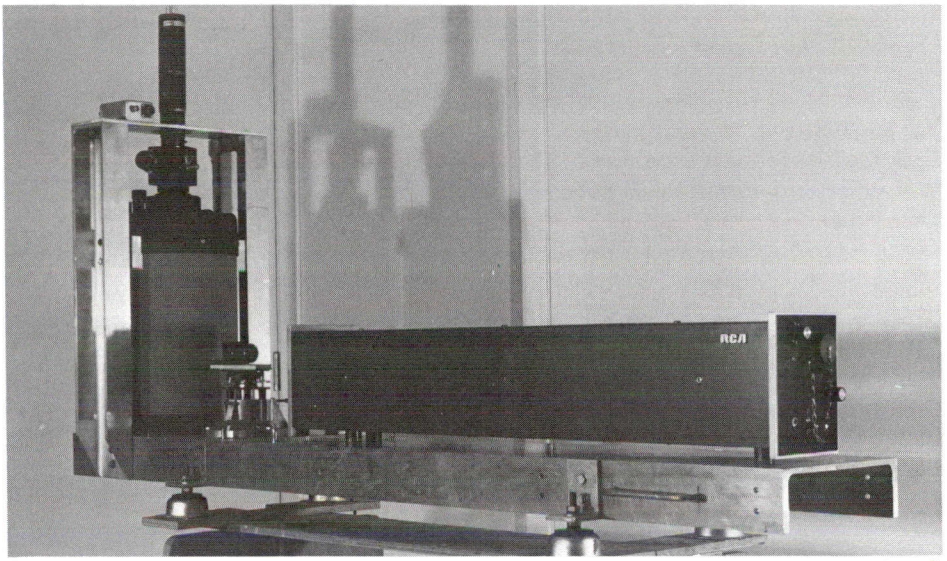
Night time detection of water pollution

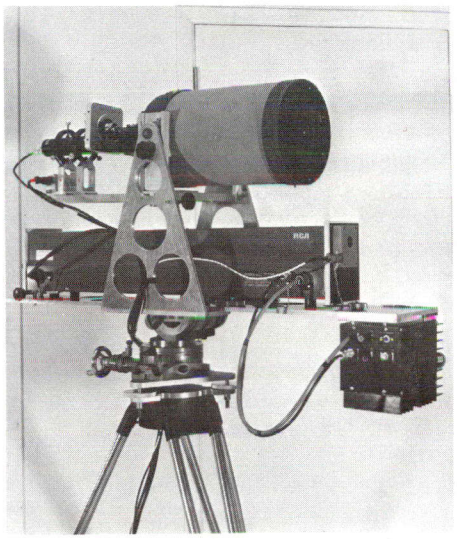
A unique system for the detection of water pollutants after dark has been built and successfully tested by scientists of the Inland Waters Directorate, Environment Canada. Consisting of a laser, telescope and optical filters, it has measured the fluorescence of water at ranges up to 75 metres and has detected oil slicks from altitudes of 300 metres. It has also detected rhodamine dye and chlorophyll in open water, and lignin sulphonates in pulp mill ponds.

According to the researchers this equipment has two special advantages over other systems. It is small and light enough to be readily airborne and it does not require a sample of the material to be identified.



Photos: Environment Canada

This equipment, mounted in an aircraft, has detected oil spills at night from an altitude of 300 metres.



Land-based "fluorosensor" for monitoring water pollution.

The apparatus has detected fluorescence from oil-refinery wastes and pulp plants' settling ponds, as well as controlled spills of oils and dyes in tests conducted off the Bahamas, along the Ottawa River and in the area of the Port of Montreal.

At ground level, the system has been used to examine river water and, on board a ship, to monitor chlorophyll concentrations in Lake Erie.

A blue light from a low-powered laser excites fluorescence in the target area, and an eight-inch telescope focused on this area collects the light. Optical filters are used to block the reflected laser light and select pertinent wavelengths from the fluorescent spectrum of the target. This light is converted to an electrical signal by a photomultiplier tube, processed and recorded on a strip chart.

The new system, which appears to be ready for market development, was developed by Dr. A.R. Davis of the Water Science Subdivision and H. Gross, Dr. J. Kruus and Dr. R.A. O'Neil of the Remote Sensing Subdivision, Inland Waters Directorate.

Canada/U.S. meeting on Great Lakes Water Quality Agreement

Canadian and United States Officials met earlier this month in Ottawa for an exchange of views on the first annual report of the International Joint Commission on the Great Lakes Water Quality Agreement. The officials also outlined steps under way to control and abate pollution from municipal and industrial wastes, vessels, and other sources. The agreement signed in 1972 by President Nixon and Prime Minister Trudeau, commits the Governments of Canada and the United States to coordinated programs of action for restoring and preserving the Great Lakes. The two sides noted with satisfaction the International Joint Commission's conclusion that despite the short period of time covered by the report there has already been an indication of beneficial effect on water quality from activities under the Agreement. This bodes well for the future as these activities are now gathering full momentum.

The two sides examined the report of the International Joint Commission and the various recommendations it contained. In particular they studied measures to assist the Commission in discharging obligations under the Great Lakes Water Quality Agreement to monitor and report on progress being achieved in Canada and the United States to meet the object specified in the Agreement. The two sides welcomed the efforts made to date by the International Joint Commission in this regard and agreed that the two Governments would make every effort to respond positively to the recommendations contained in the International Joint Commission's annual report. Further, the two sides noted the International Joint Commission's concern in its report that adequate staffing and funding has not, as yet, been provided to the International Joint Commission regional office in Windsor, Ontario. However, they were pleased to learn that some further progress had been achieved with respect to staffing. They agreed to explore together ways by which further necessary support could be provided to the International Joint Commission. A small working