

Canada makes major contribution To International Hydrological Decade

By Dr. I.C. Brown

Canada is among 108 countries which are contributing to the United Nations Educational, Scientific and Cultural Organization's (UNESCO) International Hydrological Decade (IHD) program. In terms of both effort and production, the Canadian IHD program, which started in 1965, is one of the largest. The program does not include all water research in Canada. It is involved only in those proposed projects that fit within the definition of hydrology suggested by UNESCO and accepted by the Canadian National Committee (CNC) of IHD:

"Hydrology is the science which deals with terrestrial waters; their occurrence, circulation and distribution on our planet, their physical and chemical properties, and their interaction with the physical and biological environment, including the effect on them of the activity of man."

The following figures summarize the statistics of Canada's program to the end of 1971:

Projects proposed	384
Projects approved	281
Projects deleted due to lack of funds, personnel or changes in program	58
Projects active including those deferred or completed	223
Publications (not including internal reports)	724

Projects are divided among the major participating sectors as follows:

	Active	Completed	Deferred	Total
University	56	5	3	64
Provincial	50	11	1	62
Federal	77	19	1	97
				223

(Funds for the IHD program are provided by participating agencies. IHD has no funds of its own for support of research in hydrology. It acts as a focal point for hydrological programs that fall within the terms of reference of the Decade).

Total expenditures for each project are reported annually to the nearest \$1,000 and include all capital, operating, and labor costs. The following figures give the division of effort between sectors for 1971 and the total for the IHD from its start in 1965 to 1971:

Grants to university projects	\$ 259,000
University support from their own budgets	\$ 202,000
Municipal, industrial	\$ 46,000
Provincial support	\$ 1,083,000
Federal support (not including grants)	\$ 4,063,000
TOTAL FOR 1971	\$ 5,653,000
TOTAL PERIOD 1965-71	\$27,923,000

Although these figures give some indication of the size of the program, they do not present the whole story as they are based on projects as defined for IHD some of which include many sub-projects. The International Field Year for the Great Lakes (IFYGL) is defined as one IHD project but it comprises more than 86 sub-projects, some equivalent to, or even larger than, many other IHD projects. In terms of dollars, the



Canadian Survey Ship *Limnos*, one of three major Canadian research vessels involved in the IFYGL. Specially designed for limnological research, she is 147 feet long with a displacement of 610 tons and is operated by Marine Waters Directorate for Canada Centre for Inland Waters. • Le "Limnos", bateau canadien des relevés hydrographiques. C'est l'un des trois principaux bateaux canadiens travaillant dans le cadre de l'AIEGL. Il a été spécialement étudié pour les recherches en limnologie; c'est un bateau de 610 tonnes et de 147 pieds de long. Il appartient à la Direction des eaux marines du Centre canadien des eaux intérieures.

IFYGL program during 1971 represented nearly half the total Canadian effort for that year.

Because the IHD program covers all aspects of the hydrological cycle it would be impossible to enumerate all details. Consideration of what has come out of the program and how it is organized and managed will be discussed. A brief reference will be made to international activities and the future.

The summary of the physical aspects of the Canadian program does not indicate the qualitative results that have been produced from this massive effort and which are probably of more continuing value.

The degree of voluntary cooperation that has developed during the IHD program is gratifying. Although many projects were started in comparative isolation, researchers soon discovered that related aspects of the hydrological cycle needed study by other researchers to provide answers to their questions. Cooperation among federal, provincial, university, municipal, and industrial agencies has resulted from this need for answers to questions beyond one man's, or one agency's competence. Only 42 projects are so specialized that they are handled entirely within one agency; the rest involve from three to 14 agencies.

The outstanding example of IHD cooperation is the massive International Field Year for the Great Lakes. The operational phase of IFYGL started April 1, 1972, and involves more than 40 agencies conducting more than 130 research projects, supported by massive air, sea, land, and space logistics. About 150 scientists participated in the planning phase of this program. Canada and the United States have contributed equally