

# Pushing Ahead the Frontiers of Medical Technology

**S**ince the 1922 discovery of life-saving insulin by Canadian scientists Frederick Banting and Charles Best, Canada has remained at the forefront of medical research and technology. From pioneer breakthroughs in specialty areas such as laser technology, artificial prosthetic devices and diagnostic imaging, to a deeper understanding of the complexities of the human brain, Canadian researchers have proven invaluable to the progress of medical science.

Now, some of the world's most sophisticated medical diagnostic and treatment hardware is designed and manufactured in Canada. The list of products ranges from excimer lasers that clear blocked arteries to fixation plates that provide internal support to patients with severe spinal damage. And in between are to be found developments such as a special wheelchair for the disabled and a revolutionary scanning device called Positron Emission Tomography.

Today, there are close to 600 Canadian firms engaged in the manufacture and supply of more than 1 200 classes of medical products. Ranging from adhesive bandages to sophisticated imaging technology, many of these products enjoy an international reputation and are exported all over the world.



## Excimer Laser Clears Blocked Coronary Artery

One area where Canada has become a world leader is heart surgery. Last year, an 84-year-old diabetic, almost crippled by severe leg pains caused by a blocked artery, was cured in 33 seconds. Within a few days, he was walking again.

Life could become easier for spinal injury victims thanks to a fixation plate developed by Canada's National Research Council.

A few months later, a 40-year-old man with plaque in his right coronary artery, which if left untreated could have led to his death, is now breathing more easily.

The list of miracles goes on thanks to one of Canada's leading wonder workers, cardiac surgeon Dr. Wilbert Keon. Director general of the University of Ottawa Heart Institute at the Ottawa Civic Hospital, he was the first in the world to perform a coronary-endarterectomy using an excimer laser.

The laser was developed over a three-year period by a group led by Drs. Lyall Higginson and Edward Farrell of the Heart Institute, physicist Dr. Rodney Taylor of the National Research Council (NRC) and engineer Roger Sandwell, director of medical products at the Ottawa-based Lumonics Inc. — an international leader in applied laser technology.

In the procedure, a 1.5-mm fibre-optic catheter with a light at the tip was inserted into the artery and directed to the blockage. Then a laser pulse was applied for a few billionths of a second which turned the blockage into gas.

Says Dr. Keon, who also helped pioneer the Jarvik-7 mechanical heart, "We have a long way to go, but this major advance [the excimer] has the potential to eventually eliminate the estimated 700 000 coronary bypass surgery operations performed yearly in Canada and the U.S.A."