signal whatever its orientation on the earth's surface. Finally, the package would have to float and be fire resistant.

**Paper model**
After a year or two of experiments, Mr. Stevinson and his co-workers came up with the first facsimile of the modern CPI, a paper model which was first tested by dropping it from the balcony of the hangar laboratory. The disc-shaped device, which tumbled as it fell, gave encouraging results, and he built the next version out of aluminum. The model's performance, tested by releasing it from a speeding car, convinced Stevinson that the tumbling-airfoil principle was almost ideally suited to this complex task.

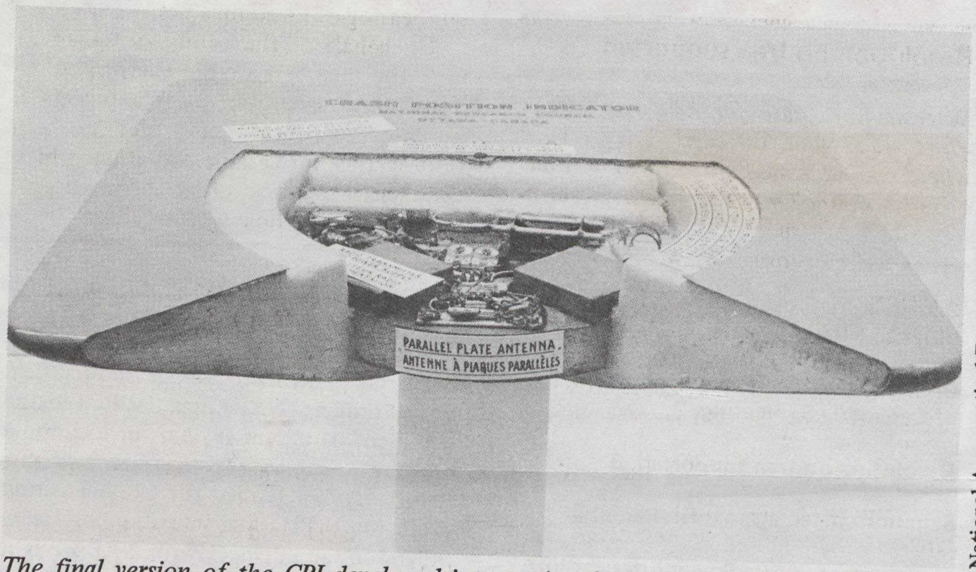
**Transmitter attached**
While Mr. Stevinson and his co-workers were adapting the system to various aircraft, the Division of Electrical Engineering developed his ideas for a radio transmitter and an omni-directional antenna small enough to tuck into the CPI.

When the first reinforced plastic CPI (containing transmitter and antenna) was assembled, it was attached to a rocket sled and fired at a cliff at speeds up to 370 kilometres an hour. The model detached from the sled as predicted. While the sled was crashing into the cliff, the CPI flew in an arc over the site, slowed, and gently landed above the cliff, with only minor scrapes to its tough outer skin. The transmitter worked without a hitch.

**Success proved**
Tests that included a series of drops from aircraft over all types of surface proved the performance of the CPI.

Early production models of the CPI were fitted mainly on aircraft operating in Canada's North. When some of these crashed, the CPI was instrumental in their early location and recovery. In one plane crash in the Yukon mountains, location would have been impossible without the CPI. The internal antenna was able to get the signal between the mountain peaks to the search aircraft.

**U.S. appreciation**
In another example, the United States Air Force credited the CPI with the early location of one of their aircraft which crashed at night in the ocean. The life of at least one critically injured person was saved by the quick rescue (Leigh Instruments received a letter of thanks, which was forwarded to NAE).




National Aeronautical Establishment

*The final version of the CPI developed into a wing-shaped structure. Here a cut-away resting on a pedestal shows the different components, all in one neat package.*

The next development by Leigh in the CPI story involved the inclusion of a flight recorder with the emergency signal transmitter. The flight recorder, or "black box", is an electronic recording device which monitors the aircraft's systems and operations, information vital to identifying the cause of aircraft accidents. Most heavy aircraft carry a "black box" as a permanent internal fixture, but they are prone to damage in a crash. In one case, it took many hours of painstaking effort at NAE's Flight Recorder Playback Centre to extract the recorder's information from the charred magnetic tape. Although the Centre was able to reconstruct the doomed flight, a lot of time and effort could have been saved if the recorder had been contained in a CPI.

The success of the Crash Position Indicator is now well established. The Canadian armed forces are committed to using them, as are some of the American Armed Forces. European jet manufacturers are placing CPI's on planes such as PanAvia's *Tornado,* and many private planes flying Canada's remote northern routes carry them.

For Leigh Instruments of Carleton Place, CPI has meant commercial success. Manufacturing and marketing the product has created a healthy financial picture for Leigh's Avionics Division, with CPI sales of $6 million in 1978 alone.

*(From an article by Sadiq Hasnain in* Science Dimension, *1979/4.)*

## Education of engineers subject of Canada/U.S. meeting

Canadian and American engineers met recently in Niagara Falls, Ontario, to discuss the present and future education of engineers.

Sponsored by McMaster University in Hamilton, the American Society for Engineering Education, the Institute of Electrical and Electronics Engineers and the Engineering Institute of Canada, the "Frontiers in Education" conference was held for the first time in Canada. The major topic of discussion was the challenge of rapidly-advancing technologies to the processes of education in engineering fields. Workshop sessions covered such topics as microcomputers in laboratories and in industry; techniques for teaching and evaluating energy engineering education for the public; teaching and learning by computer and its associated problems; and the future of personal computing.

The conference's first session, dealing with microprocessors (microcomputers) was of particular interest because of the increasingly rapid growth of the use of the miniature computers in laboratories and classrooms at many educational levels. Speakers at the conference included Dr. James Ham, president of the University of Toronto and Dr. Gordon R. Slemon, dean of applied science and engineering, University of Toronto.