

VIII.—REPORT OF THE SEA-FISHERIES OF THE LÄN OF GÖTEBORG AND BOHUS IN THE YEAR 1877.*

BY GERHARD VON YILLEN.

A.—THE GREAT FISHERY.

The Skrejd fishery.†—Thirty-seven vessels with 322 crew engaged in this fishery. According to statements from Norway the average earnings per man amounted to \$157.17, equivalent to 1,386 codfish, sold at 11 cents per “round fish.” This distant fishery caused considerable losses of implements and of one man’s life.

The Storeggen fishery, during the summer season, was carried on by 11 vessels with 144 crew. The average earnings per man were \$173.63. Scarcity of fish and rough weather caused the products to be so small.

The Jæderen fishery was carried on by 32 craft with 388 crew. The earnings, at a low estimate, average \$128.17 per man. To obtain complete statistics of this fishery is, as previously remarked, more difficult than is the case with those above, the products not being sold to dealers, but generally shared (“bytt”) between the fishermen, and sold by them in small lots.

One craft from Gullholmen, with 11 crew, was totally lost in this fishery during a gale in the month of August. She was insured in the Fishermen’s Association.

The Jutland Reef was visited by 30 fishing smaacks, with 254 crew. The average earnings per man were about \$124.38.

The Kattegat fishery was carried on with 57 craft and 327 crew. The average earnings per man were about \$91.80.

Besides these fisheries, several vessels resorted to various other fishing banks, and it appears that the Skrejd fishery in winter time, and fishery on the reef during the summer, secure the best fares. One has in this way arrived at a gross profit of \$3,105 for 8 men.

The market places for each fishing craft are stated in the tables, and from them may be seen that every year more vessels come to Norwegian ports for a market. The Norwegian merchants, who thoroughly understand this business—which cannot be said of the Swedish merchants—have already found their advantage in furnishing loans to the outfitting of Swedish bank vessels; and the Norwegian “customers-system”‡ is not far from being introduced in Bohus-Län.

* Translated by Josua Lindahl, Ph. D.

† The cod-fishery off Aalesund, Norway.—(J. L.)

‡ The Norwegian merchants buy the fish “round” from the Swedish fishermen, and dress it and cure it on shore.—(J. L.)

The measured craft are registered at a tonnage calculated according to Rule II.* All others have been treated as stated in my previous reports. The herring fishery and other occupations have prevented me from measuring all of them. Twenty-four new craft have this year been added to the fishing fleet. The summer fishery in larger fishing smacks on the Jutland Reef is growing more important every year. Market is generally sought in the southern ports of Norway.

The Fishermen's Association, besides having suffered from the loss of the above craft, met with heavier losses than ever before through the destruction of apparatus in the Skrejd and Storreggen fisheries. The assessment levied to meet these losses was, for the banking vessels, 8.4 per cent. of their insured value.

In consequence of this, and on account of the inequality in risk, it was resolved at a meeting of the Insurance Association, January 21, that a special section of the association be formed that will grant insurance only for total loss, and not undertake to indemnify for damages to vessels or for loss of apparatus.

This is the final aim of the association toward which it now seems to have approached one step nearer. When the association was formed, eight years ago, the loss of one gang of trawl-lines or of one anchor would have paralyzed the whole boat's crew. This is now no more the case in any degree worth mentioning.

B.—THE MACKEREL FISHERY.

The supply of fish was almost equal to that of the previous year. Price and demand also were about the same.

Mackerel was sent to Stockholm in ice, but this undertaking proved a financial failure. The railroad freight for the heavy ice-boxes, and the low price of mackerel in Stockholm, where this nutritious fish is not appreciated, interfered with the efforts to supply the capital with this sea-fish in a fresh condition in summer time. It will remain a mere object of desire, until the railroad administration will furnish American refrigerator-cars. It paid well, however, to ship ice-packed mackerel to Christiania, and this undertaking met with a cheerful approval from the Norwegians.

The preserving of mackerel in oil and its marinating are still practiced. The products of Edward Nilsson, of Grebbestad, are of superior quality, and the best of all that are made in the Län.

The "bankers" from Orust still use mackerel-nets for catching bait.

The losses, also, in this fishery have been unusually heavy, and contributions have been levied to the amount of 6.6 per cent. of the insured value.

The hook-and-line ("dörj") fishing is gradually being abandoned, and during the last three years has given insignificant returns for the labor.

* In English register tons, "accurate tonnage," outside measurement.

C.—THE WINTER FISHERY.

