

XIV.—EEL-FISHING WITH SO-CALLED “HOMMOR” (A SPECIES OF FISH-POT) ON THE BALTIC COAST OF SWEDEN AND IN THE SOUND.*

By RUDOLPH LUNDBERG.

The eel is certainly found along the entire coast of Sweden, and everywhere forms an object of fisheries, although their extent, and consequent economical value, vary greatly on different portions of the coast. On our coasts we must distinguish between two kinds of eel-fisheries—those which aim at the eels which are found on our coasts all the year round, and those whose object is the migratory eel, which are only carried on during the latter part of summer and during autumn, with a special apparatus, constructed for catching migratory eels, the so-called “hommor.” †

These last-mentioned fisheries are, beyond a question, the largest and most important, and both for this reason and for the sake of the conclusions relative to the mode of life of the eel, which may be drawn from the data gathered so far, as well as the hints for further investigations which they furnish, I have thought that a brief review of this fishery would be of interest.

Before going any further, I deem it necessary to say a few words with regard to the character of the apparatus in question, or the so-called “hommor,” and the manner of carrying on this fishery.

*“Om ålfisket med s. k. hommor vid svenska Östersjökusten samt Öresund.” Stockholm, 1881. Translated from the Swedish by HERMAN JACOBSON.

†The fishermen make a distinction between the stationary and the migratory eel. Whether these different eels must be considered as separate species or only as various stages of age and sex, is a question which I will not attempt to answer, as I have not had an opportunity to investigate the subject. Krøyer considers the migratory eel as a separate species (*Anguilla migratoria*), and even Nilsson gives it a special name (*Muraena acutirostris*). Ekström, Yarrel, and some of the older zoologists distinguish several species of eels. More recent naturalists, like Siebold, think that there is only one species of the European eel, and even Günther thinks that these differences, principally relating to a difference in the shape of the nose, do not entitle us to assume different species of eels. Günther, however, makes a distinction, based on a difference in the position of the fins, between two European species of eels, viz, the *Anguilla vulgaris* and the *Anguilla latirostris*. The varieties of the eel distinguished by our fishermen are the same as those given in Nilsson's “Fauna”; but the fishermen pay less attention to the shape of the nose than to the color, which with the grass-eel or coast eel is a yellowish green, and with the migratory eel white or whitish gray, and to the size and flavor. The grass-eel is smaller, has softer meat, and is leaner than the migratory eel.

The "homma" must be considered as a large fish-pot, with one or, generally, two arms on the sides, one being considerably shorter than the other. They are always set, beginning at the coast, either one by itself or several in a row, the longer arm of each succeeding "homma" extending alongside or back of the one in front of it.

THE EXTENT OF THE FISHERY.

I now proceed to give an idea of the extent of this fishery. The northernmost point, as far as I know, where eel-fisheries with "hommor" are carried on, is the neighborhood of Grissleham, and the coast south of that place towards Arholma and Tjoekö, where this fishery is said to have commenced about the year 1840. We do not meet with any "hommor" eel-fisheries till we reach the southern part of the coast near Stockholm, from Elfsnabben to Landsort. On the coast of Södermanland and the northern part of the coast of Östergötland no "hommor" eel-fisheries are carried on. These fisheries, however, commence again in the southern part of the coast of Östergötland, beginning in the neighborhood of Arkö, and are carried on along the entire coast of the Kalmar district as far south as the city of Kalmar. I am not prepared to say at the present time how far south of Kalmar, towards the boundary of Blekinge, these fisheries extend. On the coast of Blekinge these fisheries are carried on from Christianopel, and farther south towards the districts of Thorhamn and Sturkö. From the latter place they decline, and are only carried on along the outer coast-line as far south as Carlshamn and the inner part of the Hanö Bay, where from time immemorial very considerable eel-fisheries have been carried on, along the coast of the Mjellby district, from Nogersund and Hörvik as far as Pukavik. The migratory eel, however, do not visit the southern part of Listerland, but are found in large numbers on the eastern coast of Scania, from Åhus and Yngsjö, as far as Stenshufvud, where eel-fisheries are carried on along the entire coast, and farther south, past Sandhammaren and as far as Käseberga. Between the last-mentioned place and Abbekås the migratory eel does not come near the coast. Near Abbekås, however, there are considerable "hommor" eel-fisheries, but after that we do not find any till west of Trelleborg, principally in the Kämpinge Bay, and as far as Cape Falsterbo. On the other side of this cape, and towards the sound, no "hommor" eel-fisheries are met with on the Swedish side of the sound until we reach Rää, immediately south of Helsingborg and farther north towards the fishing station of Viken, where these fisheries come to an end. On the Danish side of the sound, however, "hommor" eel-fisheries are found both west of Saltholm, on the outer (eastern) side of Amager and farther up the sound near Humlebeck and Helsingör.* On the Danish side these fisheries cease north of Helsingör. Formerly there were eel-fisheries near Aalsgård, im-

* See G. Winther's admirable treatise, "*Bidrag til Kundskab om Fiskeriet ved Torshøj*" in "*Nordisk Tidsskrift for Fiskeri*," vol. i, p. 316.

