

## FISHERIES RESEARCH PAYS OFF

An experiment in salmon-packing, involving a new system known as "partial freezing" developed by scientists of the Fisheries Research Board of Canada, has paid handsome dividends in British Columbia.

The venture involved four chilled-brine boats owned by B.C. Packers and two owned by the Canadian Fishing Company which, last summer, were sent on what is believed to be the longest salmon-packing trip on record - 4,120 miles to Bristol Bay and back. The six boats packed a total of 400,000 Bristol Bay sockeye salmon to Prince Rupert and Steveston, landing almost all in perfect condition.

Early in August, 29,000 cases of sockeye went on the market, giving the two canners a head-start for the selling season. The wholesale value of the pack was about \$1,300,000.

### HELD AT 25 DEGREES

The fish were held in salt-reinforced sea-water at 25 degrees F., using a system developed at the Vancouver Technological Station of the Fisheries Research Board. Mainly involved in the project were the station's chief of biochemistry, Dr. Neil Tomlinson, and research engineer Stewart Roach. Although laboratory tests had been conducted earlier, there had been no opportunity for a full-scale commercial test until last summer.

The FRB scientists afterwards described the operation as "an unqualified success", stating that between 75 and 80 per cent of the pack was Grade A fish.

### ARMED FORCES BILINGUALISM

The Department of National Defence will set up new language-training centres at 28 Canadian Forces bases in Canada and Europe by September.

The training will provide some men with a practical degree of bilingualism, and will prepare a large number for advanced language courses at other institutions.

The new language centres will not replace but will augment existing programs, such as those at the Canadian Forces Language School, St. Jean, Quebec, and military participation in the Public Service Commission language-training program.

Plans are now being made to expand the program in 1972 to cover other bases and stations. The program will cost \$1,240,500 for the first year of operation, and slightly more than \$8 million over the first five years.

The course is an advanced form of "programmed

Mr. Roach explained that a big advantage of the system is that it can be put into operation with present equipment. "Brine-freezing is very efficient - in fact no other system can be loaded as fast," he said. "We can literally put the fish in as fast as they can be put aboard."

The scientists are looking forward to another large-scale operation using partial freezing, and in the meantime have been working on improving the brine circulation system to give more efficient cooling.

### PERIOD OF RESEARCH

The principle of storing and transporting salmon in refrigerated sea-water has been researched and developed over a 12-year period at the Vancouver technological station.

Under the normal system, fish are chilled to 31 degrees F. in storage tanks aboard the packers. This is an ideal method of rapidly chilling and holding salmon for short periods up to seven days. With the new system of "partial freezing", fish can be stored safely for up to 17 days.

Mr. Roach said that the term "partial freezing" is used because fish flesh does not freeze at a fixed temperature like water. The water in the salmon's flesh (salmon is 64 per cent water) is frozen out and the remaining fluids are concentrated so that their freezing point is lowered. Thus, although the salmon become firm at 29 degrees, they are still only about two-thirds frozen even at 25 degrees. But at the lower temperature spoilage caused by bacteria practically ceases.

learning" and will be carried out by civilian instructors. Each student will be loaned a cassette recorder and taped lessons with which to work. The students, all volunteers, will have to spend an average of six hours of their own time each week to keep up during the 40-week course. They will also work with their instructors for half a working day each week for review, individual help, and for a preview of the next assignment.

The new facilities are designed to accommodate 1,400 students in the first year and 2,500 a year starting in autumn 1972.

Installations at which the training centres will be established this year are CFBs Halifax, Shearwater, Greenwood, Summerside, Esquimalt, Montreal, Gagetown, Valcartier, Petawawa, Calgary, London, Winnipeg, Borden, Kingston, Moose Jaw, Chilliwack, Cold Lake, Bagotville, Chatham, Comox, North Bay, Trenton, Toronto, Uplands, Rockcliffe, Edmonton, Europe and CFHQ Ottawa.