The requirement of this fishery being open water, it is obvious that as during the winter of 1877 the "Skärgård" was ice-bound for three months, the products of that year were materially reduced. The autumn, with constant supply of fresh herring-bait and unusual abundance of fish, especially cod, gave full compensation as far as quantity is regarded; but the cheap herring which filled the markets, and could be bought for next to nothing, depressed the price of the greater fish as well as of other victuals, which fell in price by 25 per cent., and thus the fishermen earned less than they had calculated. Since the erection of the fish-hall in Göteborg, the price of fish has never been as low as in the fall of 1877.

The railroad statistics are not at my disposal, but I know from reliable sources that the transportation of cod and haddock was many times larger during last fall than ever before.

Two men perished in this fishery.

Villages in the Southern "Skärgård," that some years ago adopted fishing with trawl-line in larger decked boats, are energetically increasing this business. The same method was last year adopted by the Wrångö fishermen too, who now are running three such boats.

Asperö is the only place where, on account of want of a suitable harbor, the old method of fishing in open boats must still be continued.

The Hönö fishermen have adopted the Danish flounder-seine, and are succeeding well. This implement is managed from a boat in the open sea, and can be used everywhere where flounders occur. It is a sort of trawl-net, but simpler and smaller, as well less yielding as less injurious to the fishery. It is urged by some that the trawl-net ought to be prohibited.

D.—THE HERRING AND SPRAT FISHERIES.

a. The herring fishery.—Since the last herring-period, which ended in the year 1808, this fishery has never been so productive as during the fall of 1877 and winter of 1878. A great ingress of sea-herring appeared last fall in the northern parts of the Län, and the herring remained there until in the month of March. The first ingress consisted of "lodd-herring," which was obtained in the district of Fjellbacka, in the beginning and middle of November. By the 17th or 18th of November the lodd-herring had expelled the sprats, or mixed with them, so that the hauls contained almost exclusively lodd-herring. Now the schools filled all fjords, and one could literally lock in as much herring as he could sell. The uncountable swarms of sea-gulls, especially the hyperborean "Rinkja," *Larus tri-dactylus*, indicated that these schools were something different from the schools of lodd-herring generally visiting the coast. Also, the Wäderö and Sotö Fjords had throughout the autumn presented the spectacle of large schools of herring followed by the common "herring-followers," viz, whales and sea-gulls.

By the end of November lodd-herring was discovered in the district of Strömstad; and Koster fjord also displayed "herring-signs" on a large scale, even more so than the southern fjords.

All observations indicated that this ingress into Koster Fjord had passed by the north of Wäderö.

Almost simultaneously lodd-herring was discovered also north of the Koster Islands, as far as to Hvalerö.

Everywhere the herring came from the south and went northward.

Already about November 20 "*great-herrings*" were occasionally found among the lodd-herring in the district of Fjellbacka; they were 12 inches long and upwards, full of "inmeat," that is, roe and milt, perfectly mature and ready for spawning.

November 28 a few barrels of almost exclusively such herring were caught in a small seine at the Wäderö pilot-station. On December 1 and following days so much of this great-herring was obtained among the lodd-herring in the inner bays of Fjellbacka that people began salting for household use, and fishermen from the district of Kungshamn, who had come all the way up here to fish outside the island, got exclusively great-herrings in their seines. Such was the case with one man from Smögen, who, December 1, fished at Wedholmen, and with the Fjellbacka fishermen at Trinisla and Florö on December 3, 4, and 5.

On December 12 great-herring was found at North Dyngö, where 25 barrels were caught in one haul, and shortly afterward great-herring was found in every fjord in the "Skärgård" of Fjellbacka, all the way up to Grebbestad. The main body of these schools consisted of the same big "inmeat-herring" as that caught at Wäderö. Many of these herrings had the roe and milt running. But also herring which had already spawned were met with, and immature herring with some fat still left; and as a rule the herring was very much mixed.

The same kind of herring was caught in Bottnä Fjord December 10, and on the 16th it occurred in great packs as well in this fjord as in other branches of Sote Fjord. It was remarked—and this coincides with my own observations—that these southern schools mainly consisted of bigger individuals, and that more empty herring was here found in the hauls than farther to the north in the fishery.

On the 26th and 27th a large school entered into the so-called Hol-lander's Bay, at Smögen, where 1,200 barrels were inclosed in one lork; nearly all of it was empty herring.

