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## ORGANIZATION AND SCOPE OF ICELAND'S FISH-INSPECTION SERVICE

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### INTRODUCTION

Considerable interest in the standardization of quality for fresh and frozen fishery products has developed recently in this country. A bill (H. R. 7441) has been introduced at this session of Congress on the establishment of standards for frozen fishery products. One or two States have also expressed interest in setting up standards for certain types of fishery products.

Several countries already have developed some type of fish-inspection service for fishery products. Canada recently has been developing and expanding its fish inspection service. Iceland and Norway also, for several years, have been developing and expanding quality standards and inspection for fishery products. In view of the interest for fishery-products standards, what Iceland has done along these lines probably will be of interest to the fishing industries in the United States.  
(Editors)

### OBJECT OF INSPECTION

A new Act dealing with fish inspection, processing, curing, and exportation of fish was passed by the Althing on March 23, 1948. Article 1 of the Act reads:

"All fish exported from Iceland shall be inspected by officially appointed fish inspectors and shall be under their supervision. Exempt shall, however, be small parcels, of 50 kilos or less, sent as gifts.

"Fish exported in the ships that caught it shall be exempt from inspection, if it was not landed in this country. The Ministry may, however, issue regulations concerning such exportation, after having consulted the Fish Inspector General.

"The Ministry may order inspection of fish sold as an article of commerce in the Icelandic market."

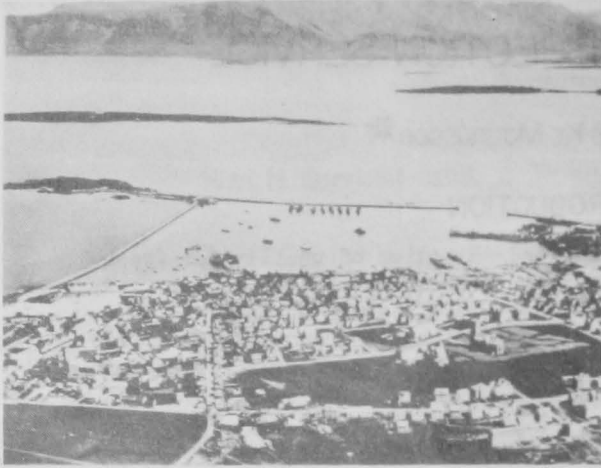
The object of the Icelandic Fish Inspection Agency is to insure an article of the best possible quality and to avert quality faults that might prejudice the sale of the Icelandic fish in the foreign market. With this object in view, export fish shipments have to be stopped occasionally, or observations on them included in the inspection certificates that go with the shipments. The Agency works with the aim that such occurrences should be as few as possible. Success in this matter depends, however, on the production of prime-quality products, and that their treatment and storage be as perfect as possible.

Giving instructions is the principal work of the inspection service. This is mainly done while the fish is being processed, but also partly by inspecting

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the completed article and calling attention to the faults and showing how repetition of these may be avoided.

Adequate education in handling, storing, holding, processing or shipping fresh, frozen, or processed fish would preclude any faults being found with the fish when it is inspected in its final marketing form. The producer of a shipment of fish turned down by the inspectors is bound to suffer a financial loss. As a rule, however, only a very small quantity is condemned by the inspectors, and since the defect is often insignificant, the shipment can be allowed to proceed on its way with an inspection certificate stating the shipment's quality deficiency. Normally this would mean some reduction in the final price realized for the shipment.



AIR VIEW OF REYKJAVIK, ICELAND.

While the inspection certificates should be a just assessment of the quality of the goods, they should also be an inducement to the producer to maintain the highest possible standard which is obtainable only by demanding increased inspection and instruction. The producer maintains, and justly so, that the inspection service should insure the production of prime-quality goods. But if there is a failure in this respect, no matter whether the fault lies with the inspection service or the producer, it is incumbent upon the former to see to it that the unsatisfactory cases do not affect those producers who offer a high quality product. Any laxity in this respect would be unfair to the producer who conscientiously adheres to the inspection standards, thus maintaining a high standard for the Icelandic fish industry. It might even affect the entire Icelandic fish market abroad.

