COMMERCIAL FISHERIES REVIEW

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REPORT ON THE NORWEGIAN FROZEN FISH FILLET INDUSTRY[1/]

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FILLETING INDUSTRY IN GENERAL

The fisheries that support the groundfish fillet industry in Norway are located in the northern part of the country principally from the Lofot Islands area northward to Hammerfest in Finnmark. These fisheries, particularly those for cod, are generally ranked among the most prolific in the world. In a normal year the Lofot fisheries alone from January through March yield from 80,000 to 120,000 metric tons of large cod. Notwithstanding this, the 1953 spring fishery for cod was disastrous owing to violent storms and almost continuous bad weather for the two-month period which comprised most of the season.

No trawlers operate in the Lofot cod fishery. The purse seiners, gill netters, long liners, and hand liners used are dependent to a great extent on reasonably fair weather conditions. As a result of the curtailed fishing because of the poor weather during the 1953 season, the landings of headed and gutted cod as of March 30 amounted to only about 25,000 tons, one of the poorest showings during the past 50 years. Since March is usually considered the prime fishing period, the 1953 catch of the Lofot fisheries totaled less than 45,000 tons of cod even though the weather abated for the last few days of the season. This means that the catch was less than 50 percent of an average year. As an example of the severity of the situation, the largest fillet-producing plant had not packed any cod fillets at the end of March this year as compared to 1,000 tons produced by the same date last year.

Norwegian Landings of Principal Species Used in Fillet Industry, 1948-52

Species	1952[1/]	1951	1950	1949	1948
	(Thousands of Metric Tons)				
Cod[2/] (headed and gutted) .	218	249	196	176	179
Haddock ..... do.	22	18	18	21	25
Ocean catfish ... do.	5	6	5	3	1
Ocean perch (round)	3	3	3	2	3

1/ PRELIMINARY.
2/ ABOUT 85 PERCENT USED FOR SALTED AND DRIED FISH.

Keen competition for the small supply of fish this year naturally has developed and fillet producers are pitted against klipfish (dry-salted cod) and stockfish (air-dried cod) buyers causing prices paid to fishermen to rise considerably above the 4-4½ U. S. cents-per-pound minimum (headed and gutted) set by the Norwegian Government. Ex-vessel prices were closer to 6 U. S. cents per pound and in some cases have gone beyond what fillet producers can pay in relation to the market for the finished product; thereby further curtailing production. A similar situation prevailed in the Finnmark fisheries which are important for cod as well as other species.

1/ THE INFORMATION CONTAINED IN THIS REPORT WAS GATHERED DURING A TRIP TO NORWAY IN MARCH 1953 IN RESPONSE TO AN INVITATION FROM NORSK FROSSENFISK A/L, AN EXPORT TRADE ASSOCIATION WHICH HANDLES APPROXIMATELY 99 PERCENT OF NORWAY'S FISH FILLET EXPORTS.

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The present fillet production comes mainly from cod, haddock, ocean catfish (wolffish), ocean perch, halibut, and some pollock. Cod fillets made up the major share of the total fillet output with haddock and ocean catfish ranking about equal as next in importance in quantity produced. These fillets are cellophane-wrapped, frozen, and packaged in one-pound consumer packages, and also in five- and ten-pound cartons. The one- and five-pound cartons are the types commonly placed in the United States trade. There is, however, a limited amount of jumbo cod and haddock fillets (about two pounds each) packaged in ten-pound cellos that are especially prepared for institutional trade in the United States.

Export marketing of all varieties of Norwegian frozen fishery products is carried out by the export trade association Norsk Frossenfisk A/L with headoffices at Oslo. This organization, which handles approximately 99 percent of fillet exports, consists of primary producers operating on a share basis according to the production capacity. There appears to be no direct government subsidy in the production and foreign trade of fillets, although the Government owns and operates one large plant as a production and pilot-plant combination. On this basis it participates in the export association in the same manner as a private producer, earning dividends on shares held just as the other participants do. However, as profits from this plant accrue to the Government any operating losses similarly must be covered by Government funds.

The Association presently pays the individual producers an agreed price for fillets produced and furnishes the wrapping and labeling material under one trade name. The plant profit is included in this price. Adjustment of the price takes place in accordance with changes in costs of raw materials. Frozen fillets are then marketed by the Association at prevailing prices which determine the Association profit or loss status.

During 1952 about 50 percent of the Norsk Frossenfisk production entered the United States market, the balance being sold in European markets which are under steady development. In spite of Norway's normally large cod production, shipments to the United States in 1952 consisted of about 75 percent haddock and ocean catfish fillets, 20 percent cod fillets, and 5 percent ocean perch fillets. Europe was considered a better cod market than the United States.

All of the frozen fish destined for export are subject to rigid inspection and quality-control regulations of both the Government and the export association. Inspection starts with selection of the fresh fish at the point of landing and ends with final inspection of every cargo at the time it is loaded on the steamer for overseas transport. Kristiansund is at present the main port of loading for export. Frozen fillet cargoes are assembled there, arriving from the production areas by coastal steamers that provide daily service along the coast.

