

fish for food purposes, a good canning fish, but falls off considerably in its colour when it is canned, so that up to the present time the demand for it has not been as great as for any of the others, and not as great, as a general thing, as the supply. These fish all die after spawning, so that you have that clear issue to keep in mind, that these fish spawn once and die. We catch them coming in from the sea to spawn, so that the time when they are caught is comparatively short. They are all what is known as anadromous fish, that reach their maturity and growth in the sea, but have to get back to the fresh waters of the rivers and lakes to reproduce. They stay in the rivers and lakes different periods. The Fraser River, as you will see by a glance at the map, is potentially the greatest salmon river on the Pacific coast—and that means in the world. It drains, I think, speaking from memory, over ninety thousand square miles of territory. What makes it so capable from a salmon-reproducing standpoint is the tremendous area of spawning ground that is tributary to it. The fishing in the Fraser began commercially about 1876. One other point that I should have stated to make the whole matter clear is that in connection with this salmon—in fact, with all salmon—what is known as the homing theory has now been practically vindicated beyond reasonable doubt; that is, that the fish not only come back to the area in which they were hatched, to the river in which they were hatched, but very largely to the tributary stream in which they were hatched.

*By Mr. Grimmer:*

Q. Have they demonstrated that on the Atlantic too?—A. That has not been demonstrated to such a great extent on the Atlantic, but the evidence that way tends to confirm the correctness of it there. On the Pacific coast now there is not very much doubt about it. Therefore you will see that not only each stream is its own problem, but each tributary of each stream becomes a particular problem, and if you are going to maintain a system of fisheries you have to maintain the whole of that river system.

*By Mr. Neill:*

Q. If that roe is transported to another river, will they go back to the river in which they were originally bred?—A. The river in which it was hatched. The experience shows that there is very little doubt that if you stock a river the fry from that river come back to that river, not to where the eggs came from. It is a matter, no doubt, of instinct, coming back to the waters in which they were originally brought up.

Q. That is established, is it?—A. I would not say that it is absolutely established, but the information, I think, that we have is so confirmatory that I know of no authority that takes a contrary view. We have in the Fraser River a very peculiar phenomenon, known nowhere else; that is, a tremendous run every fourth year, followed by three off years. That existed as far back as the historical record goes. A great big run every fourth year is followed by three smaller ones. For instance, 1921, 1917, 1913—which was, as I will show you in a moment, the last big year. The causes for that we can only conjecture. It is probably that it was due to a slide from the mountain into Hell's Gate canyon in the very early times. The rapids and falls up which these fish go is astonishing, in making their way up to the spawning grounds. About 125 miles up the river there is a great canyon; I do not remember how wide it is, but I think at its narrowest point it is not more than about 70 feet wide, and through that the whole Fraser river is forced to pass, between walls of rock. That is known as Hell's Gate, and has always been a difficult place. It is quite probable that in the early days a slide came down into that narrow passage which blocked the ascent of fish entirely the year in which it came, very largely the second year when some of it would be washed out, less the next year, and by the fourth year that nature had washed it all out again. That seems to be a reasonable explanation of a big fourth year and three small years, backed up by the fact that in the big year

[Mr. W. A. Found]