary dinosaur remains, and relatively detailed mapping of the Cretaceous-Tertiary contact in part of Swan Hills. See The Continental Tertiary of Western Canada, Vertebrate Palaeontology in Alberta, Univ. of Alberta, 1965.

688. Rust, B.R., Mayr, U., Univ. of Ottawa:
The palaeocology and palaeogeography of Cretaceous/Tertiary rocks in the Stanwell-Fletcher basin, Somerset Island, N.W.T., 1965-66; Ph.D. thesis (Mayr).
Fossil plants, invertebrates and vertebrates are being examined by Mayr in liaison with the National Museum and the Geological Survey of Canada. The boundary relations with underlying Precambrian rocks and sedimentary features of the Cretaceous/Tertiary sediments are being studied by Rust. An integrated analysis of ancient sedimentary and life environments will be made.

689. Shah, D., McGill Univ.:
Devonian stromatoporoids from the Esterhazy shaft, Saskatchewan, 1964-66; M.Sc. thesis.

690. Shearman, H., National Museum of Canada and Polar Continental Shelf Project:
Collection and study of fossil dinosaur, Prince Patrick Island, N.W.T., 1965.

691. Singh, C., Research Council of Alberta:
Lower Cretaceous microfloras of the Peace River district, 1965-66.

692. Smith, W.H., Chevron Standard Ltd., Calgary, Alberta:
Mesozoic micropalaeontology, Western Canada.

693. Srivastava, S., Thusu, B., Hills, L., Univ. of Alberta:
Early Tertiary and Upper Cretaceous palynology, 1964-; Ph.D. theses (Srivastava and Hills), M.Sc. thesis (Thusu).
See Azolla geneseana n. sp. and revision of Azolla primaeva, Micropalaeontology, vol. 11, No. 2, 1965, pp. 255-261.

694. Staplin, F.L., Jansonius, J. and Pocock, S.A.J., Imperial Oil Ltd., Calgary, Alberta:
Relationships among gymnospermous pollen.

695. Stearn, C.W., McGill Univ.:
Palaeoecology of the stromatoporoids at the south margin of the Ancient Wall reef, Mt. Haultain, Jasper National Park, 1964-67.
Stromatoporoids have been systematically collected from the edge of the Ancient Wall reef as it is exposed in the Devonian section at Mt. Haultain. Identification of these collections should allow an ecological zoning of the reef to basin transition.

696. Steele, Miriam, Univ. of Ottawa:
The Chaumont (Middle Ordovician) mollusc faunas at Braeside, near Arnprior, Ontario, 1965-66; Ph.D. thesis.
Molluscs and other fossils are unusually well preserved by silicification in one bed within the local Chaumont. Detailed study of these necessitates a revision of many taxa of molluscs within the Chaumont and other Middle Ordovician formation of the Ottawa Valley.

697. Steeves, M.W., Univ. of Saskatchewan:
Palynological studies, 1960-.
Segregation, examination and description of pollen and spores from a variety of Saskatchewan non-marine sediments. The current phase involves studying wood fragments, leaves and pollen from the Tertiary Ravenscrag Formation. A preliminary analysis of the pollen and spores of the Cretaceous Whitemud Formation will be undertaken also.

698. Terasmae, J., Geol. Surv. Can.:
Survey of airborne pollen, 1963-.
To obtain record of airborne pollen at present time in various areas for comparison with fossil record.
Palynological studies.
See Geol. Surv. Can., Paper 66-1, 1966, p. 207.

699. Usher, John L., Queen's Univ., Yorath, C.J., Bedford Institute of Oceanography:
Sedimentation and foraminiferal ecology of the northeastern Scotian shelf, 1965-67; Ph.D. thesis (Yorath).
A detailed analysis of the interrelationships of sedimentation and foraminiferal ecology in an area of very complex bathymetry adjacent to Sable Island and its associated banks.

700. Verma, H.M., McMaster Univ.:
Taxonomic study of Triassic pelecypods from Western Canada, 1965-67; M.Sc. thesis.

701. Vilks, G., Geol. Surv. Can.:
Foraminifera of Gulf of St. Lawrence, 1963-.
To provide material for the study of foraminifera of the area, in order to make comparative studies with Arctic fauna on the basis of ecology, which includes relationships to associated sediments and oceanography.
Bottom fauna, East Bay, Mackenzie King Island, Northwest Territories, 1963-.
To determine the relationship of faunal distribution to bathymetry and bottom sediments.

702. Wagner, Frances J.E., Geol. Surv. Can.:
Faunal studies, Polar Continental Shelf Project, 1960-.
See Geol. Surv. Can., Paper 64-2, 1964, p. 31.

703. Wall, J.H., Research Council of Alberta:
Microfaunal study of the Cretaceous marine sequence in the Foothills of Alberta, 1959-65.
A publication dealing with the systematics and stratigraphic distribution of the microfossils from this sequence is expected to be issued in the first half of 1966. See also Microfaunas, megofaunas, and rock-stratigraphic units in the Alberta Group (Cretaceous) of the Rocky Mountain Foothills, Can. Petrol. Geol., Bull., vol. 11, No. 4, pp. 327-349, 1963.

704. Walton, H.S., Chevron Standard Ltd., Calgary, Alberta:
Palynological investigations, with emphasis on the Palaeozoic.

PETROLOGY AND PETROGRAPHY

Alberta

705. Carrigy, M.A., Research Council of Alberta:
Lithology of Upper Cretaceous & Tertiary Rocks of Alberta, 1962-.
The coming year's program will include the coring of several holes to depth of 500 feet or more for stratigraphic information on the relationships between Tertiary and Cretaceous strata in the Alberta plains. See X-ray diffraction microcamera technique for identification of clay minerals in sandstones; Norelco Reporter vol. 11, No. 4, pp. 138-139 (1964).

706. Mellon, G.B., Research Council of Alberta:
Stratigraphy and Petrology of the Lower Cretaceous Rocks of Alberta, 1956-65.
See Lower Cretaceous section, Belcourt Ridge, Bull. Canadian Petrol. Geology, vol. 11, No. 1, 1963.

707. Wynne-Edwards, H.R., Pearce, T.H., Queen's Univ.:
Petrology and chemistry of the Crows Nest volcanics, 1963-66; Ph.D. thesis (Pearce).
Study of a unique set of alkaline volcanic rocks containing primary analcite crystals.

British Columbia

708. Moore, J.M. Jr., Carleton Univ.:
Metamorphic zoning in the Thor-Odin gneiss dome, Monashee Mountains, British Columbia, 1963-66.
Petrography and field relations of metasedimentary rocks mantling a granitoid. A progression from the greenschist to the uppermost amphibolite facies exists, characterized in the middle grade by the association of andalusite, kyanite, and sillimanite.

709. Petro, V.A.G., McGill Univ.:
Structure and petrology of the metamorphic and igneous rocks of the Grand Forks area, British Columbia, with special reference to the Shuswap problem, 1964-66.

710. Reesor, J.E., Blattner, P., Geol. Surv. Can.:
Thor-odin gneiss dome, west upper Arrow Lake, British Columbia, 1964-65.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 78-80.

711. Souther, J.G., Geol. Surv. Can.:
Telegraph Creek, British Columbia, 1 inch to 1 mile, 1965-66.
Study of recent volcanic centres and their relation to regional tectonics. See Geol. Surv. Can., Paper 66-1, 1966, pp. 87-89.

Manitoba

712. Davies, J.F., Manitoba Dept. of Mines and Natural Resources, Wilson, H.D.B., Univ. of Manitoba and government and university staff and graduate students:

Project Pioneer, an integrated geological, geophysical and geochemical study of a Precambrian volcanic-sedimentary belt, 1965-71.

Integrated with detailed re-mapping of 1,500 square miles along the Rice Lake-Beresford Lake volcanic-sedimentary belt will be a series of laboratory projects and geophysical studies designed to reveal as much as possible about the geologic character and history, both at surface and at depth, of a typical Precambrian "greenstone belt". Various phases of Project Pioneer will include: complete photogeologic interpretation; 4-inch-to-the mile mapping; interpretation of aeromagnetic data utilizing techniques for separating various levels of magnetism; study of rock magnetism; determinations of gravity; seismic studies; regional and detailed structural analyses, including petrofabric where applicable; investigation of metamorphism; detailed petrofabric and modal analysis of all rocks on a statistical basis; determination of chemical character of all rock types, and distribution of minor elements; petrographic and chemical study of wall-rock alteration and of regional alteration; distribution of radioactivity in rocks; age determinations; trace elements in surficial deposits and streams; study of gold-bearing and barren quartz veins.

713. Quaraishi, A.A., Univ. of Manitoba:
Petrology of the Elbow Lake granitic stock, 1965-66; M.Sc. thesis.

714. Usher, J.L., Young, H.R., Queen's Univ.:
Petrography of the Virden Member, Lodgepole Formation, southwestern Manitoba, 1964-67; Ph.D. thesis (Young).

A study of the carbonate petrography of the Virden member from the type area at Virden, Manitoba southward to the International Boundary. Marked facies changes occur going southward in the upper bioclastic part and lower part. Attempts will be made to interpret these facies changes in relation to changes in environment of deposition and palaeogeography.

New Brunswick

715. Pajari, G.E., Trembath, L.T., Gunter, W.D., Univ. of New Brunswick:
The mineralogy and petrochemistry of Rapakivi type granites in the St. George Complex, New Brunswick, 1965-; M.Sc. thesis (Gunter).
The mineralogy and petrochemistry of Triassic volcanics of Grand Manan, New Brunswick, 1965-; M.Sc. thesis (Gunter).

Newfoundland and Labrador

716. Fleming, J.M., Memorial Univ. of Newfoundland:
Petrology of the Whalesback mine near Springdale, Newfoundland, 1964-66; M.Sc. thesis.
Detailed petrology of Ordovician volcanic rocks, the host-rocks of copper mineralization in the Whalesback Mine.

717. Papezik, V.S., Memorial Univ. of Newfoundland:
Mineralogy and petrology of granitic and volcanic rocks on the Avalon Peninsula, Newfoundland, 1963-.
Petrology of the area between Springdale and Little Bay, Newfoundland, 1963-66.
Detailed study of Ordovician volcanic rocks (pillow and massive lavas and pyroclastics) and minor sediments formed in a eugeosynclinal environment and containing diffuse copper mineralization. The study involves problems of classification and origin of spilites.

Northwest Territories and Yukon

718. Chamberlain, J.A., Geol. Surv. Can.:
Sulphide phase study of Muskox Intrusion, 1962-65.
To provide information that will help to explain the genesis of the ore mineral phases of the Muskox Intrusion relative to the history of the entire igneous body. See Geol. Surv. Can., Paper 65-2, 1965, p. 36.

719. Frisch, Thomas, Geol. Surv. Can.:
Metamorphic rocks, northern Ellsmere Island, Northwest Territories.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 4-5.

720. Giguere, J., Univ. of Ottawa:
Petrology and structure of an area southeast of Stanwell-Fletcher Lake, Somerset Island, Northwest Territories, 1964-66; M.Sc. thesis.

721. Gray, N., McGill Univ.:
Migmatites and associated rocks of east central Baffin Island, 1965-67; M.Sc. thesis.

722. Yole, R.W., Carleton Univ.:
Petrology of Mesozoic sedimentary rocks, Prince Patrick Island, Arctic Archipelago, 1965-68.

Nova Scotia

723. Friedlaender, C.G.I., Dalhousie Univ.:
Contributions to the mineralogy and petrology of Nova Scotia.

724. Jenness, S.E., Geol. Surv. Can.:
Anorthosite in Northern Cape Breton, Nova Scotia.
See Geol. Surv. Can., Paper 66-1, 1966, p. 171.

725. Lawrence, D.E., Dalhousie Univ.:
Petrology of basic dyke in southwest Nova Scotia, 1965-66; M.Sc. thesis.

726. Lawrence, L., Dalhousie Univ.:
Volcanic rocks from Guysborough county, Nova Scotia; 1965-66; M.Sc. thesis.

Ontario

727. Ambrose, J.W., Fong, D., Queen's Univ.:
Textures in gneisses, Tichborne area, 1965-66; M.Sc. thesis (Fong).
An attempt to correlate petrofabric textures with mesoscopic structures as observed around a small fold in the Grenville province.

728. Boutcher, S.M.A., Edhorn, A.S., Moorhouse, W.W., Univ. of Toronto:
Archaean conglomerates and lithic sandstones of Lake Timiskaming, Ontario, 1962-65.
An examination of the petrography, sedimentary structures, and source of the sediments in this classical area of Archaean sedimentation.

729. Chesworth, W., Shaw, D.M., McMaster Univ.:
Geochemical history of part of the Glamorgan granite complex, Glamorgan township, Ontario, 1961-66; Ph.D. thesis (Chesworth).
A field petrographic major element and trace element study has been made of the northeastern part of this complex which outcrops in Glamorgan township. Interpretation of the petrology, which includes both igenous and metasomatic processes has been written up in final form.

730. Clifford, P.M., McMaster Univ.:
Evolution of Keewatin volcanic-sedimentary belts, 1963-.
See Preliminary geologic maps No. 298, 299 (West Lake St. Joseph area), Ontario Dept. of Mines, 1965.

731. Cooke, D.L., Univ. of Toronto:
The Temiskaming volcanics and associated sediments of the Kirkland Lake area, 1963-66; Ph.D. thesis.
A field, petrographic, and analytical study of the trachytic and other volcanic rocks in this area.

732. Dence, M.R., Carleton Univ.:
Petrology and structure of the Brent Crater, Ontario, 1962-66; Ph.D. thesis.
Detailed mapping and logging of drill core, petrographic and chemical study of breccias and their relations to wall-rock. Examination of crater geometry and deduction of its mode of origin.

733. Ermanovics, I.F., Geol. Surv. Can.:
Structural studies on the Loughborough syenite, north of Kingston, Ontario.
See Geol. Surv. Can., Paper 66-1, 1966, p. 151.

734. Findlay, D.C., Geol. Surv. Can.:
Reconnaissance study of ultramafic rocks, Abitibi-Porcupine area, Ontario.
See Geol. Surv. Can., Paper 66-1, 1966, p. 151.

735. Forsythe, L.H., Langford, F.F., Univ. of Saskatchewan:
Feldspar trends, Dome Stock, Ontario, 1964-66; M.Sc. thesis (Forsythe).

736. Gittins, J., Wenban-Smith, A.K., Univ. of Toronto:
Petrology of the Glamorgan gabbro, Monmouth township, Haliburton county, Ontario, 1965-; M.Sc. thesis (Wenban-Smith).

737. Lal, R.K., Univ. of Toronto:
The petrology of the cordierite-anthophyllite and associated gneisses, on Fishtail Lake, Harcourt township, Ontario, 1963-66; Ph.D. thesis.
An investigation of the petrology and chemistry of coexisting silicates in a metamorphic terrain of upper amphibolite facies.

738. Larochelle, A., Geol. Surv. Can.:
Palaeomagnetism of Sudbury irruptive norite, Sudbury, Ontario, 1965.
A joint project with International Nickel Co. of Canada.

739. Lee, P.J., Univ. of Western Ontario:
Fabric of a Middle Ordovician Limestone at Colborne, Ontario, 1963-65; M.Sc. thesis.
Part of a large scale project on the Middle Ordovician of Ontario. The clasticity in a forty foot section of the quarry was studied at three places with the following results: (1) the percentage of matrix decreases and total fossils and brachiopods increases downward; (2) disarticulated brachiopod and ostracod valves are convex upward in biosparite and convex downward in biomicrite; (3) the orientation pattern of elongate fossils show two dominant trends, north-east – south-west and north-west – south-east. Statistics were analysed on the computer.

740. McNutt, R.H., Mason, I.M., McMaster Univ.:
Petrologic study of an anorthosite body, near Parry Sound, Ontario, 1965-67; Ph.D. thesis (Mason).
The study will be mainly concerned with mapping the anorthosite, followed by a detailed chemical study of the major mineral phases, including plagioclase, pyroxene, and Fe-Ti oxides.

741. Moore, J.M. Jr., Mah, D.C., Dence, M.R., Carleton Univ.:
Chemical petrology of coronite metagabbros, Brent, Ontario, 1963-66; Ph.D. thesis (Dence).
Petrochemistry of a small lens of granulite-facies metagabbro containing coronas consisting of orthopyroxene cores mantled by clinopyroxene, amphibole, garnet, and plagioclase.

742. Moore, J.M. Jr., Sethuraman, K., Carleton Univ.:
Petrology and structure of Grenville metamorphic rocks, Fernleigh-Clyde area, southeastern Ontario, 1960-67; Ph.D. thesis (Sethuraman).
Structure, stratigraphy, and metamorphic zoning in metavolcanic and metasedimentary rocks; relation of layered rocks to adjacent plutons; chemistry of coexisting minerals in pelitic schists and their relations in rocks of varying oxidation state. See Chemical petrology of some Grenville schists near Fernleigh, Ontario (abstract); Bull. C.I.M.M., vol. 58, 1965, p. 909.

743. Moorhouse, W.W., Univ. of Toronto:
Petrography of the Gunflint iron formation, 1950-.

The texture and mineralogy of the Gunflint iron formation and their significance in its origin. See Gunflint Iron Range in the vicinity of Port Arthur; Ont. Dept. of Mines Ann. Report vol. LXIX, pt. 7, 1960.

744. Mukherji, K.K., Univ. of Western Ontario:
Petrology of the Middle Ordovician Black River Group, 1965-67; Ph.D. thesis.
Part of a large scale project on the Middle Ordovician of Ontario. The objective is study of the regional petrology of Black River sediments from Kingston to Manitoulin Island. Determinations will be made on the stratigraphic variation of texture, magnesium distribution, heavy mineral assemblages, trend of carbonate clastics, etc. The exposed section at Marmora has been studied and will be used as a standard for comparison. Preliminary results clearly indicate that four units can be defined.

745. Payne, J.G., Shaw, D.M., McMaster Univ.:
Geochemical and petrological studies of the Blue Mountain nepheline gneisses, Methuen township, Ontario, 1962-66; Ph.D. thesis (Payne).
Field studies and geochemical and petrological investigations are being used to interpret the history and character of the nepheline syenite and associated syenites.

746. Schwarcz, H.P., McMaster Univ.:
Volcanic rocks of the Sudbury district, Ontario, 1965-67.
A petrologic study of the evolution of the volcanic infilling of the Sudbury basin.

747. Shaw, D.M., McMaster Univ.:
Composition of the Apsley paragneiss, Chandos township, Ontario, 1958-.
The Apsley paragneiss has chemical features resembling both greywackes and intermediate volcanic rocks. The research begun by P.S. Simony to evaluate the most likely origin is being continued, and the chemical changes of the formation in the aureole of the Loon Lake pluton are being studied.
Composition of the Canadian Precambrian Shield, 1962-.
Estimates are being made of elemental abundances in different segments of the shield. Extensive use is being made of rocks collected and made available by the Dominion Observatory. Trace element analyses will be used for testing for regional and secular variations; some major element data will be obtained also.

748. Shaw, D.M., Jennings, D.S., McMaster Univ.:
Stratigraphy and metamorphism of the Hermon Formation, Peterborough county, Ontario, 1965-68; Ph.D. thesis (Jennings).
A study of the sedimentology, correlation, structure and metamorphism in the Hermon Formation which is a major stratigraphic unit of the Grenville series in S.E. Ontario.

749. Stevenson, J.S., McGill Univ.:
Comprehensive petrological and mineralogical study of the Sudbury Basin Irruptive, Ontario, 1951-.
See Sudbury in Terms of Upper-Mantle Petrology, Proceedings of the Geol. Soc. Amer. 1965, p. 18.

