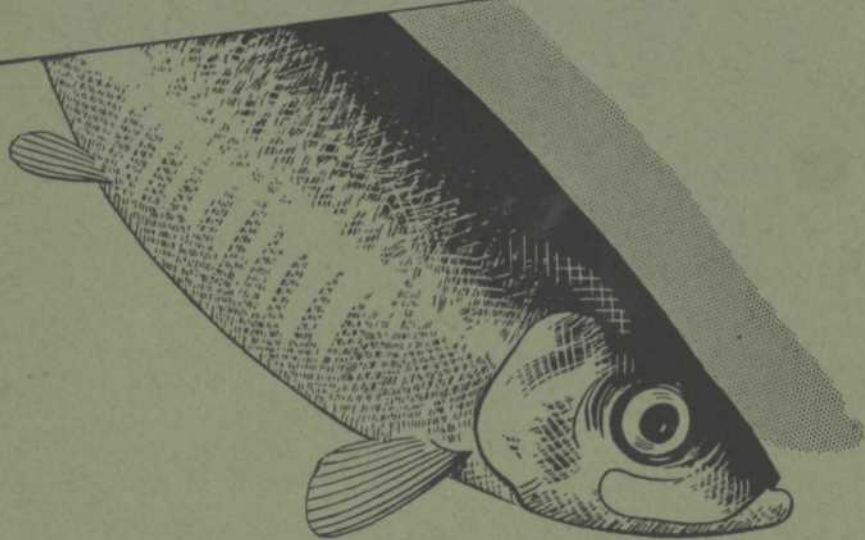


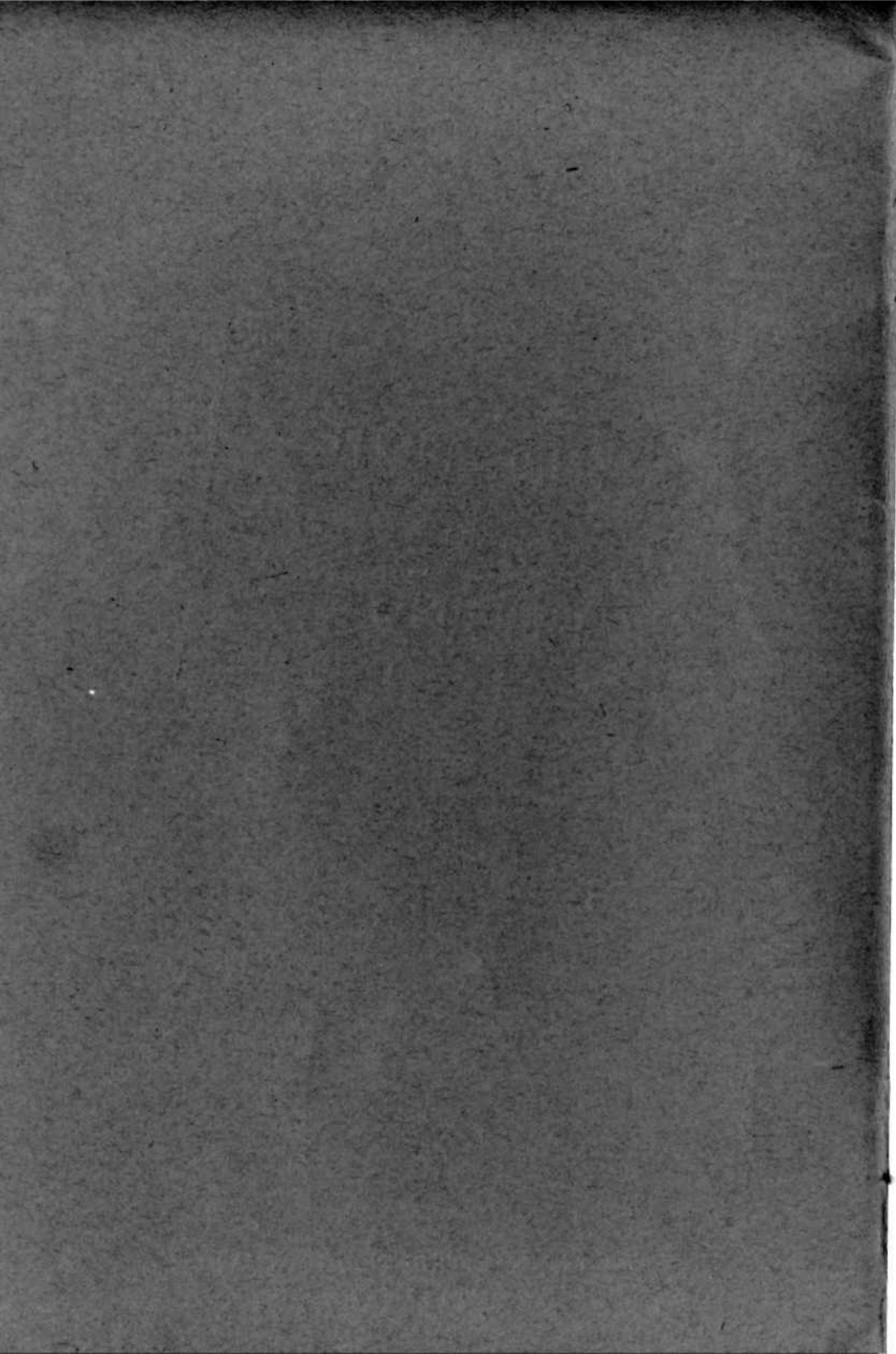


LECTURE NOTES
on the
HERRING



Issued by the HERRING INDUSTRY BOARD
184 Strand, London, W.C.2

March 1928



LECTURE NOTES ON THE HERRING



FOREWORD

THE subjoined lecture notes on the herring and the herring industry have been furnished in a partially connected form with a view to assisting those desirous of giving instruction on this subject to either juveniles or adults.

The wording has been rendered as simple as possible and it has been left to the discretion of the lecturer or instructor to make such alterations in phraseology or such additions in respect of local colour as may be deemed necessary to make the discourse suitable to the mentality of the audience addressed.



THE FISH THAT HAS MADE HISTORY

Most of us are familiar with the old song that runs thus :—

“Ye gentlemen of England, who sit at home at ease,
Oh little do you think upon the dangers of the seas !”

The words hold a hint of reproof in them. They remind us that proud as we may be of belonging to a sea-faring race, most of us know surprisingly little of the lives of those “whose business is in deep waters.” We take our great fishing industry for granted. We have grown so accustomed to seeing ample supplies on the fishmongers’ slabs that we rarely spare a thought for the perils that are faced and the hardships that are endured in order to keep us supplied with what may well be called “Nature’s health food.”

Yet our fishing industry is a national asset of which we may well be proud. There are many other nations who would be only too glad to have such a plentiful supply of health-giving food. The pity is that we do not make more use of it than is the case at the present time.

