

outlay for a cannery. Some years ago, the establishment of a factory for the utilization of sardines was contemplated at the mouth of the Columbia, where, during a brief period in each year, sardines may usually be taken in abundance; but the shortness of the season deterred the consummation of the plan. It is possible that within a few years the canning of sardines may be undertaken in connection with the packing of salmon at a few places on the more northern parts of the west coast, where there is a short run of sardines that can be utilized without the necessity for expensive special machinery, etc. This matter has already received the consideration of some salmon-canneries; but the general canning of sardines by salmon-packers is not anticipated so long as the supply of salmon lasts.

Personal observation and inquiry, the testimony of fishermen and dealers, and the studies of ichthyologists afford ground for the belief that the successful operation of a sardine cannery can not be expected any farther north than San Francisco, and the history of the industry at that place seems to indicate that the northern limit of satisfactory work is even farther south. South of San Francisco the prospects of a profitable business appear to be in direct relation to the latitude; the more southern the location of the cannery the more constant and abundant the supply of fish.

It is probable that at some places on the coast, more especially to the northward, the conditions for the successful canning of anchovies are very good. In a paper presented to the World's Fisheries Congress at Chicago, entitled "Notes on the fisheries and fishery industries of Puget Sound,"* Mr. James G. Swan devotes a chapter to the sardine (i. e., anchovy) fishery of that region, and mentions the advantages which the sound possesses for the establishment of a canning industry. Writing of the anchovy, he says:

When taken in Monterey or San Diego bays, it is only fit for bait; but in Puget Sound, which is its northern limit, it is in perfection, and is one of the fattest and most deliciously flavored of the small fish, and is considered by experts to be far superior, in point of flavor and richness, to the best Mediterranean sardine. Some Norwegian and Russian fishermen here have put them up, in limited quantities, in vinegar and spice, and they are delicious and sell readily; but the men who attempted the enterprise are without capital, and there has been no one with executive ability to push the business forward to a success. The anchovy come to Puget Sound in enormous quantities, and during their season, from May to November, every bay and inlet is crowded with them. When they first come from the ocean they appear in Clallam Bay, on Fuca Strait; then in Port Angeles, Dungeness, and Sequim bays; then in Port Discovery, and next in Port Townsend and Scow bays, where their numbers are almost incredible. I have known them to be in such masses at Port Hadlock, at the head of Port Townsend Bay, that they could be dipped up with a common water bucket, but as there has been no demand for them the fishermen do not consider them of value, and when hauling their nets for smelt they generally let the anchovy escape. The anchovy differ from herring in one respect—the herring, when they visit the bays, keep inshore and are easily caught in seines and landed on the beach; anchovies, on the contrary, keep out in deep water and seldom approach the shore, so that drag seines are of no use to capture them. They can be best taken with purse seines, as mackerel are taken in the Atlantic. As these fish are small, not much over 6 or 7 inches in length, they require a net with a small mesh, and with suitable gear an enormous quantity can be secured.

Sardine-canning at San Francisco.—In June, 1889, a canning factory was established in San Francisco, which continued in operation until August, 1893. During the five years in which the cannery was run the yearly pack was from 5,000 to 15,000 cases.

The canned fish consisted chiefly of anchovies in oil in quarter-pound-cans and large sardines in 1-pound and 2-pound round cans. The fish consumed at the factory were caught in San Francisco Bay with haul seines. In the earlier years sardines

* Bulletin U. S. Fish Commission 1893, article 42, pp. 371-380.

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