Since Iceland's economic position depends upon the production and the sale of fishery products, the Icelandic Fish Inspection Agency is not merely a protection for foreign nations who buy Icelandic products, but an equally necessary insurance for Icelandic fish producers and for the Icelandic nation.

#### ORGANIZATION OF INSPECTION AGENCY

In the Fish Inspection Agency there are, at present, eight active chief inspectors, in addition to the Inspection Director General, who is the head and the organizer of the whole Agency.

The Southwestern part of Iceland has four chief inspectors stationed at Reykjavik. Besides his duties as chief inspector, one of them is commissioned to experiment with improved working methods and better processing, and to keep himself and the inspectors informed of similar matters with the neighboring nations through the study of literature and periodicals. Western Iceland has one chief inspector stationed at Isafjord. Northern Iceland has one stationed at Akureyri, and eastern Iceland one at Seydisfjord, while there is also a chief inspector stationed at the Westman Islands (Vestmannaeyjar).

Upon the completion of each inspection tour, the chief inspectors report upon the quality of fish produced by each individual producer, and if any faults have been found, they are described in these reports, giving their causes and the way in which they affect the quality of the product. The report contains, in addition, advice as to how the faults may best be remedied and their recurrence prevented. One copy of these reports is sent to the producer, while the other is retained at the head office of the Fish Inspection Agency. Thus, extensive information is gathered about the processing and the quality of the fish produced for export.

According to the Fish Inspection Act of 1948, the Minister of Fisheries appoints the Inspection Director General and the chief inspectors, in consultation with the Director General. They are all required to take an oath that they will obey orders governing their work, and conscientiously and diligently attend to their official duties.

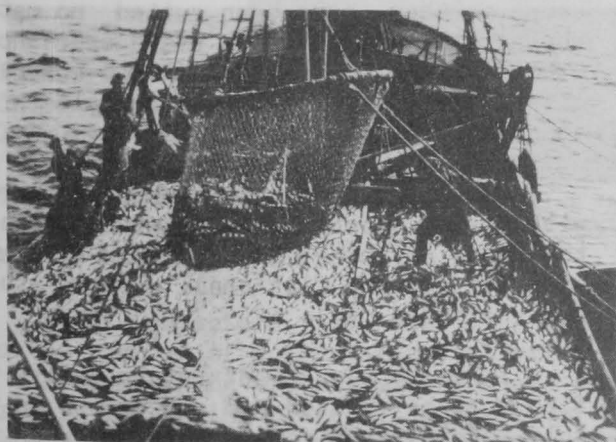
Article 11 of the Act says:

"Should it be established that inaccuracies in a certificate issued by the Inspection Director General or a chief inspector must be deemed due to culpable carelessness or negligence, he shall be responsible for such loss as may ensue. In addition the Ministry may peremptorily remove him from his post. He shall, however, be deemed blameless if he can prove that some subordinate of his was at fault. In that case the subordinate, to whom it was due, shall be held responsible for the loss. In addition to that responsibility they may then peremptorily be deprived of their post or their appointment.

"In other respects, infringement of this Act by inspectors and chief inspectors shall be dealt with in accordance with the Penal Code."

#### INSPECTION OF SHIPS AND BOATS

Chief inspectors see that the holds of fishing vessels and boats, as well as gratings and shelves in the holds, are so fitted as to facilitate their cleaning.



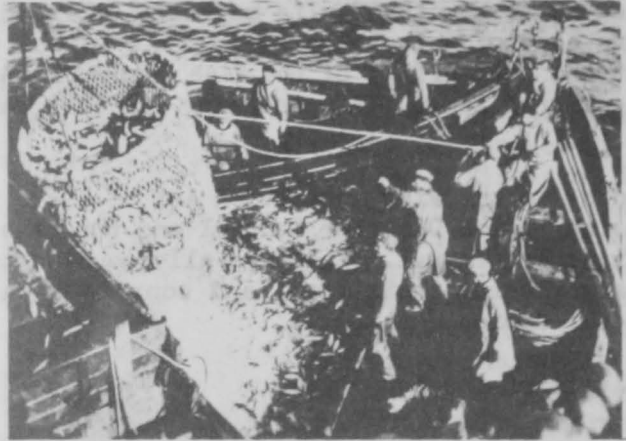
ICELANDIC FISHING VESSEL BRAILING HERRING.