“Of all the fish that swim the sea” runs an old saying, “the Herring is the King.” Certainly if food value be considered it fully justifies the title.

The Name "Herring."

Where does the name "herring" come from? Probably from a Teutonic word "Heer" meaning an army. This is an apt name for the herring, which reaches our coasts in vast armies or shoals.

The herring has always been popular with British folk. In olden days it was enjoyed in its fresh state only in the fishing villages where it was landed or in the districts near enough to them to be served by a pack horse. The rest of the country had to be content with it salted or "pickled"—for there were no means of rapid transport to carry it inland. Even so, salt herring made a very pleasant change of diet, and it was held in high esteem, even by Royalty, because it was realised what an extremely nutritious food it was.

Although the oldest document relating to our herring fishery and found in the Chronicle of the Monastery of Evesham is dated 709 A.D. it is probable that the fishery started at Yarmouth soon after the landing of Cedric the Saxon in 495. By 1108, Henry I. had made this town a burgh, for which honour an annual payment was to be made to the King of "ten milliards of herrings!"

The Sheriffs of Norwich held thirty-four acres of land in return for carrying twenty-four herring pasties to the King of England, wherever he might be. Thus you will see that already the herring was regarded as a Royal dish, and in 1286 we find a curious clause in the Charter of Great Yarmouth, requiring the corporation to send 100 herrings baked in twenty-four pasties to the Sheriffs of Norwich.

In 1270 the Herring Fair was held at Yarmouth for forty days and the barons of the Cinque Ports sent their officers there to keep the peace. This they did until the Fair was discontinued in the 18th century.