mediately north of Helsingör, but at the present time they have ceased entirely.* Even in the Great and Little Belts, and along a part of the eastern coast of Jutland, "hommor" eel-fisheries are carried on in several places.† The above indications as to the extent of the "hommor" fisheries also show very distinctly the route followed by the eels in their migrations along the coast. We see therefrom how the eels, after having passed by certain parts of the Swedish coast, such as the coast of Södermanland, &c., finally cross over towards the Danish coast from Falsterbo, and only again make their appearance on the Swedish coast in the narrowest part of the sound, near Helsingborg.‡ The reasons why the migratory eels do not approach every portion of the coast, must probably be found in the varying depth of water near the coast, the different currents, and other circumstances as yet not fully explained. It is also possible that favorable places for these fisheries are found on those parts of the coast which, as I said above, the eels pass by, although no such fisheries have ever been attempted there. Various circumstances, however, speak against such a supposition. It is hardly probable that as easy and remunerative fisheries as the "hommor" eel-fisheries should not have been attempted in these parts of the coast, if there had been any prospect of success; and as far as I could learn from the fishermen, such attempts have been made in several parts of the coast of Scania, where "hommor" fisheries had so far not been carried on, but without success.§ I will not deny, however, that there may be some places where these fisheries have not been carried on, but which may be considered suitable for the purpose.

From olden times it has been known to the fishermen that the eels migrate along the coast, and even scientists like Krøyer, Nilsson, and others have called attention to this fact, but these migrations of the grown eels have, nevertheless, been less noticed by naturalists than they deserve, and the principal question discussed in works on the fauna has been the ascent of the young of the eel from the sea into the rivers. That a migration takes place along the coast is evident from the position in which the apparatus (the "hommor") has to be placed, if any considerable number of eels are to be caught. Along our entire eastern coast the "hommor" are placed so that the eels must enter them from the north, on the south coast of Scania from the east, and up in the Sound from the south. This circumstance can hardly be caused by an accident. On the Danish coasts of the Great and Little Belts, and other coasts,

* See J. Collin, "*Nordisk Tidsskrift for Fiskeri*," vol. i, p. 355.

† See G. Winther, "*Om Fiskeriet i Stone Belt*" (*Nordisk Tidsskrift for Fiskeri*, vol. ii); also, "*Forsøg till oversigt over Fiskeriet: Danmark vedrørende ældre og nyere Lovregler*" (*Nordisk Tidsskrift for Fiskeri*, vol. i, p. 240); and also Krøyer, "*Danmarks Fiske*."

‡ Those parts of the coast which are visited by the eels during their migrations are marked on the map which accompanied my treatise in the German language: "*Notizen über die Schwedischen Fischereien I*," published for the Berlin exposition.

§ Experiments will, during the present year, be made on the coast of Södermanland, the results of which will doubtless throw some light on this subject.

it is stated that the eels likewise come from the east and south, and follow a northerly direction into the Kattegat.* The fishermen everywhere declare that it will not do to reverse the position of the "hommor," as the eels invariably follow the route along the coast indicated above.† In the frequent quarrels between the fishermen about trespassing on each other's fishing-grounds, the question is never that a fishery back of another does harm to the one in front, but the very reverse. Everywhere the eels are said to approach the coast from the depths of the sea, where they follow the long arm of the "hommor" and are thus led into them. That this is actually the case appears from the circumstance that fish may be caught in rows of "hommar" placed one behind the other. This movement from the depth of the sea towards the coast does by no means, however, disprove the correctness of the opinion that, on the whole, the eels move along the coast. A circumstance speaking in favor of this opinion, is this as we shall see, that the eel-fisheries commence later in autumn the farther down we go along the coast. The approach of the eels from the depths of the sea towards the coast might easily lead us to think that the alleged migration of the eels along the coast is in reality nothing but a crossing and recrossing between the depths and the coast, but this supposition, which lies very near, is thoroughly disproved by the manner in which the "hommor" have to be placed if any catch is to be looked for. The opinion advanced by Sundevall, that, owing to some peculiarity in its "structure," the eel on our coasts should be obliged in its migrations to constantly turn to the left, seems entirely unreasonable, and that such is not the case appears from the circumstance that on the coast of Östergötland the "hommor" are in various places located on the inner or land side of the islands, and that even in this case the long arm of the apparatus must be placed on the southern side, as the eels come from the north. Since we, therefore, may consider it as certain that a migration of eels really takes place along the coasts of Sweden and Denmark, and out into the Kattegat, the question arises, "Where do these eels come from, and which is the end of their migration?"

There can hardly be any doubt that the migratory eels are, to a very large extent at least, eels which have entered the sea from fresh waters, and also that this migration is, in some way, connected with the process of propagation, and is therefore analogous to the ascent from the sea into the rivers of the salmon and other similar fish. In the foreign literature on the subject to which I have had access, I have in vain searched for information relative to similar migrations of the eels along the coast,

* See "*Nordisk Tidskrift för Fiskeri*," vols. i and ii.

† According to information furnished by Mr. O. W. Areschoug of Esperöd, proprietor of one of the largest eel-fisheries in Scania, to whom I am indebted for many interesting data regarding these fisheries, such attempts invariably prove failures, although occasionally, when there is a southern current, a few eels may be caught in "hommor" placed with their opening towards the south.

