

XXII.—EXTRACT FROM THE REPORT OF A. ANNANIASSEN ON HIS VOYAGE TO ICELAND.*

MANUFACTURE OF KLIP-FISH.

a. As soon as the fish are taken from the water, and while they are still living, their throats are cut.

b. After the fish are split they are placed immediately in the sea and washed with a brush, and the blood and the black peritoneum are carefully removed. The washing is done entirely in salt water, and the fish are not salted until most of the water has been drained off.

c. The method of splitting is exactly like the Scotch and Faroe Islands methods. The portion of backbone remaining in the flesh by these processes is left in the opposite side to that which obtains in the Norwegian system; from 18 to 22 vertebrae are left in, according to the size of the fish. The backbone is cut obliquely across one or two vertebrae. The splitting-knives (*lungknive*) are of English manufacture, having a thin blade somewhat rounded at the point.

d. After the fish are washed they are left to drain for one hour, so that the water may run off, after which they are salted. Liverpool salt is used for the most part in Iceland, one barrel of salt being employed for about 100 large fish, which may be estimated to weigh 1 *skippund* (320 Danish pounds) in the dried state. If, however, the fish are smaller, a barrel of salt is required for such a number of fish as will weigh 1 *skippund* in the dried condition; this number may vary from 100 to 160 fish, and the man who does the salting must be accustomed to estimate the number of fish required. The salting is done in heaps, without any fixed height, varying only according to the capacity of the shops or salting houses. After the fish have remained salted thus for two or three days, they are relaid in a similar pile with the addition of a very little salt, about one-eighth of a barrel to the *skippund*. After they have remained thus for some time they are ready to be washed previous to drying, the washing being carefully done in salt water with a brush. If, however, it should be so late in the fall that the drying must be deferred until the following spring, the fish are left in their first salting, and in that case sufficient salt is used so that no fish may

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come in contact with another. In the spring the fish will be of the same quality as if they had been caught the same year. They make, as far as I am aware, no difference in salting between the fresh fish and those that remain over. There is no salting in vats (*kar*), but bins or heaps are everywhere used. The fish which are caught in the fall, and which cannot be dried the same year, are always thoroughly rinsed and washed clean of blood before they are salted, and the black membrane is removed, just as when they are washed for drying. I observed that after the resalting of the fish is finished, all the salt which is not taken up by the fish is again mixed with the fresh salt, and in this manner is used many times. After the fish are washed out they are laid in small bundles or heaps. The fish are all laid in the same way, and remain lying in this position until the water has drained off and a little stiffness is perceived in them. If there is an opportunity the next day to get at the fish for drying, it is improved. In the opposite event the fish are laid in square heaps, which contain not more than 100 to 150. In case there should be no drying weather upon subsequent days, the fish are repiled daily. After one or two days of drying the pressing process begins, and this is repeated successively as the drying progresses. When this process has advanced to the stage in which the final pressing is about to take place and the fish are collected into larger piles of about 20 *skipfund*, these are covered with mats, and boards are placed on top of them in the form of a roof. Then on the top of this is laid a thickness of stone equal to that of the fish in the pile, this method of pressing being universal. The fish remain under this pressure four or five days, and, if the weather allows, they are laid out again after this time; but immediately upon being collected again they are weighted with the same pressure. If the weather should be unfavorable for any further drying after this time, the fish are repiled daily and weighted constantly with the same pressure until they are dry.

The principal difference between our mode of drying and the Icelandic method is that the pressing process contributes most largely to the drying of the Icelandic fish. The sun is seldom so warm in Iceland as to injure the fish, but this may sometimes happen.

e. The drying place consists of cobble-stones, which are for the most part artificially laid. Boards and twigs are also used to some extent. The advantage of the Icelandic drying place is that the air circulates above as well as below.

The reason that the Icelanders press their fish so much more than we do is to be found, first, in the fact that the fish are salted more, and, secondly, that there is more cloudy weather and less sunshine, so that they hasten the drying by constant heaping and the necessary pressing; a third reason is that the fish are fatter and thicker, and therefore endure more pressing than ours do.

Dried fish are usually one-half lighter than fresh fish, and, if the fish are very fat, they weigh perhaps a little less in proportion after drying.

When dried fish are made from salted fish, the dried product is generally one-third lighter than the salted fish from which it was prepared.

f. After the fish are dried they are brought into small store-houses and placed in large heaps, just as in Norway. Most of the store-houses in Iceland have a frame-work of posts, covered outside with boards and partly wainscoted within. They consist of a single room, and the fish are usually piled quite up to the roof, if there are enough of them. Each heap is always covered with mats or sail-cloth, as the air here is very moist, and, since the fish are strongly salted, moist air may easily penetrate and injure them.

g. Besides cod, a great many haddock, of which a considerable number are caught off the coast of Iceland, are used for klip-fish, and they are handled in just the same manner as cod. On the other hand, ling (*Brosmin*) are less common, but they are also sometimes prepared in the same manner. The wolf-fish and halibut are also split, salted, and dried as klip-fish, but they are used exclusively for home consumption.

h. Of the refuse portions of the fish very little is used. The heads are dried to some extent and used as food, both for men and other animals, but the greater portion is thrown away as useless. The air-bladders are also sometimes used. As soon as they are removed they are carefully washed in salt water to remove the blood and the black skin. They are not salted in vats or bins until most of the water has been drained off. As a rule, sufficient salt is used to make a strong brine. There is, however, no fixed time during which the fish must remain in pickle. When they are taken out of the salt they are again washed in salt water, and the black skin which then appears is peeled off. Afterwards they are hung up by strings, and dried by hanging them on the sides of the houses. They are used almost entirely for home consumption, and rarely as an article of commerce.

