tools to work on payloads such as Spacelab, the orbiting laboratory.

Industrial research and development

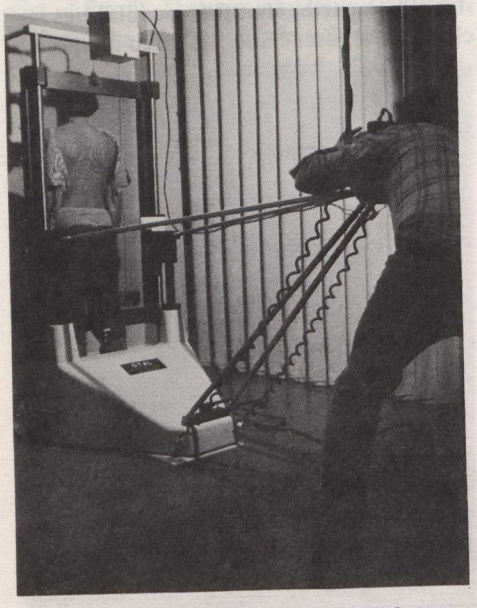
Among examples of research and development projects of the Council, undertaken with the support of its Industrial Research Assistance Program, are:

– Bach-Simpson Limited, of London, Ontario, has developed an instrument using ultrasound and Doppler techniques for the non-invasive examination of the heart. An ultrasound probe placed in the suprasternal notch at the throat is directed at the aorta to obtain information on blood flow in the aorta. It is a valuable adjunct to presently available echocardiographic equipment which has particular difficulty in assessing mitral and aortic insufficiency. Cardiac patients with structural abnormalities can be screened cheaply, safely and painlessly. After a long period of co-operation with seven hospitals and two universities, the instrument is now being put into production.

– Vortek Industries Ltd. of Vancouver, British Columbia, was formed in 1975 to exploit commercially a plasma lamp developed by the Plasma Physics Group at the University of British Columbia. Under licence from Canadian Patents and Development Limited (the original work had been supported by an NRC grant), Vortek has developed a compact lamp employing a vortex-stabilized and liquid-cooled DC argon arc, with a rated power of 125 kW and luminous flux of six million lumens.

NRC

This specially constructed chamber at the National Research Council in Ottawa has been designed to determine safe exposure levels of microwave radiation on animal tissue. The project will assist government in establishing realistic safety standards for such common sources as radio transmitters, radar and domestic microwave ovens.



NRC

For the past two years, researchers at NRC's Division of Physics have worked to develop a suitable technique for detecting scoliosis (curvature of the spine) in children at the early stages of the disease. The method involves a screening device which operates by projecting "shadows" or moiré fringes on the back. If the patterns are symmetrical, on both sides of the spine, it is normal; if the contours are not symmetrical, the child has scoliosis.

Industry/laboratory projects

Some of the contracts under the Program for Industry/Laboratory Projects include:

– Norpak Limited, of Packenham, Ontario, in co-operation with the Division of Electrical Engineering, is developing a microprocessor-based Blissymbol graphics generator as a means of communication for verbally impaired children. Since many of these children are also physically handicapped, the equipment will include a variety of input switches, such as push button, joystick, and "puff and sip" (pneumatic), which can be selected to match the capabilities of the individual user. With this graphics generator, a non-verbal child will be able to select Blissymbols one at a time and build a complete message which will be displayed on a television screen for others to read. The equipment will also be able to transmit messages from one terminal to another, such as from a student's display to a larger television monitor at the front of a class, or over the phone. The graphics generator will give the verbally handicapped child a better chance for normal intellectual and social development.

– The Canadian Marconi Company, of Montreal, is developing a commercial version of the NRC-developed photogrammetric instrument "Anaplot". Research in the Division of Physics has led to the development of new computer-aided methods of image reconstruction using stereophotos. The various corrections needed for such conditions as slant range, elevation and earth curvature are automatically made, thus relieving the operator of tedious effort. The resulting maps are produced in a fraction of the time necessary with manual methods and with improved accuracy. Major customers round the world are already reviewing the NRC process and awaiting demonstrations planned by Marconi.

– Bristol Aerospace Ltd., of Winnipeg, has developed a line of vertical axis wind generators to produce electrical power. These are based on work initially carried out at NRC's National Aeronautical Establishment. A major part of the work at the company has been the development of direct driven alternators and control systems to produce the maximum power over the normal range of wind speeds rather than using the usual maximum

(Continued on P. 8)