750. Vos, M.A., Moorhouse, W.W., Univ. of Toronto:
Quartz diorites from the North Range, Sudbury, 1964-; Ph.D. thesis (Vos).
The petrology of the "quartz diorite" at the northern edge of the Sudbury irruptive, and the innumerable inclusions which constitute an important part of this body.

751. Wynne-Edwards, H.R., Ermanovics, I.F., Queen's Univ.:
The Perth Road syenite, 1964-67; Ph.D. thesis (Ermanovics).
A geochemical investigation of the origin of the syenite in cooperation with Dr. K.L. Currie, Geological Survey of Canada.

752. Wynne-Edwards, H.R., Sauerbrei, J.A., Queen's Univ.:
Origin and relationship of granitic rocks in the Frontenac Axis, 1963-66; M.Sc. thesis (Sauerbrei).
A geochemical study of granites and monzonites.

Quebec

753. Aarden, H.M., Van Loon, J.C., Gittins, J., Univ. of Toronto:
Paragenesis of some niobium – zirconium – rare earth minerals in an alkaline syenite in western Quebec, 1964-; Ph.D. thesis (Aarden).

754. Ahmedali, S.T., Quebec Dept. of Natural Resources (part time):
Anorthosites of Sept-Iles and Rivière Pentecôte, Quebec, 1965-66; Ph.D. thesis, McGill Univ.
Special studies of their mineralogical and petrological variations and contact relationships.

755. Baragar, W.R.A., Geol. Surv. Can.:
Volcanic studies, Noranda area, Quebec, 1965-66.
See Geol. Surv. Can., Paper 66-1, 1966, p. 160.

756. Béland, René, Université Laval:
Mineral assemblages and phase equilibria in some slightly metamorphosed rhyolitic lavas and pyroclastics, Abitibi West, Quebec, 1965-66.

757. Blecha, M., McGill Univ.:
A study of chemical composition of certain dykes at Campbell-Chibougamau Mines, Quebec, 1961-66; M.Sc. thesis.

758. Currie, K.L., Geol. Surv. Can.:
Manicouagan crater, Quebec, 1963-65.
See Geol. Surv. Can., Paper 66-1, 1966, p. 161.

759. Davies, R., McGill Univ.:
Petrology of Mutton Bay syenite and surrounding gneisses, north shore of Bay of St. Lawrence, Quebec, 1963-66; Ph.D. thesis.

760. Emslie, R.F., Geol. Surv. Can.:
Val Morin vicinity, Quebec, 1 inch to 1 mile, 1964-65.
A study of Morin anorthosite. See Geol. Surv. Can., Paper 66-1, 1966, p. 164.

761. Forester, R., McGill Univ.:
Petrology of a Monteregian Intrusive near Drummondville, Quebec, 1965-67; M.Sc. thesis.
An analcite syenite of probable Monteregian age intrudes a coarse grained biotite- hornblende peridotite near Drummondville, Quebec. A petrographic and chemical study of these rocks is in progress.

762. Gandhi, S.K., McGill Univ.:
The petrology of Mt. Yamaska, Quebec, 1961-66; Ph.D. thesis.

763. Gillain, P.R., McGill Univ.:
Dykes and sills in the Canada Cement Quarry, Montreal, Quebec, 1964-66.

764. Grove, E.W., McGill Univ.:
Petrochemical and structural studies in the Lake Miquelon area, Quebec, 1960-66.

765. Hogarth, D.D., Univ. of Ottawa:
Petrographic and structural study of Precambrian rocks in Hull township, Quebec, 1959.

766. Katz, Michael, Univ. of Toronto:
The nature and origin of the granulites of the southern part of Mont Tremblant Park, Quebec, 1964-66; Ph.D. thesis.
A petrographical and chemical investigation of the granulites, their constituent minerals, and associated gneisses.

767. Ledoux, R.L., Sabourin, R.J.E., Université Laval:
Kaolinisation of an anorthosite near Chateau Richer, Quebec, 1965-67.

768. Mahaffy, D.F., McGill Univ.:
Blotchy gabbro of Hopes Advance Bay area, Quebec, 1962-65; M.Sc. thesis.

769. Peredery, W.V., McGill Univ.:
Metasomatism and metamorphism of cordierite-anthophyllite rocks northwest of Lake Matassini, Quebec, 1963-66; M.Sc. thesis.

770. Perrault, G., Gélinas, L., Chouinard, R., Ecole Polytechnique:
Mineralogy and petrology of Oka alkaline intrusives, 1957-70; M.A.Sc. thesis (Chouinard).
See Notes sur la précision des analyses quantitatives du niobium par fluorescence des rayons X, par Guy Perrault, L'Ingénieur, No. 188, 1961.

771. Rajasekaran, K.C., McGill Univ.:
The mineralogy and petrology of the nepheline syenite rocks of Mount St. Hilaire, Quebec, 1962-65; Ph.D. thesis.

772. Raudsepp, J.J., McGill Univ.:
Lithology and altitude in the Gaspé Peninsula, Quebec, 1963-65; M.Sc. thesis.

773. Stevenson, J.S., McGill Univ.:
Petrological study of Dawsonite, 1963-.
See The Petrology of Dawsonite at the Type Locality, Montreal, Canadian Mineralogist, vol. 8, part 2, 1965, pp. 249-252.
Mineralogical studies of ashed lung tissue, 1950-.
Research continues as medical material becomes available.

774. Van Ingen, R., McGill Univ.:
A study of the granite masses near Weedon and Megantic, Quebec, 1962-66; Ph.D. thesis.

775. Van Roechoudt, M., McGill Univ.:
Contact metamorphism around the Tabletop Granite, Gaspé, Quebec, 1963-66.

Saskatchewan

776. Netolitzky, R., Univ. of Calgary:
Study of nickeliferous hornblendite in Kipanigan Lake area of northern Saskatchewan, 1965-66; M.Sc. thesis.
Study of chemistry, mineralogy, structure and petrology of a basic rock body containing nickeliferous sulphides.

777. Spooner, A.J., Smith, J.R., Langford, F.F., Univ. of Saskatchewan:
Phase petrology of the Neagle Lake intrusion, 1965-68; M.Sc. thesis (Spooner).

General Problems

778. Allen, C.M., Mount Allison Univ.:
Triassic vulcanicity in the Maritime Provinces of Canada, 1963-67.
A detailed petrologic, geochemical and structural study of selected areas of Triassic basalts in the Maritime Provinces with a view to assessing the mechanisms of eruption of tholeiitic basalts and the relationships of these volcanic rocks to Appalachian tectonics.

779. Campbell, F.A., Univ. of Calgary:
Chemical composition and mineralogy of sedimentary rocks in the Alberta Basin.
Involves the application of X-ray diffraction techniques to solution of problems of basin geometry, environmental factors and provenance. See Chemical Composition of Shales of Manville Group (Lower Cretaceous) of Central Alberta, Canada. Bull. of A.A.P.G., vol. 49, No. 1, 1965.

780. Chi, Byung, Univ. of Alberta:
A petrographic comparison of the Frenchman and Upper Edmonton Formations, 1964-66; M.Sc. thesis.

781. Chi, W.W., Univ. of Toronto:
The sampling problem in the petrographic study of granite plutons, 1964-66; M.A. thesis.
An investigation of the significance of sampling an apparently homogeneous granitic pluton, and the spacing of samples necessary to obtain significant results.

782. Douglas, J.A.V., Maxwell, J.A., Dawson, K.R., Geol. Surv. Can.: Study of meteorites.

783. Dwibedi, K., Wilson, H.D.B., Univ. of Manitoba:
Petrology of the English River gneissic belt, 1963-66; Ph.D. thesis (Dwibedi).
Includes the study of some of the oldest paragneisses and associated granites of the Superior Province of the Canadian Shield in a belt running east-west along the English River to learn more about nature of early Precambrian sedimentation and the supposedly horst structure associated with the belt.

784. Emslie, R.F., Geol. Surv. Can., Queen's Univ. (part time):
Study of anorthosite intrusions in the eastern Canadian Shield, 1962-.
The project involves mapping and sampling of selected intrusions in Eastern Canada with a view toward establishing quantitative data on form, internal structure, parent magma, composition and crystallization history. See the Michikamau anorthositic intrusion, Labrador, Can. Jour. Earth Science, vol. 2, pp. 385-399, 1965.

785. Fahrig, W.F., Geol. Surv. Can.:
Diabase dykes of Canadian Shield, 1961-.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 186-187.

786. Fawcett, J.J., Univ. of Toronto:
Petrology of tertiary basalt lavas, 1959-.
See Alteration products of olivine and pyroxene in basalt lavas from the Isle of Mull; Mineralogical Magazine, London, vol. 35, pp. 55-68, 1965.

787. Ferguson, L., Mount Allison Univ., O'Brien, N.R., New York State College:
Origin of fissility in shale, 1964-67.
Involves the correlation of X-ray data on the nature and orientation of the clay particles of the shale from palaeontological and palaeoecological data from the same bed. See A comparison of two techniques for measuring shale compaction; J. Sedimentary Petrology, vol. 34, No. 3, Sept. 1964, pp. 694-5.

788. Gaucher, E., Larochelle, A., Fahrig, W.F., Geol. Surv. Can.:
Palaeomagnetic study of diabase dykes in the Canadian Shield, 1963-.
An attempt to classify the different dyke swarms throughout the Canadian Shield; and to date some of these swarms. See Geol. Surv. Can., Paper 64-2, 1964, pp. 41-43.

789. Gittins, J., Univ. of Toronto:
Petrological studies of alkaline rocks and carbonatite complexes, 1961-.
See Significance of strontium isotope ratios intheories of carbonatite genesis, Nature, vol. 207, No. 4997, 1965, pp. 625-626.

790. Goodwin, A.M., Geol. Surv. Can.:
Volcanic studies in the Porcupine-Kirkland Lake-Noranda region, Ontario and Quebec.
See Geol. Surv. Can., Paper 66-1, 1966, p. 153.

791. Haughton, D., Shaw, D.M., McMaster Univ.:
Scapolite plagioclase paragneisses, 1965-67; M.Sc. thesis (Haughton).
An electron microprobe study of composition relationships between coexisting plagioclase and scapolite in metamorphic rocks.

792. Hayatsu, A., Farquhar, R., Univ. of Toronto:
Strontium isotope measurement using simultaneous collection methods of mass spectrometry, 1961-.
The high accuracy obtainable makes this technique particularly suitable for resolving the very small differences in Sr^{87}/Sr^{86} ratios produced in rocks by orogenic mixing processes. The method is also useful for measurement of the gradual change with time in this ratio in rocks having very low Rb/Sr ratios. See Significance of strontium isotope ratios in theories of carbonatite genesis, Nature, vol. 207, pp. 625-626, 1965.

793. Hodgson, C.J., McGill Univ.:
Monteregian dyke rocks, 1965-67; Ph.D. thesis.

794. Kranck, E.H., McGill Univ.:
Anorthosites and the lower crust.

795. Maxwell, J.A., Geol. Surv. Can.:
Investigation of field sampling errors, 1965 67.
To determine magnitude of error on composition of replicate samples taken in the field for subsequent compositional analysis.

796. McNutt, R.H., McMaster Univ.:
Rb-Sr isotopic study on anorthosites, 1966-.

797. Peach, P.A., Univ. of Toronto:
A study of Grenville granites, 1964-.
Systematic sampling of acid intrusives in the Grenville to determine the relationship of age to composition.
Variations in the composition of the Upper Mesozoic intrusives of the Canadian Cordillera, 1964-.
A preliminary study of some of the minor intrusives in British Columbia to try and relate composition to tectonics.

798. Reesor, J.E., and others, Geol. Surv. Can.:
Study of granites in Canada, 1957-.
Detailed mapping of representative granitic bodies with special attention to providing comprehensive geologicalinformation concerning their scientific and economic aspects.

799. Roeder, P.L., Queen's Univ.:
The effect of oxygen partial pressure on the crystallization of basaltic magma, 1965-67.
See Fractional Crystallization Trends in the System Mg_2SiO_2-$CaAl_2Si_2O_8$-FeO-Fe_2O_3-SiO_2 Over the Range of Oxygen Partial Pressures of 10^{-11} to 10^{-07} atm., Int. Assoc. Volcanologists Meeting, New Zealand, 1965.

800. Rondot, J., Quebec Dept. of Natural Resources:
Geology of L'Anse St. Jean and Baie St. Paul areas, 1965-66.
A study of the border of the Laurentides charnockitic massif.

801. Schwerdtner, W.M., Ahmad, W., Univ. of Toronto:
Structural significance of hornblende lineations in metamorphic tectonites, 1962-; Ph.D. thesis (Ahmad).
Mesoscopic structures whose internal strain distribution can be carefully reconstructed provide a means of determining the kinematic significance of hornblende lineations. It is thus possible to establish a strain indicator whose usefulness will be checked.

802. Shafiqullah, M., Carleton Univ.:
Fossil craters in the Canadian Shield, 1965-68; Ph.D. thesis.
At least 10 craters in the Canadian Shield are the subject of controversy as to whether or not they are meteorite-impact in origin. It is believed that K-Ar dates on glass should give the time of impact or volcanic-tectonic activity. An attempt will be made to relate Ar^{40}/K^{40} ratios in cogenetic minerals and whole rock drill core samples to the intensity of shock wave (both vertically and laterally).

803. Smith, C.H., and others, Geol. Surv. Can.:
Ultrabasic intrusions of Canada, 1957-.

804. Turnock, A.C., Univ. of Manitoba:
Melting relations of pyroxene systems, 1965-67.

805. Wilson, H.D.B., Univ. of Manitoba:
The ultrabasic rocks of the Precambrian Shield, 1963-.
Three hundred and thirty complete rock analyses have been made as part of a study of the ultrabasic rocks along the Superior-Churchill boundary in Manitoba. During 1965 a large suite of ultrabasic rocks was collected along the Superior-Churchill boundary in the Cape Smith-Wakeham Bay belt of Ungava for study and analysis during 1966.
Sedimentary rocks of the English River gneissic belt, 1964-.
One hundred and fifty complete rock analyses have been made of the metasedimentary rocks of the area to aid petrographic studies of this belt, which structural studies indicate to be the oldest exposed rocks of North America.
The volcanic history of the Superior Province of the Precambrian Shield, 1964-.
During 1965 the first paper resulting from the project was published. (Canadian Journal of Earth Science, vol. 2, p. 161). This is believed to establish the earliest known volcanism in the Canadian Shield as continental orogenic in nature similar to that in island arcs such as the East Indies or continental orogenic areas such as the Cordillera. The scope of the work has been increased to study the complete volcanic history of the Superior province from the earliest Archaean rocks nearly three billion years old. The volcanic-intrusive sequence appears to have a large scale simplicity. Orogenic volcanism is closely followed by crustal melting to produce a stable block which is then repeatedly fractured with intrusion and extension of flood basalts and alkali-rich complexes. The activity finally ended a billion years ago. The composition of the various volcanic intrusive types is being determined by chemical and petrographic analyses. A preliminary paper on the subject was presented at the Annual Meeting of the Geol. Assoc. Canada, in October 1965.

806. Wynne-Edwards, H.R., Golightly, J.P., Queen's Univ.:
Mineral assemblages in amphibolites, 1962-; M.Sc. thesis (Golightly).

807. Wynne-Edwards, H.R., Jen, Lo-Sun, Queen's Univ.:
Metamorphic geochemistry, 1965-66; M.Sc. thesis (Jen).

808. Wynne-Edwards, H.R., Shaw, C.M.E. (Mrs.), Queen's Univ.:
The Leo Lake Gabbro, 1963-66; M.Sc. thesis (Mrs. Shaw).

809. Wynne-Edwards, H.R., Smith, M.E., Queen's Univ.:
Distribution of elements in metamorphic feldspars; 1963-65; Ph.D. thesis (Smith).
A geochemical study involving 20 plagioclase-potash feldspar pairs from granulite and mid-almandine amphibolite facies.

810. Yole, R.W., Carleton Univ.:
Petrology of Palaeozoic rocks of southern and eastern Ontario, 1964-67.

811. York, D., Gittins, J., Macintyre, R.M., Univ. of Toronto:
Investigation of argon retentivity of feldspathoids, 1962-; Ph.D. thesis (Macintyre).
See The argon retentivity of nephelines, Nature (in press).

812. York, D., Farrar, E., Univ. of Toronto:
Investigation of argon retentivity of basalts, 1963-; Ph.D. thesis (Farrar).

PLEISTOCENE AND GROUNDWATER

Alberta

813. Bayrock, L.A., Research Council of Alberta:
Exploratory Survey of Surficial Deposits of northern Alberta, (north of 57° latitude), 1958-.
The mapping project was carried out in conjunction with Helicopter Soil Survey of northern Alberta. See Appendices to R.C.A. Prelim. Soil. Surv. Repts., 59-1, 60-1, 61-1, 62-1, 63-1.

814. Bayrock, L.A., Berg, T.E., Research Council of Alberta:
Geology of the City of Edmonton, Alberta, 1965-70.
A detailed drilling program is under way to determine the preglacial topography and extent and thickness of the overlying Saskatchewan sand and gravel, till and Glacial Lake Edmonton sediments.

815. Berg, T.E., Research Council of Alberta:
Surficial deposits of National Topographic Sheet 72L (Medicine Hat, 1965-68).
Periglacial phenomena in Alberta, 1965-.

Investigation of all fossil frost phenomena to determine part of the past climatic history of the area.

816. Carlson, V.A., Research Council of Alberta:
Gravity exploration for a buried channel near High Prairie, Alberta, 1962-66.

A large, negative gravity anomaly has been found near High Prairie. It was thought to be connected with a deeply buried preglacial channel. Test drilling has been carried out to determine the accuracy of the gravity results and to determine the density of the bedrock and overburden materials encountered.

Bedrock topography and sand thickness maps of the Edmonton area, 1961-66.

A bedrock topography map of townships 49-55, ranges 20-27, W. 4th Meridian with 25-foot contours has been constructed using information from oil company shot hole logs and other sources. A map of the thickness of sand encountered in the overburden using the same sources of information has also been constructed.

817. Dreimanis, A., Univ. of Western Ontario, Westgate, J.A., Univ. of Alberta:
Buried soil in Banff National Park, Alberta, 1962-66.

Re-examination of the area has revealed at least two volcanic ash horizons associated with buried soils. They are younger than 9330 $\pm$ 130 B.P. Additional samples were collected for dating of the soils and the volcanic ash. Some of the buried soils are in colluvial deposits, others in silt (Recent loess?).

818. Dunn, D., Research Council of Alberta (part time); Univ. of Alberta:
Groundwater resources of the Stettler area, 1965-66.

Analysis of the hydrological parameters of the Edmonton Formation in the Stettler area from pump-test data; mapping of the bedrock topography from water-well and seismic-shothole data; hydrology of a buried channel aquifer located in the area.

819. Gabert, G.M., Lennox, D.H., Research Council of Alberta:
Analysis of pump test results, 1962-.

This project will illustrate the practical application of available analytical methods to well and aquifer evaluation in Alberta. Formulas and methods are applied to results obtained from separate pumping tests conducted in unconfined and confined aquifers to evaluate the water-yielding capacities of wells and aquifers. See Transmissibility determination by the bail-test method, R.C.A. Report, Groundwater 2, 1, pp. 38-39, 1964.

820. Gabert, G. M., Research Council of Alberta, Roed, M., Univ. of Alberta:

Bedrock topography of the Edson area, 1961-66.

Groundwater hydrology of the Edmonton area, 1963-68.

This project involves a thorough study of the groundwater availability and groundwater chemistry of the Edmonton area. Quantitative estimates of water in storage will be made for delineated surficial aquifers with known hydraulic properties. A three-dimensional analysis of the groundwater chemistry will be presented.

