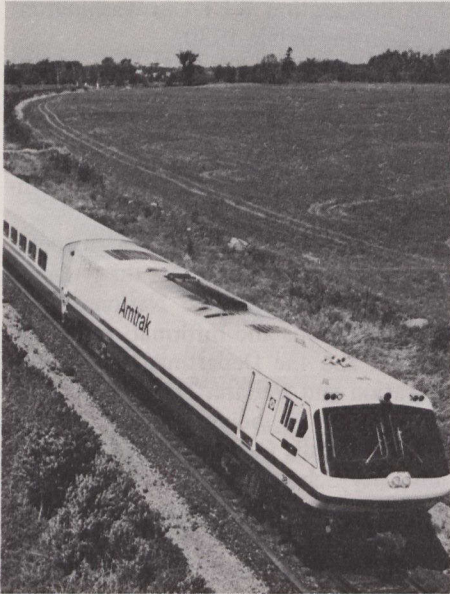

LRC trains delivered to U.S.

Two "light, rapid, comfortable" (LRC) high-speed inter-city passenger trains built by Bombardier Incorporated of Montreal were shipped recently to Amtrak in the United States.



Bombardier's LRC train has stabilizers that allow cars to remain level on curves.

A joint development project of Bombardier Inc. of Montreal, Dominion Foundries and Steel Ltd. of Hamilton and Alcan Canada Products Ltd. of Montreal, the LRC features a hydraulic power banking system built into its coaches. Activated by electronic sensors, the stabilizers neutralize centrifugal forces, allowing the cars to remain level on curves even at high speeds.

The Federal Government also contributed development grants through its program for the advancement of industrial technology.

The deal with the American railway company — a two-train, \$10-million lease-purchase contract signed in 1976 — was the first merchandising breakthrough for the LRC. Since then, Via Rail Canada Incorporated, Canada's national passenger corporation, has given Bombardier a \$70-million order for 21 locomotives and 50 coaches to be used in the Quebec City-Windsor corridor. Eight trains are scheduled for delivery in about a year.

Extensively tested

Although the LRC has been extensively tested to date, especially at the U.S. Federal Railroad Authority's high-speed

ground test centre in Pueblo, Colorado, Amtrak will put the units through their paces for another several months before they are put into service.

According to Raymond Royer, president of Bombardier's mass transit division, there are currently about 4,500 coaches in short run service in North America. "Our analysis says about 1,500 of these could be replaced by the LRC. It's ideal for those runs with lots of curves where the authorities don't want to have to rebuild the roadbed," he said.

The LRC is capable of 200 kilometres an hour (120 miles an hour) without having to slow much for the curves.

Currently, each coach costs about \$1 million; a locomotive \$1.2 million.

Officials said the train delivers 500 passenger miles a gallon, fully loaded, compared with five to ten for a jet aircraft.

Multidisciplinary approach used

Bob White of the Ontario Research Foundation (ORF) in Toronto is an aviation engineer by training, but his current work often takes him to the morgue.

There he evaluates shoulder, elbow, wrist and finger joints and learns to replace them with mechanical devices which can do the same job.

Developing and perfecting these upper-limb prostheses — much less common than lower-limb devices — has meant grafting his own engineering background on to medical and surgical disciplines.

At the ORF team work and co-operation in technology makes the marrying of two or several disciplines a simple matter. An informal system allows chemists to summon engineers, doctors, mathematicians, metallurgists, electronics specialists in any combination required.

Live implant

It made Mr. White's crash course in anatomy and physiology easier at the start. Dr. Ted English of Sunnybrook Hospital in Toronto, provided all medical input and liaison such that six months after beginning the program, the first live implant was performed. That was seven years ago, and the implant, a shoulder replacement, is still operating successfully.

When the first request for a shoulder came in, Mr. White had been doing test and development work. With a chemist he had developed a system to coat char-

coal briquettes; with a mathematician, a hovercraft transmission; with other engineers, thermal shock testing of marble slabs — and then came the shoulder.

It was soon apparent that quite a few disciplines would be involved and, of paramount importance, access to the clinical environment and medical expertise would be mandatory.

"I had to talk plastics' moulding," said Mr. White. "I had to blend my approach with metallurgists. I had to consider how the prosthesis would be fitted. In the end, we abandoned some of the more finicky procedures and decided the surgeon could better implant the shoulder by learning to feel for the optimum placement."

"The real beauty of the contract research and development activity here at the ORF" said Tom Kingry, communications manager, "is that with the team we've got, we can zero in on complicated multidisciplinary problems instantly.

"In Bob White's case, no company would have touched upper-limb prostheses; there was no market. Now we have a product at a time when upper-limb joint replacement is becoming increasingly attractive and can look for interested companies.

"We initiate research and support ongoing work. In many cases, where research and development would not normally be started, there being no established market to justify it, we have been able to successfully develop a product.

(From Ontario Business News, March 1980.)

Quebec sets up refugee foundation

The Quebec government is setting up a foundation aimed at educating Quebecers about the plight of refugees around the world and tackling problems that lead to the refugees' predicament.

Quebec Minister of Immigration Jacques Couture said the Quebec government would be creating the Fondation Québécoise de Solidarité Internationale.

Mr. Couture said the foundation, to be financed by the federal and provincial governments, will create a unique climate for individuals, organizations and governments to participate in "team work".

Mr. Couture said that the foundation's "most meaningful role will be to sensitize the Quebec community to the plight of refugees".