Before the Norman Conquest large numbers of fishermen came over to England from Flanders and Normandy, using suitable East Coast centres as bases for their herring fishery. It is because the ocean bed off our East Coast is so suitable as a spawning ground that the herring shoals visit it in preference to other coasts. It has been a splendid thing for Great Britain for it means that we are in a highly favourable position as regards this important fishery.

Legislation.

During the 13th century the Norwegians and Dutch had been developing their herring fisheries. In 1295 we find Edward I. allowing the Dutch to come to Yarmouth to fish for herring and English subjects were forbidden to molest them. But this did not prevent international rivalry, which soon began.

The long struggle between England and Holland which lasted throughout the reigns of the Stuarts and the years of the Commonwealth is sometimes stated to have been in reality a struggle for the control of the herring fisheries in the North Sea. This shows how important the industry had grown in the eyes of both English and Dutch. Out of this struggle can be traced the rise of our mercantile marine and ultimately—through Cromwell's navigation laws—the British Navy itself! Small wonder that the herring has been called "the fish that has made history."

In 1429 we find the herring once more "in the news." The English were laying siege to Orleans (later on to be relieved by Joan of Arc). An English contingent under Sir John Falstaff was conveying Lenten provisions, chiefly herrings, to the besiegers when it was attacked at Rouvray by a combined force of French and Scots. This engagement became known as the "Battle of the Herrings," and it illustrates how valuable a food the herring was considered in those days.

During the 16th and 17th centuries the Dutch were supreme in the industry, probably owing to their discovery of a special method of preparing herrings for salting. Certainly the British fishery declined so seriously that various laws were passed by our government to stimulate its revival.

The Navigation Act of 1650 provided that only British-caught herrings could be brought into the country or even carried from one port to another, thus dealing a death blow to the Dutch who had acquired a monopoly of the carrying trade.

In 1663 by a "Statute for the Encouragement of the North Sea Fisheries," we find that no fresh herrings were to be imported into England except in English-built ships.

In 1666 came yet another Act for the "Better Encouragement of the Herring Fishery" and the importation of fresh or salt, dried or bloated herring caught by foreigners was prohibited.

During the 18th century there were a number of other Acts for the encouragement of the British fisheries and various bounties were offered to owners of fishing vessels. During the close of the 18th century and the opening years of the 19th, herrings were caught in great abundance in the Firth of Forth and the revival of the herring fishery, which was ultimately to produce 500,000 barrels of herrings annually, proved of enormous help at a time when the exorbitant price of bread was a cause of great hardship to the people.

The humble but nutritious herring has thus played no small part in the past affairs of the nation and can still be regarded as a fruitful source of supply in the event of food shortage in the future.

THE HERRING AND ITS LIFE

Now for a few words about the herring itself. When you look at one you will see how marvellously it is streamlined for speed.

The head is beautifully moulded with no distinct neck, while the snout forms an effective water cutter. The closely fitting fins; smooth eyes carefully adjusted so that their surfaces are level with the adjoining surfaces of the head; closely fitting gill-covers and scales are all designed to offer practically no resistance to forward motion. Moreover, the surface of a herring, smooth as it is, is improved yet further by a mucous covering designed to reduce friction to a minimum. Again the hollow curves of the hinderpart of the body throw off the water displaced during forward motion.

The forked tail of the herring is another indication that it is built for speed. As a rule, fish with forked tails are capable of swimming for long

periods at high speed while those with rounded or squarish tails, although capable of sudden bursts of speed, are usually slow swimmers.

There is an interesting reason, too, why the under side of the herring is silvery white while its back is steely blue and black. It is a case of protective colouring. Looked at from above by hungry birds for instance the metallic colours of its back merge into the tones of the sea. Looked at from below by larger fish seeking their prey, the silvery white of the belly renders it inconspicuous when seen against a light sky. So you see its beautiful colouring is really a protection against its enemies from the air above and from the water beneath.

Unlike nearly every other food fish, herring eggs are laid on the bottom of the sea. They are sticky and become attached to seaweed and stones. Only a small fraction of the eggs laid come to maturity because when the herring shoals gather together for spawning they are followed by myriads of hungry fish ready to devour the female "hard roe" deposited on the bed of the sea.