Holdings shall be so fitted as to obviate the danger of the fish being bruised on pieces of the framework or by protuberances. In the bottom of the holds shall be close-barred gratings, so fashioned that the laths on which they rest are laid longways along the hold, in order that the flow of water down and aft may be unobstructed. Boats that during a fishing trip keep their catches on deck shall also have gratings on that part of the deck where the fish are kept. All gratings

shall be so constructed as to be easily kept clean. The same applies to the space underneath the gratings.

The forward and aft bulkheads of the hold must be tight and sufficiently insulated to prevent heat penetrating from the crew's quarters or from the engine room. If the depth of the hold exceeds one meter (a little more than three feet), it is to be fitted with shelvings when fish is stored with ice, with each layer of fish never exceeding one meter. In the smaller boats, only slightly exceeding one meter in depth, the hold may, however, be filled without the use of shelvings.

Holds of fishing boats must be carefully cleaned and scrubbed after each fishing trip. The inspector may even demand that a disinfectant be used, if deemed necessary.



BRAILING A GOOD CATCH OF HERRING.

It is highly important that all fish caught be properly handled on board all fishing vessels.

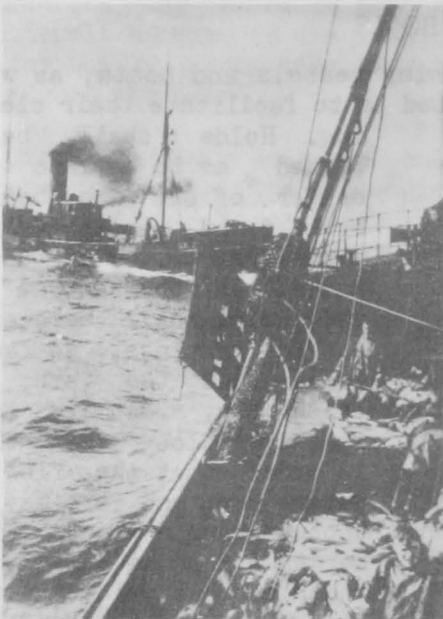
All fish are to be bled by cutting the cervical veins on both sides as soon as the fish has been brought on board.

In boats that do not land their catches daily, all fish are to be gutted on board as soon as possible. Boats landing their catches daily need not necessarily gut the fish on board, though during the summer season, it is desirable that all fish be gutted and washed as soon as they have been caught.

All fish are to be carefully washed as soon as they have been gutted no matter whether this is done on board or ashore. Great care is to be taken that no traces of liver, intestines, or blood remain in the abdominal cavity.

Fish must never be hooked or pierced with forks or other implements except in the head. Anything that may bruise or otherwise damage the fish shall also be studiously avoided.

In boats that do not return daily, the fish must be gutted and put on ice in the hold before rigor mortis sets in. When the fish are put on ice, they are to be laid with the belly side down, and flatfish with the cut facing down (the white side up).



ICELANDIC TRAWLER IN FOREGROUND SHOWS DECK LOADED WITH GROUND FISH. STEAM TRAWLER CAN BE SEEN IN BACKGROUND.

Chief inspectors shall at each time determine the quantity of ice to be used for the icing of fish in boats, depending upon the season of the year and the equipment of the ship.

#### SUPERVISION AND INSPECTION OF FROZEN FISH

At each freezing plant, a frozen-fish inspector is posted. It is incumbent upon him to see that all requirements respecting the handling and the quality of the fish as well as the equipment of the plant are complied with. In these matters, he is responsible to the chief inspectors and the Inspection Director General.

The inspector may serve the freezing plant in other capacities at the same time, e.g., by filling the post of a foreman or doing manual work, as long as he is in a position to carry out his inspection duties efficiently. He must always be present whenever fish is being processed in any manner. If unable to attend in person, he shall appoint someone to act on his behalf, and shall be responsible for the work of his alternate or substitute.