and it therefore seems that in other countries such migrations do not occur. Löberg speaks of a kind of eel-fisheries with a sort of fish-pots on the coast of Norway, and mentions that there, too, the eels go in a southerly direction, but from his remarks it appears that these fisheries are only carried on near the mouths of rivers.* Kröyer supposes that the object of the eel in wandering along the coast is to seek deeper and salter waters, and that those eels which pass the coasts of Denmark are principally fresh-water eels from the rivers Oder, Vistula, and other rivers flowing into the Baltic.† He does not state, however, in how far he considers salt water necessary for the spawning of the eel. If this view of Kröyer, that the eels seek salter waters, is correct—and in itself it seems highly probable to suppose that salt water is of the same importance for the development of the spawn of the eel, as fresh water for the development of the spawn of the salmon and other fish, as otherwise the migration of the eels from the rivers into the sea seems utterly inexplicable—we can easily explain why the migrations of the eels along the coast are noticed particularly on the coasts of the Baltic, and especially in those parts of this sea which have an immediate connection with the salter waters of the Kattegat, but not on the coasts of England, France, or Italy, which countries are surrounded by waters which are a great deal salter than the Baltic. Löberg's statement, referred to above, regarding the migrations of the eels on the coast of Norway, seems to speak against this view, but as the migrations of the eels are, in Norway, confined to the mouths of rivers, this statement does, in my opinion, not disprove the assertion that the saltness of the water is the cause of the migrations of the eels along the coast.

In his description of the large and well-known Italian eel-fisheries near Comacchio,‡ Jacoby expresses the opinion that the migration of the eels into the sea, or the so-called "calata," is favored by the circumstance that when in summer the water evaporates, the saltness of the lagoons becomes too great, for which reason the eels eagerly seek the sea-water, which is less salty—an opinion entirely opposed to the one expressed above. The spawning process probably is the principal cause, particularly as the lagoons of Comacchio hardly contain any suitable spawning places for eels. It would, moreover, doubtless be an error to explain the migrations of the eels as exclusively depending on the character of the water, as, like the migrations of other fish, they are also caused by other circumstances, which are not yet fully understood, and which may be comprised under the head of what is called the "migratory instinct." But whatever may be the causes of the migrations of the eel, I think that it is evident from what has been said above regarding the eel-fisheries on the Baltic coast that such migrations take place, and that a more thorough investigation of these fisheries, even

* *Norges Fiskerier*, 1864, pp. 298, 299.

† *Danmarks Fiske*, vol. iii, p. 636.

‡ "*Der Fischfang in der Lagune von Comacchio, &c.*," Berlin 1880, p. 75.

from a purely scientific stand-point, is of very great interest, amongst the rest with regard to the question where and when the spawning of the eel takes place; for this reason I have deemed it proper to call attention to this subject, and shall now continue my review of the eel-fisheries.

THE SEASON WHEN THE EEL-FISHERIES ARE CARRIED ON, AND THE CIRCUMSTANCES WHICH ARE SUPPOSED TO INFLUENCE THE SAME.

The "homnor" eel-fisheries are everywhere confined to the latter part of summer and autumn. Near Grissleham and Landsort they are reported to begin about the 29th July, and last till the beginning of October, when night-frosts set in. On the coast of Östergötland, Kalmar, and Blekinge the fisheries also commence towards the end of July or the beginning of August, and come to a close in October, and sometimes in November. On the coasts of Scania the fisheries never begin until some time in August, and are generally but little productive until September and October. In November they decline, and if any eels are caught in December it is an exception.* In the Sound the eel-fisheries do not commence till September, and most eels are caught during October. Near Humlebeck, on the Danish side of the Sound, about one (Danish) mile southwest of Elsinore (Helsingör), the fisheries commence on the 1st of October, and always close on the 10th of November.† The further up the Sound we go, the later in autumn are the fisheries carried on, which certainly confirms the opinion that the eels wander along the coast in a northerly direction out into the Kattegat. As regards the time when the eel-fisheries are carried on, it should be stated that darkness is the only time when these fisheries can be engaged in, and that their beginning therefore depends on the time when a change of the moon takes place. During dark nights the best hauls are made. During moonlight nights, on the other hand, none or but very few eels are caught, and most fishermen do not set their apparatus in such nights.‡ In the beginning of the fishing season the eel-fisheries are nowhere very productive, but few eels being caught during July. Under ordinary circumstances the best time for eel-fishing is in September, and higher up the sound in October. Later in autumn the fisheries gradually decline, and generally come to a close as soon as snow begins to fall. The eel seems to stir about principally during the night; during daytime hardly any

* In the Great Belt the eel-fisheries with fish-pots do not commence till the end of September or the beginning of October, and the fish-pots are left in the water during two new moons. Near Nyborg attempts were made to continue the fisheries till Christmas, but only one eel was caught during December.

† J. Collin, *Nordisk Tidskrift for Fiskeri*, vol. ii, p. 182.

‡ From information furnished by Mr. Aroschoug it appears, however, that even during a full moon good hauls can be made, if the water is previously stirred up by a storm, and a light sea-breeze keeps it agitated.