There is no fear however of the herring dying out because of this devastation. Although they lay rather fewer eggs than most fish of their size the average family for each mother is at least 30,000 a year! It has been calculated that if all these eggs came to maturity the seas would be solid with herrings in a very few years, so you see it is just as well that there is some amount of thinning out.

When the little fish hatch out they drift helplessly with the tides for a while but gradually come to the surface to feed. At this stage the helpless little creatures, borne hither and thither by the currents, don't look in the least like herrings.

When they are about an inch and a half long they come into the estuaries and along the shores in millions and begin to develop their silvery sheen. The scales appear and at this stage they are caught as whitebait. Whitebait, however, is not young herring only, but a mixture of them with other small fishes, chiefly sprats.

When the herrings are six to eight inches long they leave their nurseries and move to the rich feeding grounds off shore. At three years old some develop roes and prepare to breed, while others—though fat little fish—do not become mature for another year. These are often caught when they congregate on the feeding grounds and that is one reason why, when you buy herrings, particularly in June and July and ask the fishmonger what he has done with the roes he assures you that "they haven't any."

These are not the only herrings without roes. There are the mature fish who have spawned, but they are too watery and thin to be worth eating until they have fattened up again when there is no reason why they should not be caught. But there are so many points around the British Isles where herrings congregate to spawn at different times of the year that there are very few months when herrings with roes are not available in some market or other.

What do the herrings live on? They feed principally on the *plankton* or swarms of microscopic organisms, both animal and vegetable, that float on or near the surface of the sea. As might be expected from the nature of their

food, their teeth are small and feeble. The food as it passes through the gills is strained from the water by a filtering mechanism called gill-rakers. These are a double row of stiff appendages like long, slender, close-set bristles set on the inner margin of each gill-arch. These gill-rakers serve as an effective sieve and keep back all the plankton while the water pours through them.

This plankton-eating habit of the herring is most important from the food value point of view for plankton is saturated with sunshine and its life-giving properties pass directly into the fish. We all know the value of sunlight these days, but few people realise how much of it is stored up in the oil of the herring.

HOW HERRINGS ARE CAUGHT

There are two main methods of catching sea-fish—trawling and drifting.

In trawling, a bag shaped net, the trawl-net, is dragged along the ocean floor and deep-swimming fish such as cod, haddock, plaice and other varieties are scooped up into it.

The second method, drifting, is carried on at those seasons when the fish approach the coast in shoals and at distances usually thirty to forty miles from the shore. In drifting, a curtain or wall of net, some thirty feet high and two or three miles in length is "shot" or cast. The nets, eighty to a hundred in number, are dropped over the side of the drifter as it steams slowly on its way until this long meshed wall is complete. It hangs in the water, suspended by floats or "buffs" as they are called, while the boat drifts (hence the name) quietly in the tide. The fish swim against this vertical wall and as they are not able to "go into reverse" wedge themselves tighter and tighter in the mesh of the net.

Under these conditions drifting, of course, can only be used for fish that swim in shoals near the surface of the water. Such fish are called "pelagic." Herring, mackerel, pilchards and sprats are all pelagic fish, but of these far and away the most important is the herring. Indeed, the other pelagic catches are quite insignificant compared with our huge herring catch.

We do not know when the drift net was first invented, but it is reasonable to suppose that it has been used since that far-off age when herrings were first captured in the open sea for it is the only sort of net by which surface swimming fish can be caught in large numbers.

The herring population round Great Britain is divided into many separate families. Each family collects together in a shoal near spawning time and goes on a holiday trip to the coastal waters. The different families go to different places and at different seasons and so there are only a few months in the year when one family or another is not holiday-making.

The Two Chief Herring Seasons.

It is when the herrings are in these shoals that the fishermen catch them. The two chief herring fisheries are (1) off the Orkneys and Shetlands and the North-east coast of Scotland during the early summer, and (2) off East Anglia in October and November. The East Anglian fishery is the most important of all. You will get some idea of the quantities caught when I

tell you that the number of herrings landed in Great Britain each year is not far short of *two thousand million*! (For full list of ports and seasons, see Appendix).

