

NEWS

The Herzberg Award

University of Western Ontario professor John Brand is the recipient of the 1982 Herzberg Award in spectroscopy. Named after NRC scientist Gerhard Herzberg, winner of the 1971 Nobel Prize in chemistry, the award is given annually by the Spectroscopy Society of Canada as its senior distinction.

Brand's citation referred to his "distinguished contributions" to how electrons arrange themselves when their atoms combine into molecules, and to what types of light these electrons emit when in states of higher energy. He has also been a pioneer in applying lasers to spectroscopy, which provides "very specific measurements" of the phenomena involved.

Brand was elected a Fellow of the Royal Society of Canada in 1978. He has authored more than a hundred publications, as well as the test *Molecular Structure*.

Newfoundland marine labs

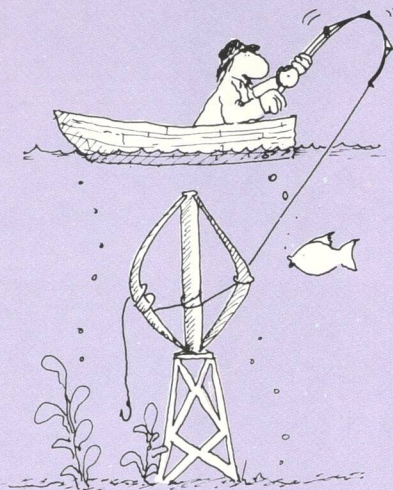
One of the world's largest and most modern marine research laboratories is being built at St. John's, Newfoundland. The latest addition to the NRC family of laboratories, the Arctic Vessel and Marine Research Institute (AVMRI), or, as it is commonly dubbed, AVE MARIA, will become part of the Memorial University campus in 1985.

The Institute will provide the Canadian marine industry with the very latest facilities for studying the problems of navigation and other operations in cold waters. It will have computers to analyze navigation conditions in ice-covered waters, computerized machine tools to automatically build scaled-down models of large ships, and large tanks to do realistic tests on such models (including the world's largest tank, 89 m x 12 m x 3 m, for tests in ice-covered waters).

The choice of St. John's for the Institute site was not a matter of chance; the city has been an important maritime centre for hundreds of

years, and a home base for many fishing fleets operating in North Atlantic waters. In recent years, it has also become the base for launching intensive oil explorations off the shores of Newfoundland, a hostile, dangerous environment where the drilling rig *Ocean Ranger* sank last year. Many firms working in marine engineering, or associated with the specialized resources of Memorial University, are now established in St. John's, and Memorial University is fast becoming a major training centre for engineers in marine technology.

In a few years, AVE MARIA will have more than one hundred scientists and technicians employed in the study of marine engineering problems.



Windmills under water

Last August, Canada's first vertical-axis hydraulic turbine began turning in the St. Lawrence River near Cornwall, Ontario. The design concept was simple. If these egg-beater shaped wind generators can be driven successfully by the wind, then why not by running water as well?

The St. Lawrence prototype, measuring 2.4 m in diameter and producing 20 kW of power, was built by Nova Energy Ltd. of Dartmouth, Nova Scotia, for the National Research Council. Called a "turbodyne generator" by its inventor, Barry Davis of

Nova Energy Ltd., the system is surprisingly simple: a turbine with three vertical blades which rotate at almost 30 rpm in the current; a gearbox; and a generator. The system is moored to a floating platform with two pontoons, and two guide vanes focus the current onto the turbine for increased power. Prior to the St. Lawrence project, the turbine underwent a series of 'indoor' tests in a specially designed tank at NRC's Hydraulics Laboratory.

This kind of hydraulic turbine offers a number of advantages over conventional hydroelectric systems. The laboratory-tested design has an efficiency of about 60 per cent, costs are comparatively low, and it is portable. Further, there is little effect on the environment.

As in any move from the laboratory to field tests, there were a number of unforeseen difficulties. For example, when the turbine was set up in the St. Lawrence River one of the anchors moved, and the turbine drifted into the slower currents close to shore, lowering part of the electricity. Mooring the system in strong currents turned out to be a greater problem than anticipated.

The Cornwall area was chosen for the first tests because of certain system requirements. A current of at least 1.5 m/s was needed, and the stream had to be 3 m deep. The site had to be readily accessible for easy maintenance, and it had to be near a power grid, in this case Saint Lawrence Power, a private company serving the Cornwall area. Nova Energy Ltd. and NRC are planning two other series of field tests, one in British Columbia and the other in the Maritimes during the next two years. The first indications are that these new hydraulic turbines will play a part in our energy future.

NSERC's Steacie Awards

Commemorating a former president of NRC, the E.W.R. Steacie Memorial Fellowships each year pay the salaries of four young Canadian researchers while they devote up to two years