are caught. As with other fish, wind and current are of considerable importance as regards the eel-fisheries. The data we possess in this respect are, however, still too incomplete to draw from them any certain general conclusions.* Near Grissleham southeasterly wind was considered the most favorable, but north, northeasterly, and east wind as unfavorable for the eel-fisheries. Near Landsort, south wind is considered favorable, but north and northwest wind unfavorable. Near Harstena, on the coast of Östergötland, the best eel-fisheries are said to be when the wind is south or east. West wind is not considered unfavorable, but when north wind prevails no eels are caught. On the coast north of Helsingborg south and west wind and rainy weather are considered favorable for the eel-fisheries. Near Kivik, on the eastern coast of Scania, a faint northeasterly or easterly breeze is in some places considered most favorable, whilst in other places the same is thought as regards strong west wind. The best hauls are made with a tolerably strong northerly current.† (Areschoug.) I am strongly inclined to suppose that the different currents and the varying depth of water near the coast play an important part in the migrations of the eels, and are the principal causes why the eels, as has been stated above, in their migrations pass by certain parts of the coast. Thus an old fisherman near Ystad stated that the reason why the eels did not visit that part of the coast in any considerable number must be sought in the depth of water outside that coast, where the eels, instead of going towards the land, turn and go out to sea again. Among other conditions of the weather which are considered to have an influence on the eel-fisheries, cloudy and rainy weather seem, as a general rule, to be considered favorable. Near Kivik great heat during summer, and calm, which favors the so-called "blooming" of the water (the development of a kind of floating algæ), seem to be favorable for the eel-fisheries. The eel is always said to seek a bottom overgrown with grass and algæ, and the fishermen, therefore, like to set the "hommor" on such bottom; but also on stony bottom, as is generally found on our coasts, and on sandy bottom (the coast of Scania) with or without vegetation. If, as is generally the case, in Blekinge and Scania, the "hommor" are set in rows, one back of the other, sometimes to the number of 30, the catch is but rarely distributed evenly among all the "hommor," but more fish are generally caught in those nearer the land than in those on the outside. Near Kivik it has been observed that during west wind the eels come very near to the land, whilst during east wind they go farther out to sea. (Areschoug.)

* Krøyer states that the eels leave the coast during land wind, but approach it again when the wind blows over the land.

† In the Great Belt south wind is in some places, and north wind in others, considered favorable; for both these winds cause a faint current along the coast, and keep the water a little agitated, which causes the eels to halt in their wanderings. G. Winther, *Nordisk Tidsskrift for Fiskeri*, vol. ii, p. 251.

FISHING APPARATUS, AND THE MANNER IN WHICH THEY ARE USED.

The so-called "hommor" are, as has already been stated, a kind of fish-pot, varying in size, but always constructed on the same principle. In accordance with different local circumstances and usages, there are, however, some differences in this apparatus, which at first sight cause a casual observer to think that what is really one and the same apparatus, is a variety of different apparatuses. One can principally distinguish two kinds: those which are intended to be placed on stony bottom, and those which are used on even sand or clay bottom. To the first kind belong the apparatus used on the coasts of the districts of Stockholm, Östergötland, and Kalmar, and to the second, those used on the coasts of Blekinge and Scania. The former are generally smaller and narrower. As a good representative type of this apparatus the one used on the coast of the Kalmar district may be taken. It has only one arm, varying in length from 15 to 42 feet, according to the depth of water in which the apparatus is set, starting from the left side of the opening.*

Here begins the so-called "hat," consisting, like a common fish-pot, of a semicircular hoop, from 3 to 4 feet across, and following this, rings, at intervals of 1 foot, gradually decreasing in size, so that those at the farther end measure only 6 to 8 inches in diameter, the whole being covered with netting. At the end of this so-called "hat" (generally 15 to 24 feet long), which like a fish-pot has funnel-shaped entrances, there is fastened the so-called "tub," plaited of thin branches, in which the eels are finally caught. To keep this "tub" steadily in position, it is placed on a frame-work of wood. The apparatus is anchored, and held in position by ropes† to which tolerably heavy stones are fastened. To each stone there is moreover fastened a line with a float, by which the line is hauled in, when the apparatus is to be emptied or taken up. Near Örö (in the district of Kalmar) four similar weights (two on each side) are used for the wide part of the apparatus, a like number to keep the arm in position, and one large stone for the "tub." In stormy weather it becomes necessary to make use of more anchoring to keep the apparatus in position. To prevent the eels from going under the arm, which might be the case, especially when the bottom is very uneven, the lower part of the arm is pressed a little against the net through the meshes, so that its lower part comes to lie close along the bottom.

Near Landsort the so-called "tub" is not used, whilst it is in use in the northern part of the coast of the Stockholm district; as for the rest, the apparatus used north of Kalmar is in its main outlines the same as the one we have described. From those used in the south of

* Right and left counted in the direction of the apparatus, looking forward from the narrow end of the apparatus.

† In the district of Kalmar ropes are used for this purpose, plaited of very thin branches. These ropes are stronger and more durable than one would suppose, and are frequently used as hauling-lines both in the north and south of Sweden.

Sweden it differs by its long shape and its many rings. The apparatus used near Kivik may be considered as the type of those used in Blekinge and on the eastern and southern coasts of Scania. They are often very large; the arms especially are of considerable length (the long arm 60 to 80, and the short arm 20 to 30 feet; height of the arms 6 to 8 feet). The apparatus proper is 16 to 24 feet long, with a main hoop 4 to 5 feet high (not semicircular), and 5 or 6 rings, at intervals of 3 feet, decreasing in diameter towards the back part of the apparatus, but never quite as small as those described above. No special "tub" of wicker-work is used. On the south coast of Scania the apparatus are smaller than those used on the east coast of Sweden, but otherwise of the same general construction. In the Sound smaller apparatus are also used. The front ring or hoop measures about $2\frac{1}{2}$ feet, and the other two 2 to $1\frac{1}{2}$ feet, respectively, in diameter. Here a so-called "tub" of wicker-work is used. The apparatus proper without this "tub" measures about 10 feet in length. The "tub" is made of willow branches, and has the same shape as those described above. In plaiting this wicker-work the longest switches are allowed to protrude and are twisted together, so as to form a sort of handle at the end. This handle serves to fasten the cable by means of which the "tub" is anchored. The anchor is nothing but a number of large stones resting on a cross-shaped wooden foot, from which extend four branches, which surround the stones, and above are joined in a sort of loop. These kinds of anchors are used even for so-called "bottom-nets."