Almost everywhere there is evidence of expansion of facilities for handling frozen-fillet production. Old freezers are being renovated and new freezers and cold-storage warehouses are being constructed in accordance with the most modern principles. Most storage is now at temperatures from -5° F. to -10° F., but the goal is for lower temperatures in the neighborhood of -30° F. The newest and most modern freezer has been recently built in Bergen. This plant has a blast-freezing capacity of 70 metric tons per day in addition to a 250-ton brine-freezing capacity for herring. It has a storage capacity of 12,000 tons of frozen fish. With these improvements Norway is obviously looking toward expansion of markets both in Europe and the United States. For the United States market, the greatest emphasis is expected to be placed on larger production of haddock, ocean perch, and ocean catfish.

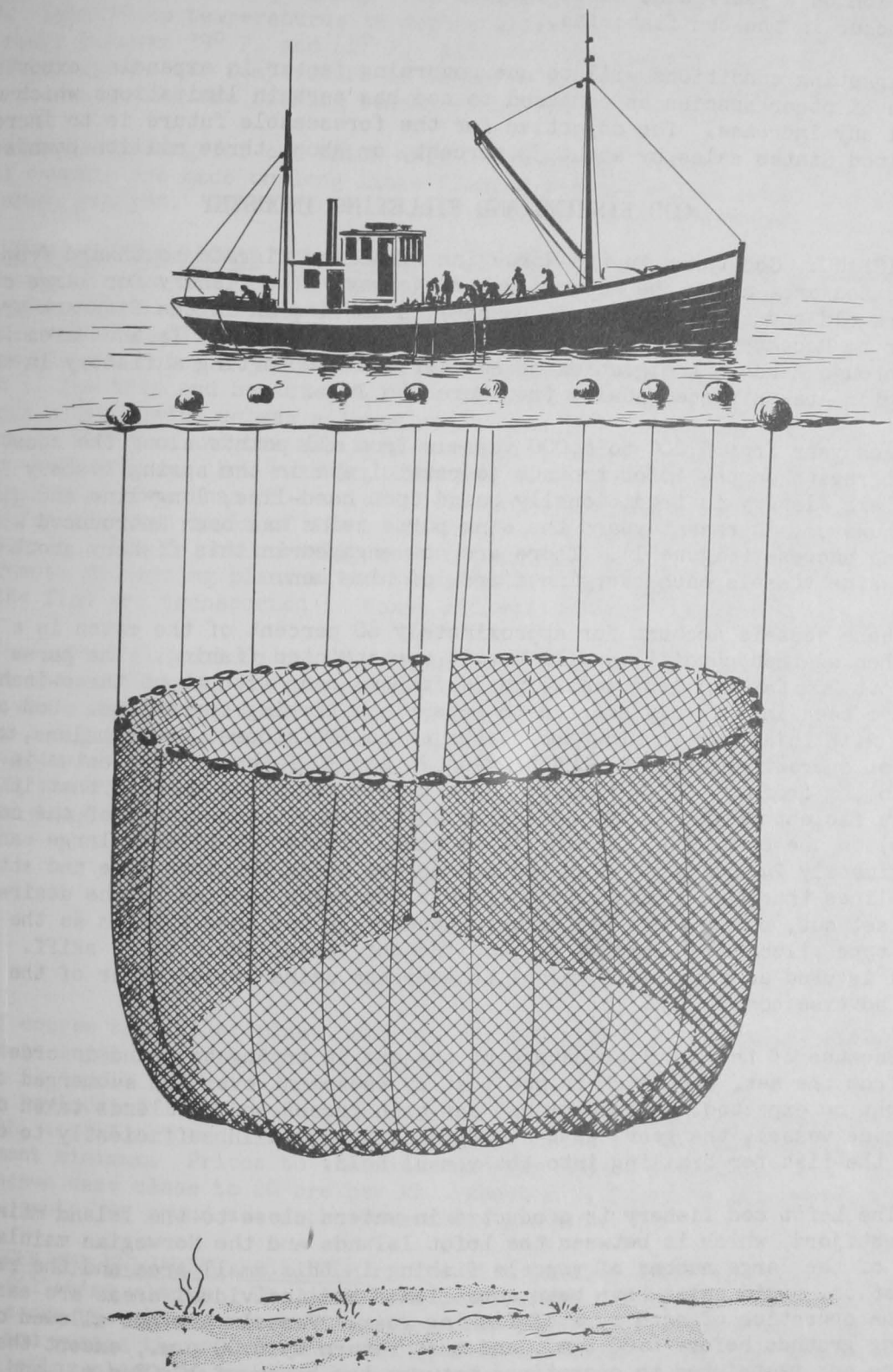

FIG. 1 - SINK PURSE SEINE USED TO CATCH COD IN NORWAY.

Some attention also may be given to increasing the production of sei (pollock) for marketing in the United States. Such diversity is sought to bring more uniform production on a year-round basis instead of relying on the short production periods which occur in the cod fisheries.