Inspectors at freezing plants shall forthwith contact chief inspectors or the Inspection Director General whenever a problem arises in the performance of their duties which they feel cannot be solved by them.

If a freezing plant employe entrusted with inspection duties is found neglecting his duties, or if he shows himself otherwise unfit for the task, the Inspection Director General may appoint some other person to devote himself to the inspection exclusively.

Frozen-fish inspectors are appointed by the local Chief of Police on the recommendation of the Inspection Director General.



WEIGHING AND PACKING LINE IN AN ICELANDIC FILLETING PLANT. AT THE LEFT CAN BE SEEN SOME OF THE FILLETING LINES.

Chief inspectors visit the quick-freezing plants as frequently as possible for the purpose of supervising the work of the inspectors. Supervision consists of first examining the raw material and then going through the whole process of handling it, paying close attention at every stage of its handling, and correcting any mistakes that may have been made.

If the plant has been using other packing systems than the one in process at the time of the chief inspector's visit, that fish previously processed is inspected in its completed condition without being thawed out. This is a safe and expeditious method, entailing no expense for the producer, as no damage need be done

to either the fish or the wrappings. In order to be able to inspect the fish efficiently in its frozen condition, it is essential that the chief inspector should recognize the more common types of defects in frozen fish. To enable him to do so, the chief inspector undergoes a special course of training and is thereafter continuously kept up to date as required by the constant progress of the industry.

Duties of Chief Inspector: The chief inspector's work is indeed supervision, but first and foremost it is the instructing and advising of ordinary inspectors to whom is entrusted the actual work of inspection. The chief inspector can inspect only a fraction of each plant's production, and for that reason, great emphasis is put on the inspector's qualifications as even a minor fault may often prove very costly.

When the fish is shipped, the chief inspector examines it for the last time, principally looking for storage faults. The producer also has his own stevedore in each ship, whose business it is to see that the packings of the fish are sound and clean, that the right kind of fish and packings are being put on board the ship, and that the stowing is done in the proper manner.

No chief inspectors, inspectors, or stevedores are accepted by the Fish Inspection Agency unless they have been through a course of training where the handling of frozen fish was taught. Such courses of instruction have been held during the past two years.

Quality Faults: It would take up too much space and it would be difficult to include the official regulations concerning frozen fish, since these are continuously being amended to keep pace with developments. But a list of common quality faults which inspectors must guard against or rectify is given here. It is not an exhaustive catalog of such faults or oversights as may occur in the handling and storing of frozen fish, but they are the most common and are the ones which are deemed most discernable by inspectors.

Defects in the raw material:

1. Putrifaction.
2. The flesh of the fish bruised or torn, whatever the cause.
3. The fish bloodshot because of imperfect bleeding.
4. Blood bruises in the fish.
5. The fish pierced by a hook, without blood having gathered in the cut.
6. Black filaments in the fish.
7. Worms in the fish.
8. The fish excessively lean.

Possible working faults:

1. Mucus on the skin of the fish.
2. Cut surfaces unclean.
3. Careless gutting of fish frozen whole.
4. Inexact grading of flatfish frozen whole.
5. Scales or similar particles on the surface of cuts.
6. Fillets not cut the right size to fit the cartons.
7. Loose particles of fish in the cartons.
8. Bones in fillets that should be boneless.
9. Parts of the belly flap included in the fillet; where this should not be so.
10. Particles of skin on fillets that should be skinless.
11. Underweight.
12. Any irregularities in the packing, e.g., not the right number of pieces in a 1-lb. carton, the wrong number of wrappers in a 5-lb. carton, the wrong number of flatfish fillets in a 7-lb. carton, etc.

13. The fillets so laid down as to make the skin touch a cut surface.
14. The top layer in a flatfish carton not correctly laid.
15. Empty space in the carton.
16. Marking labels or check labels lacking.
17. Frozen whole flatfish incorrectly laid in the block.
18. The parchment and cellophane sheets creased, torn, or failing to cover the fish properly.
19. Packing unclean.
20. Marking of packages unsatisfactory.
21. Too much fluid has escaped from the fish while it awaited freezing.
22. Packages have lost their right shape, e.g., in the freezing machinery.
23. The fish has become desiccated in the freezing process.
24. The fish has frozen slowly.
25. The ice cover on the block not clean.
26. Outer covers not clean, or they are torn, or do not shut properly.