In the fishery of Strömstad no great-herring was seen until December 20, but then within a couple of days they had entered, also here, into every fjord all the way up in Säckefjord, and in the waters bordering on Norway. This herring had spawn, though very little developed.

About New Year's day the great-herring was standing outside, and lodd herring inside in most every fjord, from Smögen to Vagnarberg—an extent of more than 10 mil*—accompanied by the usual herring fol-

* 1 mil = 6.64 statute miles.

lowers, viz, whale of larger or smaller species, and innumerable swarms of sea-birds. It was remarked that the Gannet or "Sillbas," *Sula bassana*, properly belonging to the Scotch fisheries, but exceedingly common here during previous great-herring fisheries, did not this time appear here. Every one of the birds that followed the herring belonged to some Scandinavian species or variety.

Up to January 9 the herring schools had not changed positions, but after that day the great-herring had left the inner fjörds and could nowhere be caught in the nets within the district of Strömstad. Only north of Hafsten Sound a smaller school remained.

The herring not only went for deeper water, but they altogether abandoned the locality. Thus it was noticed that the herring, like a current, rushed out through the shallow Koster Sound, and the "herring-indicators"—whales and birds—showed that the schools were drawing out in the deep Koster Fjord, and under the group of islands off the fjord. The same was the fact in the Wäderö Fjord, though the herring still was standing at the outer islets, and in the sounds of Florö, Hästvom, and Dyngö.

In the second week of January the herring occupied about the same position as in the middle of December, one month earlier. The fishery was thus limited to only a few localities, almost before it had regularly commenced, and when purchasers arrived, and the salting began, the herring was just drawing out. The supply, however, was so large at places where herring still remained, that it was quite sufficient for all. But the largest and best herring was gone, and all what now was obtained was a poor, immature, and lean herring.

On the 14th of January the herring was found only among the outer skerries, extending about $1\frac{1}{2}$ mil within the district of Fjellbacka, besides a small ingress, which, on the 10th, had been noticed at Hällö, north of Malnö. Nothing but lodd-herring remained in the fjords. Forty-two seines were in use in the fishery in the district of Fjellbacka. Herring was salted in 26 steamers and 10 sailing-vessels, used as hulks, while smaller craft and boats were engaged in the transportation of herring to railway stations and salteries.

On January 22, great-herring was again noticed at Styrösö and Saltö, district of Strömstad, and the herring remained fourteen days among the skerries that extend from the said islands down to Hafsten Sound.

On the 25th, herring also was discovered at the inner islets near Fjellbacka. A lock was closed around 2,100 barrels of great-herring at Valö, the market price of the day making this quantity equivalent to \$2,197.80. Also, some smaller throws with seines were made in the same "steg," which is supposed to have been the "tail" of the larger schools which had been standing farther south and now were drawing seaward through the inner northern sounds. Of this "tail" some herring was caught off Grebbestad as late as February 20. The fishery continued undiminished in the outer skerries, and the district of Fjellbacka until

the end of January, but for every week it drew farther northward and nearer to the open sea. After the beginning of the month of February the herring fishery decreased everywhere, and may be said to have ended with the 15th of said month. There were, however, still later made some hauls of very much mixed great-herring off Grebbestad, at Morö and Eggerö, and in the neighborhood of Lysekil, but after March 1 no more such herring was obtained.

The lodd-herring still remained in the fjords, and, just north of Fjellbacka, a lock was closed in March, which required three weeks to be emptied. The receipts on sales amounted to more than \$2,160, and the contents of the lock were estimated at not less than 10,000 barrels. Lodd-herring was fished to supply the large demand in the interior provinces until the middle of March, when also this herring disappeared.

It deserves to be mentioned that by the middle of February great quantities of herring-fry appeared in the outer skerries in the district of Fjellbacka. These fry were about two inches long, and were evidently hatched from roe spawned during the previous fall.

The herring obtained represented various stages of age and development, viz :

1. *Lodd-herring*, bigger than those usually found here. The name was applied to herring about one year old, or less than two years.

2. *Nearly fullgrown, but immature, herring*, with no generative organs yet developed. This herring has been called "*Matties-herring*," translated "*Virgin herring*." It is also called "*fat-herring*," although exceedingly lean. The Scotch fishermen who took part in the fishery said that among them such herring was called "*immature herring*," not "*matties*." These names and classifications not having the same signification in different countries, because the herring vary in form and size in different localities, there may be reason to use the name given by the salters and merchants, viz, *brand K*. This herring was not good, and hardly fit for salting.