Marketing conditions will be one governing factor in expanding exports. Production of other species as compared to cod has certain limitations which will control any increase. The objective for the foreseeable future is to increase the United States sales by about 30 percent, or about three million pounds annually.

COD FISHING AND FILLETING INDUSTRY

FISHING: Cod taken in the Norwegian fisheries migrate southward from the Barents Sea area along the upper coast of Norway. The fishery for large cod (about 10 years old and approximately 14 pounds) is carried on in the Finnmark area from October to December and then farther southward in the Lofot Islands area from January through March. A migration of smaller cod--supporting a fishery in the northern region--takes place usually from March to June.

Each year from 5,000 to 6,000 vessels from all points along the coast of Norway congregate on the Lofot grounds to participate in the spring fishery for large cod. This fishery is traditionally based upon hand-line, long-line, and gill-net gear; however, in recent years the sink purse seine has been introduced with resounding success (figure 1). There are now engaged in this fishery about 860 purse-seine vessels each carrying a crew of nine men.

These vessels account for approximately 60 percent of the catch in a normal year when weather conditions will permit unrestricted fishing. The purse seines are about 200 fathoms long and 20 to 30 fathoms deep with about three-inch mesh, and have been ingeniously adapted to subsurface fishing operations. Cod can be caught with this gear in midwater depths up to 50 fathoms. Nevertheless, the usual range of operations is in depths between 20 and 30 fathoms. The seine is very similar to the ordinary U. S. Pacific Coast-type purse seine, except that it is rigged with sufficient weight on the lead line to overcome the buoyancy of the corks (or floats) on the cork line, causing it to sink. Twelve or fifteen large canvas floats approximately 24 inches in diameter are spaced along the cork line and attached to it by lines that can be adjusted to permit the seine to sink to the desired depth. It is set out, pursed, and hauled back usually in the same fashion as the Pacific Coast-type pilchard or herring seine using one vessel and a seine skiff. Another vessel is used as a haul-off vessel to keep the seine vessel clear of the gear under adverse conditions.

Because of the peculiar nature of the cod in trying to sound in order to escape from the net, the catch is not lost by escapment over the submerged cork line as might be expected. After the net has been pursed and the leads taken on board the seine vessel, the gear can be surfaced and hauled in sufficiently to concentrate the fish for brailing into the vessel hold.

The Lofot cod fishery is conducted in waters close to the Island mainly in the Vestfjord, which is between the Lofot Islands and the Norwegian mainland. Because of the large number of vessels fishing in this small area and the resulting congestion, rigid rules have been established and individual areas are earmarked for the operation of each type of fishing gear. Vessels are not allowed on the fishing grounds before 6:00 a.m., and must return by 6:00 p.m., except that purse seiners are restricted to operations between the hours of 10:00 a.m. and 4:00 p.m. Vessels over 70 feet in length are not allowed to fish in the Lofot area.

Because of the proximity of the grounds to the fishing ports and because of the regulations, the length of trips is always one day or less. The fish are landed in prime condition, coming from waters with a surface temperature of about 37° F. Subsurface temperatures in depths where most of the fish are found generally range between 39° F. and 42° F. Although the fishery is located in a very high latitude the air temperature is tempered considerably by the warm Gulf Stream. Temperatures during the fishing season range from 25° F. to 35° F.

Vessels fishing for cod catch only a few other species. The greatest incidental catches are made on long lines fishing for cod which frequently also take some ocean catfish. Other types of gear most generally catch cod exclusively.

HANDLING FISH ABOARD THE VESSEL: Cod are handled carefully aboard the vessels. Fish hooks or pews are not permitted. Therefore, the fish are handled by hand. Regulations require bleeding of cod aboard the vessel immediately after catching. All fish must be sold heads off and gutted. However, this is rarely done aboard the vessels, it being a job reserved for dockside operations. Because of the short length of the trip and because of the cool weather conditions, fish are held on the deck until landed unless a large catch requires stowing in the hold. The size of pens in the hold and the sanitary conditions therein are subject to strict Government regulations. For example, fish are not permitted to be stowed in the pens to a height of more than 65 cm. (about 28 inches) without horizontal supporting boards for the next layer of fish. There is no mechanical refrigeration aboard the vessels. Ice is not normally used unless fish are to be transported overnight to a remote processing plant after being landed and headed and gutted. In this case the fish are transported in boxes and well supplied with fine ice.

The prices for cod to the fishermen vary in accordance with demand. The Government has established a minimum price schedule which varies according to districts where the fish are marketed. In the Lofot area the minimum price for cod (headed and gutted) to the fishermen this year is 58 ore per kilogram (about 4 U. S. cents per pound). In addition, the fishermen sell the livers and roe. For example, the fishermen's gross income at minimum prices on an average purse-seine fish weighing eight pounds, headed and gutted, is as follows:

8-pound fish ...	232 ore (33 U. S. cents)
½-liter liver ..	30 ore (4 U. S. cents)
½-kg. roe	30 ore (4 U. S. cents)
Total	292 ore (41 U. S. cents), or about 5 U. S. cents per pound.