Groundwater-level fluctuations in Alberta, Canada, caused by the Prince William Sound, Alaska Earthquake of March, 1964, 1964-65.

See Groundwater-level fluctuations in Alberta, Canada, caused by the Prince William Sound, Alaska Earthquake of March, 1964, Can. J. Earth Sciences 2, 2, pp. 131-139, 1965.

Groundwater hydrology of a buried-channel aquifer near Devon, Alberta, 1965-66.

Location and evaluation of the groundwater potential for the buried channel.

821. Geiger, K. W., Research Council of Alberta:

Groundwater geology of Lethbridge and vicinity, 1963-66.

A comprehensive, detailed study in a restricted area. The study of the geology involves the mapping of the surficial deposits, the bedrock geology, the preglacial and bedrock surfaces, and the stratigraphy. Study of the hydrology involves the mapping of any groundwater occurrences, sampling of the chemical composition in the various geologic environments, instrumentation to determine the nature of the shallow groundwater behaviour, the flow characteristics in the area and the evaluation of potential aquifers.

Bedrock topography of National Topographic System map-area 82 I, 1964-66.

The data compilation is well advanced. A comparison of the contouring done independently by a research geologist and by an automatic plotter is proposed. The publication will include a topographic map of the present surface superimposed on a topographic map of the bedrock surface and an interpretation of the preglacial drainage.

Groundwater conditions and changes near the Waterton Dam, 1964-66.

A preliminary geologic evaluation and some instrumentation have been carried out near the Waterton Dam, presently under construction. A more detailed geologic evaluation and more drilling are planned and the effect of the flooding of the reservoir which started in 1965 upon groundwater conditions in the surrounding area will be measured in every possible way.

Bedrock topography of southwestern Alberta, 1962-66.

The publication will contain a topographic map of the present surface superimposed on a topographic map of the bedrock surface at the scale of 1/250,000. An interpretation of the preglacial drainage will be made.

822. Geiger, K.W., Brown, R.J.E., Withers, D.W., de Vries, P., Research Council of Alberta:
Tabulation and publication of water-well data, 1964-.

Data for townships 1-10, west of the 4th meridian have been compiled and should be published early in 1966.

823. Jones, J.F., Research Council of Alberta:
Geology and groundwater resources, Peace River district, 1961-66.

It is expected that a comprehensive survey of the known groundwater resources of the Peace River district will be published in 1966. See Reconnaissance groundwater study, Swan Hills and adjacent areas, Alberta, Res. Coun. Alberta Prelim. Rept. 62-5, 1962, 43 pages.

824. LeBreton, E.G., Research Council of Alberta:
Groundwater geology and hydrology of the Lamont-Chipman area, Alberta, 1963-66.

An attempt to determine the flow of groundwater, changes in chemical quality of the water and well yields. Generally, to the west and north of Chipman, well yields from bedrock aquifers are less than 5 gallons per minute but near and to the southeast of Chipman well yields of up to 20 gpm may be obtained.

825. LeBreton, E.G., Vanden Berg, A., Research Council of Alberta:
Groundwater geology and hydrology of east-central Alberta, 1957-65.

See Chemical analyses of groundwaters of east-central Alberta, Res. Coun. Alberta Prelim. Rept. 65-5, 1965, 24 pages.

826. Lennox, D.H., Carlson, V., Research Council of Alberta:
The seismic method in exploring for buried channels near Stavely, Alberta, 1958-66.

Extensive refraction seismic data in the Stavely area will be compared with subsequent geologic control in order to better establish the limitations of the method. A test-drilling program has been conducted as an aid in the evaluation.
Geophysical exploration for buried valleys in an area north of Two Hills, 1961-66.

Extensive field data have been collected within the area of about one township using three geophysical methods: gravity, seismic and resistivity. An evaluation of these three methods as an aid in groundwater exploration will be made using borehole control.

827. Pawluk, S., Univ. of Alberta, Bayrock, L.A., Research Council of Alberta:
Composition of Alberta Tills, 1958-67.
Most of the analyses have been completed. The results show that there are some significant variations in trace elements and texture between northern and southern portions of the Province. See Heavy minerals in till of Central Alberta, Jour. Alta. Soc. Pet. Geol., vol. 10, pp. 171-184, 1962.

828. Roed, M.A., Research Council of Alberta:
Surficial geology of the Edson area (83-F) Alberta, 1964-66; Ph.D. thesis (Univ. of Alberta).
Preliminary results serve to define two distinct advances of Cordilleran glaciers and at least one advance of a continental glacier. Tills of different origin and age can be identified in the field on the basis of erratic composition, geomorphic expression and detailed stratigraphy.
Groundwater geology and hydrology of the Cache Percotte and Whiskeyjack basins near Hinton, Alberta, 1965-66.
Measurement of the groundwater components of the hydrologic cycle and evaluation of the groundwater balance.

829. Rutter, N.W., Univ. of Alberta:
Glacial history of the Bow Valley, Eastern Canadian Rocky Mountains, Alberta, 1963-65; Ph.D. thesis.

830. St. Onge, D., Geol. Surv. Can.:
Geomorphology and glacial geology studies in north-central Alberta, 1965-.
See Geol. Surv. Can., Paper 66-1, 1966, p. 122.

831. Stalker, A.M., Geol. Surv. Can.:
Glacial geology studies in southern and central Alberta, 1965-.
See Geol. Surv. Can., Paper 66-1, 1966, p. 123.
Surficial geology, Kananaskis Lakes, Alberta, 1 inch to 4 miles, 1964-66.
See Geol. Surv. Can., Paper 66-1, 1966, p. 123.

832. Tokarsky, O., Research Council of Alberta:
Surficial geology and groundwater resources of Grimshaw-Cardinal Lake area, 1965-67.

833. Toth, J., Research Council of Alberta:
Development and investigation of methods to determine the groundwater regime in uninstrumented drainage basins, 1963-66.
See a theoretical analysis of groundwater flow in small drainage basins, J. Geophys. Res. 68, 16, 4795-4812, 1963.
Investigations for groundwater for the town of Olds, central Alberta, 1964-66.
The investigations started as an emergency program for finding water for the town of 3,000 people. They developed into a detailed survey of the groundwater resources of the area, proving a total safe yield of approximately 700 gallons per minute. The geology, water chemistry and groundwater flow systems have been studied also. A bulletin describing the investigations is being edited.
Investigations for groundwater in the Three Hills and Red Deer areas, central Alberta, 1965-68.
Both programs are to obtain detailed knowledge of the quantity, quality, and distribution of groundwater available and suitable for domestic, municipal, and agricultural uses; and the securing of field information for basic research in hydrology.

834. Vanden Berg, A., Research Council of Alberta:
Groundwater movement and groundwater chemistry in the Hand Hills-Bullpound Creek area, Alberta, 1963-66.
Detailed mapping of the chemical quality of the groundwater; mapping of groundwater discharge and recharge areas from surface indications and piezometric data; stratigraphy of the Edmonton and Paskapoo Formations from bore-hole data and bedrock exposures; investigation into the origin of anomalous calcium-magnesium ratios observed in groundwater through chemical analysis of bore-hole samples.
Groundwater resources of the Acadia Valley area, 1965-68.

835. Westgate, J.A., Univ. of Alberta:
Quaternary volcanic ash deposits in Alberta, 1965-.
Stratigraphy of Pleistocene deposits in southeastern Alberta, 1961-.
See The Pleistocene stratigraphy of the Foremost-Cypress Hills area, Alberta; Alberta Soc. Petroleum Geol., 15th Annual Field Conference Guidebook, pt. 1, Cypress Hills Plateau, 1965, pp. 85-111.

British Columbia

836. Armstrong, J.E., Geol. Surv. Can.:
Glacial studies, Kitimat Terrace area, British Columbia.
See Geol. Surv. Can., Paper 66-1, 1966, p. 50.

837. Fulton, R. J., Geol. Surv. Can.:
Quaternary studies, Vernon (West Half), British Columbia, 1965-.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 56-57.
Quaternary geology salvage, Columbia River, Development Project, British Columbia.
See Geol. Surv. Can., Paper 66-1, 1966, p. 57.

838. Halstead, E. C., Geol. Surv. Can.:
Surficial geology, Nanaimo-Victoria-Gulf Islands, British Columbia, 1961-65.
See Geol. Surv. Can., Paper 65-1, 1965, pp. 49-50 and Paper 66-1, 1966, p. 59.
Surficial geology, southeastern Vancouver Island, British Columbia.
See Geol. Surv. Can., Paper 66-1, 1966, p. 59.

839. Lawson, D. W., Geol. Surv. Can.:
Basin study, Trapping Creek, Okanagan Valley, British Columbia, 1965-; Ph.D. thesis.
Hydrogeology of a drainage basin in an arid mountainous region.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 63-64.

Manitoba

840. Carr, P. A., Geol. Surv. Can.:
Hydrogeology of Wilson Creek experimental basin, Manitoba, 1964-.
Groundwater aspects of erosion control studies in cooperation with Headwater Control Committee. See Geol. Surv. Can., Paper 65-1, 1965, p. 95.

841. Charron, J., Geol. Surv. Can.:
Groundwater survey of Red River Basin, 1959-65.
Hydrogeological study of the Stonewall area, Manitoba.
See Geol. Surv. Can., Paper 66-1, 1966, p. 137.

842. Craig, B. G., Geol. Surv. Can.:
Preliminary reconnaissance, surficial geology, The Pas area, Manitoba, 1965-.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 139-140.

843. Klassen, R. W., Geol. Surv. Can.:
Surficial geology studies, central and southern Manitoba, 1965-.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 141-142.

844. Lissey, A., Nind, T.E.W., Univ. of Saskatchewan:
Hydrological study of the Oak River Basin, Manitoba, 1963-67; Ph.D. thesis (Lissey).
The purpose is to establish the natural groundwater flow systems present in the basin; to determine whether these systems manifest themselves as mappable surface features; and to investigate the possibility of using an electric-analogue model to duplicate natural flow conditions. See Interbasin groundwater flow by A. Lissey and J.E. Wyder, Geol. Surv. Can., (in press) and Paper 66-1, 1966, p. 143.

New Brunswick, Nova Scotia and Prince Edward Island

845. Carr, P.A., Delorme, L.D., Geol. Surv. Can.:
Groundwater studies, Charlottetown area, Prince Edward Island, 1965-.
See Geol. Surv. Can., Paper 66-1, 1966, p. 175.

846. Crowl, G.H., Geol. Surv. Can.:
Pleistocene geology, Rustico (West Half) map-area, Nova Scotia.
See Geol. Surv. Can., Paper 65-1, 1965, p. 128.

847. Jones, J.F., Nova Scotia Dept. of Mines:
Groundwater data processing, 1965-.
Designed to collect and compile basic groundwater data.
Investigation into groundwater conditions in Pilot Research area, Nova Scotia.
Includes geologic, geophysical and hydrologic studies of aquifers of the area.
Observation well network, Nova Scotia.
A program carried out by the staff of the Nova Scotia Dept. of Mines.

848. Jones, J.F., Hennigar, T.W., Nova Scotia Dept. of Mines:
Groundwater chemistry of key aquifers in Northern Nova Scotia.
Will relate changes in groundwater chemistry with geology and hydrology of aquifers.

849. Lee, H.A., Geol. Surv. Can.:
Grand Falls morainic system, New Brunswick.
See Geol. Surv. Can., Paper 66-1, 1966, p. 168.

850. Parsons, M.L., Geol. Surv. Can.:
Water probability maps, southern parts of New Brunswick and Nova Scotia, 1964-65.

851. Prest, V.K., Geol. Surv. Can.:
Surficial and bedrock mapping of Prince Edward Island, 1953-66.

852. Trescott, P.C., Nova Scotia Dept. of Mines:
Investigation of groundwater conditions in parts of Annapolis and Kings counties, Nova Scotia.
Includes geologic, geophysical and geochemical investigations and test drilling.

853. Trescott, P., Hennigar, T.W., Waring, M., Jones, J.F., Nova Scotia Dept. of Mines:
Basic groundwater data collection and compilation, 1964-.
An extensive field program was continued in 1965 to evaluate the groundwater resources of the Province. Field parties were active in the Annapolis Valley, Cumberland county and Inverness county, Cape Breton Island. These groundwater investigations included studies on surficial geology, subsurface stratigraphy, aquifer evaluation, groundwater chemistry and geophysical studies in location of possible aquifers. An inventory of existing water wells and their geological environment was initiated.

Northwest Territories and Yukon

854. Blake, W. Jr., Geol. Surv. Can.:
Glacial geology, southern Baffin Island, Northwest Territories, 1965-66.
See Geol. Surv. Can., Paper 66-1, 1966, p. 3.

855. Fyles, J.G., Geol. Surv. Can.:
Quaternary of Western Queen Elizabeth Islands, Northwest Territories, 1964-65.
Preliminary reconnaissance of Quaternary deposits and history of the Western Queen Elizabeth Islands concentrating particularly on extent and age of glaciation; extent of marine submergence; and on the Beaufort Formation. See Geol. Surv. Can., Paper 65-1, 1965, pp. 3-5.
Quaternary stratigraphy, Mackenzie Delta and Arctic Coastal Plain, Northwest Territories, 1965.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 30-31.

856. Hughes, O.L., Geol. Surv. Can.:
Surficial geology studies, central and southwestern Yukon, 1965.
See Geol. Surv. Can., Paper 66-1, 1966, p. 46.

857. Johnston, G.H., Brown, R.J.E., Division of Building Research, National Research Council:
Investigation of the distribution of permafrost under bodies of water.
Ground temperature observations were continued at a lake near Inuvik, N.W.T. to determine the effect of bodies of water on permafrost. A major drilling program was carried out at this site in 1964 to install instrumentation and sample the materials to depths up to 300 ft. under and adjacent to the lake.

858. Kerfoot, D.E., Univ. of British Columbia:
Geomorphology of Garry Island, Northwest Territories, 1964-66; Ph.D. thesis.
Includes study of raised beaches, ice segregation, patterned ground, rate of coastal retreat, solifluction.

859. Mackay, J.R., Univ. of British Columbia:
Geomorphology of the Lower Mackenzie River, 1963-67.
A study of the terraces; glaciated terraces; postglacial drowning; rate of sedimentation.
Permafrost temperatures, Mackenzie Delta area, 1964-.
A 200' deep hole west of Ft. McPherson, N.W.T. and a 250' hole near Arctic Red River have already been instrumented for permafrost measurements. New holes will be instrumented in 1966.
Winter and summer deformation changes in the ground associated with the growth of ice-wedge polygons, 1965-.
Precise surveying of tubes inserted into the ground to a depth of 4' has been done for 25 tubes. The deformation of these tubes will be measured in March, 1966, summer 1966, and in the future to obtain ground movement changes. Temperatures are also being measured.

860. Mackay, J.R., Stager, J.K., Univ. of British Columbia:
The origin of tilted beds of massive segregated ice in the Mackenzie Delta area, Northwest Territories, 1963-.
See Thick tilted beds of segregated ice, Mackenzie Delta area, N.W.T.; Biuletyn Peryglacjalny (in press).

Ontario

861. Dreimanis, A., Univ. of Western Ontario and others:
Stratigraphic correlations of glacial deposits between Lake Huron and St. Lawrence Lowland, 1958-.
See Southern Ontario: INQUA 7th Congress Guidebook for Field Conference G. Great Lakes-Ohio River Valley, pp. 90-110, 1965.

862. Dreimanis, A., Gunn, C.B., Univ. of Western Ontario:
Provenance of diamonds in glacial drift, Great Lakes region, 1964-66; M.Sc. thesis (Gunn).

863. Fitzpatrick, M.M., Stephens, L.E., Queen's Univ.:
Seismic and/or resistivity surveying in vicinity of Kingston, Ontario, 1965; M.Sc. thesis (Stephens).
The main interest is in evaluating the Precambrian-Palaeozoic interface as a possible control in the quality and quantity of groundwater in the area.

864. Gorman, W.A., Queen's Univ.:
Glacial studies in the Kingston area, Ontario, 1964-67.
Study of eskers to obtain data on distance of transport of various grain sizes, degree of rounding related to distance of transport and, eventually, properties of an esker stream.
Palaeogeology of Champlain Sea, 1963-66.
An attempt is being made to work out rates of isostatic recovery in the St. Lawrence Lowlands, and from this, to work out the shape and size of the Champlain Sea at various times when it existed in the St. Lawrence Valley. See Palaeogeography of the Champlain Sea. Abstracts, General Sessions, VII International Congress, Internat. Assoc. Quat. Research, p. 173, 1965.

865. Harris, S.A., Waterloo Lutheran Univ.:
Structure and origin of the Waterloo sandhills and surrounding area, 1962-67; Ph.D. thesis, Univ. of London.
Structure and origin of the Galt and Paris moraines and their associated structures, 1966-; Ph.D. thesis, Univ. of London.

866. Henderson, E.P., Geol. Surv. Can.:
Surficial deposits of Westport area, Eastern Ontario, 1965-.
See Geol. Surv. Can., Paper 66-1, 1966, p. 154.
Regional aspects of glacial chronology and Champlain Sea between St. Lawrence and Ottawa Rivers, 1965-.

867. Karrow, P.F., Geol. Surv. Can. (part time), Waterloo Univ.:
Waterloo interlobate area, Ontario, 1965.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 155-156.

868. Lewis, C.F.M., Geol. Surv. Can.:
Post-glacial shore line features in Northern Lake Huron basin, 1965-.
See Geol. Surv. Can., Paper 66-1, 1966, p. 157.

869. Tovell, W. M., Royal Ontario Museum and Univ. of Toronto:
Raised beaches, east shore of Lake Superior and Sault Ste. Marie area, Ontario, 1963-66.
This project, initiated by the late Dr. R. E. Deane, will be continued by Dr. Tovell in the Bruce Peninsula. See Raised Cobble Beaches, Eastern Shore of Lake Superior - Paper delivered at Geological Association of Canada Annual Meeting in Winnipeg, October 20, 1965. Geol. Assn. Canada, (in press).

870. White, O. L., Ontario Dept. of Mines (part time):
Pleistocene Geology of the Bolton area, 1 inch to 1 mile, 1962-65.
See Ont. Dept. of Mines, P.R. 1964-6, pp. 50-52.

Quebec

871. Bird, J. B., Adams, P., and Subarctic Research Station Staff, McGill Univ.:
Permafrost and periglacial studies in the Knob Lake area, Quebec, 1960-.
Summaries of progress are contained in the Annual Reports of the McGill University Subarctic Laboratory.

872. Dubé, Jean-Claude, Quebec Dept. Natural Resources:
Pleistocene geology of Inverness area, Eastern Township, Quebec, 1955-66; Ph. D. thesis.
Studies of unconsolidated deposits of the Pleistocene and Recent, and of the Quaternary geomorphology of parts of the St. Lawrence Lowlands and Appalachian Uplands.

873. Elson, J. A., and students, McGill Univ.:
Surficial deposits exposed in Montreal subway and related excavations, 1963-.
Excavations are examined and samples taken as the opportunity affords. When enough data has accumulated an attempt will be made to interpret the Pleistocene events.

874. Gadd, N. R., Geol. Surv. Can.:
Surficial geology of part of the Quebec-Thetford areas, 1 inch to 2 miles, 1962-64.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 163-166.

875. Grant, J. N., Tremblay, J. J., Quebec Dept. of Natural Resources:
Hydrogeological study of the Eaton River basin, Quebec, 1964.

876. Lasalle, P., Quebec Dept. of Natural Resources:
Pleistocene geology of Arvida area, Jonquière-Kenogami and Chicoutimi counties, 1964-67; Ph.D. thesis.
Post-glacial history of the area with the aid of C^{14} determinations of marine fossils.