3. *Big, dry, outspawned herring*.—Also this herring was less fit for salting. It appeared already in November, and became very numerous after New Year. This herring, and also bigger individuals of the preceding form, were by salters named "*brand K K*." It corresponds to the Scotch "*spent herring*."

4. *Inmeat-herring*, by foreigners called "*Voll hering*," or "*Full herring*." Among them also occurred individuals that had begun spawning, *kuit-herring*. This was the only kind really fit to be salted, and when properly cured it made a superior article, which fetched \$8.10 per barrel. It was branded *K K K*.

Besides these, there were also found all intermediate forms, and at the end of the season was found "*inmeat-herring*" of the winter and spring-spawning, "*grass-herring*."

The various kinds of herring occurred in very different proportions at different periods. Up to January 10, Nos. 3 and 4 were most abundant;

after that date, No. 2, and before, as well as after the proper season, No. 1.

Of a well-assorted lot stored at Grebbestad, and containing 2,660 barrels, 78 barrels were marked with the brand *K K K*, 1,185 barrels *K K*, 1,262 barrels *K*, 5 barrels *M*, and 130 barrels were "bressling" or sprat. As a rule, the fisheries at Fjellbacka and Sote Fjord gave larger herring than the fishery at Strömstad, and the most mixed herring was caught in the neighborhood of Lysekil, where, anyhow, the fishery was of least importance, though it lasted to the beginning of March.

The salting was not started until the end of November, when the great "inmeat-herring" appeared, and the seine-gangs sold the lodd-herring, but divided ("bytte") the "inmeat-herring" between themselves, to be salted for their own household use. Merchants salted about 400 barrels of lodd-herring for cattle food, as a speculation; but a much larger quantity of fresh herring was purchased by the farmers and salted. The whole west of Sweden knows the value of herring as cattle food, and a very large part of the catches during the month of December was consumed for this purpose. Some lots went to the compost.

On New Year's day two steamers arrived in Bowall Strand for the purpose of salting herring. The Göteborg merchants had thus started the business, and now speculation began on a large, indeed far too large a scale.

Barrels and expert hands were in great demand; ultimately, also, salt. All was procured from Norway. Not until January 11 the first ship-load of barrels arrived. On the 14th the salters were in full operation; and although the supply of herring was limited to a small section of the district of Fjellbacka, besides sundry schools south and north therefrom, nevertheless full cargoes were brought to the side of every one of the 26 steamers which, together with sailing craft and hulks, had anchored in the sounds around Florö and Dyngö on purpose to salt herring. About 20,000 barrels of herring were caught from January 13 to January 19. The following week, January 20 to 26, about 23,000 barrels were secured in the districts of Strömstad, Fjellbacka, and Kungshamn. From January 27 to February 2 about 16,000 barrels were caught, of which about 10,000 barrels in the district of Fjellbacka. From February 3 to 9 about 11,500 barrels were caught, and the same quantity in the week February 10 to 16. Of this, however, a great portion consisted of big lodd-herring, which received the brand *M*. During the last three weeks of that month the herring fishery was of trifling importance and mostly yielded lodd-herring.

As far as can be ascertained, upwards of 75,000 barrels of herring were salted on board steamers or hulks in the "Skärgård," or transported to Göteborg to be salted there; and, besides, 1,000 or 2,000 barrels were sold at the fish-market of the said city and salted by consumers. If one-third of all this herring be deducted as loss by packing and as damaged herring, the quantity of good herring obtained may safely be estimated at more than 50,000 barrels.

The treatment of the herring has not been commendable, and everywhere abroad where it was not rejected or even condemned, as was the case at Pangö, where a whole steamboat cargo of 1,400 barrels was condemned and sold at condemnatory auction at 5 cents per barrel, the article has been received with very little encouragement. Through this export the market abroad probably is spoiled for a long time, and a future herring fishery will no doubt suffer great damage from the bad curing in this year.

The principal cause of the damage was the inferior quality of the herring itself, but also to a great extent the exceedingly poor barrels.

In fact, very little has, as yet, been disposed of, for although large shipments were made to various places, still the quantity really sold is trifling, and the prices obtained have generally been so low as hardly to cover the expenses for salting and for barrels, still less to pay for the herring. From \$1.50 to \$2.25 in Germany and the Baltic provinces for the brand *K A*, and proportionately more or less for other brands; about the same price in Finland; at most, \$2.70 in Norrland, and same price in the interior provinces, are the market prices hitherto quoted. It is to be supposed that somewhat higher prices may be obtained when the herring get ripper.