Of course the fillet plant does not buy the livers and roe since these are handled as separate byproducts in special plants.

In periods of light production such as in the 1953 season, competition between klipfish, stockfish, and fillet producers raises the price considerably above the Government minimum. Prices to the fishermen for headed and gutted cod during the 1953 season were close to 80 ore per kg. (about 6 U. S. cents per pound) which is 2 U. S. cents per pound above the Government minimum.

DOCKS AND UNLOADING FACILITIES: The fish landing docks are generally adjacent to the filleting plants. The docks are constructed mainly of wood although some are of concrete. They have an adequate water supply for washing the fish that are headed and gutted there, and for washing down the docks. The fish are handled in the filleting plants as soon as possible after landing. During periods when fish are abundant, filleters and plant employees work three shifts. If it is necessary for any reason to hold the fish as long as overnight, they are stored in boxes and iced as may be necessary in accordance with the weather conditions and temperatures.

FILLETING PLANTS: There are between 27 and 30 filleting plants producing for the Association, depending on the time of season. These plants range from small

FIG. 2 - TRANSPORT VESSEL UNLOADING FISH AT FILLETING PLANT IN MELBU, NORWAY.

units with an output of eight to ten tons of fillets per day to large plants with an output of 45 to 50 tons per day. The total production capacity of the plants in the Association ranges between 350 to 400 tons of fillets daily. Combined storage capacity of all plants is about 15,000 metric tons. All of the plants observed were set up on a one-line operation; the smaller plants have six or eight filleters and the largest plant operated with 50 to 60 filleters on a three-shift basis. Realizing that more than one filleting line will provide greater flexibility in operation, at least one plant is converting to a three-line operation.

Sanitary conditions are governed by regulations established by the Norwegian Government. Both the large and small plants have concrete floors with adequate drains to facilitate washing-down procedures. Filleters and other workers are required to wear caps, and employees engaged in packaging use caps and uniforms. However, during the filleting and handling of the fillets the use of woolen gloves or similar implements that may contaminate the fish is not permitted. No steam-cleaning equipment was observed, but plant equipment is washed intermittently with cold fresh water. A rather thorough wash down is carried out at the end of each eight-hour shift, and it is understood that several times during the season there is an over-all scrubbing and wash down with a hypochloride solution.

FILLETING AND FILLETING LINES: The filleting lines in the plants are set up in a varying style of mechanical operation. In some plants the fish are brought to the filleters--after thorough washing--on a belt conveyor traveling the length of the filleting table; in others the fish are distributed to the filleters in boxes by an employee assigned to this job. Some other plants carry the fish in fresh-water flumes as a means of distribution. The frames (waste) are carried out on a belt or other type of conveyor running under the table. Fillets are generall carried to the packing room on a rubber-belt conveyor or fresh-water flume, althoug in some instances they are handled in pans. Scalers are not used in processing co when skinless fillets are produced. Where scaling of haddock or cod is necessary

for skins-on fillets, the scaling is done with a hand device frequently as simple as a board with a few nails in it. No mechanical hand scalers were observed but several have been reported as in use. In some plants ocean perch is scaled by tumbling in an ordinary rotary scaler.

The filleting tables are made of both wood and metal. In either case, however, a wooden filleting board is used. Sanitation of the tables and knives is prescribed by Government regulations.

An average filleter, when working with cod, will turn out about 2,000 pounds of fillets per eight-hour shift. Fillets weigh about two pounds each when cut from an average-size purse-seine cod weighing about eight pounds, headed and gutted. This means that the filleter can handle about 500 fish per shift. Filleters are paid on a piece-work basis at the rate of five to six ore per kg. (about ½ U. S. cent per pound). Therefore, a good filleter earns the equivalent of US$10.00 per day.

Most fillets are produced with skins off, the skinning being done by machine. Two types of machines were in operation--one manufactured in Norway and the other made in Germany under the trade name of Baader; preference is for the German machine.

The percentage of recovery in filleting varies somewhat according to the size of the fish. Absolutely boneless, boneless, semi-boneless, and whole fillets are

