

# Capsules

## History of Science and Technology in Canada

Over a hundred people met last October in Kingston, Ontario, to talk and learn about the development of Canadian science and technology. The presentations and debating subjects ranged from sources of information on nineteenth century scientists to the impact of twentieth century technology on Canadian women.

The conference, the third in a series held in Kingston during the last 5 years, opened with a major address by Michael Bliss, author of *The Discovery of Insulin*, on Sir Frederick Banting's research during the years following insulin's discovery. Banting attempted to isolate secretions of the adrenal glands which were thought to be so important that they were spoken of as "the elixir of life." Examination of this ambitious but unsuccessful research shed much light on Banting, particularly on his abilities as a researcher, and

helped to clarify the part he had played in the somewhat controversial discovery of insulin. This account forms part of a soon-to-be published biography of Banting. Together with Bliss's earlier book, it promises to be the definitive work on Sir Frederick, a very prominent but not well understood Canadian.

During the day and a half which followed, a great variety of papers explored many aspects of Canadian history. It has been evident for some time that Canada has had its fair share of pioneering scientists and institutions. However, the limited amount of historical writing to date has made it difficult to appreciate the extent of their accomplishments. But some of the projects now under way are beginning to make this task easier. One of the new tools discussed at the meeting was a retrospective listing of scientific, technical, and engineering publications by Canadians or about Canada from the 16th century to 1914. This bibliography, which should be available soon, is computer-

based and will contain approximately 10 000 items arranged by author and classification. It should be an important guide for anyone interested in the history of Canadian science and technology.

Many other areas were treated in papers and discussions at the meeting. "Mutiny on the Whitehorse" and "The Kodak Girl in Ontario" were two topics in the discussions of the social impact of technology, and, under medicine and public health it was learned we had "Malaria in the 18th and 19th Centuries in Ontario."

The role of Canadian scientists during World War II was examined, and so were the ground-breaking contributions of scientists such as NRC's E.W.R. Steacie and Hugh Le Caine. The wide variety of backgrounds of those who participated (including scientists and engineers, librarians and archivists, historians and political scientists, students and retired people) made it an enthusiastic and stimulating gathering.

## Embryos on Ice

High technology has entered the Canadian livestock industry. A Calgary firm, Alberta Livestock Transplants Ltd., has developed methods of removing bovine embryos from breeding stock, freezing them for indefinite periods, then re-implanting them in surrogate mothers to complete the pregnancy.

Embryo transfer is already a common practice in livestock breeding — where risks remain high even in the 1980's. A good breeder doesn't necessarily produce prime offspring every time, and the long gestation period means a costly wait to see how successors will turn out. Trying to produce the greatest number of good calves in the shortest possible time also means that the breeder cow could drop her calves at inconvenient times. In order to overcome some of these difficulties, embryos are removed from the uterus of the prime breeder cow and placed in the uterus of another cow. The surrogate need only be in the right condition and strong enough to bear the calf.

Adding the freezing step to the process offers the opportunity for increased yields,



but timing is critical in the operation. Both the surrogate mother and the donor cow must be closely synchronized in their respective estrus cycles, and the transfer must come within seven days after the receptor comes into heat. Since such close timing is not always easily accomplished, the freezing process has been introduced to reduce the timing problems and, consequently, improve the conditions of transporting the embryos over long distances. It also offers the breeder an opportunity to reduce the threat of undetected diseases which may be passed on to the new generations.

Alberta Livestock Transplants developed its non-surgical embryo removal techniques during the 1970's. Now it is taking embryo transplant technology a step further by embarking on a project to perfect the freezing process. At the moment only one embryo in three achieves a successful pregnancy after removal from the original mother, but an NRC-supported research effort expects to improve that to better than one-for-two. Perfection of the technology will lead to a world-wide market for Canadian cattle embryos as well as an improvement in livestock strains.