

temperatures, to study the migration of fish from the Pacific into our rivers. Our international salmon commission did a remarkable job in forecasting when the fish will arrive at our coast points, which was important information. We wanted to know the effect the temperature would have on the fish movement at different times of the year.

The second problem with regard to fish speed and water temperature was also an important one. The construction of fishways such as Hell's Gate in the Fraser river canyon is of great importance to our salmon fisheries. Hell's Gate was a barrier in the canyon that choked off the Fraser river salmon and the Hell's Gate fishway was built to overcome that. It is not an ordinary fish ladder we had built in because the river rose and fell ninety feet during the seasons and such a ladder would be useless. It is a series of baffles through which the water is channelled leaving eddies behind the baffles and the salmon dart up these eddies in successive stages. This experiment was carried out successfully with sockeye salmon. However, one problem we had to overcome was how far apart each baffle should be made, what the speed of the water should be which the salmon could overcome. We wanted to have a number of baffles designed so as to allow most of the salmon to get through at most temperatures. Fish, like people, get sluggish under certain temperatures. This goldfish study was carried out in order to determine the range and cruising speed of the fish. It is true we used salmon after the pattern was established, but this was one of these cheap little lab experiments such as those carried out by the agricultural scientists on the fruit fly to establish primary facts.

The hon. member for Moose Jaw mentioned another pamphlet and if he had read the whole title he would have found out why it was published. The title he read was "The Effect of Fin Clipping on the Cruising Speed of Goldfish". That is where he finished, but the rest of the title goes on—"and Cohoe Salmon Fry". We carried our experiments by clipping the fin off the goldfish and by these experiments we were able to obtain important information with regard to the west coast salmon run.

The little fingerling starts off in the stream where it is born and is lost out in the Pacific for two years. We wanted to know where it went and if it always came back to the stream in which it was born. We cannot tag a fingerling, it is too small. What we can do, however, is clip one small fin, either

dorsal or ventral, off a number of fingerlings from our streams, and check on the adult fish that way.

One thing that bothered the scientists was what effect the removal of one of these rather superfluous fins had on the fingerling in its ability to swim. We used goldfish first, then coho fingerlings, and through our experiments we proved that this fin was as superfluous as an appendix is in most people and the removal had little effect on their ability to survive.

The last one referred to by the hon. member for Notre Dame de Grace was "Abdominal Width and Sexual Maturity of Female Lobsters on Canadian Atlantic Coast" published in 1944 and which is out of print at the moment. Hon. members laugh. I do not know the hon. member for Notre Dame de Grace except for seeing him across the floor of the house, but he is old enough to know about the birds, the bees and the flowers. Lobsters do it too. It is quite true that we can leave it to the male lobster to be able to recognize when the female lobster matures, but what we have to know is under what conditions and at what size she is mature. The lobster fishery is the most important fishery we have on the east coast. All our fishing regulations must be framed around this one important point: First of all, at what time of year and under what conditions do they breed. We want to know the size of the female lobster when she reaches what I suppose in the human world is called puberty. You cannot have any rule of thumb on the matter of size, no more than you can have one with regard to people. The system devised by one of our own scientists, which is something we will understand, is the actual pelvic width, if you will, of a female lobster in relation to her length. The effect of temperature of the water is also important. In warm waters female lobsters are bigger; it takes them a shorter time to come to sexual maturity than it does in the colder waters on the Nova Scotia coast. It is for these reasons we framed the conservation rules which the hon. member for Charlotte knows so well, as do other maritime members, in order to see that, first of all, the size is such that at least these female lobsters are going to have a chance to come to sexual maturity so that they will reproduce and so so that we shall have a continuing harvest. So much for research.

The other two things which are of major concern in fisheries are first of all conservation. Unless we conserve our fisheries as well as we can without impairing the chances of an equal harvest being taken next year,