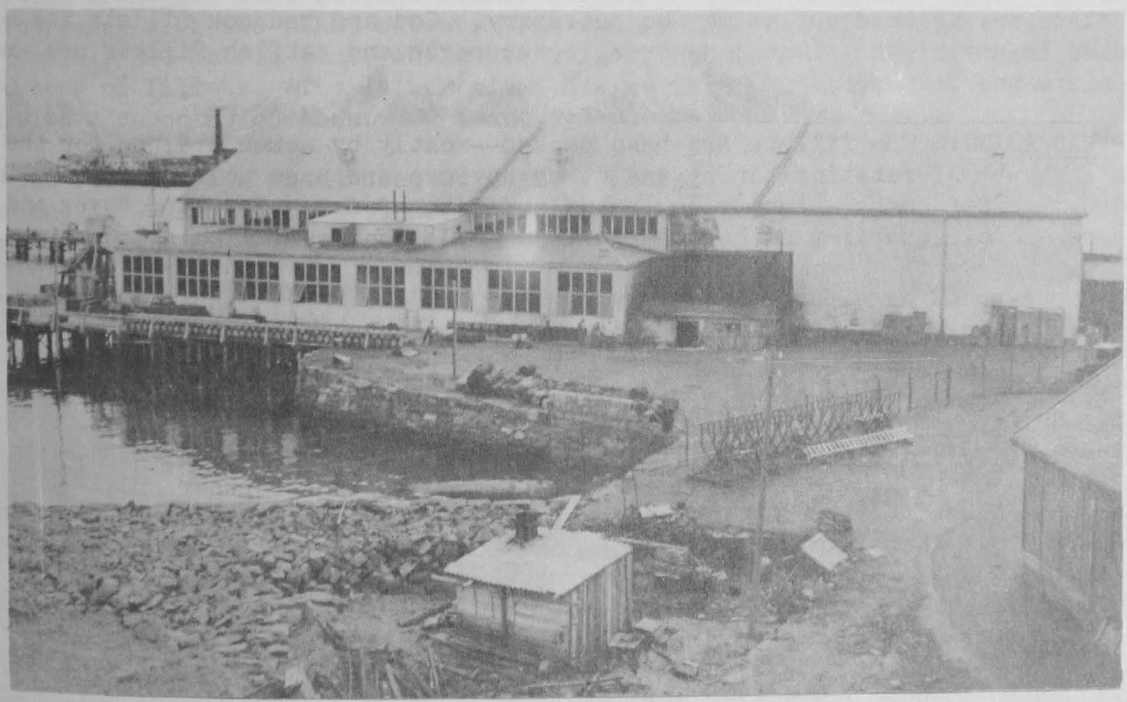

FIG. 3 - FILLETING PLANT AND FREEZER AT MELBU, NORWAY.

cut to meet various market requirements. The purse-seine fish in general seem to run larger than fish taken on hand lines or by gill net. While the former average about 14 pounds in the round, the other range in the neighborhood of 10 pounds. Losses in heading and gutting amount to about 40 percent of the round weight of the cod. Boneless fillet recovery from the headed and gutted fish, as sold to the plant by the fisherman, runs about 50 percent after being trimmed for packaging. This means that, in general, the fillet recovery from fish as taken from the water is close to 30 percent. Practically all filleting is done by hand, although there is

sufficient interest in mechanical filleting machines that at least one plant at Hammerfest is trying a German-made machine.

USE OF FISH FRAMES AND OFFAL: All parts of the cod are utilized in the Norwegian industry. The heads and viscera, as taken from fish by the fishermen during the cleaning process on the dock, are used for meal and oil as well as for fur-animal food. The frames from the filleting plant also go to meal plants. Some cod roe is marketed as a salted, canned, or frozen product for human consumption. Cod livers are processed for vitamin extraction and the residue is used for a variety of purposes. Skins are collected at the skinning machine, salted, and shipped to glue manufacturers.

FILLETS: As the fillets are cut they go directly to the packaging room where they are immediately handled. No preservatives are used. The fillets are not brined and are washed in cold fresh water only. Washing takes place by water sprays at the output end of the skinning machine. The fresh water used generally comes from mountain sources thereby being clean and cold. The water temperatures vary from 38° F. to 40° F. The appearance of the fillets is very good since the fish have been out of the water only a very short time before being filleted. Generally speaking, fillets from hand-line fish are considered to be superior grade. Purse-seine fish received somewhat rougher treatment because of the type of gear used, and the drop to the deck from the brailer usually causes fillets from these fish to have a greater percentage of blood spots than the hand-lined fish. However, the fillets are carefully inspected so that blood spots and skin ends, bones, and flaps are trimmed out as may be necessary. Cod and haddock fillets are not candled in any of the plants; however, ocean perch and catfish fillets are examined in this manner.

PACKAGING: The fillets are hand packed--mostly by women trained for the task. Various types of rotating tables and other devices are used to facilitate this hand work. Customary weighing equipment consists of a regular type "over and under" balance scale, generally either of American or German make.

A one-pound waxed-carton package is produced for the United States and Swiss markets. Labels and recipes are printed in English on the one-pound carton for the United States trade and in French and German on the package for Switzerland. No overwrap is commonly used on the one-pound carton; however, there is a cello inner wrap. Some plants are making preparations for overwrapping by using a Norwegian heat-sealing machine. Certain difficulties have been encountered in obtaining a smooth seal on the overwrap with this machine and unless further trials can correct this situation U. S.-manufactured wrapping machines are expected to be used. It is possible that an overwrap on the one-pound carton will become common before too long, at least for the United States trade.

Five-pound cellos containing five packages of fillets are also produced for shipment to the United States. These have insert labels. After freezing they are packed in 40-pound master cartons of eight five-pound packages. The one-pound consumer carton and the five-pound cellos are the only packs commonly sent to the United States. However, a limited amount of 10-pound cellos of jumbo fillets (about two pounds each) are marketed in the United States for institutional use.

