

Potential of high-speed train studied

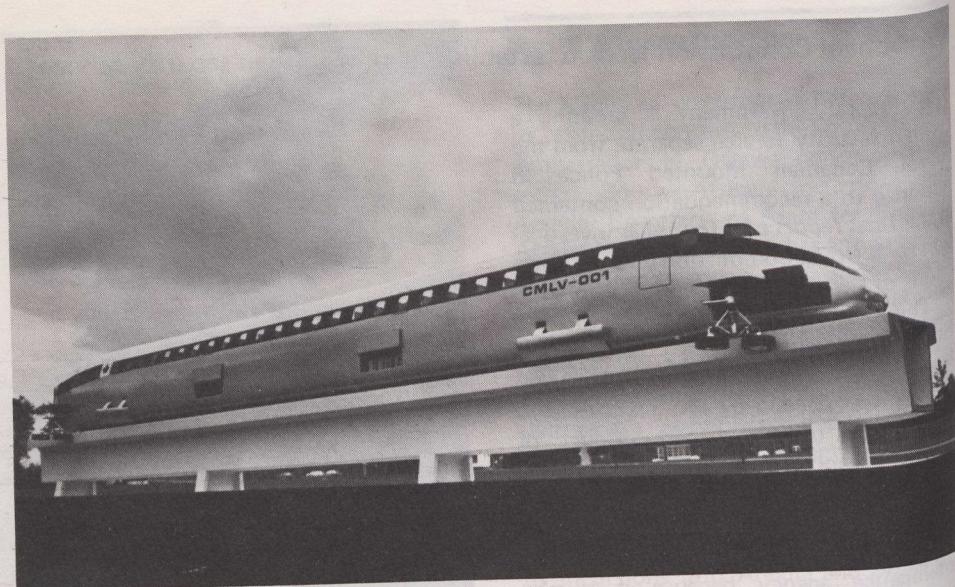
Canadian government studies indicate that a high-speed train (HST) could be put into service in this country by the end of the century.

Since 1971, the Transportation Development Centre (TDC), a federal agency in Montreal, has been conducting research projects on magnetic levitation and its application to interurban transport.

TDC officials said that it will probably be some time before a magnetic levitation transport system can be brought into service in Canada.

However, their short-term objective is, in part, to continue with the research so as to form a small group of experts in magnetic levitation principles and linear motor technology.

The National Research Council has become involved in the technical development of a magnetic levitation transport system called MAGLEV (magnetically levitated vehicle). The Canadian Institute of Guided Ground Transport (CIGGT) at Queen's University in Kingston, Ontario has conducted an economic feasibility study of a MAGLEV system linking Toronto, Ottawa, Mirabel and Montreal. There will also be a study of a rapid train which would connect Mirabel, Montreal, Albany and New York.



Model of the MAGLEV, developed at the National Research Council of Canada.

HSTs can reach speeds of 450 kilometres an hour and would travel from downtown Montreal to downtown New York in less than two hours.

Canadian HST

The MAGLEV developed at the National Research Council resembles a DC-9 with no wings, no tail assembly and no engine. It glides along on an elevated track of reinforced concrete and can carry 100 passengers and their luggage.

Superconductors placed on the lower

part of the vehicle interact with coils built into the track to create a magnetic field which pulls the vehicle along. At low speeds, the vehicle runs on wheels.

The CIGGT has estimated that it would cost \$3 billion to build a network of concrete tracks linking Toronto, Ottawa, Mirabel and New York.

Despite the costs, the CIGGT has concluded that a MAGLEV carrying 151 passengers on the Toronto-Ottawa-Mirabel-Montreal route could be profitable and less costly than air transport.

New energy-saving car heater in the works

A Manitoba inventor has developed a new energy-saving block heater for automobile engines.

John Lion, director of engineering at Tempro Automotive Division in Winnipeg made his discovery a year ago while searching for a small block heater which would fit new compact cars.

He found that the holes in cars for inserting block heaters were being made smaller along with the size of the vehicles most people now were wanting to drive. It was becoming almost impossible to install the standard tongue-shaped tubular sheath element heaters, said Mr. Lion.

Shuts off automatically

The answer to the problem came in the shape of a washer-sized disc made of thermistor material, coated with copper and attached to a negative and positive terminal resembling antennae. This was found to be flat enough to fit into small holes and was also self-regulating. The thermistor material, in this case barium

titanate, served to shut the unit off when it would reach a certain temperature.

"So we quite by accident fell into the energy alternative part of it," said Mr. Lion. "It was not that we were out to save energy, it just happened." The new device means that drivers arriving home from work in the afternoon can plug in their cars and not have the electricity start flowing until the engine cools off. This would cut consumption during afternoon peak demand hours and could mean an average annual saving of \$10 per car.

The federal and Manitoba governments are partially funding the development and demonstration of the new block heater. The company is developing and testing the project under the supervision of the Manitoba Research Council and has patents pending on the heater and the engine block clamp.

If the project proceeds as planned, the heater is expected to be tested on 100 vehicles this winter and could be on the market in about two years.

Lifelike preservation techniques

Two researchers from Queen's University in Kingston, Ontario have developed new techniques for preserving everything from flower petals to human beings.

The 12 techniques, developed by Jack Webb and Dr. Cesar Romero-Sierra, eliminate the need for pumping animals full of hazardous formaldehyde. The new processes keep specimens looking as healthy and colourful as they did while they were alive.

The methods, which involve freeze-drying and dipping in a number of solutions, should keep specimens in perfect shape for thousands of years, said Dr. Romero-Sierra. The techniques are expected to be patented during the next two years.

Dr. Romero-Sierra said his main motivation in preserving plants and animals is so that future generations can have a realistic picture of nature's past. "You simply can't make a direct contact with nature if what you've got is a smelly, rotten or dried-up specimen," he said.