877. McDonald, B.C., Geol. Surv. Can. (part time):
Surficial geology, Richmond-Sherbrooke, Quebec, 1 inch to 2 miles, 1964; Ph.D. thesis.
See Geol. Surv. Can., Paper 66-1, 1966, p. 167.

Saskatchewan

878. Freeze, R.A., Geol. Surv. Can.:
Old Wives Lake drainage basin, Saskatchewan, 1962-65; Ph.D. thesis.
The hydrogeological study of an internal drainage basin.
See Geol. Surv. Can., Paper 65-1, 1965, p. 89.
Hydrogeology of Good Spirits Lake drainage basin, Saskatchewan, 1965-.
See Geol. Surv. Can., Paper 66-1, 1966, p. 128.

879. Mott, R.J., Geol. Surv. Can.:
Palynological studies in central Saskatchewan, 1965.
See Geol. Surv. Can., Paper 66-1, 1966, p. 129.

880. van Everdingen, R.O., Geol. Surv. Can.:
Groundwater of the Prairie Provinces and southern Saskatchewan Dam, 1962-.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 124-127.

General Problems

881. Bayrock L.A., Gravenor, C.P., Research Council of Alberta:
Surficial geology of Nat. Top. Ser. sheet 73D, 1954-66.
See Res. Council of Alberta, Prelim. Repts. 55-1, 56-2, 57-1, 57-2, 57-3.

882. Billings, G.K., Williams, H., Univ. of Calgary:
Sedimentary geochemistry, 1965-; M.Sc. thesis (Williams).
The primary concern is the details of the sedimentary geochemical cycle. This will be approached by studying the rock-water system in various stratigraphic units.

883. Brown, R. J. E., Division of Building Research, National Research Council:
Permafrost distribution in Canada, 1953-.
Observations on the occurrence of permafrost throughout the permafrost region of Canada, with emphasis on the southern fringe area, are being collected continuously by direct field observations, review of the technical literature, reports from other individuals and agencies, and questionnaire; this information is recorded on punch cards and plotted on the 8 mile: 1 in. maps of Canada. Accompanying this collection of information is the study of the climatic and terrain factors comprising the permafrost environment as a means of improving the understanding of and ability to predict the distribution and occurrence of permafrost. See Permafrost investigations in Saskatchewan and Manitoba; Division of Building Research Technical Paper 193, Sept. 1965, 36p. (NRC 8375).

884. Burke, K. B. S., Wyder, J. E., Univ. of Saskatchewan:
Application of geophysical methods to the problems of groundwater location in the Canadian prairies, 1963-67; Ph. D. thesis (Wyder).

885. Churcher, C. S., Royal Ontario Museum:
Canadian Pleistocene mammals, 1965-.
See A flake tool and a worked antler fragment from Lake Agassiz; Can. Jour. of Earth Sci., vol. 2, pp. 237-246, 1965.

886. Collett, L. S., Gauvreau, C., Geol. Surv. Can.:
Measurement of the resistivity of surficial deposits by airborne pulsed electromagnetic equipment, 1965-68.

887. Douglas, G. (Mrs.), McGill Univ.:
Effects of ion concentrates on the force field controlling the transmission through clay soils, 1964-66; M. Sc. thesis.

888. Dreimanis, A., Vagners, U. J., Univ. of Western Ontario:
Relationship of lithologic and granulometric composition of till to bedrock, 1962-; M. Sc. thesis (Vagners).
During glacial transport each rock eventually becomes comminuted to the "terminal grade" which is typical for each mineral. Before a rock has been comminuted to the "terminal grades" of its constituent minerals, its frequency polygon in till is bimodal or multimodal. Considerable differences are encountered between tills derived from basal and englacial drift. See Till-bedrock lithologic relationship, Abstracts, Intern. Assoc. for Quaternary Res., 7th Intern. Congr. Gen. Sess. 1965, pp. 110-111.

889. Elson, J.A., McGill Univ.:
Strandlines and end moraines of Glacial Lake Agassiz, 1964-67.
Strandlines are being compiled from air photo studies checked in the field; relevant end moraines are being traced on photos and in the field; stratigraphic data is being accumulated, and soil development on beach ridges is examined with a view to interpolating their ages between limits fixed by radiocarbon dates. See Western Strandlines of Glacial Lake Agassiz, Abstracts, Inter. Assoc. for Quaternary Research, VII Inter. Congress, 1965, p. 126.

890. Frenkel, C.J., McGill Univ.:
The flow of aqueous solutions through clay, 1959-66; M.Sc. thesis.

891. Innes, M.J.S., Argun-Weston, A., Dominion Observatory:
Isostasy and vertical movements of the crust.
A free air anomaly map for central Canada has been compiled between latitudes 48°N. and 60°N. and longitudes 72°W. and 104°W. Statistical analyses of the gravity and elevation data for approximately 10,000 stations evenly distributed around Hudson and James Bays have been carried out to examine trends that may be related to crustal depression from glacial loading.

892. Lee, H.A., Geol. Surv. Can.:
Investigation of Late Quaternary uplift along shore of Hudson Bay, 1965.

893. Lennox, D.H., Carlson, V.A., Bukhari, A., Research Council of Alberta:
Geophysics in groundwater exploration, 1957-66.
An investigation of the application of a numerical method of resistivity analysis to shallow exploration. A paper and a bulletin are in preparation describing the method and presenting tables of numerical factors necessary for its application.

894. Mercu, R.F., Univ. of Western Ontario:
Shallow seismology, 1965-67.
Experiments are under way which are designed to test the feasibility of applying the time-term method to a grid system so that bedrock contour maps can be drawn. Seismic signal enhancement methods on digitized records are also under investigation in an effort to improve the range of the weight-drop method.

895. Meyboom, P., Geol. Surv. Can.:
Groundwater studies in the Assiniboine River drainage basin.
See Geol. Surv. Can., Paper 64-2, 1964, p. 108 and Paper 66-1, 1966, p. 128.

896. Morley, L.W., Washkurak, S., Geol. Surv. Can.:
Infrared and microwave surveys, 1965-.
To determine the feasibility of detecting old buried river channels by infrared and microwave methods; to determine if infrared surveys will outline the extent of rock outcrop areas from areas covered by bush or overburden.

897. Parsons, M.L., Gilliland, J.A., Geol. Surv. Can.:
Groundwater investigations, Ontario, Manitoba and Saskatchewan, 1965-.
See Geol. Surv. Can., Paper 66-1, 1966, p. 202.

898. Paul, G., Yong, R., Elson, J.A., McGill Univ.:
The effect of chemical additives on the permeability of clay soils; 1963-66; M.Sc. thesis (Paul).
Water containing certain cations in various concentrations is passed through a special permeameter that allows a wide range of pressure gradients, controlled spacing and orientation of clay minerals and measurement of electric potentials. Factors influencing threshold gradients and flow rates are being studied.

899. Pissart, A., Universite de Liege, in cooperation with Polar Continental Shelf Project, the Canada Council, the Geographical Branch, and the Geological Survey of Canada:
Study of periglacial features on the Arctic Coastal Plain, 1965.
Included study of pingoes; evolution of slopes and terraces in a periglacial climate; wind action on the Arctic coastal plain; development of periglacial soils on Prince Patrick Island.

900. Prest, V.K., Geol. Surv. Can.:
Pleistocene map of Canada, 1964-65.
Glacial studies, Eastern Canada.
See Geol. Surv. Can., Paper 65-1, 1965, pp. 152-153.
Glacial studies, northeastern Ontario and northwestern Quebec.
See Geol. Surv. Can., Paper 66-1, 1966, p. 202.

901. Scott, J.S., Geol. Surv. Can.:
Till characterization, 1962-65.
Preparation of a booklet listing engineering parameters of till.

Slope stability, Saskatchewan, Alberta and Manitoba, 1962-65.
Study of geological and hydrogeological factors affecting the stability of slopes. See Geol. Surv. Can., Paper 66-1, 1966, pp. 130-132.

902. Sharp, J.W., Nind, T.E.W., Univ. of Saskatchewan:
Influences of aquifer boundaries on pumping well tests, 1965-66; M.Sc. thesis (Sharp).
A study of problems such as the influences of partial hydrologic boundaries, of irregular boundaries situated at finite distances, and of other producing wells in the vicinity of the test well.

903. Stevenson, D.R., Research Council of Alberta:
An evaluation of the groundwater budget and its significance within the hydrologic balance for the Streeter basin, Alberta, 1964-67.
An evaluation of the groundwater budget and its significance within the hydrologic balance for the Marmot Creek basin, 1964-66.
Both projects involve measurement of the groundwater components of the hydrologic cycle and evaluation of the groundwater balance.

904. Terasmae, J., Geol. Surv. Can.:
Palynological studies.
See Geol. Surv. Can., Paper 66-1, 1966, p. 207.

905. Vonhof, J.A., Nind, T.E.W., Univ. of Saskatchewan:
Effects of compaction resulting from head losses accompanying production on groundwater movement, 1965-67; Ph.D. thesis (Vonhof).
It is hoped to make an initial theoretical study from which certain tentative conclusions may be drawn. These conclusions will then be tested either in the field or by means of an electric analogue.

906. Wright, E.P., Nind, T.E.W., Univ. of Saskatchewan:
Techniques for rapid assessment of groundwater resources of extensive undeveloped areas, 1965-66.
The objective is to further our knowledge concerning the utility of various relatively inexpensive groundwater search methods in unprospected areas.

907. Wyder, J.E., Geol. Surv. Can.:
Possible use of geophysics in a Pleistocene environment with emphasis on location of groundwater, 1963-66, Ph.D. thesis, Univ. of Saskatchewan.

Project involves use of surface DC resistivity, E-logging, gravity and model tank techniques. See Geol. Surv. Can., Paper 65-1, 1965, pp. 92-93 and Paper 66-1, 1966, p. 132.

SEDIMENTATION

908. Bartlett, G.A., Geol. Surv. Can. and Bedford Institute of Oceanography:
Marine geology - benthonic foraminiferal ecology in nearshore environments of the Atlantic provinces; 1962-66.
Investigation of the distribution of living foraminifera and transportation of dead tests in nearshore waters of the Atlantic provinces. This enables a check on the validity of living total foraminiferal ratios for sedimentation rates, areas and period of growth of foraminifera, cause and effect of transportation of death assemblages, and the effects of various interrelated factors on the distribution of living and dead foraminiferal tests. See Benthonic foraminiferal ecology in St. Margarets Bay and Mahone Bay, southeast Nova Scotia, Report B.I.O., 64-8 and Geol. Surv. Can., Paper 65-1, 1965, p. 138.

909. Boutcher, S.M.A., Edhorn, A.S., Moorhouse, W.W., Univ. of Toronto:
Archaean conglomerates and lithic sandstones of Lake Timiskaming, Ontario, 1962-65.
An examination of the petrography, sedimentary structures, and source of the sediments in this classical area of Archaean sedimentation.

910. Campbell, F.A., Univ. of Calgary:
Chemical composition and mineralogy of sedimentary rocks in the Alberta Basin, 1961-.
Involves the application of X-ray diffraction techniques to solution of problems of basin geometry, environmental factors and provenance. See Chemical Composition of Shales of Manville Group (Lower Cretaceous) of Central Alberta, Canada. Bull. of A.A.P.G. vol. 49, No. 1, 1965.

911. Cok, A.E., Dalhousie Univ.:
Surface sediments and morphology of the northeastern Scotian Shelf, 1961-66; Ph.D. thesis.

912. Dineley, D.L., Williams, B.P., Univ. of Ottawa:
Geology and palaeontology of the Devonian continental formations in the Lower Restigouche Valley, New Brunswick and Quebec, 1964-66.

The sedimentology, stratigraphy and some palaeontology of the continental Devonian Formations between Campbellton, N.B. and Miguasha, P.Q. have been revised in some detail. The Escuminac Formation at the top of the succession has received greatest attention; a new interpretation of its origin is being developed calling for lacustrine conditions with periodic density underflows.

913. Donaldson, J.A., Jackson, G.D., Geol. Surv. Can.:
Archaean sedimentary rocks of northwestern Ontario.
An evaluation of provenance for Temiskaming type clastic sediments. See Archaean sedimentary rocks of North Spirit Lake area, northwestern Ontario, Can. Jour. Earth Sciences, vol. 2, No. 6, 1965, pp. 622-647.

914. Drapeau, G., Dalhousie Univ.:
Sediments and morphology of the southern portion of the Scotian Shelf, 1964-68; Ph.D. thesis.

915. Halferdahl, L.B., Research Council of Alberta:
Some stream deposits in Alberta, 1957-66.
The characteristics of gravel and sand in some Alberta Rivers are being studied to learn their economic possibilities and factors bearing on their transportation.

916. Jordan, F.W., McMaster Univ.:
Calcareous concretions in Hamilton shales, western New York, 1965-66; M.Sc. thesis.
A study of the faunal, chemical and mineralogical content of an horizon of calcareous concretions in the Ludlowville shale in the Hamilton Group, N.Y. with particular reference to the time and conditions under which the concretions were formed and to the conclusions that might be drawn therefrom about the palaeoecology of the area.

917. King, L.H., Bedford Institute of Oceanography:
Marine geology, Scotian Shelf, 1963-.
The purpose is to define the sedimentary environment on the shelf and relate the environment to the constitution of the organic fraction of the sediment. See Use of a Conventional Echo-Sounder and textural analyses in delineating sedimentary facies - Scotian Shelf; B.I.O. Report (in press).
Bottom-sediment studies on the Scotian Shelf southeast of Halifax, Nova Scotia.
See Geol. Surv. Can., Paper 65-1, 1965, pp. 147-148.

918. Lee, P.J., Univ. of Western Ontario:
Fabric of a Middle Ordovician Limestone at Colborne, Ontario, 1963-65; M.Sc. thesis.
Part of a large scale project on the Middle Ordovician of Ontario. The clasticity in a forty foot section of the quarry was studied at three places in the quarry with the following results: (1) the percentage of matrix decreases and total fossils and brachiopods increases downward; (2) disarticulated brachiopod and ostracod valves are convex upward in biosparite and convex downward in biomicrite; (3) the orientation pattern of elongate fossils show two dominant trends, northeast-southwest and northwest-southeast. Statistics were analyzed on the computer.

919. Longe, R.V., McGill Univ.:
Transport of heavy materials in streams, 1964-66; M.Sc. thesis.

920. Marlowe, J.I., Geol. Surv. Can. and Bedford Institute of Oceanography:
Geology of Continental Slope, 1964-.
See The geology of part of the Continental Slope near Sable Island, Nova Scotia; B.I.O. Report 64-17 (1964).
Sediments of Baffin Bay, 1964-.
See Mineralogy as an indicator of long-term current fluctuations in Baffin Bay; Canadian Jour. Earth Sciences (in press).
Marine geology of Prince Gustaf Adolf Sea, District of Franklin, 1962-65.
See Marine geology, western part of Prince Gustaf Adolf Sea, District of Franklin; Report Bedford Institute of Oceanography, August, 1964.

921. Martini, I.P., McMaster Univ.:
Sedimentology of Medina Formation, 1962-65; Ph.D. thesis.
A study has been made of the stratigraphy and sedimentology (including petrography, fabric and sedimentary structures) of the sandstones in the Medina Formation between Hamilton, Ontario, and Rochester, N.Y.

922. Mason, G.D., McGill Univ.:
Depositional environment of the Loraine and Richmond Formations in the St. Lawrence Lowlands of Quebec, 1965-66; M.Sc. thesis.

923. Medioli, F., Post-doctorate Fellow, Dalhousie Univ.:
Sediment and microfaunal dispersal on Sable Island Bank off Nova Scotia, 1965-66.

See The physical influence of a paleosol on the morphology and preservation of Sable Island off the coast of Nova Scotia, Paper presented at the VII INQUA Congress, Colorado, 1965.

924. Meistrell, F. J., Univ. of Alberta:
Development and dynamics of a simple spit, 1965-66; M. Sc. thesis.
A wave tank study the results of which will be compared with known characteristics of actual spits as determined from field study and hydrographic charts.

925. Middleton, G. V., McMaster Univ.:
Sediments deposited by turbidity currents, 1964-.
Experimental studies of turbidity currents were begun in June 1964 at California Institute of Technology, under support from Petroleum Research Fund. They will be continued at McMaster as soon as suitable facilities can be constructed. Research on selected ancient turbidites will also be continued. See Anomalous grain orientation in the Normanskill Greywackes, Hudson Valley, N. Y., Geol. Soc. Am., Program 1965 Annual Meeting, pp. 118-119.

926. Mountjoy, E. W., MacIntyre, I. C., McGill Univ.:
Recent sediments, west coast of Barbados, 1964-66; Ph. D. thesis (MacIntyre).
Research includes the study of sea floor morphology, distribution of marine flora and fauna, reefs and associated sediments. The origin and processes controlling distribution of the various types of calcareous and terrigenous sediments and their relationship to organisms are being investigated as well as their geochemistry.

927. Oliver, T. A., Univ. of Calgary:
Sedimentation in glacial lakes, 1964-.

928. Oliver, T. A., Cowper, N. W., Univ. of Calgary:
Depositional environments of Woodbend Shales, and relation to Leduc Reefs, 1963-66.
See Depositional environments of Ireton Formation, central Alberta, Bull. A. A. P. G., vol. 49, 1965, pp. 1410-1425.

929. Parkash, B., McMaster Univ.:
Sedimentological transition from Catskill Formation to Pocono Formation in Pennsylvania, 1965-67; Ph. D. thesis.
A detailed petrographic and geochemical study of Poconos and upper portion of Catskill is planned. Attempt is being made to find environmental differences between "non-marine" Catskills and "fluviatile" Pocono.

930. Pelletier, B.R., Bedford Institute of Oceanography:
Marine geology of Hudson Bay, 1961-.
See Marine geology of Hudson Bay and approaches in Encyclopedia of Earth Sciences.
Bottom studies on the Polar Continental Shelf Project, Arctic Ocean, 1960-.
See Development of submarine physiography in the Canadian Arctic and its relation to crustal movements; B.I.O. Report 64-16.

931. Rust, B.R., Univ. of Ottawa:
The sedimentology and palaeogeography of Carboniferous rocks in Cape Breton Island, Nova Scotia, 1965-66.
Sedimentary structures, facies changes and clast lithologies in the Mississippian Horton Group are being studied as guides to the interpretation of Horton sedimentary environments and palaeogeography. Sedimentary structures have also been examined in the Pictou Group (Pennsylvanian) with a view to relating them to micro-environments of coal measure deposition.

932. Rust, B.R., Coakley, J.P., Univ. of Ottawa:
Modern and recent sedimentation in Stanwell-Fletcher Lake, Somerset Island, N.W.T., 1965-66; M.Sc. thesis (Coakley).
Measurements of water depth, temperature and salinity were made on a one mile by two mile grid of the lake. Water samples and cores of bottom sediment were taken at each station. Laboratory studies are being made in collaboration with the Geological Survey of Canada on trace elements in the water, and on the texture, composition, microflora and fauna of the bottom sediments. A heat budget will be prepared from the temperature observations.

933. Rust, B.R., Tuke, M.F., Miall, A.D., Univ. of Ottawa:
The sedimentology and palaeogeography of the Devonian Peel Sound Formation of Somerset and Prince of Wales Islands, N.W.T., 1965-69; Ph.D. thesis (Tuke), M.Sc. thesis (Miall).
Sedimentary structures and facies variation in the Peel Sound Formation have been examined by Rust and Tuke in northern and central Somerset Island respectively. Miall will start a similar study on Prince of Wales Island in 1966 with the eventual object of regional palaeogeographic analysis.

