

zations accounted for 62 per cent of the total in 1967-68. The Canada Council is the main source of funds for research in the social sciences and humanities. Other major contributors include the Defence Research board, the Department of National Health and Welfare and the Department of Energy, Mines and Resources.

A further report on federal financial assistance for post-secondary education is being prepared for release shortly.

WATER-DROPPING AIRCRAFT

The development in Ontario of water-dropping equipment for aircraft with floats to help fight forest fires began just after the end of the Second World War. At that time, the province's department of lands forests installed intake valves fitted with a non-return device into the floats of a *Norseman* aircraft based at Temagami. The valves enabled the aircraft to scoop up water into the oversized floats as it taxied forward, and then release it in flight as desired. Although the basic idea proved sound, technical difficulties, and unsatisfactory results forced its abandonment.

In 1949, the department reverted to a more primitive method of dropping salvos of latex-lined paper bags containing three or four gallons of water. The equipment required for the system was cumbersome, and although it is reported the drops did have some effect on unmanned fires, the system was never really accepted by forest-protection officers.

The next attempts were made with removable tanks mounted in the aircraft but, because of the numerous problems and the limitations of the system which reduced its practicability, these trials were abandoned before their development had progressed to any great extent.

The real breakthrough came with the development of cylindrical, detachable, float-mounted aluminum tanks. Water was forced into the tanks through a snorkel tube that projected down below the surface of the water as the plane taxied forward. To empty the tanks, the pilot released a catch and they rolled outwards, spilling the water from their open tops. Although this system proved effective, it did not concentrate the water into a deluge as was desired. Later versions were somewhat improved by having the tanks empty to the inboard side of the floats so that the water from both tanks would merge just after being released. This system is still used by some commercial operators in the province.

Later, a single, central belly tank was developed for the *Otter* aircraft to take the place of the two float-mounted tanks and to provide a slightly greater water-carrying capacity. Water was picked up through two snorkel tubes.

PERMANENT FLOATS

The latest system that has been developed by the department is a permanent installation in the floats of the aircraft which eliminates any drag associated

with the previous system. In essence, it is a reversion to the very first system tried. Water is picked up through retractable clam-shell type probes while the aircraft is taxiing and is fed into tanks in the compartments of the floats. An automatic load-selector enables the pilot to choose the proper load of water in gallons for the aircraft. As fuel is consumed during an operation, water loads can be increased to a maximum of 140 imperial gallons for the turbo *Beaver* and 230 imperial gallons for conventional *Otter* aircraft. Taxi distances required for water pick-up are relatively short for both types of aircraft, which enables them to work out of small lakes.

This latest development as an integral part of the aircraft's floats, permits it to be used for cargo or passenger transport, but at the same time makes it immediately available for the suppression of fires without the removal or installation of special equipment. It has not been necessary to acquire special or additional aircraft for this role.

CATTLE IMPORTS

Canadian breeders will again this year, be able to import cattle from France and Switzerland, providing the disease situation in these countries continues to be favourable.

Since the first importation in 1965 from France, more than 800 head of breeding cattle have entered Canada through the maximum security quarantine station at Grosse Ile, Quebec. This figure includes animals that will be released from the station this spring.

The object of the Canada Department of Agriculture's importation programme is to provide breeders with bloodlines that will add to the profitability and efficiency of the Canadian livestock industry.

Since the programme began the demand for import permits has exceeded the space available at the Grosse Ile quarantine station. To ensure that permits are allocated to those who will use the imported cattle to the maximum benefit of Canadian agriculture, the Department asks each prospective importer to meet certain conditions.

European cattle brought to Canada in 1969 will begin the required 30-day quarantine period at Brest, France, in late August or early September. From there they will be transported to the Grosse Ile quarantine station for disease tests.

POPULATION OF CANADA

Canada's population as of January 1 was estimated at 20,940,000, an increase of 310,000, or 1.5 per cent, since January 1, 1968. The increase between January 1, 1967, and January 1, 1968, was 378,000, or 1.9 per cent. The smaller increase during the past year was mainly owing to a decrease in the number of immigrants and a small decrease in births.