A four-and-one-half kg. (approximately 10 pounds) cello pack is made up of 10 packages of fillets for European trade. After freezing these are packed four to a master carton making an 18-kg. (approximately 40 pounds) package for European markets. Most of the cello-wrapping material is purchased in Great Britian. Some has been obtained from Belgium but use of material from that source is being discontinued.

FREEZING THE FILLETS: The fillets are frozen in packages of three sizes: one-pound cartons which have a thickness of $1\frac{1}{4}$ inches, and five- and 10 pound cello packages approximately $2\frac{1}{2}$ inches thick. All are frozen at sharp-freezing temperatures from -36° F. to -40° F. Both tunnel blast freezers and Birdseye-type plate freezers are used. The plate freezers are preferred and many plants are converting from tunnel freezers to plate freezers. The largest plant in operation, located in Melbu, is converting to this type of freezing equipment; when the conversion is completed it will have six plate freezers in operation. The plate freezer is particularly useful for production of a smooth uniform-surfaced package, especially desirable in the United States trade.

Freezing time for the one-pound package is roughly one hour and 20 minutes; for the five- and ten-pound cellos $2\frac{1}{4}$ to $2\frac{1}{2}$ hours. The plate freezers have 11 plates between which 10 layers of packages can be inserted to make up a thousand-pound charge. This type of freezer handles approximately six tons of fillets in 24 hours.

In the tunnel-freezing procedure, single layers of packages are placed in trays and passed through the tunnel. The temperature of the fish on entering the freezers is relatively cold since weather conditions and air temperatures do not permit it to warm very much. The time from filleting to freezing is held to a minimum as filleting and packaging capacity is coordinated with freezer capacity.

COLD STORAGE: Cold-storage facilities at the filleting plants vary in size in accordance with the plant output. The smaller plants have storage facilities for possibly 300 metric tons, while the largest plant has a holding space of about 1,500 tons of fillets. The latter plant has an arrangement of five storage rooms, each with a capacity of about 300 tons.

The cold-storage rooms used by most of the plants are of the usual design with coils and air-circulation system. The fillets are stored in master cartons and

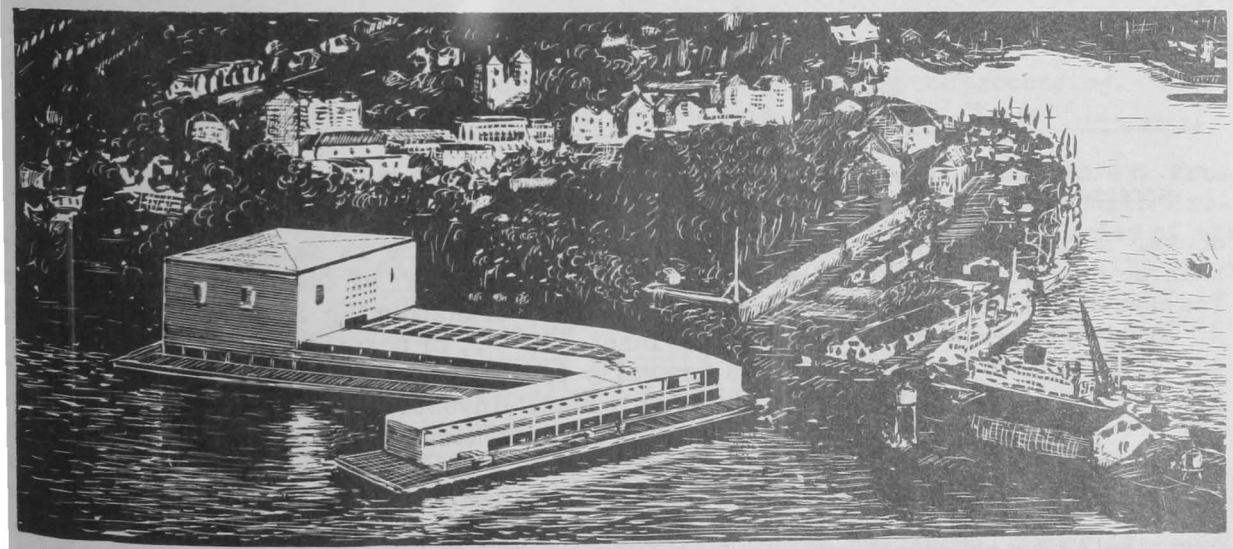

FIG. 4 - NEW 12,000-TON FREEZER AND COLD-STORAGE PLANT AT BERGEN, NORWAY. ARCADE LEADING TO THE MAIN STORAGE SECTION HOUSES THE PROCESSING ROOMS.

stacked in orderly arrangements as required by Government regulation. The storage temperatures seem to run rather uniformly from about -5° F. to -10° F. Some of the newer installations previously mentioned in this report have holding temperatures as low as -35° F. Freezing temperatures and maximum storage time for fish fillets are also regulated by Government rules. Storage temperatures must be at a

minimum low of -20° C. (-4° F.). Fish cannot be stored at this temperature for longer than a four-month period. If the storage period is intended for over four months and up to six months the temperatures must be -24° C. (-11° F.) or lower. Storage is permitted for up to a nine-month period at -28° C. (-18° F.) or lower.