The marketing of fresh herring, on the other hand, was both extensive and successful. The freight lists of the railroads are said to display large figures. The herring was sent abroad, too; whole ship cargoes went to German smokeries. The steamship Strathbey made two trips to Scotland with altogether over 3,000 barrels of fresh herring. Norwegian vessels salted and carried home 3,227 barrels during the month of January, and also in February several invoices were shipped to Norway. Swedish steamers brought 2,700 barrels of unsalted herring to Christiania.

The conduct of the population gave no cause of complaint; sobriety and peacefulness were everywhere observed.

Some confusion existed at the beginning on account of the inequalities in measurements, until it was generally agreed to adopt a measure of 5 Swedish cubic feet as the most convenient standard, being nearest equivalent to a Swedish herring-barrel.

His Majesty's Government has, under date of February 1, this year, most graciously granted the application made by the provincial government of Bohus Län December 31, 1870, that § 22 of "Regulations for the fisheries," regarding the meshes and size of herring-nets, shall be suspended until further notice in the Län of Göteborg and Bohus.

The herring fishery south of Lysekil, in the archipelagoes of Tjörn and Marstrand did not present any features indicating an ingress of sea-herring. During the fall some signs of herring were noticed off Winga, but the quantity of herring actually seen was not larger than usual. The seine-gangs went north and took part in the fishing in the districts of Fjellbacka, &c.

The value of the catches being calculated principally from the earnings of the seine-gangs, an inaccuracy has been the consequence, as 10,000 barrels have been attributed to the first district, though actually taken in several other districts. But as it was impossible to ascertain in what particular district they were taken, they have been reported for the first district with a remark.

The southern districts have supplied their hook fishery with fresh bait, and, besides, had their share of the sprat fishery.

b. The sprat fishery.—As may be seen from the tables, also, this fishery was very rich. It began as early as September, and the sprats being almost free from “ganeskar”—*i. e.*, they were very little infested with crustacea, of which the water this year was unusually devoid, on account of the cold summer, abundant rain, and prevailing land-winds—they could be utilized for canning as anchovy at an earlier season than usual. An uncommonly large quantity was pickled, and several new factories were started. About 350 barrels have been salted as “bressling,” and it is obvious that the preparing of sprat gives a larger profit than the entire herring business. According to information obtained, 5,200 barrels have been pickled or salted.

The sprat fishery inside of Oroust was also very rich this year; the proceeds are accounted to the income of the sixth district.

E.—THE LOBSTER AND OYSTER FISHERIES.

a. The lobster fishery.—It cannot be denied that the lobster fishery is gradually decreasing, whether the size or the number of the lobsters caught be considered.

It is irrefutably a necessity that the time of prohibition shall be extended in the fall when the conjugation generally takes place; and also that the minimum size of lobsters allowed to be caught shall be so determined, that their first spawning be protected.

The English Parliament has lately resolved that 8 inches shall be the minimum size, and it would be well to adopt that as a law with us, too.

b. The oyster fishery.—As usual, in winter time, a quantity of rock-oysters were gathered with oyster-rakes this year.

The overseer in the fourth district has reported one hundred “trees” to have been caught within his district, but the fact is that they were gathered from several localities by fishermen living in Klöfvedal parish.

The Fishermen’s Association of Göteborg and Bohus Län have, during the year, insured—

(a.) Sixty-three bankers	\$46,794 51
Outfits to these 63 vessels	36,196 94
New insurance on outfits	3,265 79
(b.) Fifty-two seine-boats with outfits	15,140 93
New insurance on outfits	107 46
Total	101,505 63

750 REPORT OF COMMISSIONER OF FISH AND FISHERIES.

The losses during the year were:

Bankers.....	\$6,922 02
Seine-boats	965 84
Total.....	<u>7,887 86</u>

Lysekil, April, 1878.

GERHARD VON YHLEN.

Summary of statistics of the Bohus Län fisheries in 1877.

Fishery.	Crew.	Bankers.	Decked boats.	Open boats.	Tons.	Products.	Price obtained.
Great fishery	1,645	189			6,709		\$253,036
Mackerel fishery.....	1,468		349		3,515	1,618,600 pieces	68,442
Winter fishery	1,694		98	410	2,535		67,120
Herring fishery	1,490			389	495	244,500 barrels	166,968
Sprat fishery						13,138 barrels	27,238
Lobster fishery	1,728					241,240 pieces	21,513
Oyster fishery						406 trees	2,454
Total	7,965	189	447	709	13,254		606,777