The size of a shoal varies greatly. It may cover an area of half a dozen square miles; sometimes it is much larger. A length of eight or nine miles and a breadth of four to five miles are not infrequent. The herrings do not swim near the surface all the time. They swim much deeper during the day but each night they tend to rise to the surface and so drifting is carried on at night.

A point to be remembered here is that the herring only come together in shoals when they are in prime condition. That is a particularly important point for the housewife to remember, for it means that when herrings are cheapest they are also at their best.

Drifting is one of the hardest and most exacting of occupations and hardy indeed must be the men who engage in it. Sleep can only be obtained in snatches, and right through the season the men are all too often drenched with spray. They are exposed to every wind that blows, while the hauling in of the heavy nets is no work for a weakling.

Often after a long night's work the nets are hauled only for the men to find that they have caught practically nothing, for although the herring swim in shoals they are most elusive fish and shoals are not always found where expected. On the other hand they may arrive in such vast numbers that the nets are broken and swept away—a very serious loss for the fishermen, for a new outfit will cost hundreds of pounds.

It is on the skipper that the responsibility rests for selecting the spot where the nets are to be "shot" or cast. In the afternoon he sets out from port and may be steaming about for several hours before he makes a decision. What influences his choice? Partly the colour of the water. The herrings are seeking their food—the microscopic vegetable and animal life of "plankton" that floats in the water—and brown coloured "plankton" is preferred by them to green. So the skipper avoids green-looking patches. Herring are the favoured food of many sea birds and fish and a gathering of gulls or the sight of a blower whale often reveals to the skipper the most likely place to commence operations.

When the skipper decides to shoot his nets a detachment of seven men line up with almost military precision and pay out the nets.

The time to haul in is sometimes settled by testing the number of fish to be found in the first half dozen nets. If the prospects are promising from this inspection, the labour of pulling in begins. This takes anything over three hours and in a heavy sea with the waves drenching the crew every moment, the work is hard and exhausting.

When a good catch is made the fish caught in the meshes of the net are hauled by the crew over the side of the drifter in what looks like a sheet of silver. As each net is hauled over the deck, the fish are shaken out and, as they pile up, they are shifted with wooden spades through holes in the deck into the hold below.

During the great East Anglian fishery—where the best fishing is usually to be found in well defined parts of the sea such as the area known as

Smith's Knoll—there will be up to 700/800 British vessels alone, in addition to those of Dutch, German and other nationalities collected together. At night the vast stretch of troubled water reflecting the ships lights is one of the most fantastically beautiful scenes that you could witness the world over.

Here is a description by one who spent a night on a herring drifter :—

“Just as the dawn was breaking, we all stood to, to help with the pulling in of the nets. I have seldom seen anything which was quite so physically and coldly lovely. For the first fifty yards or so of the nets we found nothing. Then quite suddenly we began to pull on board sheets and sheets of shimmering silver. My back was soon aching, my hands and arms torn and bruised with the net. But throughout the long hours which it took to haul in the net, I was never tired of watching the harvest.”

If the catch is big enough to warrant it, the drifter makes for port with her cargo; if not the skipper steams about until he finds another suitable pitch and once more sinks his nets.

Ashore the herrings are auctioned on the quayside immediately the drifter arrives, so the boats race back, for it is usual for the catches to obtain the highest prices from the buyers at the opening sales. So you see that the herring is really the freshest fish that you can buy—it is caught at night and landed the next morning.

The best of the catch is bought for the home market, to be sold as fresh herrings or to be kippered or bloatered. As soon as a buyer has made his purchases they are swiftly packed with ice in boxes, labelled and rushed off to the waiting fish train. Time is indeed money at a fishing port.

The greater part of the catch, however, is salted down into barrels by Scottish girls who go from port to port from the Orkneys to Lowestoft wherever the herrings are most plentiful. These cured herrings, of course, are for our export trade. You have probably all seen pictures of these fisher lassies and read of the incredible speed with which they gut the herrings and sort them into trade sizes.

THE HERRING INDUSTRY TO-DAY

By the beginning of the present century, the British herring industry had grown enormously and nearly 80 per cent. of the catch was salted for the export trade.

Each year the demand from abroad for cured herrings increased. The sale of fresh and smoked herrings at home, if not large, appeared to be steady. The British drifter fleet expanded year by year until it comprised at least 1,500 drifters, manned by some 15,000 fishermen, while in addition the industry provided work for thousands of men and women on shore. In 1913, the peak year of the industry, no fewer than 12,000,000 cwts. of herring were landed and sold.