Storage defects:

1. The fish desiccated.
2. The fish rancid.
3. The fish is tough (in many cases this also means desiccation).
4. Tissues in the fish ruptured through the action of the ice crystals. (If the fish is stored too long, the ice crystals increase in size and more moisture escapes from the fish when it is thawed, which means losses both in taste and nutritive value).

## INSPECTION OF DRIED AND SALTED FISH

Inspection of dried and salted fish is of a somewhat different kind. Its handling is entrusted entirely to the producer until the time of packing for exportation, when the fish is inspected by official inspectors, working under chief inspectors. These inspectors are appointed by the local chiefs of police on the recommendation of the Fish Inspection Director General.

Both dried and salted fish are grouped into several classes by the inspectors, according to their quality and appearance, and in accordance with the various requirements of the different buying countries. It would take too much space to list here all the rules to be observed by the inspectors, and indeed they are no more static than those that apply to the inspection and handling of frozen fish.

Chief inspectors instruct the producers to the extent possible and as regularly as circumstances will permit. Should the fish, when inspected for packing, be found to be of inferior quality, they are put in the lower categories. The following are some of the defects that may cause this to be done and of which the inspectors are fully competent to judge:

The principal handling defects in salted fish:

1. Bloodshot spots caused by hooking.
2. Bloodshot bruises.
3. The general hue of the fish more or less unsatisfactory, particularly the belly flaps, owing to insufficient bleeding.
4. Incorrect fashion of removing the head.
5. Incorrect method of splitting the fish, e.g., making too deep a cut, failing to cut right up to the tail, or not deep enough to reach the spine; various faulty cuts.
6. Unsatisfactory scrubbing before salting.
7. Faulty method of laying the fish in the salt.
8. Undersalting.
9. Tears in belly flaps.
10. The fish creased or broken after being salted.
11. Not well enough rinsed after being taken out of the pickle (if pickle-salted).
12. The hue of the fish impaired through the use of impure salt.

All these defects appear plainly in the fish even though they are not fully cured. If they are fully cured, they do not disappear, but most of them appear more plainly. If the fish are fully cured, the following defects may also be further developed and observed:

13. Unsatisfactory scrubbing.
14. Insufficient pressing after scrubbing and before drying.
15. Sun-baking.
16. Cracks caused by careless handling.

Defects developed in storage:

17. Red spots.
18. Black spots. These defects may develop in both cured and uncured fish, though rarely, except through long-term storage.
19. The fish is also apt to turn yellowish when stored too long.
20. Dampness in the fish. The surface of the stacks may turn damp when winter comes and the cold weather sets in.

The principal defects developed in dried fish are due to weather conditions, for as everyone knows they are hung up quite fresh, out in the open, where they must remain in all types of weather until they have been fully dried. Their appearance mainly depends upon the kind of weather that prevailed while they were drying.



ISAFJÖRDHUR, A TOWN IN ICELAND.

Special care must be taken that there are no parts of the fish to which the air has not free access, for if the fish touch anything, they become spotty and their appearance is thus spoiled. Care should also be taken to open and empty out the spine of fish that are not split.

The main defects which develop in storage are dampness and mould, due chiefly or entirely to unsuitable storage accommodations.

The Fish Inspection Agency is not concerned with other methods of treatment than those enumerated above.

#### INSTRUCTIONS REGARDING HANDLING AND PACKING OF FISH IN THE QUICK-FREEZING PLANTS

The following are the instructions for quick-freezing plants for handling and packing fish and fillets for export purposes:

Fillets of All Fish, Except Flatfish: Fillets, parchment-wrapped in 7-lb. blocks; 8 blocks per container:

1. The fillets shall be unskinned (skins on) with small pieces of bones necessarily severed in filleting, but all other bones, belly wall or flaps and substantially all discoloured flesh shall be removed.
2. The fillets shall be cut the right size for each block, so they can be packed without being folded.
3. The fillets shall not be packed so as to have the skin side of a fillet touch the cut surface of a fillet more than necessary.
4. Each block shall have a slip or label or be otherwise clearly marked with brand or identification number of the producing company.
5. The freezing of the fillets must not take more than 3 hours, and the temperature of the fish shall then not be higher than  $-18^{\circ}$  C. ( $-0.4^{\circ}$  F.).
6. Each block shall be glazed by dipping it twice into clean water immediately on being removed from the freezer. The temperature of the water shall be as close as possible to  $0^{\circ}$  C. ( $32^{\circ}$  F.).
7. The blocks must not lose their right shape or be desiccated in the freezing process.



