

# Geophysical Studies at Dalhousie University, Newfoundland, North Atlantic and Hudson Bay

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GEOPHYSICS AND GEOCHEMISTRY

Geophysical Studies at Dalhousie University,  
Newfoundland, North Atlantic and Hudson Bay

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Newfoundland

The seismic studies of the eastern seaboard of Canada, reported in a previous issue of MARITIME SEDIMENTS, were continued north-east of Newfoundland and along the south coast of Newfoundland. In both cases one land recording station was set up, and a second recording station was established with sonobuoys, operated from C.S.S. HUDSON. The shooting ship was C.N.A.V. SACKVILLE. The line north-east of Newfoundland was in a north-east to south-west direction, with the land station inland from the head of Notre Dame Bay, the sonobuoys out on the Shelf. This line complemented work of 1964 in which a line was established at right angles to this direction, so that there are now lines across and parallel to the strike of the Appalachian System. The line south of Newfoundland was established east-west, from Port-au-Basques to Fortune Bay. Sparker studies were carried on at the same time, and the records along the south coast were instructive.

North Atlantic

A number of profiles were established to the south of the Sohm Abyssal Plain, using sonobuoys as detectors. This experiment was done not primarily for determination of crustal thickness, but to provide material with which to study signals propagated through crust and mantle, in an attempt to compare attenuation of seismic waves from continental regions and oceanic regions.

Hudson Bay

A number of Universities took part in a cooperative seismic experiment in Hudson Bay, Dalhousie among them. The geophysical studies undertaken during the project as a whole included measurement of gravity and total magnetic field, and shallow-seismic experiments, so that information will be available for a comprehensive study of the Bay. Land seismic parties set up at CHURCHILL (U. of MANITOBA, U. of SASKATCHEWAN, ESKIMO POINT (WESTERN ONTARIO), CHESTERFIELD INLET (DAL.), COATES ISLAND (TORONTO), OTTAWA ISLAND and POVUNG-NITUK (DOMINION OBSERVATORY) and WINISK (DAL.). C.S.S. HUDSON recorded with sonobuoys in the centre of the Bay (DAL) and shots were fired from M.V. THERON (DAL., GEOLOGICAL SURVEY). Forty-one charges were fired, 3600 lbs. and 1800 lbs. in weight; there were no mis-fires. Navigation was the major problem, Decca being inadequate, and only

one station (HUDSON) out of four recording water-wave.

The INTERNAL UPPER MANTLE SYMPOSIA met in Ottawa on September 2-11, 1965, The following symposia were held:

- 1) Drifting for scientific purposes; Chairman: R. J. UFFEN
- 2) World rift system; Chairman: V. V. BELOUSSOV
- 3) Continental margins and island arcs; Chairman: G. P. WOOLLARD

Among the papers pertinent to the east coast were:

- BECK, A. E., Temperature measurements in deep boreholes
- BLANCHARD, J. E., Measurement of stress in boreholes
- DRAKE, C. L., Recent investigations in the Continental Margins of Eastern North America
- EWING, J. I., Seismic investigations on the Blake Plateau
- FINDLAY, D. C., and SMITH, C. H., Drilling for scientific purposes in Canada
- GEDDES, W. H., Atlantic Shelf magnetic anomaly
- HERSEY, J. B., Continental margin of Eastern North America and geophysical investigations in the West Indies
- HOOD, P. J., Magnetic surveys on the Continental Shelves of Eastern Canada
- HUNKINS, K., Arctic Continental Margins
- KEEN, M. J. and BLANCHARD, J. E., The Continental Margin of Eastern Canada
- LONCAREVIC, B., A negative gravity anomaly on the Shelf off Nova Scotia
- \_\_\_\_\_, Recent geophysical investigations of the Mid-Atlantic Ridge
- ROOTS, F., Canadian investigations of the Arctic Ocean margins
- SAITO, T., Stratigraphic studies on the Blake Plateau

DAVID J. McDOUGALL of LOYOLA COLLEGE, Montreal, and members of his Department have done some investigations of the thermoluminescence of limestones and sandstones, particularly as related to changes in trace elements, etc. Up until this year, S. A. YALCIN had been slowly working towards a research project on the rheology of clays. At the moment, Dr. Yalcin is on leave of absence in Turkey

but he will be continuing this on his return next year.

TUDOR T. DAVIES has initiated a paleoecologic research project on some Pennsylvanian shale sequences in Nova Scotia. Detailed field investigation was completed during the summer of 1965, and the sample collections will be examined at DALHOUSIE UNIVERSITY during the winter months. Faunal analysis will be integrated with a mineralogic and geochemical study of the rocks, and fossil shells in an attempt to distinguish palaeo-environments.

RON DOIG, who joined the staff of MCGILL UNIVERSITY in September of 1964, has recently set up equipment for Rb-Sr age determinations. Equipment is also being assembled for K-A dating of rocks. This laboratory will supply a service as a whole to the department of geological sciences. Doig plans to conduct research on extending age dating methods to new minerals as well as experiment with new methods of age determination of radioactive minerals.

LES DAVIES, of NEW BRUNSWICK MINES BRANCH and CARLETON UNIVERSITY, is studying the petrology and chemistry of presumed Ordovician iron-bearing formations in northern New Brunswick.