

CHAPTER XXVIII

THE COLUMBIA RIVER SALMON

A description of the Columbia River would not be complete without something more than a reference to that most highly-prized of all fish, the *Salmon*; and which, more than any other of its products, or its scenic attractions, has given the River a world-wide reputation.

I saw not a single salmon on my trip down the River, because, by the time the fishing-grounds were reached the fishing season was over. The "run" had been unusually light, had ended early, and the fishermen and cannery employees I talked with complained about the little money they had been able to earn, and expected to be heavily in debt before the winter was over.

However, I am familiar with the North Pacific Coast salmon, not only as they are found in the Sacramento and Feather rivers of California, but in the rivers of Alaska and Western British Columbia. In the latter two countries I have seen them in great hordes, not only wending their way to the spawning beds, but being taken by fishermen both in salt and fresh water. I have watched them while spawning, have shot them with rifle and pistol, killed them with clubs, and hooked them with a gaff. I have lived on them for months, and have visited the canneries and observed the operations of packing. In view of per-

sonal experience with the fish in other waters than the Columbia, I feel qualified to give a general description of them, and of their habits, and the methods by which they are caught and packed for the market.

The North Pacific Coast salmon are of five species: the chinook, or king salmon, which weigh on an average about 22 pounds, but occasionally reaching the great weight of 70 to 80 pounds; the red, blueback, or sockeye, weighing from 5 to 8 pounds; the silver, or coho, weighing from 3 to 8 pounds; the dog, weighing about 9 pounds; and the humpback, or pink, weighing from 3 to 6 pounds.

Salmon attain their full development in salt water, and when the spawning "urge" is on seek fresh water streams in which to perpetuate their species. Salmon will take the hook in the sea but after entering fresh water they feed no more, eventually ending their lives by starvation. Having reached the flowing water of a stream they never turn back, but ascend in great hordes, often leaping cascades 10 to 12 feet in height, not easily discouraged by such obstacles, which many fail to overcome and die in the attempt. The object of their migration is to reach clear, shallow, running water, with gravel beds favorable to the deposition of their eggs. The stream selected may be anywhere from a foot to four feet deep, and in these the fish gather in great numbers, so dense in places as to be almost a solid mass; in spite of which they are rarely quiet, but are in constant commotion, either engaged in the activities of spawning or fighting one another. While spawning they



—Photo, by Merigean

SALMON LEAPING CASCADES OF EAST CHANNEL, KETTLE FALLS

usually pair off, and with snout and tail excavate a broad, shallow trench in the bed of the stream in which the female deposits her eggs, which the male covers with milt—a white, milky-looking substance. The eggs are round, about a quarter-inch in diameter, are soft but have a tough integument, and being heavier than water they sink to the bottom, where they are covered by the pair with stones and gravel. The young, which are called "parr," are hatched in the course of four to six months, and at first are nourished from a sac suspended from the belly and containing the yolk of the egg, the sac being finally absorbed. After attaining a length of several inches the parr depart leisurely downstream to the sea, reaching it the second spring, and they are then known as "smolt." In salt water they develop rapidly in size, become silvery in color, and are called "grilse," and when between two and three years old reach the stage when they are "salmon." Having come to the right period of development, like their progenitors, the immutable law of their natures compels them to seek spawning grounds at which to perform their duty of reproduction.

When the salmon start their inland journey, they are symmetrical in shape, are covered with scales, and are a bright silvery color. After reaching their destination, a marked change takes place in their appearance, more pronounced in the male than in the female; although due to lack of food and their exertions they both become thin to the point of emaciation. They lose their scales, the female becomes slimy, and dull and blotchy in color, while the color

of the male changes to various shades of black or red, the sockeye becoming a bright red. The lower jaw of the male elongates until it is projecting, both jaws become hooked, the front teeth get very long and canine-like, sometimes so much so that the mouth cannot be closed and producing a wolfish appearance. As the body thins, the shoulders thicken into a pronounced hump, which is more noticeable in the pink salmon than in any other.

After spawning the salmon become known as "kelts," many of them are blind, and all of them are covered with sores due to striking against rocks and fighting. Their movements are languid and they soon die of exhaustion; and if their bodies are then dissected they will be found to be void of eggs or milt. At the end of autumn the shores at the spawning beds become veritable cemeteries of fish-bones, which disintegrate rapidly and are practically all swept away by high water in the spring.

