(notoriously named after the Chinese workers it replaced) helped expand production, as did investments by Del Monte, Libby's, and A & P, each of which took over large chunks of the industry. In 1903 the *New York Times* described canned salmon as "one of the most important food products of the world"—an admittedly exaggerated claim that the corporate canners, with their marketing clout, helped make truer.[27] Even as production exploded, though, the canners' own publicity was oddly modest. In the 1908 pamphlet *Interesting Facts about Canned Salmon,* the Alaska Packers' Association noted that "while there need be no present fear for the diminution of the salmon supply, the canned product will not increase in quantity, the fish being so much sought after in their fresh state . . . Fresh fish handlers with refrigerating appliances have invaded every salmon district . . . and they are paying more for the raw fish than the canner can afford."[28]

Sins of the Freezer

The packers' predictions were premature. Alaska's output of canned salmon increased dramatically over the next few decades, while exports of the fresh fish barely registered. In 1939, for example, canned salmon exports earned $34.4 million, and fresh exports less than $285 thousand. This isn't surprising given the remoteness of most of the territory's fisheries. Even with twenty-first-century technologies, shipping fresh salmon out of Alaska by boat is feasible only from the southeast, and only to nearby markets such as Seattle or Vancouver BC.[29]

Given the shipping options available in the first half of the twentieth century, freezing salmon was much more practical than canning it. Yet Alaska's 1939 exports of frozen salmon amounted to only $303 thousand. Although the territory's exports of frozen halibut were more substantial, the paltry figures for its most famous fish are remarkable, especially since the salmon selected for

freezing were the most prized varieties—coho, sockeye, and king. Compared with canning, freezing required less labor and fewer materials, both of which had to be imported at considerable expense. It also kept fish in a form that, in theory, resembled and could be substituted for fresh, arguably giving it more center-of-the-plate appeal than any kind of canned fish (especially one widely used as army rations). Nonetheless, frozen fish suffered from a stubborn image problem. Even as techniques improved and the industry insisted that frozen fish was as good as, better than, or the exact same thing as fresh, consumers didn't trust it. How did a preservation technique so suited to fish's perishable nature earn such a bad name? As always, the answer lies less in the technology itself than in the way it has been used.

Admittedly, in the early days the technology was crude. In fact it was considerably less effective than Northern peoples' traditional practice of freezing fish in the winter air, which reached temperatures of minus 40 degrees Fahrenheit. Neither the ice-filled boat smacks and storage rooms used in the mid-nineteenth century nor the ammonia-chilled "sharp freezers" developed later were nearly as cold, and so they could not freeze their contents nearly as fast. When fish freezes slowly, the moisture in its flesh forms large ice crystals that eventually rupture cell membranes. Upon thawing, water leaks out, the cells collapse, and the fish tastes like mush. Its eyes and gills also lose their brightness, which turned at least some fishmongers against freezing from an early date. At London's 1883 International Fisheries Exhibition, merchants claimed that frozen fish, while not spoiled, had a "wizened and disagreeable appearance . . . as if it were stinking."[30]

Although most foods suffer from slow freezing, many of the efforts to develop faster methods focused on fish. In 1862 Enoch Piper of Camden, Maine, received the first U.S. patent for a fish freezing method. He froze salmon on racks beneath pans of ice and salt, which both chilled faster than ice or cold air and prevented