8. All packages and containers must be clearly marked and the fish covers must be clean and properly shut. Each container shall be secured with three metal strappings.

Fillets packed in 2-lb. cartons:

1. The fillets shall be unskinned and containing only the small pieces of bones necessarily severed in filleting, but all other bone, belly wall or flaps and substantially all discolored flesh shall be removed.
2. The fillets shall be cut the right size to fit the cartons, so they can lay straight and not require folding of the ends.
3. The skin must not touch the cut surface.
4. Each carton shall have one check label with a number or letter identifying the producing company.

Fillets packed in 5-lb. cartons:

1. The fillets shall be skinned and boneless, and all discolored flesh shall be removed.
2. Each carton shall contain six cello-wrappings, three on the bottom of the carton and three on the top.
3. In each carton shall be one check label, and in each wrapping, one marking label, unless the cello-paper is marked.

Fillets packed in 1-lb. cartons:

1. The fillets shall be skinned and boneless, and all discolored flesh shall be removed.
2. Each carton shall contain one cello-wrapping unless it is overwrapped.
3. Each carton shall have one check label.

Flatfish: Fillets of plaice and lemon sole packed in 7-lb. cartons; packed 3 per each container:

1. All fillets of flatfish shall be cut from whole fish of not less than 1-1/4 lbs. in weight.
2. The fillets shall be boneless with skin and belly wall or flaps, but all discolored flesh shall be removed.
3. The fillets shall be classified by weight as follows:

2	oz.	fillets = 50-56	per each 7-lb. carton.
2 1/2	"	" = 41-45	" " 7- " "
3	"	" = 35-37	" " 7- " "
3 1/2	"	" = 30-34	" " 7- " "
4	"	" = 26-28	" " 7- " "
4 1/2	"	" = 24-25	" " 7- " "
5	"	" = 22-23	" " 7- " "
5 1/2	"	" = 20-22	" " 7- " "
6	"	" = 18-19	" " 7- " "
6 1/2	"	" = 17-18	" " 7- " "
7	"	" = 15-16	" " 7- " "
7 1/2	"	" = 14-15	" " 7- " "
8	"	" = 12-14	" " 7- " "
8-12	"	" = Large	
12	"	" and over = Extra large	

4. The fillets shall not be laid so as to have the white skin or cut surface touch the dark skin.
5. All cartons and containers must be clearly marked.
6. Each container shall be secured with three metal strappings.

Whole-frozen plaice and lemon sole:

1. The fish shall be satisfactorily gutted, care being taken not to leave any liver, guts, or blood in the belly cavity.
2. After the fish has been washed, it shall be packed immediately and placed into the freezer.
3. The fish shall be classified by weight as follows:
 

9	oz. to	3/4 lb.	marked	small
3/4	lb.	"	1	" " medium
1	"	"	2 lbs.	" large
2	lbs. & over			" extra large.
4. The fish shall be packed unwrapped, in 7-lb., 14-lb., 21-lb. and 28-lb. blocks; eight, four, three, and two or three per container, respectively.
5. The fish shall be laid in the blocks so that the white skin does not touch the dark side more than necessary.
6. Each block shall have a slip or label or be otherwise clearly marked with the brand or identification number of the producing company.
7. Each container shall be secured with three metal strappings.
8. If the fish is not to be shipped, it is advisable to store it unpacked. This makes it easy to detect storage defects. If there are none, it can be reglazed.



**FISH FACTS**

DO YOU KNOW . . .

That herring is the most abundant  
food fish in the world . . .

--Fishery Leaflet 132