

# Canada Weekly

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Scientific research and development in Canada during 1974/75, 1

Financing for Indonesia — memo signed during President's visit, 3

New strategy recommended for Canadian trade, 3

Motorized wheelchairs on loan, 4

Bill of rights for hospital patients, 4

Canadian festival in Washington salutes U.S. bicentennial, 4

Urban demonstration program postponed indefinitely, 4

Alberta oil reserves drop, 6

Two-price wheat payment, 6

Happy as a pig, 6

## Scientific research and development in Canada during 1974/75

The annual report of the National Research Council of Canada (NRC), which was published in July, lists highlights of the organization's activities during the past year. Some of these are reprinted below.

A promising alternative method of recovering oil from tar sands, developed by the Division of Chemistry is currently taking on a special importance.

This "spherical-agglomeration" process is a means of separating suspensions of insoluble particles from liquids by adding a suitable bonding agent that causes the particles to stick together and, on agitation, to agglomerate into spheres. The spheres of material are then easily removed from the liquid. NRC scientists have shown that the process is particularly suited to recovering the oil of the Athabasca tar sands.

In this application of spherical agglomeration the tar sands are added to a light kerosene in continuous agitation, the oil allowed to dissolve, and water (the binder) sprayed into the system. Under these conditions, the minerals and other hydrophilic materials agglomerate into spheres, a by-product that is readily separated and can find use as a gravel or fill material in the construction industry. The kerosene solvent can be recovered from the bitumen extract and recycled.

### Wind turbine

The vertical wind turbine, developed in recent years by engineers in NRC's National Aeronautical Establishment, will soon be in commercial production at Dominion Aluminum Fabricating Limited, a Canadian firm based in Toronto.

This wind turbine is totally different from the old farmyard windmills and possesses several distinctive characteristics. It is a high-speed machine that, unlike most conventional wood-mills, rotates about a vertical, not a horizontal axis. The rotor consists of three convex metal blades of aerofoil cross-section attached to a vertical shaft and supported on ball bearings at the top and bottom of the shaft.

The mechanical energy produced by

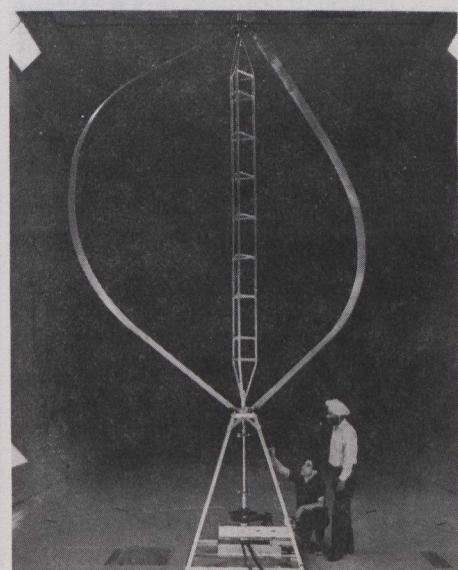
the turbine is easily converted into electrical power. Initially conceived to provide a cheap power source for developing countries to be used in irrigation or electrical power supply, the wind turbine, it was soon realized, could also have practical applications in Canada, particularly to provide electrical power in isolated regions of Northern Canada.

### Canada/France telescope

The National Research Council of Canada and the Centre national de la recherche scientifique of France (CNRS) have undertaken a joint project to establish a 3.6-m (144-inch) optical telescope on Mauna Kea, Hawaii.

The site is being provided by the University of Hawaii's Institute of Astronomy and the University is also providing support facilities. NRC, CNRS and the University have formed a non-profit corporation to build and operate the telescope.

The project is due to be completed in 1978, and work is progressing on schedule. Construction of the telescope pier and the building foundations has



NRC's wind turbine.