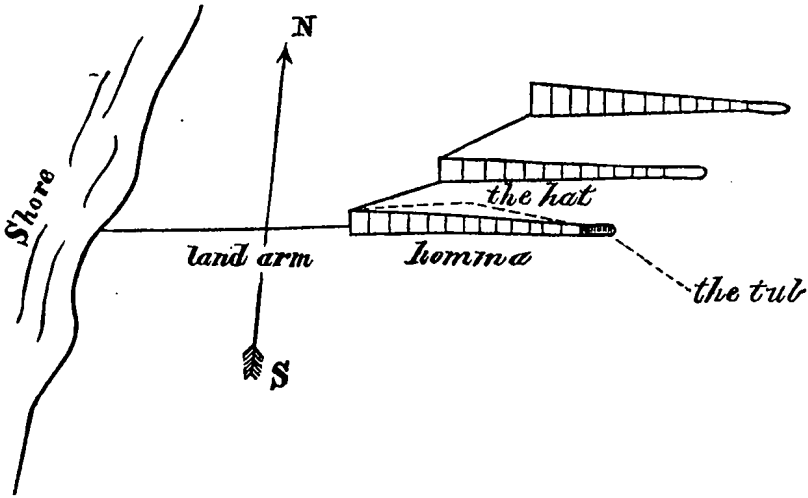
The "hommor"* are here set in a manner differing somewhat from the one generally used, which, however, it would be difficult to understand without a diagram. At the farther end of the apparatus there is fastened a pole, thicker below than at the top, and furnished with a sort of fork, to which are fastened three ropes with anchors, which serve to keep the apparatus in position. These ropes are called after the point of the compass in which the anchor is placed, *e. g.*, the "southeast rope," the "southwest rope," and the "northeast rope;" the "tub" is held in position by a separate anchor, from which, and from the handle mentioned above, a double line extends to the pole, which serves to haul in the apparatus, or to change its position, or to empty the "tub." The "tub" is then loosened from the apparatus proper, emptied, and again fastened to it. In the Sound two arms are also used, a long one (72 to 96 feet long) and a short one (8 feet long). Near Helsingborg no anchors resting on a wooden frame are used, but simply stones tied with ropes.†

Where local circumstances permit, several "hommor" are generally placed in a row, one behind the other, starting from the shore. The more sloping the bottom the larger may be the number of "hommor,"

* These eel "hommor" seem to be the same as the apparatus called in Denmark *Kasteruser*. (*Nordisk Tidsskrift for Fiskeri*, vol. ii, p. 239.)

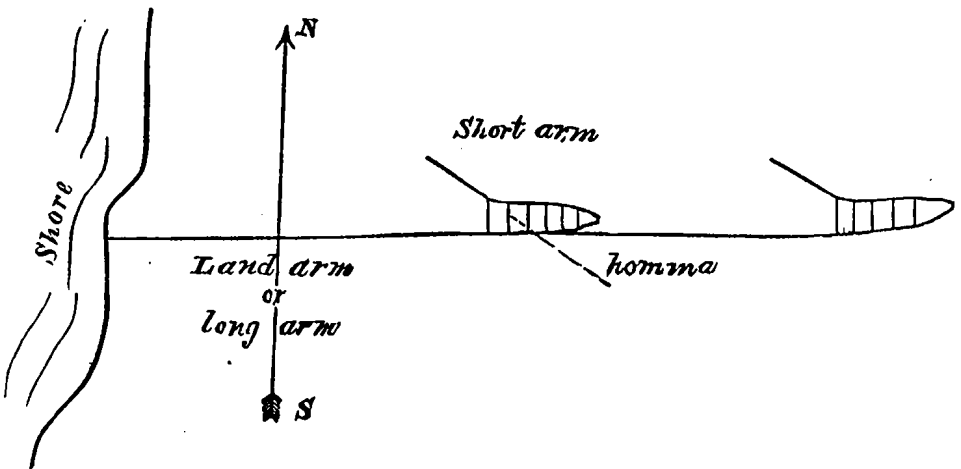
† A full description of the Danish eel-traps has been furnished by J. Collin in *Nordisk Tidsskrift for Fiskeri*, vol. ii, p. 374.

placed one behind the other. Near Grissleham the "hommor" are placed by the side of each other, generally at intervals of 10 and sometimes 5 fathoms. Near Landsort the "hommor" cannot be placed one back of the other, owing to the steep and stony bottom. Near Örü



(Kalmar district) 3, at most 4, "hommor" are placed one behind the other, as shown in the drawing.

In Blekinge and on the east coast of Scania the "hommor" are placed one back of the other in such a manner that each succeeding "hommor's" long arm commences about the middle of the preceding one. (See drawing.) In order, if necessary, to draw on land the entire row of



"hommor" they are united to each other by strong ropes (on certain portions of the east coast of Scania), or (on the south coast of Scania) the lower part of the long arm of the succeeding "hommor" is tied to the lower part of the short arm of the preceding one. According to

Areschoug the places where eel-fisheries are carried on have been called "drätter" (from "druga"=to draw), whilst near Esperöd, where the "hommor" are not bound together, they are called "sätter" (from "sätta"=to set). In the Sound it is not thought worth while to set "hommor" except on grassy bottoms, and the number of "hommor" is therefore limited by the extent of these bottoms. Near Råå only 4 "hommor" are, for this reason, placed in a row one behind the other, whilst near Helsingborg 16 are set. Each succeeding "hommor" is placed right back of the preceding one, so that its long arm reaches up to the "tub" of the preceding one.