934. Schenk, P.E., Campbell, F.H.A., Goodwin, R.H., Dalhousie Univ.:
Palaeocurrent and basin analysis of the Meguma Group, Nova Scotia, 1964-; M.Sc. thesis (Campbell).

Depositional environment and fauna-flora of carbonates of the Windsor Group, Antigonish Basin, Nova Scotia, 1965-; M. Sc. thesis (Goodwin).

See Palaeoenvironmental significance of algal stromatolites of the Windsor "Group" (Mississippian) Nova Scotia - abstract, Geol. Assoc. Canada - Mineral Assoc. Canada meetings, 1966, Halifax.

935. Shearer, J.M., Memorial Univ. of Newfoundland:
Recent sediments on the floor of Port au Port Bay, West Newfoundland, 1965-67; M. Sc. thesis.

Detailed sampling of the bay floor sediments and of the rock outcrops and Quaternary deposits along the shore of the bay is planned for summer 1966. A granulometric, mineralogical, and palaeontological laboratory study will follow.

936. Smith, L., Queen's Univ.:
The Tippecanoe sequence in western North America, 1963-66.

An analysis of the sequence concept of Sloss and Wheeler as applied to part of the Lower Palaeozoic of western North America.

937. Stanley, D.J., Cok, A.E., Drapeau, G., James, N., Grant, D., Dalhousie Univ.:
Submarine geology of the continental margin off Nova Scotia, 1960-; Ph.D. theses (Cok, Drapeau, Grant), M.Sc. thesis (James).

A long term project concerned with interpreting the surface distribution, sediment dispersal, source, submarine morphology on the Scotian Shelf and Slope. Problems of Tertiary, Pleistocene, and Holocene stratigraphy are being considered. See Recent versus relict sediment transport processes on the Scotian Shelf, Canada, Annual Meeting, Geol. Soc. America, 1965 (abstract).

938. Swift, D., Miller, M., Lyall, K.D., Dalhousie Univ.:
Quaternary sedimentation, Bay of Fundy, 1964-68; M. Sc. theses (Miller and Lyall).

The phases presently being investigated include Late Pleistocene sedimentation north shore of Minas Basin (Swift); suspended sediment transport, Bay of Fundy (Miller) and Quaternary stratigraphy, eastern Bay of Fundy (Lyall).

939. Usher, J.L., Peterson, N.N., Queen's Univ.:
Limestone environments and their special relationships, 1963-66; Ph.D. thesis (Peterson).

Investigation of the environments responsible for the various limestone types found in the Ordovician Black River

Formation in the Kingston area and the special arrangement of these environments with respect to shoreline, water depth and water turbulence.

940. Usher, J.L., Queen's Univ., Yorath, C.J., Bedford Institute of Oceanography:
Sedimentation and foraminiferal ecology on the northeastern Scotian Shelf, 1965-67; Ph.D. thesis (Yorath).
A detailed analysis of the interrelationships of sedimentation and foraminiferal ecology in an area of very complex bathymetry adjacent to Sable Island and its associated banks.

941. van de Poll, H.W., New Brunswick Mines Branch:
Sedimentation and palaeocurrents in the Carboniferous basins of New Brunswick, 1965-.
Present investigations involve studies dealing with provenance, mode of transport, environmental conditions, and morphology of the undeformed Pennsylvanian sandstones; the first phase of the study on the sedimentation and palaeocurrents in sandstones of Moncton Basin has been completed.

942. Vemuri, Ramesam, McMaster Univ.:
Mineralogical and trace element variation in the Dunkard Group, 1964-66; Ph.D. thesis.
A study of the mineralogical and trace element variation in the sediments other than clays in the reducing, paludal environment in the northeastern part of the basin as contrasted with the oxidizing fluvial environment towards the south and southwest; and of the relation of this to the cyclical, vertical repetition in the rocks of the Dunkard Group. If possible theories for the origin of the cyclicity will be tested.

943. Yole, R.W., Carleton Univ.:
Stratigraphy, sedimentology and palaeontology of Sicker Group (Permian and? older), Vancouver Island, 1960-66.
See An early Permian fauna from Vancouver Island, British Columbia; Bull. Can. Petrol. Geol., vol. 11, 1963, pp. 138-149.

944. Young, G.M., Univ. of Western Ontario:
Regional investigation of sedimentology and provenance of the Gowganda Formation (Huronian), 1966-.

STRATIGRAPHY AND PALAEONTOLOGY

Precambrian

945. Akehurst, A. J., Charlesworth, H. A. K., Univ. of Alberta:
Precambrian geology of the Lake Louise area, Alberta, 1963-66; Ph. D. thesis (Akehurst).

946. Chandler, F. W., Univ. of Western Ontario:
Stratigraphy and sedimentology of Huronian rocks in Harrow and McKinnon townships, Ontario, 1965-67.

947. Donaldson, J. A., Geol. Surv. Can.:
Stratigraphic study of Dubawnt Group, Northwest Territories, 1963-.
See Geol. Surv. Can., Paper 66-1, 1966, p. 22.
Schultz Lake map-area, Northwest Territories, 1965-.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 23-24.

948. Fyson, W. K., Univ. of Ottawa:
Structural and stratigraphic relationships of the Mt. Ida, Cache Creek, and Monashee Groups, Shuswap Lake area, British Columbia, 1965-67.

949. King, L. H., Byers, A. R., Univ. of Saskatchewan:
Geology of Precambrian basement, southern Saskatchewan, 1964-66; M. Sc. thesis (King).

950. McNair, A. H., Polar Continental Shelf Project (part time), Dartmouth College:
Study of the Late Precambrian sedimentary rocks in Northwest Victoria Island, N. W. T., 1963-.
In 1965 the project was principally concerned with the collection and study of fossil-bearing Late Precambrian rocks whose age can also be determined by radioactive methods. Results were presented at 1965 Annual Meeting, Geol. Soc. America, Kansas City, Mo., November 1965.

951. Milligan, G. C., Dalhousie Univ.:
George River Series, Nova Scotia, 1962-.
The ultimate objective is to recognize guides to economic mineralization.

952. Shaw, D. M., Jennings, D. S., McMaster Univ.:
Stratigraphy and metamorphism of the Hermon Formation, Peterborough county, Ontario, 1965-68; Ph. D. thesis (Jennings).

A study of the sedimentology, correlation, structure and metamorphism in the Hermon Formation which is a major stratigraphic unit of the Grenville series in S. E. Ontario.

953. Young, G. M., Church, W. R., Univ. of Western Ontario:
Stratigraphy, structure and sedimentology of Huronian rocks in the region north of Manitoulin Island, Ontario, 1964-.
This investigation has confirmed the Huronian age of the rocks in this region and has shown the absence of an unconformity beneath the Gowganda Formation. A shallow marine glacial origin is proposed for the Gowganda Formation, and this formation and indeed all the Huronian sediments of this area were derived from the north-northwest. The presence of iron formation in the southern part of the area studied may permit correlation of these rocks with the Animikie of the Lake Superior region. See Reassessment of the Huronian System in the Sudbury District and adjoining areas of Ontario (abstract), Can. Min. and Metall. Bull. 58, 912, 1965.

954. Weiner, J. L., Charlesworth, H. A. K., Univ. of Alberta:
Precambrian geology of the Jasper area, 1960-66; Ph. D. thesis (Weiner).

Cambrian to Silurian

955. Aitken, J. D., Geol. Surv. Can.:
Pre-Devonian stratigraphy, Alberta, 1961-64.
Study of pre-Devonian stratigraphy in such detail as to permit precise correlations and to delineate depositional trends and to develop criteria by which subsurface pre-Devonian strata of the foothills and plains may be correlated with the exposed sections. See Geol. Surv. Can., Paper 65-2, 1965, pp. 61-64 and Paper 66-1, 1966, p. 104.

956. Bolton, T. E., Liberty, B. A., Geol. Surv. Can.:
Ordovician and Silurian stratigraphy, southwestern Ontario.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 146-147.

957. Fitzpatrick, M. M., Usher, J. L., Peterson, N. N., Stephens, L. E., Queen's Univ.:
The depth to Precambrian – Palaeozoic interface in the Kingston area, 1965-; Ph. D. thesis (Peterson); M. Sc. thesis (Stephens).

958. Fritz, W. H., Geol. Surv. Can.:
Cambrian Biostratigraphy in the Canadian Eastern Cordillera, British Columbia and Alberta, 1965-.
See Geol. Surv. Can., Paper 66-1, 1966, p. 188.

959. Fritz, W.H., Norris, D.K., Geol. Surv. Can.:
Lower Middle Cambrian correlations in the east-central Cordillera.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 105-110.

960. Greggs, R.G., Queen's Univ.:
Upper Cambrian trilobite faunas; Upper Cambrian stratigraphy, 1957-.
See Upper Cambrian Formations, Southern Rocky Mountains of Alberta (abstract), Geol. Surv. Can., Paper 65-2, pp. 62-63, 1965.

961. Hay, Peter W., New Brunswick Mines Branch:
Stratigraphy and structure of Silurian rocks in southern New Brunswick, 1965-.
Detailed geological studies of the Mascarene Group, an undivided series of volcanic and sedimentary rocks of Silurian age, to determine their stratigraphic relations, structural features, and economic potential.

962. Jackson, D.E., Univ. of Alberta:
Biostratigraphy and taxonomy of Glenogle Formation of southeastern British Columbia, 1962-67.
Biostratigraphy and taxonomy of graptolites of Early Ordovician age in the Richardson Mountains, Yukon Territory, 1962-66.

963. Jackson, D.E., Davies, E.J., Univ. of Alberta:
Stratigraphy of Ordovician and Silurian strata in northeastern British Columbia with special reference to the graptolitic facies, 1963-66; Ph.D. thesis (Davies).

964. Mason, G.D., McGill Univ.:
Depositional environment of the Lorraine and Richmond Formations in the St. Lawrence Lowlands of Quebec, 1965-66; M.Sc. thesis.

965. Mountjoy, E.W., McGill Univ., Geol. Surv. Can., (part time):
Cambrian stratigraphy and petrology of northern Jasper Park, Alberta, 1960-.
Regional study of Cambrian stratigraphy to determine distribution thickness and petrography of various units. A study of Ordovician strata and the pre-Devonian unconformity is also included.

966. Mukherji, K.K., Univ. of Western Ontario:
Petrology of the Middle Ordovician Black River Group, 1965-67; Ph.D. thesis.

Part of a large scale project on the Middle Ordovician of Ontario. The objective is study of the regional petrology of Black River sediments from Kingston to Manitoulin Island. Determinations will be made on the stratigraphic variation of texture, magnesium distribution, heavy mineral assemblages, trend of carbonate clastics, etc. The exposed section at Marmora has been studied and will be used as a standard for comparison. Preliminary results clearly indicate that four units can be defined.

967. Nautiyal, A. C., Memorial Univ. of Newfoundland:
Cambro-Ordovician sequence in the southeastern part of Conception Bay, Newfoundland, 1965-66; M. Sc. thesis.
A detailed study of the sedimentary sequence exposed in the lower Manuels River valley (Cambrian) and on Bell Island, Kellys Island and Little Bell Island (Lower Ordovician), including a micropalaeontological investigation.

968. Nelson, S. J., Univ. of Calgary:
Stratigraphy and petroleum possibilities of Hudson Bay area, 1950-66.
See Ordovician Palaeontology of the Northern Hudson Bay Lowland, G. S. A. Mem. 90, pp. i-x, 1-152, 1963.

969. Norford, B. S., Geol. Surv. Can.:
Ordovician and Silurian Biostratigraphy of British Columbia and Alberta, 1961-67.
Detailed study of Ordovician and Silurian sections and sampling of the contained faunas. See. Geol. Surv. Can., Paper 66-1, 1966, p. 201.

970. Schenk, P. E., Campbell, F. H. A., Goodwin, R. H., Dalhousie Univ.:
Palaeocurrent and basin analysis of the Meguma Group, Nova Scotia, 1964-; M. Sc. thesis (Campbell).

971. Sinclair, G. W., Geol. Surv. Can.:
Ordovician of southern Quebec, 1955-.

972. Smith, L., Queen's Univ.:
The Tippecanoe sequence in western North America, 1963-66.
An analysis of the sequence concept of Sloss and Wheeler as applied to part of the Lower Palaeozoic of western North America.

973. Tuke, M. F., Univ. of Ottawa:
The stratigraphy of the Aston and Hunting Formations, Somerset Island, N. W. T., 1965-66; Ph. D. thesis.

The Aston and Hunting Formations in the northwest part of Somerset Island were mapped in much greater detail than before in order to obtain more information on the regional palaeogeography and the movements of the Boothia Arch. New formation was obtained on the relationship of the Hunting Formation to the overlying Ordovician. A careful search was made for fossils but without results. Sedimentary structures in the beds were examined and the environment of deposition is being worked out.

974. Upitis, U., McGill Univ.:
The Rapitan Formation, Yukon and Northwest Territories, 1965-66; M.Sc. thesis.

975. Usher, J.L., Peterson, N.N., Queen's Univ.:
Limestone environments and their special relationships, 1963-66; Ph.D. thesis (Peterson).
Investigation of the environments responsible for the various limestone types found in the Ordovician Black River Formation in the Kingston area and the special arrangement of these environments with respect to shoreline, water depth and water turbulence.

Devonian to Permian

976. Bamber, E.W., Geol. Surv. Can.:
Mississippian correlations in the Jasper area, Alberta, 1963-65.
A study of the fauna in the Rundle Formation.
Palaeontology and stratigraphy of the Carboniferous and Permian of northern Yukon, 1963-65.
See Geol. Surv. Can., Paper 65-1, 1965, pp. 42-43.
Stratigraphy of Carboniferous and Permian rocks in the Rocky Mountains and Liard Plateau, northern British Columbia.
See Geol. Surv. Can., Paper 66-1, 1966, p. 50.

977. Beales, F.W., Univ. of Toronto:
Limestone studies - a continuing programme.
Field and laboratory research is continuing on aspects of the build-up of Devonian reefs in Western Canada. See Elemental composition of carbonate rocks (with Wolf and Chilingar) Elsevier, in press.

978. Belyea, H.R., Geol. Surv. Can.:
Devonian of Alberta, British Columbia and District of Mackenzie, a continuing project.
See Geol. Surv. Can., Paper 64-2, 1964, pp. 2-3.

979. Belyea, H.R., MacKenzie, W.S., Geol. Surv. Can.:
Middle Devonian correlation (subsurface), Yukon to Saskatchewan, 1965-66.

980. Belyea, H.R., Norris, A.W., Geol. Surv. Can.:
Late Middle and early Upper Devonian formations of Manitoba and central Saskatchewan to Great Slave Lake area, Northwest Territories, 1964-66.

981. Bonham-Carter, G.F., Univ. of Toronto:
Pennsylvanian reef studies, north Ellesmere Island, Northwest Territories, 1963-66; Ph.D. thesis.
See A numerical method of classification using qualitative data, as applied to the facies analysis of limestone; Can. Bull. Petroleum Geology (in press).

982. Braun, W.K., Univ. of Saskatchewan:
Devonian biostratigraphy and microfauna of Western Canada, 1961-.

983. Cumming, L.M., Howie, R.D., Geol. Surv. Can.:
Carboniferous stratigraphy and structure, Miramichi Bay, New Brunswick, 1966.

984. Dineley, D.L., Williams, B.P., Univ. of Ottawa:
Geology and palaeontology of the Devonian continental formations in the Lower Restigouche Valley, New Brunswick and Quebec, 1964-66.
The sedimentology, stratigraphy and some palaeontology of the continental Devonian formations between Campbellton, N.B. and Miguasha, P.Q. have been revised in some detail. The Escuminac Formation at the top of the succession has received greatest attention; a new interpretation of its origin is being developed calling for lacustrine conditions with periodic density underflows.

985. Ferguson, Laing, Mount Allison Univ.:
Studies of a Lower Carboniferous marine transgression, 1957-67.
A geochemical study of shale is at present being undertaken with a view to correlating geochemical palaeosalinity data with already published palaeontological palaeosalinity data. See The paleoecology of Lingula squamiformis Phillips (PS) during a Scottish Mississippian marine transgression; J. of Paleontology, vol. 37, May, 1963, pp. 669-681.
A stratigraphic and faunal study of the Permo-Pennsylvanian of North-Central Ellesmere Island, N.W.T., 1961-68.

986. Fuzesy, L. M., Saskatchewan Dept. of Mineral Resources:
Geology of Frobisher - Alida Beds, 1963-66.
Detailed study of the lithology, and problems related to oil accumulation in the Frobisher-Alida beds subcrop area in southeastern Saskatchewan. See Correlation and subcrops of the Mississippian strata in southeastern and south-central Saskatchewan, D. M. R. Report No. 51.

987. Holter, M. E., Wardlaw, N. C., Univ. of Saskatchewan:
Stratigraphy of the Devonian potash ore beds, Saskatchewan, 1965-66; M. Sc. thesis (Holter).
This study encompasses the entire region of the Prairie Evaporite (Middle Devonian) potash deposits in Saskatchewan. An attempt is being made to correlate individual potash beds and "shale markers" and to determine their relationships with associated sedimentary rocks in order to provide a better understanding of palaeogeography in Prairie Evaporite times.

988. Jackson, S. A., Univ. of Toronto:
Palaeoecological aspects of lead-zinc mineralization in carbonate rocks, 1964-66; M. A. thesis.
Particular emphasis on Presqu'ile Dolostone and Pine Point mineralization, Northwest Territories.

989. Jones, L., Saskatchewan Dept. of Mineral Resources:
The Middle Devonian Winnipegosis Formation of Saskatchewan, 1962-65.
See The Middle Devonian Winnipegosis Formation of Saskatchewan: Sask. Dept. Mineral Res. (in press).

990. Kent, D. M., Saskatchewan Dept. of Mineral Resources:
Some aspects of the geology of the Upper Devonian Saskatchewan Group in western Saskatchewan and adjacent areas of eastern Alberta and north-central Montana, 1960-66.
See Some problems of Upper Devonian nomenclature and correlation in the Cypress Hills area, Alberta and Saskatchewan: Alta. Soc. Petrol. Geol., 15th Annual Field Conference Guidebook, Part I, pp. 246-254.

991. Lafon, G. M., Univ. of Alberta:
A petrographic and geochemical study of the Nisku Formation in the Leduc-Woodbend field, Alberta, 1964-65; M. Sc. thesis.

992. Leavitt, G. M., Univ. of Alberta:
A study on the Beaverhill Lake reef - Carson Creek North, 1963-66; Ph. D. thesis.

Includes a study of palaeontology, petrology and chemistry to gain a better understanding of the palaeoecology and conditions of sedimentation at the time of reef growth.

993. Leith, E.I., Zakus, P., Univ. of Manitoba:
The Whitewater member (Mississippian)'in Manitoba, 1965-66; M.Sc. thesis (Zakus).
A study of the sedimentary petrography and stratigraphy and lateral extent of the Whitewater in adjacent North Dakota and Saskatchewan.

994. Lerbekmo, J.F., and graduate students, Univ. of Alberta:
Carbonate reservoir rocks in Alberta, 1962-.
See Petrology of a Permo-Carboniferous section in northern Jasper National Park, Alberta: Edmonton Geological Soc., 6th Annual Field Trip Guidebook, 1964, pp. 35-60.

995. Martin, H.L., Geol. Surv. Can.:
Mississippian subsurface geology in the Pembina area, Alberta, 1965.
Mississippian Elkton member, Elkton area, Alberta, 1965-67.

996. MacKenzie, W.S., Geol. Surv. Can.:
Stratigraphy of Devonian rocks, Operation Liard, northeastern British Columbia.
See Geol. Surv. Can., Paper 66-1, 1966, p. 73.
Stratigraphy of Devonian reef and off-reef rocks in the subsurface in Fort Nelson, British Columbia, 1965-66.