Then came the War. There is small need to emphasise the part played by our fishermen then. Our shores were patrolled by fishermen from the earliest days of the War, “the first to offer service to their country, the last

to seek its aid," as has well been said. Their unique knowledge of our coastal waters made their services of great value in the defence of the country and the Admiralty were the first to acknowledge this fact.

But when peace came and they turned once more to their fishing, they found a very different state of affairs from that prevailing in 1913.

International trade had received a terrific set-back. All sorts of difficulties, lack of purchasing power on the part of our foreign customers, together with the imposition of tariffs and quotas limited the free exchange of goods, and herring were no exception.

By 1934 the total landings of herrings had fallen to less than 5,000,000 cwts., compared with double this quantity in 1913. Exports had decreased by 50 per cent. ; the home demand by 40 per cent. But the catching power of the industry had not been reduced in anything like the same ratio. There were still 1,088 steam drifters, only 74 less than the number in 1929 when the total catch was nearly twice as great.

During these years the plight of those herring fishermen who work on a share system (some having a guaranteed wage) grew steadily worse. In 1933 for instance many fishermen did not earn enough to meet their proportion of voyage expenses, and, after months of arduous work had nothing whatever to bring back to their wives and families. Poverty and dire distress descended on the fishing communities. Small wonder that the men grew bitter when it seemed that the nation cared nothing for the excellent food they won for it through such difficulty and danger.

This was the position in 1935, when the Government stepped in and the Herring Industry Board was set up. Obviously the problems confronting the industry could not be solved in a day. But much work has already been done in the way of exploring new markets and reviving, wherever possible, the old. Moreover, the home market is now receiving attention and already we in this country are beginning to wake up to the fact that herrings are one of the finest foods we can eat. I shall have something more to say about this part of the Herring Industry Board's work at the end of this lecture.

Here are the figures of the herring catch since 1911 :—

THE HERRING CATCH

			<i>Annual Average weight landed. cwts.</i>		<i>Annual Average value. £</i>
1911—1913	..	..	10,800,000	..	3,700,000
1925—1930	..	..	7,700,000	..	3,500,000
1931—1935	..	..	5,100,000	..	2,100,000
1935	..	..	5,680,000	..	1,960,000
1936	..	..	5,558,000	..	2,405,000
1937	..	..	5,516,000	..	2,180,000

THE HERRING—NATURE'S HEALTH FOOD

If we want to see our children grow sturdy and strong, we cannot give them a better food than herrings.

One of the chief dangers of our modern diet is that we are apt to eat too much cereal and starchy food and too little "first-class protein," the material which builds up the body and repairs waste. For what is termed "first-class protein" we have to go to foods of animal origin, such as meat and fish, eggs, cheese and milk.

The herring provides some of the most digestible of these first-class proteins and very cheaply too. Here is a table that shows the low cost compared with other first-class proteins :—

				1st class protein
6d.	spent on herrings (at 6d. per lb.)	gives you	.. ..	2.3 oz.
6d.	.. .. stewing steak (at 1/- per lb.)	gives you	.. ..	1.5 oz.
6d.	.. .. beef (at 1/3 per lb.)	gives you	.. ..	1.3 oz.
6d.	.. .. eggs (at 1/3 per doz.)	gives you	.. ..	1.06 oz.
6d.	.. .. leg of mutton (at 1/- per lb.)	gives you	.. ..	0.99 oz.

It will be seen from the above that herrings are certainly one of the very cheapest sources of protein that you can buy. Two large herrings will supply the amount of protein required daily by an adult.

In addition to protein, herrings contain about 10 per cent. of fat, which is not only an important source of bodily heat and energy, but contains two of those remarkable substances essential to health known as vitamins. Several different vitamins are known to exist. Those found in the oil of the herring are called Vitamins A and D. Vitamin A protects from certain forms of infection and without it growth is impossible. Vitamin D prevents and cures rickets, and promotes the formation of sound bones and good teeth. The herring is therefore a valuable food for growing children.