Both public and private freezers are used in assembling shipments for overseas transport. Coastal steamers with good refrigeration facilities pick up fillets at the production plant warehouses periodically and transport them to the ports of transshipment for foreign markets. During the season of heavy operation, shipments are usually made twice weekly on these steamers. Kristiansund is the principal port of assembly at the present time. Plans are being discussed, however, for diverting a considerable amount of this business to large storage warehouses in Trondheim and Bergen. Cold-storage plants at these locations have a large capacity; for example, one in Trondheim has a 3,500-metric-ton capacity, some of which is used for storage of meat and other products. The new freezer at Bergen has a capacity of 12,000 tons. Much of this space is used for frozen herring storage as well as for fish fillets.

OVERSEAS SHIPPING: In loading shipments at transfer points such as Kristiansund, loading time is cut to a minimum as freezers are located adjacent to steamer

(RAW MATERIAL REPORT NO._____)

RÅSTOFFRAPPORT NR.

Skjema R

(FREEZER) FRYSERI: (INSPECTED) BESØKT 19 (DATE)

(RAW MATERIAL) RÅSTOFF (YIELD) UTBYTTE

(DATE) Datum	Fiskeslag	(QUANTITY) Kvantum kg		(CATCH) Fangst		(AGE) Alder	(PRODUCED) Produsert		(CUT) Utskåret		(%)	Code	(REMARKS) Anmerkninger (Årsak til utsortering etc.) (REASON FOR SORTING OUT)
		Fart	Direkte	sted	redsk.	dager (DAYS)	(QUANTITY) Kvantum	(TYPE) Type	Utsortert		Filet-kvantum	0/0	
	(SPECIES)	(TRANSPORT)	(DIRECT)	(PLACE)	(GEAR)				(SORTED OUT)		(FILLET) (QUANTITY)		(CODE)	

den

Kontrollørs underskrift

FIG. 5 - PRODUCTION REPORT REQUIRED FROM ALL NORWEGIAN FILLET PLANTS FOR EACH LOT OF FISH PROCESSED (WITH ENGLISH TRANSLATION).

docks. Refrigeration temperatures on Scandinavian ships is said to be somewhat lower than on most other lines. Members of the technical staff of the Directorate of Fisheries have been discussing with all vessel operators transporting fillets the possibility of lowering storage temperatures to at least -10° F., or possibly lower. The length of the ocean trip to the United States generally is about two weeks. However, in some instances a period of three weeks may be involved. Investigation of the rate of marketing shows that the United States consumer receives Norwegian fillets about three months after the fish have been taken from the water. This period, of course, is due to the time it takes to handle the fillets in the plant, ship them to assembly points in Norway, transship them across the ocean, store them in main warehouses in the United States, and distribute them to retailers. Recognizing this time lag the Norwegians are placing a great deal of emphasis on low storage temperatures in order to maintain the quality of the product to the greatest extent.

INSPECTION: The Norwegian Government has established a very rigid system of inspection in the production, handling, and storage of frozen fish fillets. There are about 20 regular inspectors employed on a year-round basis, and 40 to 45 during the height of the season. These inspectors are able to give reasonably good coverage in the area

of operation. Norsk Frossenfisk also has three inspectors who work in close co-operation with the Government inspectors but their primary duties do not overlap. The Association inspectors concern themselves mainly with quality and the varied types of packs required in the many foreign countries where the fillets are shipped. The Association also maintains a modern laboratory at Bodo, specifically for the purpose of regulating quality control of all member producers. This laboratory is staffed by chemists and bacteriologists who analyze samples from the production plants. There is also a branch laboratory at Kristiansund available for analytical work at various times.

The inspection system provides for an elaborate method of recording the history of production and the handling of each lot of fish. It starts with the plant manager

(STORAGE REPORT NO.)

LAGERRAPPORT NR.

Skjema L

(FREEZER) FRYSERI (INSPECTED) BESØKT (DATE) 19

(DATE) Dato	(CODE) Code	(SPECIES) Fiskeslag	Pakningstype (TYPE OF PACKING)	Henv. (REFERENCE)	Lagerrom (STORAGE ROOM)	Lager-temp. (STORAGE TEMPERATURE)	Filet-temp. (FILLET TEMPERATURE)	Vekt (WEIGHT)	(QUALITY AND APPEARANCE) Kvalitet og utseende	(MARKING) Merking	(PACKING) Pakning	(REMARKS) Anmerkning

den .....

Kontrollørs underskrift .....

FIG. 6 - COLD-STORAGE REPORT MADE BY GOVERNMENT INSPECTOR ON FILLET PRODUCTION AT PLANTS (WITH ENGLISH TRANSLATION).

who must maintain a complete production record including the kind of raw stock used and its condition, as well as a record of the circumstances during the processing. Code numbers are assigned to individual lots, and recorded on a form (figure 5).