997. MacQueen, R.W., Geol. Surv. Can. (part time):
Mississippian stratigraphy and petrology of Bow and Highwood River area, Alberta, 1963-65; Ph.D. thesis, Univ. of Toronto.
See Geol. Surv. Can., Paper 65-1, 1965, p. 80.

998. Mayr, U., Univ. of Ottawa:
Conodont faunas of the Tully Limestone with special reference to the Middle/Upper Devonian boundary problem in North America and Western Europe, 1963-66; Ph.D. thesis.
The Tully Limestone has been extensively sampled throughout its vertical and lateral extent and the conodont faunas prepared for comparison with material from the European Devonian type sections. The Givetian-Frasnian type conodont succession is being studied for the first time.

999. McGugan, A., Univ. of Calgary:
Permo-Carboniferous stratigraphy of northeast British Columbia.

See Chapter 8, Geological History of Western Canada, Alberta Society Pet. Geologists, 1965.

1000. Mountjoy, E.W., McGill Univ., Geol. Surv. Can. (part time):
Carboniferous stratigraphy and petrology of northern Jasper Park, 1959-.
Regional study of Carboniferous stratigraphy to determine extent, thickness and petrography of various units. See The Permo-Carboniferous Succession of Mount Greenock and northern Jasper Park. Bull. Can. Petrol. Geol. vol. 13, pp. 340-45.
Upper Devonian Ancient Wall reef complex, 1960-.
Investigation includes a study of gross stratigraphic relationships, petrology and detailed examination of reef margins in order to determine depositional history and environments. A study was also undertaken with Dr. C.W. Stearn to investigate in more detail the stratigraphy, petrology and palaeoecology of the southern margin of the reef. See Geol. Surv. Can., Paper 61-31, 1962.

1001. Nassichuk, W.W., Geol. Surv. Can.:
Permo-Carboniferous stratigraphy of parts of Grinnel Peninsula, and Cameron, Helena, and Melville Islands, Northwest Territories, 1964.
See Geol. Surv. Can., Paper 65-1, 1965, pp. 9-12.

1002. Norris, A.W., Geol. Surv. Can.:
Devonian biostratigraphy of Lake Manitoba-Lake Winnipegosis area, Manitoba.
See Geol. Surv. Can., Paper 66-1, 1966, p. 143.

1003. Oliver, T.A., Cowper, N.W., Univ. of Calgary:
Depositional environments of Woodbend Shales, and relation to Leduc Reefs, 1963-66.
See Depositional Environments of Ireton Formation, Central Alberta Bull. A.A.P.G., vol. 49, 1965, pp. 1410-1425.

1004. Procter, R.M., Geol. Surv. Can.:
Subsurface study of the Mississippian, Pennsylvanian and Permian systems of northeastern British Columbia, 196-.
By study of data obtained from wells drilled for oil and gas, to describe and interpret the geological features of each system.

1005. Schenk, P.E., Campbell, F.H.A., Goodwin, R.H., Dalhousie Univ.:
Depositional environment and fauna-flora of carbonates of the Windsor Group, Antigonish basin, Nova Scotia, 1965-; M.Sc. thesis (Goodwin).
See Palaeoenvironmental significance of algal stromatolites of the Windsor "Group" (Mississippian) Nova Scotia – abstract, Geol. Assoc. Canada – Mineral Assoc. Canada meetings, 1966, Halifax.

1006. Stelck, C.R., Warren, P.S., Pelzer, E., Univ. of Alberta:
Mid-Devonian stratigraphic studies, 1950-; Ph.D. thesis (Pelzer).
See The Besa River shale; Ph.D. thesis, Univ. of Alberta, Edmonton, 1965.

1007. Tassonyi, E.J., Norris, A.W., Geol. Surv. Can.:
Windy Point Reef, Great Slave Lake, 1964-65.
A study of the topography, stratigraphy, lithology and palaeontology based on microscopic examination of diamond drill samples.

1008. Trettin, H.P., Geol. Surv. Can.:
Stratigraphy, carbonate petrography and structure of the Marble Canyon Formation (Permian) in Marble Range Cariboo district, British Columbia.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 98-99.

1009. Yole, R.W., Carleton Univ.:
Stratigraphy, sedimentology and palaeontology of Sicker Group (Permian and? older), Vancouver Island, 1960-66.
See An early Permian fauna from Vancouver Island, British Columbia; Bull. Can. Petrol. Geol., vol. 11, 1963, pp. 138-149.

1010. Winder, C.G., Univ. of Western Ontario:
Micropalaeontology of the Devonian in southern Ontario, 1959-.
The Kettle Point Formation has been subdivided into conodont zones and correlation established with zones in the standard sections in Germany. The distribution of conodonts has been compared with lithology, carbonate content, miscellaneous microfossils such as radiolaria, sporomorphs, brachiopods, trails etc. and such minerals as pyrite and quartz. Conclusions are made on the depositional conditions of the Kettle Point and the palaeoecology of conodonts. See Conodont zones and stratigraphic variability in the Upper Devonian in Ontario. Bull. Amer. Assoc. Pet. Geologists (in press).

Stratigraphy of the Middle Ordovician in Ontario, 1950-.

The extensive conodont fauna of the Cobourg Formation at Colborne is from the type area of the uppermost Middle Ordovician and may act as a basis to establish a standard for defining the Middle-Upper Ordovician boundary in the area. The conodont distribution in this quarry (Winder, AAPG, 1964) is being re-analyzed by statistical computations. The invertebrate fauna at the Colborne quarry was being investigated by the late Mr. J.A. Balogh and preliminary identifications have established over 100 species. Trend analysis of invertebrates in the outcrop produced results similar to those for the petrography. See Conodonts from the upper Cobourg Formation (late Middle Ordovician) at Colborne, Ontario; Jour. Palaeontology, vol. 40, January 1966.

Mesozoic

1011. Bannatyne, B.B., Manitoba Dept. of Mines and Natural Resources:
Clay and shale deposits of Manitoba, 1961-66.

As part of this study, a set of isopach and structure contour maps for each Cretaceous formation or member is being prepared for separate publication as part of a series of stratigraphic maps of Manitoba. See Cretaceous bentonite deposits of Manitoba, Manitoba Mines Branch publication 62-5 (1963).

1012. Binda, P.L., Univ. of Alberta:
Whitemud and Battle Formations in Alberta, 1964-66; Ph.D. thesis.

1013. Brooke, M.M. (Miss), Braun, W.K., Univ. of Saskatchewan:
Jurassic biostratigraphy and microfauna of the Little Rocky Mountains (Montana) and southwestern Saskatchewan, 1965-67; M.Sc. thesis (Miss Brooke).

1014. Burk, C.F. Jr., Geol. Surv. Can.:
Subsurface Upper Cretaceous stratigraphy of west-central Alberta and adjacent British Columbia.
See Geol. Surv. Can., Paper 65-2, 1965, p. 65.

1015. Caldwell, W.G.E., North, B.R., McLean, J.R., Univ. of Saskatchewan:
Stratigraphic studies in Cretaceous Rocks, 1959-; M.Sc. thesis (McLean).

See Foraminiferal faunas in the Cretaceous Montana Group of southwestern Saskatchewan: Third Internat. Williston Basin Symposium Vol., 1964, pp. 143-151.

1016. Carrigy, M.A.,, Research Council of Alberta:
Lithology of Upper Cretaceous & Tertiary rocks of Alberta, 1962-.
The 1966 program will include the coring of several holes to depths of 500 feet or more for stratigraphic information on the relationships between Tertiary and Cretaceous strata in the Alberta plains. See X-ray diffraction microcamera technique for identification of clay minerals in sandstones; Norelco Reporter vol. 11, No. 4, pp. 138-139 (1964).

1017. Chamney, T.P., Geol. Surv. Can., Mountjoy, E.W., McGill Univ.:
Lower Cretaceous (Albian) Stratigraphy of Peel and Snake Rivers, Yukon Territory, 1963-65.

1018. Chi, Byung, Univ. of Alberta:
A petrographic comparison of the Frenchman and Upper Edmonton Formations, 1964-66; M.Sc. thesis.

1019. Christie, R.L., Geol. Surv. Can.:
Triassic disconformity in the Tanquary Fiord-Yelverton Pass region, Ellsmere Island, Northwest Territories.
See Geol. Surv. Can., Paper 65-2, 1965, pp. 67-70.

1020. Christopher, J.E., Saskatchewan Dept. of Mineral Resources:
Jurassic of Saskatchewan, 1962-.
See The Middle Jurassic Shaunavon Formation of southwestern Saskatchewan – Report No. 95, Sask. Dept. Mineral Resources, 1964.

1021. Clack, Wm. J.F., Univ. of Calgary:
Mannville Formation (Lower Cretaceous) in the Cold Lake area, Alberta, 1965-66; M.Sc. thesis.

1022. Coates, J.A., Geol. Surv. Can. (part time):
Structural and stratigraphic study of the Dewdney Creek and Pasayten Groups, southwest British Columbia, 1964-67; Ph.D. thesis, Univ. of British Columbia.
Part of Cordilleran Structure Project.

1023. Frebold, H., Geol. Surv. Can.:
Stratigraphic-palaeontologic study of Jurassic of Canada, 1959-.
The basal beds of the Lower Jurassic in the Foothills and Rocky Mountains.
See Geol. Surv. Can., Paper 65-1, 1965, pp. 141-42,

1024. Jeletzky, J.A., Geol. Surv. Can.:
Jurassic and (?) Triassic rocks of the eastern slope of Richardson Mountains.

See Geol. Surv. Can., Paper 64-2, 1964, pp. 105-106.

Jurassic rocks of the western slope of Richardson Mountains and northern Porcupine Plains.

See Geol. Surv. Can., Paper 64-2, 1964, p. 10.

Cretaceous marine zones of the western interior of Canada, 1956-.

A comprehensive description of the palaeontology and stratigraphy and their correlation with the U.S. Western Interior and European standard divisions.

See Geol. Surv. Can., Paper 65-2, 1965, p. 72.

1025. McLellan, W.R.S., Leith, E.I., Univ. of Manitoba:
Origin of the Halfway Formation, northeast British Columbia and adjacent Alberta, 1965-66; M.Sc. thesis (McLellan).

1026. Mellon, G.B., Research Council of Alberta:
Stratigraphy and petrology of the Lower Cretaceous Rocks of Alberta, 1956-65.

See Lower Cretaceous section, Belcourt Ridge, Bull. Canadian Petrol. Geology, vol. 11, No. 1, 1963.

1027. Mountjoy, E.W., McGill Univ., Geol. Surv. Can. (part time):
Mesozoic stratigraphy of northern Yukon, 1961-.

Includes Cretaceous and Tertiary stratigraphy northern Yukon Territory and District of Mackenzie; Triassic stratigraphy of northern Yukon Territory, and Lower Cretaceous Albion stratigraphy, Peel and Snake Rivers, Yukon Territory.

1028. Norris, D.K., Wanless, R.K., Stevens, R.D., Geol. Surv. Can.:
Age and source of igneous pebbles in the Lower Cretaceous Blairmore Group, 1964-65.

To determine the isotopic age of selected igneous pebbles in conglomerates in the Blairmore Group with a view to elucidating the physical history of the southern Canadian Cordillera during Albian time.

1029. Petryk, A.A., Geol. Surv. Can.:
Mesozoic and Tertiary sediments, northern Ellsmere Island, Northwest Territories.

See Geol. Surv. Can., Paper 66-1, 1966, pp. 5-6.

1030. Proctor, R.M., Geol. Surv. Can., with officers of National Energy Board:
Subsurface study of Triassic of northeastern British Columbia, 1963-65.

1031. Russell, L.S., Royal Ontario Museum:
Vertebrate palaeontology of the Swan Hills area, northern Alberta, 1964-65.
The project involves a detailed study of the Paleocene mammalian fauna and associated fossils, identification as far as possible of the fragmentary dinosaur remains, and relatively detailed mapping of the Cretaceous-Tertiary contact in part of Swan Hills. See The continental Tertiary of Western Canada, Vertebrate Palaeontology in Alberta, Univ. of Alberta, 1965.

1032. Rust, B.R., and Mayr, U., Univ. of Ottawa:
The palaeoecology and palaeogeography of Cretaceous/Tertiary rocks in the Stanwell-Fletcher Basin, Somerset Island, N.W.T., 1965-66; Ph.D. thesis (Mayr).
Fossil plants, invertebrates and vertebrates are being examined by Mayr in Liaison with the National Museum and the Geological Survey of Canada. The boundary relations with underlying Precambrian rocks and sedimentary features of the Cretaceous/Tertiary sediments are being studied by Rust. An integrated analysis of ancient sedimentary and life environments will be made.

1033. Schau, Mikkel, McMaster Univ.:
A study of some aspects of the stratigraphy and structural geology of the Upper Triassic Nicola Formation in south-central British Columbia, 1965-68; Ph.D. thesis, Univ. of British Columbia.

1034. Stelck, C.R., Warren, P.S., Univ. of Alberta:
Cretaceous stratigraphy of Western Canada, 1961-.
See Gas from the Alberta Mesozoic, Alberta Assoc. Pet. Geol., special volume on Occurrences of Natural Gas (in press).

1035. Stott, D.F., Geol. Surv. Can.:
Subsurface studies of Cretaceous rocks in northeastern British Columbia and Alberta.
See Geol. Surv. Can., Paper 64-2, 1964, pp. 19-20.
The Cretaceous Smoky Group, Rocky Mountain Foothills, Alberta and British Columbia.
See Geol. Surv. Can., Paper 64-2, 1964, p. 114.
Cretaceous stratigraphy of northeastern British Columbia.
See Geol. Surv. Can., Paper 65-1, 1965, pp. 65-66.

1036. Stott, D.F., Pelletier, B.R., Geol. Surv. Can.:
Cretaceous stratigraphy, Northwest British Columbia Foothills, 1961-65.

Detailed stratigraphy, facies study, and correlation of Fort St. John and equivalent strata – Peace River to 60th parallel.
See Geol. Surv. Can., Paper 66-1, 1966, p. 90.

1037. Tipper, H.W., Geol. Surv. Can.:
Stratigraphy and palaeontology of Toarcian to Oxfordian beds of Taseko Lakes area, British Columbia, 1966.

1038. Tozer, E.T., Geol. Surv. Can.:
Triassic biostratigraphic studies in northeastern British Columbia, 1960-.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 96-97.

1039. Usher, J.L., Mothersill, J.S., Queen's Univ.:
The discontinuous Halfway Sand of N.E. British Columbia, 1965-66; Ph.D. thesis (Mothersill).

1040. Wall, J.H., Research Council of Alberta:
Microfaunal study of the Cretaceous marine sequence in the Foothills of Alberta, 1959-65.
A publication dealing with the systematics and stratigraphic distribution of the microfossils from this sequence is expected to be issued in the first half of 1966. See also Microfaunas, megafaunas, and rock-stratigraphic units in the Alberta Group (Cretaceous) of the Rocky Mountain Foothills, Can. Petrol. Geol., Bull., vol. 11, No. 4, pp. 327-349, 1963.

1041. Yole, R.W., Carleton Univ.:
Petrology of Mesozoic sedimentary rocks, Prince Patrick Island, Arctic Archipelago, 1965-68.
Petrology of Palaeozoic rocks of southern and eastern Ontario, 1964-67.

Cenozoic

1042. Cox, Raymond L., Geol. Surv. Can.:
Biostratigraphy of the Sooke and Carmanah Formations.
See Geol. Surv. Can., Paper 65-1, 1965, p. 48.

1043. Fulton, R.J., Geol. Surv. Can.:
Correlation of Quaternary volcanic ash falls of the southern Canadian Cordillera, 1964-.

1044. Reimchen, T., Univ. of Alberta:
Stratigraphy and fauna of the Saskatchewan gravels in Alberta, 1966-68; M.Sc. thesis.

1045. Westgate, J.A., Univ. of Alberta:
Quaternary volcanic ash deposits in Alberta, 1965-.
Stratigraphy of Pleistocene deposits in southeastern Alberta, 1961-.
See The Pleistocene stratigraphy of the Foremost-Cypress Hills area, Alberta; Alberta Soc. Petroleum Geol., 15th Annual Field Conference Guidebook, Pt. 1, Cypress Hills Plateau, 1965, pp. 85-111.

General Problems

1046. Bolton, T.E., Geol. Surv. Can.:
Lexicon of stratigraphic names used in Canada, 1958-.
Stratigraphy of Anticosti Island.
See Geol. Surv. Can., Paper 65-1, 1965, pp. 113-114.

1047. Brigham, R., Univ. of Western Ontario:
The structure of Palaeozoic sediments in southern Ontario, 1964-67; Ph.D. thesis.
The University of Western Ontario and the Ontario Department of Energy and Resources Management with financial support from industry are sponsoring a program of placing all valid stratigraphic data in southern Ontario on punch cards and magnetic tape. This information will be used to compute trends of subsurface stratigraphic levels for an interpretation of the tectonic history. The rocks are "flat-lying" but the Algonquin has a N.E. – S.W. trend and the Chatham sag has a N.W.-S.E. trend.

1048. Cumming, L.M., Geol. Surv. Can.:
Lower Palaeozoic of Appalachian Region, 1953-.
Stratigraphic palaeontologic study of the Silurian and Devonian formations.
Biostratigraphic study, Port au Port Peninsula and vicinity, Newfoundland, 1964-65.
See Geol. Surv. Can., Paper 65-1, 1965, p. 132 and Paper 65-2, 1965, pp. 66-67.

1049. Gibson, D.W., Univ. of Toronto:
Triassic stratigraphy, Jasper Park, Alberta, 1962-67; Ph.D. thesis.
See Triassic stratigraphy near the northern boundary of Jasper National Park; Geol. Surv. Can., Paper 64-9, 1965.

1050. Irish, E.J.W., Geol. Surv. Can.:
Stratigraphy of near-surface rocks of plains of Alberta and Saskatchewan, 1963-.

See Geol. Surv. Can., Paper 65-2, 1965, pp. 71-72 and 66-1, 1966, pp. 111-112.

1051. Kaye, L., Univ. of Ottawa:
Stratigraphy and structure in the Lac des Lacs area, northwest Ontario, 1964-66; M.Sc. thesis.

1052. Lerbekmo, J.F., Campbell, F.A., Univ. of Alberta:
Chemical composition of shales and carbonate rocks in Alberta.
See Chemical composition of carbonate rocks from Thornton Creek, Alberta; Bull. Can. Petroleum Geol., No. 13, vol. 2, 1965, pp. 229-237.

1053. Lerbekmo, J.F., and graduate students, Univ. of Alberta:
Correlation of Cretaceous-Tertiary continental deposits in Alberta, 1962-.
Petrographic studies in conjunction with physical age dating.

1054. Liberty, B.A., Geol. Surv. Can.:
Palaeozoic outliers of the Canadian Shield, 1957-.
To compile and maintain all available data on the distribution and geology of the Palaeozoic outliers in the Canadian Shield, and to evaluate their palaeogeographical and other geological significance. See Geol. Surv. Can., Paper 64-2, 1964, p. 12.
Palaeozoic rocks of southeast Ontario, 1 inch to 4 miles, 1959-64.
See Geol. Surv. Can., Paper 65-1, 1965, pp. 107-108.

1055. McCabe, H.R., and Bannatyne, B.B., Manitoba Dept. of Mines and Natural Resources:
Stratigraphic map series.
The series consists of structure contour/isopach maps for all formations in Manitoba. See Manitoba Mines Branch Stratigraphic map series 1-14.

1056. Norris, D.K., Geol. Surv. Can.:
Stratigraphic and structural studies in the southeastern Canadian Cordillera, 1964-.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 113-115.

