



NRC scientists are studying air-cushion vehicles to determine why they can break ice more easily and economically than conventional icebreakers. Air-cushion vehicles were developed mainly for carrying cargo over rough terrain.

realizes its value and agrees to take over the final development and applications.

Basic research

Much of the NRC's work concerns basic and exploratory research designed to broaden our knowledge of the sciences in general and to develop new and promising applications. For example, geneticists are seeking to discover the reason why a protein-rich edible red algae eaten in the Atlantic provinces produces only male plants and never females, a mystery that has eluded scientists for 150 years.

Chemists are also trying to find a more effective and more economical means of extracting deuterium from hydrogenated compounds. This process is important for the manufacture of heavy water, an essential ingredient in the production of nuclear power.

Technological assistance

The NRC also carries out research of a more practical nature. It provides

technological assistance for social objectives such as public safety or the protection of property, health and the environment; it seeks solutions to long-term problems of our society, such as energy, food, transportation and construction; and it is participating actively in transforming Canada, traditionally an exporter of raw materials, into a world supplier of manufactured products.

Marine research

Canada is bounded by three oceans, has nine of the world's largest lakes and two of its largest rivers. NRC scientists are therefore in a good position to develop systems of maritime transportation.

More and more offshore drilling is being done for petroleum and natural gas reserves. The NRC and Canadian industry are together developing advanced glacial technology to make possible year-round exploration and development in the country's outlying regions such as the Canadian Arctic.

There are also several research projects underway, including remote-controlled submarines for the excavation of trenches and laying of pipelines in the seabed; vessels capable of sailing in water covered with more than three metres of ice; marine structures that can protect a drilling platform from ice floes and icebergs; and highly developed air-cushion vehicles capable of transporting heavy loads on water or on ice too thin for normal vehicles.

Air transportation

In the field of aeronautics, the NRC has played a large role in the development of sections for the new supercritical wings, so called because they allow aircraft to fly closer to the speed of sound than conventional wings. The



New methods of building construction are being tested to store solar energy.

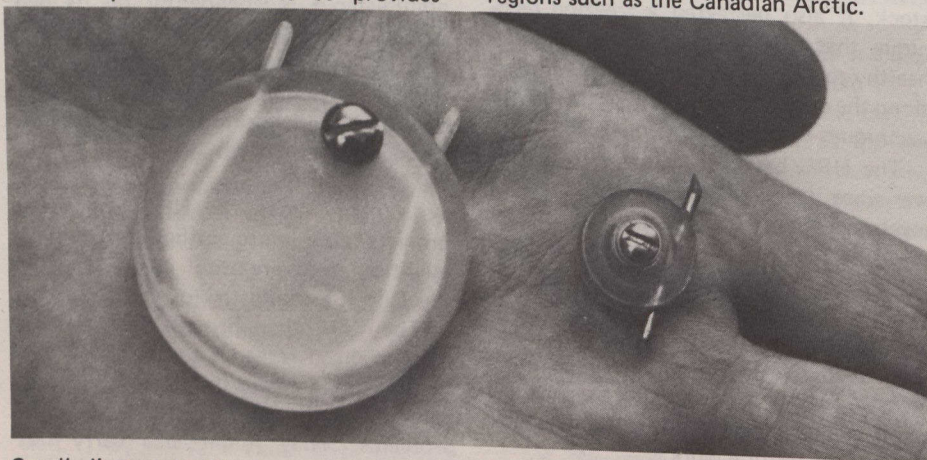
supercritical wing is used on the *Challenger*, a Canadian-made jet aircraft that has been widely acclaimed.

Energy

In the field of energy, the NRC is working on the saving, storage and transport of energy, on fossil fuels and nuclear techniques, and on the development of renewable energy sources.

Solar facilities (in single-family homes and in commercial structures) are being tested, and development is proceeding on improved components for solar heating, new methods of storing heat and better configurations for solar panels.

Houses have been built to test new methods of construction designed to conserve energy. Various materials and dif-



Small discs containing pancreatic tissue can be implanted in diabetics to eliminate the need for daily injections of insulin. These implants were developed by the Connaught Laboratories in Toronto with the assistance of the National Research Council.