The eel "hommor" are a large apparatus, and are therefore comparatively expensive. Near Grissleham the price of a "homma" is 50 crowns [\$13.40]. Near Öro (in the Kalmar district) the price is 20 crowns [\$5.36], and with the ropes belonging to it 30 crowns [\$7.04]. The large "hommor" used on the east coast of Scania and in Blekinge cost 100 crowns [\$26.80] apiece. On the south coast of Scania smaller "hommor" are used, which cost 16 crowns [\$4.28] apiece. Near Råå a "homma" costs 50 crowns [\$13.40]. If, as is the case in many places, as many as 30 "hommor" and more are placed in each row, they represent a very considerable capital.

THE YIELD OF THE EEL-FISHERIES WITH "HOMMOR."

It has been impossible so far to obtain full data relative to the yield of the eel-fisheries along the entire stretch of coast where the fisheries are carried on.* But even from the data which we possess it appears that the eel-fisheries with "hommor" are of considerable economical value. From the Stockholm district a few statistics are given, which to some extent will show the value of these fisheries. Thus, at Byholma, where 11 fishermen own 50 to 60 "hommor," the total average yield per annum was 3,720 pounds of eels. The eels are shipped to Stockholm, and generally are sold at 10 crowns [\$2.68] per "lispund" [=18.6 pounds]. The gross income from these fisheries, therefore, amounted to 2,000 crowns [\$536]. On the southern part of the same coast, near Landsort, 1,395 pounds of eels were caught last year, which, at the price of 8 crowns [\$2.14] per "lispund," would represent a sum of 600 crowns [\$160.80]. From the statistics given below, taken last year by Mr. V. Wahlberg, regarding the eel-fisheries on the coasts of Östergötland and Kalmar, it appears that the gross receipts from the "hommor" eel-fisheries were 17,010 and 27,900 crowns [\$4,558.68 and \$7,477.20], respectively, the price per "lispund" being only 6 crowns [\$1.60]. Some years, however, the eels fetch 7 crowns [\$1.87] per "lispund," and these prices must be considered as, on the whole, somewhat below the average. From Blekinge we have but few statistics. In 1878 there were in the

* Special statistics of the Scania eel-fisheries have only been furnished for the last two years. Previous fishery statistics did not give separate statistics for each fishery.

district of Kristianopel 185 "hommor," in which there were caught about 18,600 pounds of eels, representing a sum of about 7,000 crowns [\$1,876]. In the districts of Thorshamn and Sturkö, with the islands belonging thereto, the number of "hommor" in 1878 was about 1,000. No data could be obtained as regards the number of eels caught. The number of "hommor" in the western part of this district, from Pukavik as far as Nogersund, is estimated at about 600, and in 1879 about 93,000 pounds of eels were from this district sold to German fish-dealers, which, at a low calculation, would represent the sum of at least 50,000 crowns [\$13,400]. The receipts from the eel-fisheries in the Christianstad district in 1879 were 138,600 crowns [\$37,154.80]. We have, however, no data from some of the fishing stations in this district, and the receipts from these eel-fisheries may, in favorable years, be put down at about 145,000 crowns [\$38,860]. In the Malmö district the eel-fisheries are comparatively insignificant.

As will be seen from the statistics of the last two years, the eel-fisheries vary greatly in different years.

TABLE I.—Statistics of the eel-fisheries with "hommor" in the districts of Östergötland and Kalmar in 1880, gathered by V. Wahlberg.

Districts.	Number of fishermen.	Number of "hommor."	Number of pounds of eels caught.	Gross receipts.
Östergötland.....	86	312	52,731	\$4,557 68
Kalmar.....	240	1,144	80,490	7,477 20
Total.....	326	1,456	139,221	12,034 88

TABLE II.—Statistics of the eel-fisheries with "hommor" on the coast of Scania during the years 1879 and 1880.

1879.

Districts.	Number of fishermen.	Number of "hommor."	Number of pounds of eels caught.	Gross receipts.
Christianstad.....	207	4,438	372,539	\$37,152 57
Malmö.....	130	1,062	30,204	3,370 48
Total.....	436	6,100	403,433	40,523 05

1880.

Christinnstad.....	350	4,089	162,973	\$15,934 24
Malmö.....	237	2,022	41,050	4,010 35
Total.....	593	6,711	204,023	10,034 59

During the year 1879 the eel-fisheries were unusually productive, whilst in 1880, when stormy weather greatly interfered with them, they were in most places even below the average. Mr. Areschoug, of Esperöd, has kindly furnished the accompanying (see plate) interesting graphic

representation, showing the variations of the Esperöd eel-fisheries during the period 1815-1879, from which it appears, amongst the rest, that the year 1879 was the most favorable year during the entire period. Mr. Areschoug justly thinks that, as the fisheries in the other parts of the east coast of Scania are very much like the Esperöd fisheries, said table will give a tolerably correct idea of the variations of the eel-fisheries during that period on the entire coast. It will hardly be necessary to state that data as to wind and current, during this long period, would be exceedingly valuable.* Although the eel-fisheries are generally continued for a period of three months, the richest hauls are generally made during a much shorter period, when the great mass of eels passes the coast, before and after which the yield is generally much smaller. The same is also the case as regards the salmon-fisheries in the rivers. As an illustration, we will state the following relative to the Esperöd fisheries in 1878, kindly communicated by Mr. Areschoug: "Up to September 24th but few eels were caught (18 to 36 pounds a day in each row of 'hommor'), the prevailing wind being west wind. On that day it commenced to blow from the NNE., but not enough to prevent the apparatus from remaining in position. This wind continued for several days, the current being northerly. The wind afterwards changed to SE. and S., but, as a general rule, the wind was more or less north till October 12th, when a gale commenced to blow from the east, which continued till October 25th, cast the apparatus ashore, and put an end to the fisheries. The fisheries of that year actually lasted from September 24th till October 12th, during which period 20 to 70 "lispund" [372 to 1,302 pounds] a day were caught in each row, the yield, therefore, being somewhat above the average. This, however, was an exceptional case." This communication is of special interest as showing the influence of wind and current on the eel-fisheries.