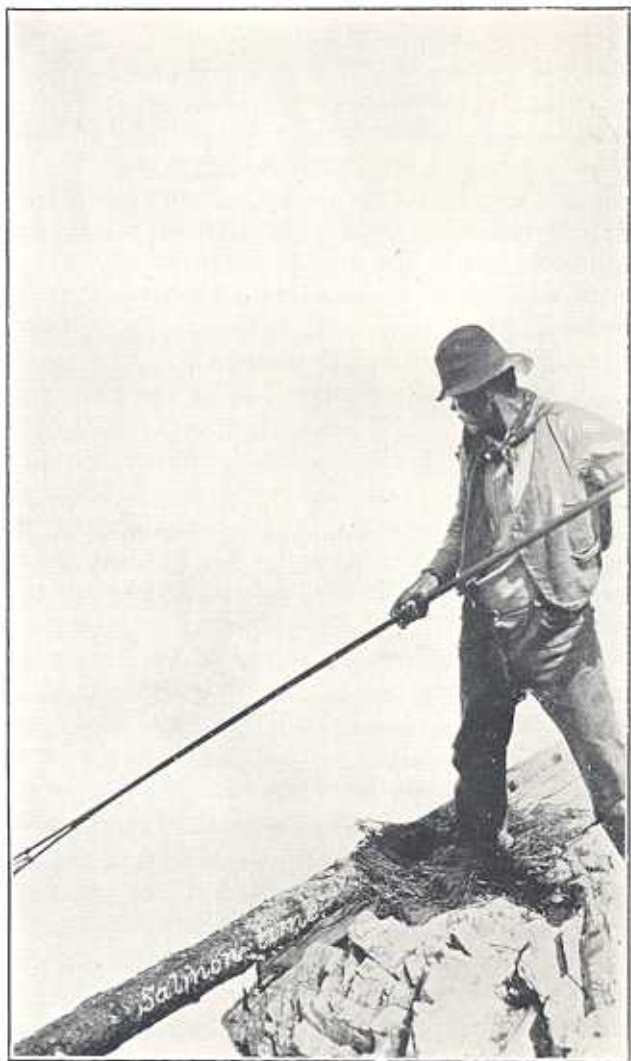
It is claimed that salmon spawn at the age of four years, and that they almost invariably come to the place of their birth for the purpose. Little is known about their habits or where they go in the ocean. But it is probable that they do not depart far from the mouth of the river in which they are hatched, and that when ready to spawn their native stream is naturally the one nearest at hand. Although four years is the age at which salmon become fecund, there is a "run" every year, alternate hordes of them utilizing the same stream.

All five species of the North Pacific Coast salmon have been found in the Columbia River, but the king,

or royal chinook, is the most prized and staple fish taken in its waters, not only on account of its size but on account of the quality of its flesh. When the upper Columbia first became known to white men, salmon ascended as far as Windermere Lake, for the ancient spawning beds were pointed out to me at Athalmer, with the statement that they are frequented no more. Salmon are now rarely seen above Kettle Falls, but the early spring run is still known to ascend Snake River to Salmon River in the Sawtooth Mountains, a thousand miles from the Pacific Ocean.

The salmon are followed from the sea to the spawning beds by dolly-warden trout, or char, a member of the salmon family, but of different habits from the true salmon, and who do not die after spawning. The dolly-warden I have seen and caught weighed from 1 to 3 pounds, but it is claimed that individuals, in some localities, attain a weight of 12 pounds. These trout arrange themselves in line immediately behind the spawning salmon and feed on such stray eggs as the current carries to them. The salmon seem to pay no attention to the trout, nor do I believe the latter attempt to reach the covered eggs but content themselves with those that the constant agitation of the water causes to float their way. The spawning season at an end, with no more eggs to feed on, sleek and plump in appearance, the dolly-warden wend their way back to salt water.

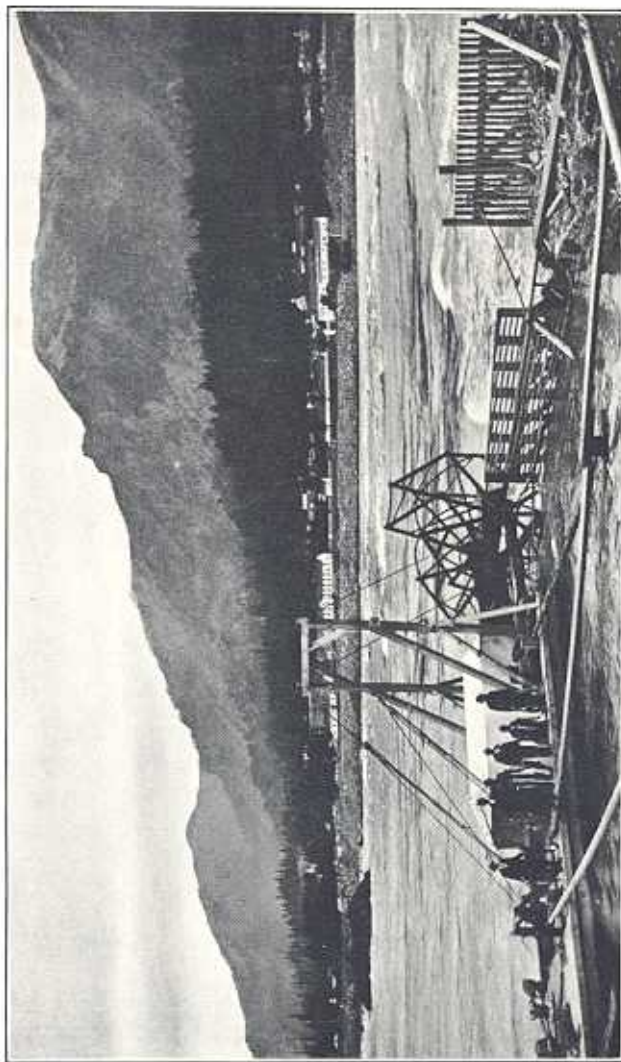
My first introduction to commercialized fishing on the Columbia River was at Celilo Falls, and, thereafter, the contrivances used for taking the fish