These vitamins are both produced under the action of sunlight, and are believed to be a result of the herring's own diet of sun-soaked plankton. In any case they make it a most valuable food, especially for growing children.

When you consider the energy value of the herring you will find it is extraordinarily high :—

1 lb. of herrings	gives	755	calories
1 lb. of meat	gives ..	685	..
1 lb. of eggs	gives ..	635	..
1 lb. of milk	gives ..	310	..
1 lb. of cod	gives ..	220	..

Compared with the other common foods the herring is very rich in mineral matter. It provides us with a familiar element, iodine, which we know, in tincture form, as something to paint on a scratch, but which is

immeasurably more valuable as an absolute necessity for life and health. The thyroid gland in the neck, one of the master architects and protectors of the body, cannot make its precious secretion without iodine which is unfortunately lacking in much of our food, so that very many of us suffer, though we don't know it, from some degree of iodine deficiency.

You may ask how it comes to be that the herring possesses such an assemblage of dietetic merits. The answer is quite simple. It is that the herring is the most abundant and by far the cheapest of the few kinds of fish which distribute their valuables throughout the muscles, instead of collecting them all into one place, the liver, and leaving their muscles without vitamins, without iodine and without oil.

The herring has a very small liver, but it has in its flesh *all the merits of cod liver oil* at a very low price combined with a delicious flavour. No wonder it is wholesome faring! It has, indeed, been singled out by eminent authorities as one of the best of the "protective" foods.

The latest scientific research has proved that the food value of the herring is not likely to be lessened by cooking. Nor are the vitamins destroyed by smoke-curing as lovers of kippers and bloaters will be pleased to learn.

Herring roes, too, are especially full of nutriment and soft roes are thus an excellent food for young children.

To sum up—in value for money the modest herring is truly a King. In its various forms—fresh herring, kipper or bloater—it supplies weight for weight, more strength, more energy, more solid satisfaction than almost any other dish that you can put on the table.

I have already mentioned the Herring Industry Board and their strenuous endeavours to make the herring as popular in this country as it deserves to be. But one thing everybody already knows about herring is that it is regularly thrown back into the sea in enormous quantities! **This idea in the public mind is a vastly exaggerated one.** Occasions certainly do occur when sudden very heavy landings of fish are more than a port can deal with in the circumstances of the moment, which may be that the herring is of an inferior or even more than usually perishable quality or that it is very hot weather or perhaps a Saturday. In such cases when the herring could not in any case reach the market in fit condition it is thrown away, but **it is true to say that fully 99½ per cent. of the total catch every year is usefully disposed of,** though often at prices that mean loss to the fishermen.

The Board point out that at the present time our average yearly consumption of herrings in this country is only 15 herrings per head! If that fifteen could be increased to 50—less than one a week actually—the troubles of our herring fishermen would be at an end. Not too much to ask, surely, when you consider how much this country owes to its fishermen, and how greatly the health of the people would benefit from a more liberal use of this appetising food.

March, 1938.