i. No fish which are prepared by the people of Iceland as klip-fish are pickled in barrels.

j. The principal market for the Iceland fish is Southern Spain, but many of the Iceland traders send a not inconsiderable quantity to Copenhagen, consisting for the most part of salted and moist fish. On the other hand, while dried fish are sent to Spain, no further assorting takes place for the trade, as far as I know. Haddock are sent both to Spain and to Copenhagen.*

k. The difference between the winter fish and the summer fish is that the winter fish are usually larger and comparatively fatter than the summer fish.

l. Fish caught with the hook are as a rule the best fish in Iceland, because they are always bled and are quickly salted. The mode of drying is the same for all klip-fish.

m. The liver is small and contains very little oil. From 1,000 to

*A large number of small fish are also sent to Great Britain.

1,500 cod furnish one barrel of livers. The haddock generally has a larger liver than the cod.

MISCELLANEOUS NOTES.

1. The Iceland fishermen use for the most part small boats, accommodating from 3 to 5 men, and generally fish with long lines in the fiords. When not much bait is at hand, they fish also during favorable weather, at a distance of from one-half to one mile from the shore, with hand-lines. At Westmanerne larger boats are employed, having a crew of 8 to 11 men. The fishing from this place is carried on, with long-lines and hand-lines at a distance of from one-half mile to one mile at sea. The people of Iceland also employ small sloops in the cod fishery, generally off the coast, but to some extent, also, within the fiords. They use hand-lines exclusively.

2. The fishing in Iceland begins in the month of March with the so-called spring or winter cod. It begins on the south coast at Westmanerne and off Reykjavik, and is prosecuted by the inhabitants of these localities in boats, sloops, and smaeks, but most of the fishing is done by French fishermen. It continues to the beginning of May. Most of the fishermen thereupon go to the west coast, to Isafjord, Breidbugten, Arnafjord, and Patrikfjord, where the fishing, as a rule, is at its best in the months of May, June, and July; continuing, however, through the whole year, except when bad weather and ice prevent. In the middle of August and during the remainder of the autumn, when the herring come into the fiords on the east coast, there is excellent fishing in the fiords. So far as my information goes, the best fishing places are Seydisfjord, Eskefjord, and Ofjord, on the north and east coasts, and on the west coast Isafjord and the fiords in the vicinity.

3. The Iceland boat-fishermen consist, for the most part, of vessel-owners who prosecute fishing with the help of servants hired by the year. Some of the boat-owners co-operate and fish on equal shares, with the exception of the foreman, who has a percentage of the fish, ranging, according to agreement, from 20 to 25 pounds in each *skippund* of dried fish. Again, some employ boatmen, usually by the day. Sloop-fishermen, on the contrary, are engaged for a specified time and generally receive half of the catch of fish, and all their expenses, but sometimes only one-half of their expenses. The people live chiefly upon English *kjæx* or bread, which is imported; sometimes, also, they have butter prepared from sheep's milk. They use, besides, a great quantity of whiskey, which they nearly always have in their possession. Finally, they have coffee, which is a universal drink.

4. The fishing boats of the Icelanders, according to my opinion, are very unsafe and unreliable, since they are round-bowed and cranky, and carry only a mast with a rude sail, which is seldom useful in sailing with a strong breeze.

5. The implement for the cod fishery is the long-line similar to our

own. Number 7 hooks are used, and the distance between them is from 6 to 7 feet. Long-lines are always set on the bottom, and glass floats are not used. The buoys are Scotch. They use on the hand-lines a lead in the form of a hand-lead, through which is bored a hole wherein is placed a wire about two feet long, one on each side of the lead. On the ends of the wires sticks are fastened, on the ends of which are placed larger hooks, and in the middle smaller ones. Each hand-line thus has at the most four hooks.

6. Herring are used for bait whenever they can be obtained; in the absence of these, wolf-fish and halibut are preferred, mussels also being used to some extent, and occasionally lug-worms (*Arenicola*). The last kind of bait is used mostly on the west coast.

7. The stomach contents of the cod are principally crabs and mussels; sometimes also smaller fishes of other species.

8. Cod fishing at Iceland with boats is prosecuted also by the Faroe Islanders. They send their boats over to Iceland on the mail-steamer and let them remain during the winter on the island. The Faroe people fish exclusively with long-lines, and are the best boat-fishermen at Iceland. They sell fish, for the most part, in the salted state. Besides French and English fishing vessels, of which there are plenty at Iceland, are found also some Danish and Norwegian craft, which always fish with hand-lines off the coast, but never nearer than 1 mile from the land. The Danish fishing vessels are accustomed to lie at anchor in August in the fiords and carry on long-line fishing with boats, which, as a rule, yields the best results, because at this time there is generally a good opportunity to obtain fresh bait.

9. My longest stop in Iceland was in Isafjord, and during that time I examined the larger fishing places here as well as at Bolongervig and Altafjord. As the mail-steamer enters most of the fiords and stops from six hours to two days in each, I next had a good opportunity to examine Westmanerne, Reykjavik, Eskefjord, Seydisfjord, Husavik, Ofjord, Siglefjord, Sudakrog, Skagestrand, and Reykjafjord, besides making a journey to Arnafjord. Thus I examined the drying-places in Iceland in the localities mentioned and collected information from the people concerning the mode of handling klip-fish and various other items concerning the Iceland fisheries. From the information which I collected in the different places, it appears that the method of handling fish is practically the same everywhere; but it results best in Reykjavik and thereabouts and in Isafjord, this being due to the more favorable condition of the weather during the drying season.