1057. Sanford, B.V., Geol. Surv. Can.:
Subsurface geology of southwestern Ontario, 1958-.
The preparation of maps and reports giving data and conclusions pertaining to the subsurface geology. See Geol. Surv. Can., Paper 64-2, pp. 14-19.

1058. Snead, R.G., Univ. of Alberta:
Upper Cretaceous-Paleocene boundary in southern Alberta, 1964-67; Ph.D. thesis.

1059. Tassonyi, E.J., Geol. Surv. Can.:
Recent exploratory well data, Yukon, District of Mackenzie and Arctic Islands, 1964-65.
Includes study of lithology, facies, structure, and correlation of rock units.

1060. Thorsteinsson, R., Geol. Surv. Can.:
Reconnaissance geological survey of Cornwallis Island, Northwest Territories, 1965.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 16-18.

1061. Trettin, H.P., Geol. Surv. Can.:
Precambrian to Carboniferous rocks of M'Clintock Inlet region, northeastern Ellesmere Island, Northwest Territories.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 7-11.

1062. Tuke, M.F., Univ. of Ottawa:
The significance of sudden facies changes in the Pistolet Bay area, Northern Newfoundland, 1963-66; Ph.D. thesis.
Two contemporaneous sequences of very different facies occur close together. A complex structure involving several thrust slices is invoked to explain the sudden facies changes.

1063. Usher, J.L., Young, H.R., Queen's Univ.:
Petrography of the Virden Member, Lodgepole Formation, southwestern Manitoba, 1964-67; Ph.D. thesis (Young).
A study of the carbonate petrography of the Virden member from the type area at Virden, Manitoba southward to the International Boundary. Marked facies changes going southward occur in the upper bioclastic part and lower oolitic part. Attempts will be made to interpret these facies changes in relation to changes in environment of deposition and palaeogeography.

STRUCTURAL GEOLOGY

British Columbia, Alberta, Saskatchewan, and Manitoba

1064. Ambrose, J.W., Bielenstein, H., Queen's Univ.:
Rundle Thrust Sheet, Banff, Alberta, 1965-67; Ph.D. thesis (Bielenstein).
An intensive field and laboratory study of the structural elements in the Rundle Thrust Sheet. This project is under the field direction of Dr. R.A. Price, Geological Survey of Canada.

1065. Ambrose, J.W., Cook, D.G., Queen's Univ.:
The Stephen-Dennis Zone, Field, British Columbia, 1965-67; Ph.D. thesis (Cook).
Field project under direction of Dr. R.A. Price, Geological Survey of Canada.

1066. Ambrose, J.W., McNeely, R., Queen's Univ.:
Eastern extension of St. Louis fault, Beaverlodge, Saskatchewan, 1964-; M.Sc. thesis (McNeely).

1067. Bell, C.K., Geol. Surv. Can.:
Churchill-Superior Province boundary in northeastern Manitoba. See Geol. Surv. Can., Paper 66-1, 1966, pp. 133-136.

1068. Bell, K.W., Brisbin, W.C., Univ. of Manitoba:
Deformational behaviour of clasts in the San Antonio conglomerate, Rice Lake area, Manitoba, 1965-66; M.Sc. thesis (Bell).
The purpose is to study the deformational response of different rock types to the same set of stress conditions. The San Antonio conglomerate contains clasts of numerous rock types which show differing degrees of deformation within a small area. Preliminary work has indicated that the rock type is one of the controlling factors which govern the geometry of any deformed clast. The work will involve a study of the geometry of the deformed pebbles as related to rock type, and petrographic studies of pebbles of different rock types to determine the movements which have produced the observed geometry.

1069. Brisbin, W.C., Univ. of Manitoba:
Gravity studies in the Rice Lake area, Manitoba, 1965-67.
The area lies along the north boundary of the English River gneissic belt; it presents an opportunity to study the changes in composition and structure of the upper crust which takes place across this north boundary. Other objectives are to determine the form and size of a greenstone belt just north of the gneissic zone, and of granite diapirs which have intruded the greenstones. The gravity investigations form part of a detailed geological and geophysical study (undertaken by the Department of Geology, Univ. of Manitoba, in this area) similar to the study of the Kenoran greenstone belt immediately south of the gneissic zone.

1070. Charlesworth, H.A.K., Weiner, J.L., Akehurst, A.J., Univ. of Alberta:
Structure of the Proterozoic rocks of the Main Ranges of the Canadian Rocky Mountains at Jasper and Lake Louise, Alberta.

1071. Coates, J.A., Geol. Surv. Can. (part time):
Structural and stratigraphic study of the Dewdney Creek and Pasayten Groups, southwest British Columbia, 1964-67; Ph.D. thesis, Univ. of British Columbia.
Part of Cordilleran Structure Project.

1072. Cruden, D., Charlesworth, H.A.K., Univ. of Alberta:
Folding in Palaeozoic rocks of the central Alberta foothills, 1964-66; M.Sc. thesis (Cruden).

1073. Davies, J.F., Manitoba Dept. of Mines and Natural Resources, Wilson, H.D.B., University of Manitoba and government and university staff and graduate students:
Project Pioneer, an integrated geological, geophysical and geochemical study of a Precambrian volcanic-sedimentary belt, 1965-71.
Integrated with detailed re-mapping of 1,500 square miles along the Rice Lake-Beresford Lake volcanic-sedimentary belt will be a series of laboratory projects and geophysical studies designed to reveal as much as possible about the geologic character and history, both at surface and at depth, of a typical Precambrian "greenstone belt". Various phases of Project Pioneer will include: complete photogeologic interpretation; 4-inch-to-the mile mapping; interpretation of aeromagnetic data utilizing techniques for separating various levels of magnetism; study of rock magnetism; determinations of gravity; seismic studies; regional and detailed structural analyses, including petrofabric where applicable; investigation of metamorphism; detailed petrofabric and modal analysis of all rocks on a statistical basis; determination of chemical character of all rock types, and distribution of minor elements; petrographic and chemical study of wall-rock alteration and of regional alteration; distribution of radioactivity in rocks; age determinations; trace elements in surficial deposits and streams; study of gold-bearing and barren quartz veins.

1074. Fyles, James T., British Columbia Dept. of Mines and Petroleum Resources:
Structure of the Jordan River Area, Monashee Mountains, British Columbia, and its bearing on exploration for lead-zinc deposits in the Shuswap Terrain, 1964-67.

1075. Fyson, W.K., Univ. of Ottawa:
Structural and stratigraphic relationships of the Mt. Ida, Cache Creek, and Monashee Groups, Shuswap Lake area, British Columbia, 1965-67.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 58-59.

1076. Grove, E.W., British Columbia Dept. of Mines and Petroleum Resources:
Structural stratigraphic study of the western side of the Bowser Basin and eastern margin of the Coast Range batholith, and the relation of mineral deposits to the structure, 1964-65.

1077. Leech, G.B., Geol. Surv. Can.:
Kananaskis Lakes and Canal Flats, 1 inch to 4 miles, British Columbia, 1962-65.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 65-66.

1078. McMillan, W.J., Geol. Surv. Can. (part time):
Structural study of the core and enveloping metasedimentary gneisses on west side of a gneiss dome in the Monashee Mountains northwest of Revelstoke, 1964-66; Ph.D. thesis, Univ. of British Columbia.
Part of the Cordilleran Structure Project.

1079. Mountjoy, E.W., McGill Univ., Geol. Surv. Can. (part time):
Structure of Front and Main Ranges, northern Jasper Park, Alberta, 1957-.
Extent, geometry and development of fold and thrust structures, relationships of folds with abrupt termination of thrusts, interrelations of hanging-wall and footwall structures.
See Rocky Mountain Front Ranges between Rocky River and Medicine Lake, Jasper National Park, Alberta, Edmonton, Geol. Soc. Guidebook, 1964.

1080. Muecke, G.K., Charlesworth, H.A.K., Univ. of Alberta:
Jointing in the Cardium sandstone of the central Alberta foothills, 1963-66; M.Sc. thesis (Muecke).

1081. Netolitzky, R., Campbell, F.A., Univ. of Calgary:
A study of the geometry and mineralization in an ultrabasic plug south of Kipahigan Lake, Saskatchewan and of the age relations of the plug to two fold episodes in the country rock.

1082. Norris, D.K., Geol. Surv. Can.:
Stratigraphic and structural studies in the southeastern Canadian Cordillera, 1964-.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 113-115.

1083. Ollerenshaw, N.C., Geol. Surv. Can.:
Rocky Mountain Foothills structure in the Marble Mountain and Fallentimber map-areas, Alberta, 1964-.

1084. Price, R.A., Geol. Surv. Can.:
Tectonic fabrics, southern Foothills and Rocky Mountains, 1964-.
To establish the nature and variation of tectonic fabrics in the various structural subdivisions of the region, the kinematic history and relationships of these structural subdivisions, and the mechanical basis for various types of geological structure in the region.

1085. Raham, G., Campbell, F.A., Univ. of Calgary:
Study of zinc mineralization at the Big Ledge property southwest of Revelstoke involving the geometry of the ore zones and the age relationships between mineralization and wallrock deformation, 1965-66; M.Sc. thesis (Raham).

1086. Reesor, J.E., Blattner, P., Geol. Surv. Can.:
Thor-odin gneiss dome, west upper Arrow Lake, British Columbia, 1964-65.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 78-80.

1087. Ross, J.V., Geol. Surv. Can. (part time), Univ. of British Columbia:
Geology of the Mt. Revelstoke area, British Columbia.
A detailed investigation of the relations between the metamorphic Shuswap Complex and the supposedly overlying non-metamorphic Palaeozoic rocks. See Geol. Surv. Can., Paper 66-1, 1966, pp. 85-86.

1088. Schau, Mikkel, McMaster Univ.:
A study of some aspects of the stratigraphy and structural geology of the Upper Triassic Nicola Formation in south-central British Columbia, 1965-68; Ph.D. thesis, Univ. of British Columbia.

1089. Simony, P.S., Univ. of Calgary:
Structural analysis of Proterozoic and Lower Cambrian low-grade metamorphic rocks of the Dogtooth Mountains, British Columbia.
Part of Cordilleran Structure Project.
Study of mesoscopic structures in the Foothills and Eastern Ranges (with special reference to the Moose Mountain area, Alberta) and their relation to macroscopic structures.

1090. Trettin, H.P., Geol. Surv. Can.:
Stratigraphy, carbonate petrography and structure of the Marble Canyon Formation (Permian) in Marble Range Cariboo district, British Columbia.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 98-99.

1091. White, W.R.H., Bone, M., Dominion Observatory:
Crustal studies in the Cordillera.

A program of seismic refraction studies to outline the major crustal and upper mantle features of the Cordilleran region. Observations parallel to the West Coast have been published, and a reversed profile from Merrit to Quesnell completed. See A seismic refraction and gravity study of the earth's crust in British Columbia, Bull. Seism. Soc. Am., 55, 463, 1965.

Maritime Provinces

1092. Anderson, F.D., Norris, D.K., Geol. Surv. Can.:
Deformation of stream slip cleavage by bedding slippage in Bay d'Espoir Group, Newfoundland.
See Geol. Surv. Can., Paper 65-2, 1966, pp. 43-46.

1093. Brown, R.L., Helmstaedt, H., Lee, D., Univ. of New Brunswick:
Detailed structural studies in the Bay of Fundy region of southern New Brunswick, 1965-; Ph.D. thesis (Helmstaedt), M.Sc. thesis (Lee).

Objectives for the summer of 1966 include structural analysis of the Coldbrook and Mascarene Groups in the Beaver Harbour area, Charlotte county, to determine the geometrical relations in both groups, and the relationships of metamorphism to the structural time scale in the Coldbrook Group, and study of the mechanics of limestone deformation in the Mascarene Group of the Letang Peninsula, Charlotte county to ascertain the geometry and kinematics of the limestones and relate them to the adjacent volcanics.

1094. Fyson, W.K., Univ. of Ottawa:
Relation of minor to major structures in the Maritime Provinces, 1962-.

See Repeated trends of folds and cross-folds in Palaeozoic rocks, Parrsboro, Nova Scotia: Canadian Jour. Earth Sci., vol. 1, pp. 167-183.

1095. Hay, Peter W., New Brunswick Mines Branch:
Stratigraphy and structure of Silurian rocks in southern New Brunswick, 1965-.

Detailed geological studies of the Mascarene Group, an undivided series of volcanic and sedimentary rocks of Silurian age, to determine their stratigraphic relations, structural features, and economic potential.

Northwest Territories and Yukon

1096. Barr, K.G., Tyrlik, W.T., Dominion Observatory:
Crustal studies in Yellowknife area, Northwest Territories, 1965-66.

An experiment to determine the sub-Moho velocity and time terms at points inside and outside the Slave Province, and to shoot a profile through Yellowknife at distances bracketing the crossover distance, across the Bear-Slave provincial boundary and across the McDonald fault. Particular attention is being made to the calibration of the Yellowknife area and to an evaluation of digital processing techniques.

1097. Brown, R.L., Dalziel, I.W.D., Univ. of New Brunswick:
Structural studies in the Precambrian basement of Boothia Peninsula, Northwest Territories, 1965-66.

See Notes on the Scientific Work of the University of Ottawa Expedition to Somerset Island, 1965, Arctic (in press).

1098. Clarke, B., Wilson, J.T., Upton, B.G.J., Univ. of Toronto:
Expedition to East Baffin Island, 1964-67; Ph.D. thesis (Clarke).

The hypothesis of continental drift suggests that the little known lavas near Cape Dyer, Baffin Island should correspond closely to those at Disco, W. Greenland. In two seasons' field work, Mr. Clarke and his supervisors collected lavas for petrological study, found Late Cretaceous to Eocene floras and established this relationship. See Geological Expedition to Capes Dyer and Searle, Baffin Island, Canada, Nature, vol. 205, pp. 349-350, 1965.

1099. Innes, M.J.S., Dence, M.R., Hornal, R.W., Dominion Observatory:
Fossil crater investigations, Pilot and Nicholson Lakes, Northwest Territories, 1965.

At Nicholson Lake a gravity survey outlined a circular negative Bouguer anomaly similar to those recorded at other Canadian craters of probable meteoric origin.

1100. McConnell, R.K., Hornal, R.W., Dominion Observatory:
Regional gravity studies, northern Manitoba and Ontario, 1965.

A large scale survey established a total of 6,100 gravity stations in 1965. Approximately 4,000 of these stations were observed in northern Manitoba between latitudes 54°N. and 60°N. and longitudes 92°W. and 104°W. and in northern Ontario in the Ignace-Fort William, Chapleau Sudbury and Michipicoten-Sault-Ste-Marie areas. The remainder were observed in a study of the boundary of the Churchill-Superior geological provinces; in connection with investigations of certain acid intrusive bodies north of Lake Superior and post-orogenic carbonate and

alkaline intrusions along the Kapuskasing High; and in the Stony Rapids area of northern Saskatchewan in an investigation of norite intrusions there.

1101. Overton, A., Barr, K.G., Whitham, K., Dominion Observatory (Polar Continental Shelf Project):
Crustal studies in Canadian Arctic.
Refraction seismic profiles in the Arctic Archipelago with special interest in anomalous features in the Western Arctic Islands. Attempts are being made to relate the seismic refraction results to other geophysical results in the same area. See Deep seismic refraction investigation in the Canadian Arctic Archipelago, Geophysics, 30, 87, 1965.

1102. Tempelman-Kluit, D.J., McGill Univ.:
The stratigraphy and structure of the Keno Hill quartzite, Yukon Territory, 1964-66; Ph.D. thesis.

1103. Weber, J.R., Sobczak, L.W., Berkhout, A., Dominion Observatory:
Regional gravity studies, Queen Elizabeth Islands, Northwest Territories, 1965.
Regional gravity studies in cooperation with the Polar Continental Shelf Project were continued during 1965. About 750 stations were observed over Somerset and Prince of Wales Islands as part of a geophysical investigation of the Boothia Arch and neighbouring sedimentary basins; and 500 stations were observed on the sea ice of the Arctic Ocean and Ballantyne Strait. A comprehensive and structural interpretation of all gravity data for the Queen Elizabeth Islands is in progress by Mr. Sobczak.

Ontario

1104. Ambrose, J.W., Fong, D., Queen's Univ.:
Textures in gneisses, Tichborne area, 1965-66; M.Sc. thesis (Fong).
An attempt to correlate petrofabric textures with mesoscopic structures as observed around a small fold in the Grenville province.

1105. Blackburn, C., Univ. of Western Ontario:
Structural history of the McKim Group of the Sudbury series, Espanola region, Sudbury, 1965-66; M.Sc. thesis.

1106. Brigham, R., Univ. of Western Ontario:
The structure of Palaeozoic sediments in southern Ontario, 1964-67; Ph.D. thesis.

The University of Western Ontario and the Ontario Department of Energy and Resources Management with financial support from industry are sponsoring a program of placing all valid stratigraphic data in southern Ontario on punch cards and magnetic tape. This information will be used to compute trends of subsurface stratigraphic levels for an interpretation of the tectonic history. The rocks are "flat-lying" but the Algonquin has a N. E. -S. W. trend and the Chatham sag has a N. W. -S. E. trend.

1107. Brisbin, W. C., Univ. of Manitoba:
Shear folding in northwestern Ontario, 1964-66.
Macroscopic, mesoscopic and microscopic studies of the Ewart-Forgie townships area all indicate superimposed folding, the latest phase of which has been folding by simple shear. Studies of deformed boulders, pebbles and pillows and oriented thin sections have yielded significant data about the direction of movement during this episode. The movements are tentatively attributed to diapiric intrusions; fabric studies of adjacent granitic diapirs will continue next year.

1108. Buckingham, J. Y., Brisbin, W. C., Univ. of Manitoba:
Detailed investigation of folding in Forgie township, Ontario, 1964-65; M. Sc. thesis (Buckingham).
Microscopic and mesoscopic studies of pyroclastic rocks to determine the nature of, and movements which have produced folds in this area.

1109. Carmichael, D. M., Geol. Surv. Can.:
Structural studies, Hastings area, Ontario, 1 inch to 1 mile, 1965-66; Ph. D. thesis.
See Geol. Surv. Can., Paper 66-1, 1966, pp. 148-150.

1110. Currie, K. L., Geol. Surv. Can.:
Structure of Crow Lake Dome, Ontario.
See Geol. Surv. Can., Paper 66-1, 1966, p. 151.

1111. Dence, M. R., Carleton Univ.:
Petrology and structure of the Brent Crater, Ontario, 1962-66; Ph. D. thesis.
Detailed mapping and logging of drill core; petrographic and chemical study of breccias and their relations to wall rock. Examination of crater geometry and deduction of its mode of origin.

1112. Ermanovics, I. F., Geol. Surv. Can.:
Structural studies on the Loughborough syenite, north of Kingston, Ontario.
See Geol. Surv. Can., Paper 66-1, 1966, p. 151.

1113. Henderson, J.R., Kwak, T.A.P., Spaven, H.R., McMaster Univ.:
Structural and metamorphic studies in the vicinity of the Grenville Front near Sudbury, 1964-; Ph.D. theses (Henderson and Kwak), M.Sc. thesis (Spaven).

1114. Kaye, Leslie, Univ. of Ottawa:
Stratigraphy and structure in the Lac des Lacs area, northwest Ontario, 1964-66; M.Sc. thesis.

1115. Moore, J.M. Jr., Sethuraman, K., Carleton Univ.:
Petrology and structure of Grenville metamorphic rocks, Fernleigh-Clyde area, southeastern Ontario, 1960-67; Ph.D. thesis (Sethuraman).
Structure, stratigraphy, and metamorphic zoning in metavolcanic and metasedimentary rocks; relation of layered rocks to adjacent plutons; chemistry of coexisting minerals in pelitic schists and their relations in rocks of varying oxidation state. See Chemical petrology of some Grenville schists near Fernleigh, Ontario (abstract); Bull. C.I.M.M., vol. 58, p. 909.

