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Participation in the International Hydrological Decade
in New Brunswick*

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The International Hydrological Decade (I.H.D.) was initiated during the year of 1965. Sixty nations throughout the world are involved in the program; it is essential that most nations take part, since the hydrological cycle is no respecter of political boundaries.

The overall objective of an international program in the field of hydrology is to accelerate the study of water resources and the regimen of water with a view to their rational management in the interest of mankind, to make known the need for hydrological research and education in all countries, and to improve their ability to evaluate their resources and use them to the best advantage. Thus the program will focus on science, but will give strong consideration to utilitarian factors.

In order to fulfill this general objective in Canada, each province has a coordinating committee which will propose projects for that province. J.G. LOCKHART of the NEW BRUNSWICK WATER AUTHORITY is the committee chairman for the Province of New Brunswick.

The first task of the committee involved the selection of a "Representative Basin" for New Brunswick. After some investigation,

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the North Nashwaaksis Basin, a small area north of Fredericton, was chosen as the first "Representative Basin".

Representative basins are areas marked out to permit study of the existing conditions of a region. The objective of research in these areas are twofold:

1. To provide data on all parameters in the hydrological cycle, so that statistical or physical models may be developed for major climatic and geological areas. Principles derived from these models will be used to synthesize the hydrological characteristics of ungauged areas.
2. To provide an outdoor laboratory in which particular aspects of the hydrological cycle may be investigated. Conclusions drawn from these detailed studies, if undertaken within instrumented basins, will provide a framework for transposition of plot or sub-basin results to basin areas.

The North Nashwaaksis Basin has a drainage area of 10.4 sq miles, and is located about 10 miles from Fredericton. The basin is about 90 per cent forested but has relatively good access to all parts. The bedrock in the basin is relatively uniform, consisting of flat-lying grey shales, sandstones, and conglomerates of Carboniferous age. The basin has a moderate range of topography ranging from 850 feet above sea level at the head waters to about 130 feet at the outlet. The climate of the basin is humid continental. Average annual precipitation over the basin is about 42 inches, of which 25 per cent is in the form of snow water-equivalent.

At the present time the basin has the following instrumentation in operation:

1. One stream gauging station
2. Two recording rain gauges
3. Four standard rain gauges
4. One anemometer
5. One station for air temperature and relative humidity
6. One sunshine recorder
7. Two short wave radiometers
8. One net radiometer
9. One evaporation pan (to be installed in the spring)

The first major research project to be carried out on the basin is an evaluation of snowmelt at a point. A continuous recording of runoff from 120 sq feet plot is being obtained. Correlations will be made to relate the snowmelt to the physical factors causing melt.

During 1966 other studies will be initiated in order to determine the following within the basin:

1. A water balance for the basin
2. Runoff characteristics
3. Groundwater potential
4. Sediment transport
5. Water quality
6. Forest cover classification
7. Soil classification
8. Geological classification

The North Nashwaaksis Basin should provide an excellent opportunity for those interested in a well-equipped natural laboratory for hydrological studies. Additional research projects may be initiated by any qualified individual or organization. Further information may be obtained from the author who is acting as the project coordinator for New Brunswick.

Interest in the I.H.D. program in New Brunswick may be appreciated by the participation of representatives of various disciplines from provincial and federal government departments and from the University of New Brunswick. In particular, the following people are recognized for their active participation in the field program:

1. J.E. PETERS, Water Resources Branch, DEPARTMENT OF NORTHERN AFFAIRS AND NATURAL RESOURCES. (Stream gauging station).
2. R.B.B. DICKISON, Meteorological Branch, DEPARTMENT OF TRANSPORT. (Meteorological station).
3. W.B. CUTHBERTSON, NEW BRUNSWICK ELECTRIC POWER COMMISSION. (Snow course surveys).
4. H. LEGARE, Fish and Wildlife Branch, NEW BRUNSWICK DEPARTMENT OF LANDS AND MINES. (Water quality determination).
5. D.W. PYSKLYWEC, graduate student, Department of Civil Engineering, UNIVERSITY OF NEW BRUNSWICK. (Snowmelt studies).

As the project develops and becomes more widely known many qualified engineers and scientists will be able to make a contribution to the hydrology of New Brunswick through work on the North Nashwaaksis Basin.

It is hoped that the data obtained and the results of the research carried out on the basin may be used to provide information on which the social, physical and biological scientists may combine their efforts to plan an adequate solution to the water resource problems of the future.

Hudson Bay Project, 1965: Aeromagnetic Surveys*

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A detailed aeromagnetic survey of an area in central Hudson Bay (Figure 1) was carried out in co-operation with the NATIONAL AERONAUTICAL ESTABLISHMENT and the R.C.A.F. during July and August 1965. The primary navigational aid used was the 6F Lambda Decca chain on loan from the Polar Continental Shelf Project which was installed in the southwest part of the bay for the 1965 Hudson Bay Oceanographic Project.

A rubidium-vapour magnetometer system modified by the N.A.E. was used to record digitally on magnetic tape the total intensity of the earth's magnetic field at two heights. This was accomplished using a

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