—Photo, by Merceau

INDIAN SPEARING SALMON

and the canneries for packing them were constantly in evidence all the way to Astoria. These contrivances are varied. While the Indians have adopted some of the white men's methods, the two-pronged spear at the end of a long handle is still used by them. Salmon for commercial use are not taken at the spawning beds, where they soon become defective, but while they are still fresh and unmarred as they wend their way upriver to the beds. In that part of a river where there is a strong current, the use of fish-wheels is a favorite method of trapping the fish who, as they breast the current, almost invariably follow the shore, where the resistance is lessened. Fish-wheels are of two kinds. They are either permanent structures established at the shore, or they are erected on scows and are movable from place to place. Both kinds are similar in construction and operation. They consist of a framework supporting wheels from 20 to 40 feet in diameter and from 6 to 8 feet wide, provided with scoop-shaped, wire-meshed arms that revolve with the current, in which they are placed far enough offshore to be operated. Intercepting the pathway of the fish as they travel upstream and diverting them to the wheel are "leads" made of a line of wire-screened piling, and as the wheels revolve they scoop up the fish and dump them above upon an inclined platform from which they slide into the scow, or into a pond, from which they are withdrawn as wanted. Immense numbers of salmon are taken by fish-wheels. Instances are known where a single wheel has scooped up eight tons in one day's operation.



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FISHWHEEL AND VILLAGE OF CASCADE LOCKS

Where fish-wheels are ineffective because of lack of current, salmon are ensnared in fish-traps. These consist of a rectangular, net-lined enclosure of driven piling, called "the pot," placed a short distance offshore, into which an intercepting wing, or wings, lead the fish through a funnel-shaped entrance out of the small end of which the entrapped creatures cannot find egress. Some fish-traps are made with two enclosures. A single lead extends into the first, which on account of its shape is called "the heart"; the point of the heart tapers into the second, where the fish are impounded, and is known as "the pound." Fish-traps are often of large size, capable of holding many thousands in the pot, or pound, where they remain alive until wanted for the canneries.

There are several other methods of taking salmon. One is with gill-nets stretched from the shore in which the fish become entangled by their gills. On the tide-flats seining is done with long nets laid out across the channel. The net is made fast at one end, the outer, unsecured end is towed to form a purse and is then dragged ashore by horses. This is called purse-seining. Outside the entrance to a river, where salmon will still take the hook, trollers in their fishing boats get the first chance at the silvery horde; there also, deep sea purse-seine boats operate; and fish-traps are frequently placed alongshore in salt water. I have also seen salmon snagged below the mouth of small streams with a many-hooked, weighted line, several hundred feet long, which is cast from a distance into the swarming mass and

almost invariably lodges in the flesh of some unfortunate.

Some of the salmon are, of course, eaten fresh, others are salted down, and still others are smoked, but most of them are preserved by packing in tin cans at packing-houses called "canneries." There are 21 canneries distributed along the Columbia River, the majority of which are located at Astoria. The amount of the annual pack is about 600,000 cases, having a value of about \$7,500,000.

Many of the canneries have their own traps, but all buy of independent fishermen. To further promote the salmon packing industry the states of Washington and Oregon operate a number of fish hatcheries, maintained by licenses issued to the canneries and fishermen. Millions of salmon are hatched each year and are released into fresh water from which they go to the ocean to develop, and in due time seek their natural spawning beds.

Besides Americans, a great number of foreigners follow the occupation of fishing, and especially at Astoria many Finns, Norwegians, Russians, Italians, Sicilians, Greeks, and a sprinkling of other nationalities are fishermen, and live mainly in the east end of the city.

The salmon run on the Columbia River usually starts in February or March and extends to August or November; but, to prevent annihilation, the season for catching them is not open until May 1, thus allowing the early comers unhindered passage to the upper reaches of the rivers to spawn.

Much of the work at the canneries, such as clean-

ing, cutting up, topping, testing, boiling, and labeling is done by machinery and is largely automatic. Most of the necessary labor at the Columbian canneries is performed by Chinese, Japanese and Filipinos, and is contracted ahead for the season. In Alaska, many of the cannery employees are Indians.