EXTENT OF THE DIFFERENT CATCHES, PRICES PAID FOR EELS, PREPARING EELS, AND PRINCIPAL MARKET FOR EELS.

As the greatest catches in one day in one and the same row of apparatus, Areschoug mentions 90 to 110 "lispund" [1,674 to 2,046 pounds]. At the present time catches of 50 to 60 "lispund" [930 to 1,116 pounds] a day are very rare. It is not stated how many "hommor" were used. Near Örö (Kalmar district) 40 to 60 eels per "homma" is considered a good catch. Catches of 100 to 220 eels per "homma" are regarded as exceptional. The eels, especially in the north, fetch a very good price, and in this respect rival the salmon. The greater portion of the eels are sold, fresh, to fish-dealers.

From the neighborhood of Grissleham the eels are sent to Stockholm, in long, narrow boxes, made of four boards, and resembling a wooden

* It has been resolved that from the present year daily observations of wind and weather, as well as the temperature of the water, shall be taken by the superintendents of the different eel-fisheries.

sewer-pipe. These boxes are taken in tow by lumber ships sailing to the capital. The price obtained was generally \$2.68 per 18 pounds. At Landsort about one-third of the catch is consumed at home, and two-thirds sent to Södertelje or Stockholm. On the coast of Östergötland and North Kalmar the eels are generally bought by fish-dealers from Norrköping or Stockholm, who visit the principal fishing stations, such as Harstena, and gather the fish in their sailing vessels. In Blekinge and Eastern Scania the greater portion of the eels has, for some years, been sold to German fish-dealers, who keep fishing-smacks on this coast during the entire period of the eel-fisheries. From time to time steamers come from Germany, gather the eels from the fishing-smacks, and take them to Stettin, whence they are sent to Berlin. According to a contract with the Hörvik fishermen, which I had the opportunity to see, the German dealers last year agreed to pay per 19½ pounds [21 Swedish "skålpund"] 8 crowns [\$2.14] in September and October, and 7½ crowns [\$2.01] in August. At Råå the eels vary in price according to their size. Of good eels 20 or 21 should generally go to 1 "lispund" [18.6 pounds], and are sold for 8 crowns [\$2.14], whilst smaller eels are sold for 5 crowns [\$1.34] per "lispund" [18.6 pounds]. Here, as in general along the entire south coast of Scania, the eels are sold in the country to farmers and dealers. It is only since last year that German dealers have visited the Kalmar district, where they had one fishing-smack. There is, therefore, no lack of remunerative and convenient markets, at least as far as the great eel-fisheries are concerned. The great portion of the eels caught on the coasts of Blekinge and Scania are, at the present time, sold fresh, and only small quantities are salted, either for domestic consumption or by salters. On the Kalmar coast a considerable number of eels are salted, and principally sold at the Norrköping autumn fair. The eels are laid in salt brine alive, are then put in kegs and salted once for all (that is, are not taken out again). Near Örö, on the coast of Misterhult, the price of salt eel was about 9 crowns [\$2.41] per "lispund" [18.6 pounds]. Twenty-two "skålpund" of fresh eels are generally calculated to make 15 "skålpund" of salt eel. [The skålpund = $\frac{3}{4}$ of a pound. This shrinkage is about one-third.]

OWNERSHIP OF THE EEL-FISHERIES; THE EEL-FISHERIES IN OLDEN TIMES.

The eel-fisheries with "hommor" are, as appears from the above, exclusively coast fisheries, which in most places are carried on within certain well-defined limits, called in Swedish eel "*drätter*" or "*sätter*" (corresponding to the Danish "*aalestader*" or "*aalegaarder*" (eel towns or eel farms). They are frequently known by special names, "*kyledrätten*," "*kungsören*," &c., and their boundaries are well defined till within a few yards from the shore. These eel-fishing places are in Scania and Blekinge considered taxable property. A great portion of the eel-fisheries on the east coast of Scania seem originally to have