1116. West, G.F., Halls, H., Univ. of Toronto:
Structure of the Keweenawan Basin and the earth's crust in the vicinity of Lake Superior, 1963-67; Ph.D. thesis (Halls).
The results of the 1963 Lake Superior Seismic experiment showed that the crust of the earth is abnormally thick under the eastern part of Lake Superior, and that the late Keweenawan sedimentary basin (in which the lake lies) is much deeper than was expected. Much additional geophysical data is now available and a much improved picture of the structure of the region should be obtained. Combined geological and geophysical studies are being undertaken to this end.

Quebec

1117. Ambrose, J.W., Brown, A., Queen's Univ.:
Geology of Opemiska Mine, Quebec, 1958-67; Ph.D. thesis (Brown).
An intensive study of all structural elements in the Opemiska Mine and surrounding area.

1118. Ambrose, J.W., Sharma, K.N.M., Queen's Univ.:
A structural study of Baskatong Reservoir, 1965-67; Ph.D. thesis (Sharma).
A structural analysis in association with R.S. Jacoby under the auspices of the Quebec Department of Natural Resources.

1119. Chown, E.H., Quebec Dept. of Natural Resources:
Structural studies of the Grenville Front in the Otish Mountains, Quebec, 1963-.

1120. Clarke, P.J., Quebec Dept. of Natural Resources:
Cross folding in the Mount Wright-Mount Reed district, Quebec.

1121. Currie, K.L., Geol. Surv. Can.:
Manicouagan crater, Quebec, 1963-65.
See Geol. Surv. Can., Paper 66-1, 1966, p. 161.

1122. Depatie, J., Quebec Dept. of Natural Resources:
Granitic dome and basin structures in Grenville rocks of Duplessis county, Quebec.

1123. Eakins, P.R., Roth, H., McGill Univ.:
Structural studies in the Appalachians of southern Quebec, 1963-67; Ph.D. thesis (Roth).
Mr. Roth has completed a petrofabric study of part of the area.

1124. Grove, E.W., McGill Univ.:
Petrochemical and structural studies in the Lake Miquelon area, Quebec, 1960-66.

1125. Hogarth, D.D., Univ. of Ottawa:
Petrographic and structural study of Precambrian rocks in Hull township, Quebec, 1959-.

1126. Sikander, Abdul Hakim, Univ. of Ottawa:
Structural analysis of the Lower Palaeozoic rocks of the western Gaspe, Quebec, 1963-67; Ph.D. thesis.

1127. Underhill, D.H., McGill Univ.:
Structural studies in the Romanet Lake-Dunphy Lake area near the east side of the "Labrador-trough", 1964-66; M.Sc. thesis.

1128. Williams, F.M.G., McGill Univ.:
Structural studies in the Rioux Quarry, Cowansville, Quebec, 1963-66; M.Sc. thesis.

General Problems

1129. Barron, K., Mines Branch, Dept. of Mines and Technical Surveys:
Structural modelling, 1961-65.

Work has been carried out on the method of applying biaxial stress or deformation conditions to the model constructed to examine the stress and failure conditions around rooms and pillars. The effects on the stress distribution in the simulated layered formations of applying a uniform horizontal deformation was also examined. It was found that with the existing model the stresses measured depend more upon errors inherent in the system than upon the differing conditions so that although much was learned about designing such a system, the project as it stood was abandoned. See Loading tests on the Wabana Model - 11, Final Report, Mines Branch, DR-FMP 65/108 MRL.

1130. Barron, K., Toews, N., Parsons, R., Coates, D.F., Van Heerden, W.L., Mines Branch, Dept. of Mines and Technical Surveys:

Time-dependent deformation of geological materials, 1962-.

The measurements that were made of the variation of deformation with time in salt around a shaft were successfully correlated with general theoretical concepts of visco-elastic materials. A similar study is being conducted on the deformation around mine openings in potash. In addition, laboratory studies are being conducted to determine if it is possible to describe these materials in terms of a coefficient of viscosity, an elastic modulus and a yield point with tests that have a duration of no more than one or two days. Such tests and those on other rock substances continue in connection with a study on rock classification. A differential transformer compressometer is being developed for use on rock specimens to measure strain in place of strain gauges.

1131. Bird, J.B., Morrison, A., McGill Univ.:

Planetary surface interpretation, 1963-.

An examination of the earth's surface as it appears from satellites with particular reference to landforms. Emphasis has been on imagery from TIROS and NIMBUS satellites and is now concentrating on photographs from the Gemini series.

1132. Blanchard, J.E., Keen, M.J., and graduate students, Dalhousie Univ.:

Absolute measurement of stress in the crust of the earth, and measurement of earth tides, 1960-.

See Measurement of stress in boreholes, Upper Mantle Symposium on Deep Drilling, Ottawa, 1965 (in press).

1133. Brisbin, W.C., Wilson, H.D.B., Univ. of Manitoba:

Regional structural studies of the Superior Province of the Precambrian Shield, 1963-.

Regional structural analysis based on geologic mapping, regional gravity, magnetic surveys and crustal seismic studies conducted by the Department of Geology, University of Manitoba. See The mid-north American ridge structure – Abstract Geol. Surv. Amer., Annual Meeting, 1965.

1134. Burke, K. B. S., Univ. of Saskatchewan:
Crustal studies in western Canada, 1963-.

1135. Clifford, P. M., McMaster Univ.:
Effect of fabric on mechanical properties and behaviour of rocks, 1965-.

Triaxial stress apparatus, capable of working at up to 5 Kbs. confining pressure, is used to test natural and artificial materials. The relationships between grain sizes and sorting, cement content, and mechanical properties and behaviour established by these tests may shed some light on the origin of fractures and cleavages.

1136. Coates, D. F., Gyenge, M., Mines Branch, Dept. of Mines and Technical Surveys:
Rock slope stability, 1960-.

A number of projects are being conducted to determine the mechanics of failure in rock slopes. Basic studies are being pursued into the stress distribution occurring in typical slope geometries. Mathematical and photoelastic techniques are being used for this work. In addition, field measurements are being conducted on a number of mining properties to determine deformation, groundwater regime and microseismic activity associated with deep cut slopes in open pits. Both hard and soft rock formations are being studied. See The Stability of Slopes in Open Pits, Mines Branch, DR FMP 64/72 MRL.

1137. Coates, D. F., Laroque, G. E., Sassa, K., Terada, M., Darling, A., Aslam, M., Mines Branch, Dept. of Mines and Technical Surveys:
Shock wave propagation, 1963-.

A research project is in process for studying the coupling of explosive energy with rock and the propagation of the resultant shock into the rock both for surface explosions and underground explosions. A laboratory project has been completed on measuring particle velocities and propagation velocities within the crater zone from a surface explosion. This laboratory work has been conducted using two different types of explosive and one type of hard rock. Laboratory work is continuing on aquarium experiments for the determination of explosive detonation velocities and on bar experiments to study shock wave shape and tensile strength of the rock substance. Field experiments have

been conducted on ground motion acceleration due to explosives. See Progress Report, 1965 Blasting Research, Mines Branch, DR FMP 65/131 – MRL.

1138. Cochrane, T.S., Mines Branch, Dept. of Mines and Technical Surveys:
Sonic studies of rock competency, 1961-.
A portable, transistorized sonic unit developed in the laboratory has been subjected to field trials for the determination of the elastic uniformity of rock masses. With this equipment transit time measurements are made between two boreholes. Measurements of a few hundred microseconds to many milliseconds can be made with an accuracy of 5%. The unit has been effective in delineating fracture zones and their growth with time and has been used in a number of different locations.

1139. Cochrane, T.S., Coates, D.F., Parsons, R., Mines Branch, Dept. of Mines and Technical Surveys:
Rock burst research, 1962-.
Studies are being conducted on mining properties that are experiencing rock bursts. These events are seemingly caused in some cases by mining induced stresses but in other cases by inherent residual stresses, e.g. in one case serious bursts are occurring at the shallow depth of 400 feet. Tests are being conducted on the rock substances in the laboratory, on the rock formation for their seismic velocities, on deformations associated with mining operations and on microseismic activities emanating from the surrounding ground.

1140. Currie, J.B., Univ. of Toronto:
Photoelastic and model experiments related to studies of geologic structure – a continuing project.
Experimental analysis of structural processes involved in development of features such as cleavage, faults and fold patterns; and a continuing development of dimensionally and experimentally satisfactory model materials. See Photoelastic experiments related to structural geology; Proc. Geol. Assoc. Canada, vol. 15, pp. 33-51, 1964.
Experimental rock deformation – continuing project.
At present this study comprises deformation of alabaster samples at room temperature and uniform strain rates and under confining pressures up to two kilobars. Sulphur has also been employed as an experimental material.

1141. Edmond, K.L. (Mrs.), Univ. of Toronto:
Analysis of methods used in preparing structural cross-sections, 1961-65; M.A. thesis.

An investigation of methods useful in preparing interpretive cross-sections of subsurface geologic structures in sedimentary strata.

1142. Goodacre, A.K., Weber, J.R., Dominion Observatory:
Reconnaissance gravity survey of Hudson Bay, 1965.

Underwater gravimeter observations were supplemented in some areas by measurements with a surface sea gravimeter. The results and preliminary analysis of this work are being prepared for publication in the Gravity Map Series, Dominion Observatory.

1143. Grant, F., Barron, K., Coates, D.F., Van Heerden, W.L., Mines Branch, Dept. of Mines and Technical Surveys:
Measurements of stress in situ, 1951-.

Field trials have been conducted using a borehole deformation meter designed by the US Bureau of Mines and modified for use in hard rocks. The instrument is used with an overcoring technique to obtain measurements of field stresses and stresses induced by mining. Some cooperative work has been done with Dalhousie University on this project. Some unexpectedly high horizontal stresses have been detected in these trials. Laboratory tests have been conducted to assess the performance of a glass biaxial stressmeter. The instrument has been found to have many favourable aspects, and field trials may be conducted at a later date. See The Mines Branch Stressmeter, Mines Branch, DR FMP 65/172 - MRL.

1144. Hall, D.H., Brisbin, W.C., Hajnal, Z., Univ. of Manitoba:
Deep seismic sounding of the Precambrian Shield, 1962-.

Seismic crustal work in the Kenora district was extended to include stations along the road from Vermilion to Red Lake, Ontario and at Eton and Hudson, Ontario. The work in 1965, following that in two previous years, completes seismic coverage in an area bounded by lat. 49° and 51° and long. 93° and 96°30'. See Crustal structure from converted head waves in central western Manitoba: Geophysics, vol. 30, December, 1965.

1145. Hall, D.H., McGrath, P., Univ. of Manitoba:
Crustal structure from magnetic anomalies, 1964-67; Ph.D. thesis (McGrath).

Regional magnetic anomalies are being analyzed in the area bounded by lat. 49° and 51°, and long. 93° and 96°20' (bounded by Lake Winnipeg on the west and Red Lake, Ontario on the east), in an attempt to determine some features of crustal structure. In addition, local anomalies and the induced and remanent magnetization of surface samples are being studied in the light of the geochemical and physical history of the various geologic units.

1146. Hardy, H.R. Jr., Mines Branch, Dept. of Mines and Technical Surveys:
Time-dependent deformation of geologic materials, 1961-.
Incremental creep experiments are being conducted on a number of "simple" geologic materials. These are naturally occurring materials that are basically monomineralic and macroscopically isotropic and homogeneous. The present work includes Solenhofen limestone and Hasmark dolomite. Work has also been initiated on another suite of relatively homogeneous rocks including Missisquoi and Delbo marble, Sienna Red Syenite and, Scots Grey and Peribonka granite. See Inelastic Behaviour of Geologic Materials, Part I – Experimental and Analytical Techniques and Initial Studies on Wombeyan Marble: Mines Branch, FMP 65/155-P.

1147. Imrie, A.S., Charlesworth, H.A.K., Univ. of Alberta:
Jointing in the Bullhead Group at the Portage Mountain damsite, 1964-67; M.Sc. thesis (Imrie).

1148. Jones, G.H.S., Diehl, C.H.H., Suffield Experimental Station, Defence Research Board:
Morphology and mechanism of crater formation, 1957-.
During the past year the effort of the cratering group, has been directed towards the detailed excavation of the Snowball Crater, produced by the detonation of 500 tons of TNT on the surface of the prairie. This work is now virtually complete, and the task of formulating a final report is in hand. This crater is of exceptional importance due to the fact that it models very closely the classical type of large scale astrobleme, including central mound, ring folds, circumferential and radial cracking, and "secondary vulcanism"in the form of sand and mud volcanoes. See A tracer technique for cratering studies; J. Geophy. Res., vol. 70, No. 2, pp. 305-309, and A scale model study of the Bosomtwe Crater; Sky and Telescope, vol. 20, No. 1, 1965.

1149. Kellerhals, P., Univ. of British Columbia:
Stress analysis, using polaroid films, of openings of various shapes and sizes in rocks under different confining pressures.

1150. Kendrick, G., Univ. of Toronto:
A study of structure in Grenville rocks; the use of minor structures as indicators of relative rock properties during deformation, 1964-66; M.A. thesis.

1151. Kornik, L., Brisbin, W.C., Univ. of Manitoba:
Regional structural studies of the Churchill geologic province, 1965-67; Ph.D. thesis (Kornik).

1152. Krishnamurthy, P., McGill Univ.:
Experimental deformation of sulphide ores, 1963-66; M. Sc. thesis.

1153. LeComte, P., Mines Branch, Dept. of Mines and Technical Surveys:
Properties of rocks by dynamic methods, 1960-.
A study using the resonance method of factors affecting internal friction in a number of rock types with the object of developing the usefulness of internal-friction measurements for rock testing.

1154. Loftai, Emery, Univ. of New Brunswick:
Model experiments using (a) synthetic elastic materials to study the distribution of induced stresses in discontinuous media and (b) natural rigid materials to study the shear strength of jointed rocks.

1155. Mereu, R.F., Hunter, J.A., Univ. of Western Ontario:
The Hudson Bay crustal study, 1965-66; M. Sc. thesis (Hunter).
A three component array was operated at Eskimo Point in the summer of 1965. An analysis of the records is underway to determine the structure of the crustal and upper mantle under Hudson Bay.

1156. Norris, D.K., Geol. Surv. Can.:
Stress analysis of small scale geological structures.
To model and attempt to evaluate the local stress and strain patterns in scale geological structures in the laboratory in collaboration with the engineering physics and rock mechanics groups of the Mines Branch.

1157. Pelletier, B.R., Bedford Institute of Oceanography:
Bottom studies on the Polar Continental Shelf Project, Arctic Ocean, 1960-.
See Development of submarine physiography in the Canadian Arctic and its relation to crustal movements; B.I.O. Report 64-16. Marine geology of Hudson Bay, 1961-.
See Marine geology of Hudson Bay and approaches in Encyclopedia of Earth Sciences.

1158. Robinson, J.E., Charlesworth, H.A.K., Univ. of Alberta:
Folding in the sedimentary rocks of the Western Canadian Interior Plains, 1965-67; Ph.D. thesis (Robinson).

1159. Ross, J.V., Univ. of British Columbia:
A study of mathematical models attempting to reconcile the differences between confining pressures in experimental metamorphism and the pressure estimated from field observations for the same degree of metamorphism.
Three dimensional stress analyses of flexural slip folding.

1160. Schwerdtner, W.M., Ahmad, W., Univ. of Toronto:
Structural significance of hornblende lineations in metamorphic tectonites, 1962-; Ph.D. thesis (Ahmad).
Mesoscopic structures whose internal strain distribution can be safely reconstructed, provide a means of determining the kinematic significance of hornblende lineations. It is thus possible to establish a strain indicator whose usefulness will be checked.

1161. Shafiqullah, M., Carleton Univ.:
Fossil craters in the Canadian Shield, 1965-68; Ph.D. thesis.
At least 10 craters in the Canadian Shield are the subject of controversy as to whether or not they are meteorite-impact in origin. It is believed that K-Ar dates on glass should give the time of impact or volcanic-tectonic activity. An attempt will be made to relate Ar^{40}/K^{40} ratios in cogenetic minerals and whole rock drill core samples to the intensity of shock wave (both vertically and laterally).

1162. Stauffer, M.R., Univ. of Saskatchewan:
Model experiments pertaining to structural geology, 1965-.

1163. Stockwell, C.H., Geol. Surv. Can., with cooperation of and contributions by Geological Association of Canada, Alberta Society of Petroleum Geologists and various Provincial governments:
Tectonic Map of Canada, 1958-65.
See Geol. Surv. Can., Map 4-1965, 1965.

1164. Weaver, D.F., Tanner, J.G., Dominion Observatory:
Regional Gravity Studies, Quebec and Newfoundland, 1965.
A comprehensive structural interpretation of the gravity anomalies in Quebec and Labrador is underway by Mr. Tanner and a study of the gravity variations over the Appalachian regions of Canada with particular attention to Newfoundland is nearing completion by Mr. Weaver.

1165. Wickens, A.J., Stevens, A.E., Hodgson, J.H., Dominion Observatory:
Earthquake mechanisms from P and S waves, a continuing project.

Computer re-evaluation of fault plane solutions is underway for all major earthquakes from 1922-62. The machine solutions have been found, and their significance vis-a-vis the older graphical solutions is being examined. The practical use of shear wave polarization angles in determining point source mechanisms of earthquakes is being investigated; particular attention is being made to the combination of P and S data to strengthen solutions and remove mechanism ambiguities. See Computer re-evaluation of mechanism solutions, 1922-62, Pub. Dom. Obs., vol. 33, No. 1 (in press) and Seismicity and earthquake mechanism, Res. in Geophys. vol. 2, Solid Earth and Interface Phenomena, 1964.

1166. Wilson, H.D.B., Univ. of Manitoba:

The volcanic history of the Superior Province of the Precambrian Shield, 1964-.

During 1965 the first paper resulting from the project was published. (Canadian Journal of Earth Science, vol. 2, p. 161). This is believed to establish that the earliest known volcanism in the Canadian Shield was continental orogenic in nature similar to that in island arcs such as the East Indies or continental orogenic areas such as the Cordillera. The scope of the work has been increased to study the complete volcanic history of the Superior province from the earliest Archaean rocks nearly three billion years old. The volcanic-intrusive sequence appears to have a large scale simplicity. Orogenic volcanism is closely followed by crustal melting to produce a stable block which is then repeatedly fractured with intrusion and extension of flood basalts and alkali-rich complexes. The activity finally ended a billion years ago. The composition of the various volcanic intrusive types is being determined by chemical and petrographic analyses. A preliminary paper on the subject was presented at the Annual Meeting of the Geol. Assoc. Canada in October, 1965 but the rock collection and analyses of the granitic, flood basaltic, and ring complexes will be greatly extended during 1966.

1167. Wilson, J.T., Smirnow, L., Morrison, R.P., Gertner, Mrs. B., Univ. of Toronto:

Study of elements of World Geology, 1955-.

Dr. Smirnow continues work on U.S.S.R., Mr. Morrison is preparing his book on South America for publication, Mrs. Gertner is compiling age determinations. The crustal thickness project has been recognized by and received financial support from the Federation of Astronomical and Geophysical Services in Paris. Professor Wilson visited four continents in the past year collecting data and has extended theories about the formation of ocean floors. See Submarine fracture zones, seismic ridges and the International Council of Scientific Unions Line: Proposed Western Margin of the East Pacific Ridge, Nature, vol. 207, pp. 907-911, 1965.

AUTHOR INDEX