The Government inspector has access to the production reports and records. From these records and from information obtained in person at the plant, he submits a report to appropriate Government authorities every two weeks (figure 6). Copies of the report, along with samples frequently taken of various code lots, are sent to the Association laboratory at Bodo for analysis. The laboratory issues a quarterly report to individual production plants indicating the results of the analysis of the plant's production for that period. This report is quite comprehensive, dealing with such items of producer interest as (1) quality and appearance, (2) labeling, (3) packing, (4) weight control, (5) temperature control, and (6) other remarks. By this means the producer has a report every three months which can be used as a guide for adjusting and correcting his production methods to meet the best standards. Final inspection of the frozen fillets comes at the time they are withdrawn from storage for overseas shipment. Every shipment must be inspected and a report made on its condition (figure 7). This system records the complete history of the product from the landing of the raw fish to the final shipping.

In general the Government regulations deal with the following aspects of the industry:

1. General Inspection of Fish as Landed for:

a. Bleeding--all fish must be bled aboard the vessel when caught.

b. Proper cleaning (heading and gutting) and washing.

c. Freshness to insure proper condition for destination; that is, very top quality only permitted for filleting and freezing with rejects from this class used for salting and stockfish production. There is a special regulation stating that fish for filleting preferably should be processed before rigor mortis sets in and must be processed no later than while in the state of rigor mortis.

d. Hook, tong, or spear holes in the fish--rejected if such holes found.

e. Proper heading and gutting.

f. Icing requirements which vary according to the time of year and air temperatures.

2. General Inspection of Vessels and Holds for:

a. Adequate painting and general sanitary conditions of the hold.

b. Arrangement of pens in the hold to insure compliance with special regulations that fish cannot be stored higher than 65 cm. (28 inches) in pens without supporting shelves.

c. Watertight and insulated engineroom bulkhead so as to prohibit oil and gases or warm air coming in contact with the fish in the hold.

d. Proper deck equipment to insure adequate facilities for handling fish and sanitation of such equipment.

3. General Inspection of Filleting Plants for:

a. General sanitation of plant and equipment, docks, and unloading equipment. Workrooms and implements must be carefully cleaned at close of each workday and be free of odors.

b. Compliance with regulation on workers' caps, uniforms, and health requirements. Workers' eating and restrooms must have modern equipment; hot water must be available.

c. Compliance with freezing and storage-temperature regulations. Rules are set on freezing times and fillets cannot be removed from the freezer until they are cooled to at least -4° F. clear through. Storage temperature must be at a minimum low of -4° F. Fish cannot be stored longer than 4 months at this temperature Storage up to 6 months must be at -11.2° F. or lower, and for storage up to 9 months temperature must be -18.4° F. or lower.

d. Proper stacking in storage rooms. Orderly stacking is required and distances above the floor and away from walls is prescribed for adequate air circulation.

4. Label Compliance and Markings Inspection for:

a. Proper species as labeled.

b. Proper type of fillet as labeled.

c. Proper type of package and proper packing of master cartons.

d. Markings, codes, etc.

e. Proper weights as labeled.

The export Association inspectors work on the same established standards as et forth in the Government regulations. However, they do not duplicate to any extent the general inspection activities of the Government inspectors. They have access to the Government inspector's records. The Association inspectors also have access to the plant manager's records and focus their activities principally on the marketing aspects of the products. For example, their attention is given principally to the selection of the grades of fish for the types of markets involved, such as United States or European markets. They also inspect at the point of filleting operation to see that the proper type of fillet (boneless, semi-boneless, or whole fillet) is being produced in accordance with the particular market requirements. Observations are also made for blood spots, skin ends, and proper trim-up of the fillets. The production for the United States and Swiss trade is given foremost attention in regard to inspection since it is recognized that these two markets have the top requirements in consumer acceptance. Broadly speaking, the Government inspectors assure the general quality while the Association inspectors heck the selection made from this point to meet particular market requirements.

(SHIPPING REPORT BY INSPECTOR) Skjema L.

(REPORT NO.) rapport nr.

(PRODUCER) Produsent
(WAREHOUSE) Lager
(SHIPPED BY) Skibet med
(DATE) Datum:

Codenummer (CODE NUMBER)
(SPECIES) Fiskeslag
(TYPE OF PACKING) Pakningstype
(REFERENCE) Henv.
(STORAGE ROOM) Lagerrom
(STORAGE TEMPERATURE) Lagertemp. + C.
(FILLET TEMPERATURE) Filettemp. + C.
(WEIGHT) Vekt
(QUALITY) Kvalitet.
(MARKING) Merking
(PACKING) Pakning
(QUALITY) Kvantum
(CODE) Code:
(WEIGHT CONTROL) Vektkontroll
Anmerkning: (REMARKS)

den

Kontrollørs underskrift

FIG. 7 - SHIPPING REPORT SUBMITTED BY NORWEGIAN GOVERNMENT INSPECTORS TO GOVERNMENT AUTHORITIES (WITH ENGLISH TRANSLATION).