belonged to the state, and have since been sold to private individuals. As regards many of them we find it stated that they were bought by the proprietors of Torup in 1697; but as late as 1850, 92 eel-fisheries in the district of Kristianstad are mentioned as belonging to the state, which, however, by royal decree of March 22, 1850, were either sold, or, under the name of "fish revenues," leased to different parties. The same was the case on the coast of Blekinge. In the district of Malmö the state seems to have owned but few eel-fisheries, which shows that the fisheries in that district were not very important (only two fisheries are mentioned to which the fishery regulations of 1850 applied). As far as I could ascertain there were no state or taxed eel-fisheries on the remaining portions of our Baltic coasts. In Nilsson's "Fauna" it is stated that taxed eel-fisheries are found on the coast as far north as Hernösand, but this statement is probably based on a mistake, and refers to the taxed eel-fisheries further inland. All the taxed eel-fisheries are treated as property, for which a certain tax is paid. According to the old Danish law, the so-called "*forstranden*" (coast front), and therefore the right to fish in its waters, belonged to the King, who gave it to his subjects, either free or for the payment of a certain rent. It appears from old documents that the nobility enjoyed special privileges to have free fishing and eel farms on portions of the coast belonging to them—privileges which were not enjoyed by any and every owner of property along the coast. This exclusive right of the noble owners of eel farms to carry on these fisheries in the sea was by the law of Christian V extended to all owners of such fisheries. As most of the eel-fishing grounds were probably taken up before these provinces (Scania and Blekinge) were ceded to Sweden, no new eel-fisheries have sprung up besides those which had been carried on from time immemorial. In certain portions of the west coast of Scania, *e. g.* near Råå, the eel-fisheries have been free. There is only one place where eels are caught which belongs to farmers, the rest of the fishing places being determined by the fishermen by mutual agreement. The one who first marks the place by anchoring the pole described above is considered to have the right to fish in that place during the year. Near Grisslehamn the fishing water is divided among the shareholders in certain parts, which are worked in turn and are changed every eighth day. If, for example, a shareholder has part *a*, he changes to *b* after eight days,

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>i</i>
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and so on; and if he closes the year's fisheries with part *e*, he commences at *f* in the following year. Every part is intended for four "homnor," but the owner has the right, if he desires, to set more. Quarrels arise very frequently among the owners of eel-fisheries, caused by trespassing on each other's fishing grounds, by one of the owners of a preceding part setting too many "homnor," and thus diminishing the number of eels going into the succeeding "homnor," &c. As it some-

times happens that one and the same row of "hommor" has several owners, the outer ones belonging to one and the inner ones to another, there is frequent occasion for quarrels and lawsuits. As was stated above, the distances between the different eel-fisheries are generally carefully defined, as well as the number of "hommor," but there are no rules as to how far from the coast the right of fishing shall extend. As the price of eels has risen the fisheries have sometimes been extended as far as local circumstances would permit. At the present time the "hommor" are set out much farther and in greater number than was the case formerly. Thus, near Kivik, "hommor" are now set at a depth of 9 or 10 fathoms. The fishing population proper, however, is excluded from these easy and profitable fisheries, and, displeased with this, they have during the last few years, in several places, attempted to set "hommor" beyond the boundary lines of the old fishing grounds, claiming that these could not extend farther than the so-called land ground (*land-grund*) extends according to the fishery law of 1852. This has given rise to quarrels and lawsuits between the fishermen and the owners of the taxed fisheries. The same has taken place in Denmark, where circumstances are very similar. It is certainly not to be wondered at that the fishermen feel hurt at seeing themselves exclusively confined to the difficult and, comparatively speaking, less remunerative sea fisheries; but, on the other hand, it cannot be denied that an equitable arrangement of the mutual rights would in this case be connected with great difficulties. It is, at all events, desirable that there should be some distinct legislation on this point. As for the rest, there does not seem to be any necessity for other administrative measures relative to these eel-fisheries.

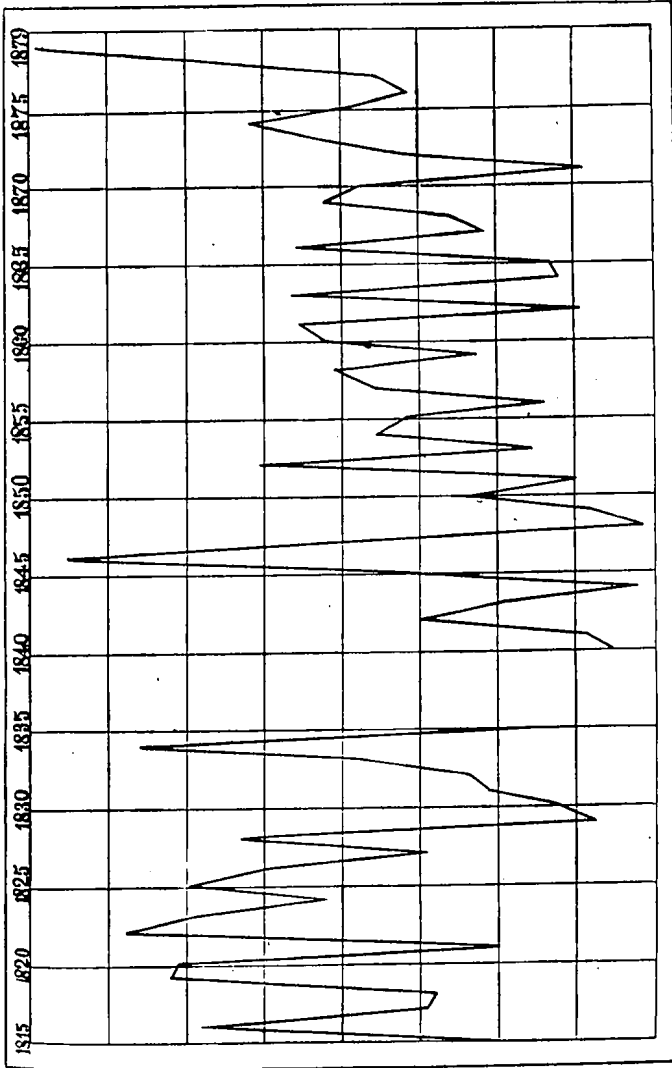


Table showing the variations in the Eel-fisheries near Esperöd and Kivik, in Scania, from 1815 to 1880,
by O. W. Areschoug.