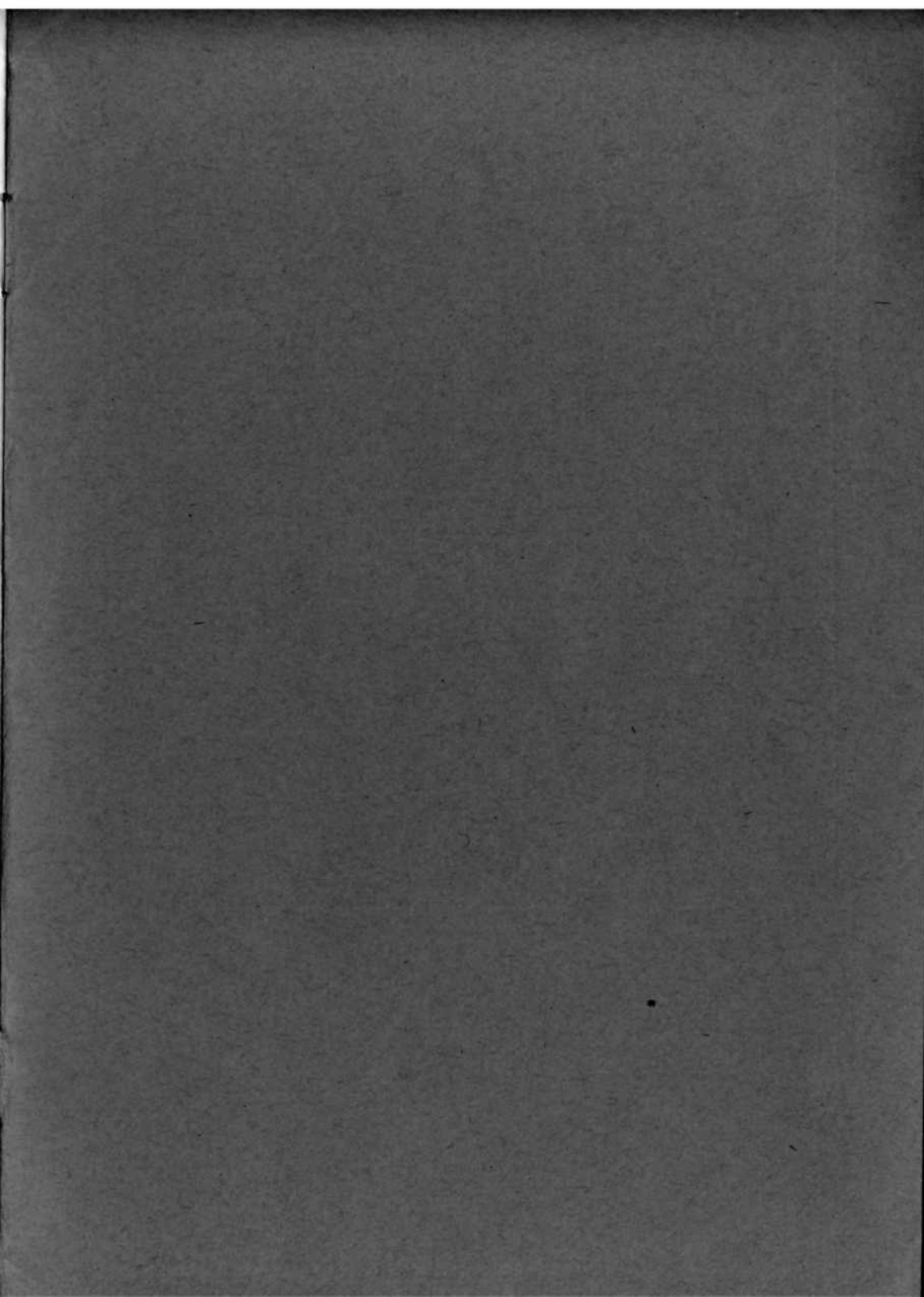
Appendix.

HERRING FISHERY SEASONS

The Principal Fisheries are printed in bold type.

JANUARY	..	Plymouth Firth of Forth Milford Haven West Coast of Scotland	
FEBRUARY	..	Firth of Forth	} Somewhat variable and uncertain
MARCH	..	Firth of Forth	
APRIL	..	Firth of Forth	
MAY	..	Hebrides Orkneys Shetlands North Shields	
JUNE	..	Hebrides Orkneys Shetlands North-east Coast of Scotland North Shields Isle of Man	
JULY	..	Hebrides Orkneys Shetlands North-east Coast of Scotland Eyemouth, Berwick, etc. Milford Haven West Coast of Scotland North Shields Hartlepool Isle of Man	
AUGUST	..	Hebrides Orkneys Shetlands North-east Coast of Scotland Eyemouth, Berwick, etc. North Shields, etc. Milford Haven West Coast of Scotland Hartlepool Scarborough Isle of Man	

- SEPTEMBER .. Hebrides
Orkneys
North-east Coast of Scotland
Eyemouth, Berwick, etc.
North Shields, etc.
Milford Haven
West Coast of Scotland
Hartlepool
Scarborough
Grimsby
Yarmouth
- OCTOBER .. **Lowestoft**
Great Yarmouth
Milford Haven
West Coast of Scotland.
- NOVEMBER .. **Lowestoft**
Great Yarmouth
West Coast of Scotland
- DECEMBER .. Lowestoft
Great Yarmouth
Dover
Plymouth
West Coast of Scotland



**PORTS AND SEASONS
OF THE
HERRING FISHERY**

The Principal Fisheries are shown in bold type.

