OTHER FISHERY NOTES

Diesel Engine Lubricating Oil Dilution [1]

Reports have been received of Diesel engines experiencing excessive dilution of lubricating oil by fuel. Such diluted lubricating oil is the cause of many operating difficulties, such as gum formation resulting in sticking of pistons, rings, valves, and even fuel injection pumps; acid formation resulting in corrosion of working parts, etching of bearing metals, and pitting of steel surfaces. Thus, the total expense is represented by the cost of any damage to the engine plus the cost of the lubricating oil which must be replaced. It is obvious, then, that an effort must be made to reduce such lubricating oil dilution.

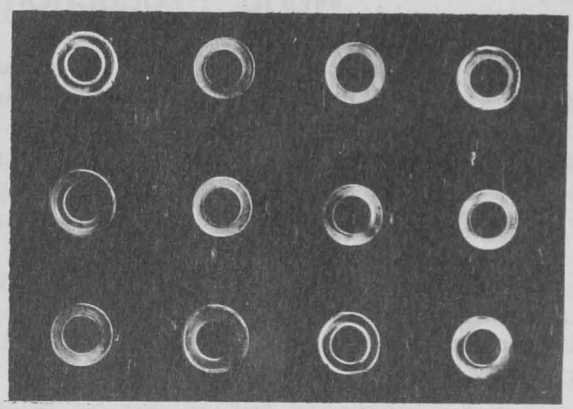


FIGURE 1

It has been ascertained that one cause of lubricating oil dilution is leakage of joints in fuel oil lines due to poor gaskets. The copper gaskets shown in Figure 1 are illustrative of practice which has been observed in a number of instances. Many of these gaskets are badly deformed and all are work hardened. A number of them would have been reused by the operating personnel. It should be obvious that such gaskets cannot properly seal the joints.

It is good practice to discard all gaskets after they have been used once. The cost of the gaskets is trivial compared with the expense and delay that might result from leaks. Always use new gaskets whenever it is necessary to break a joint.

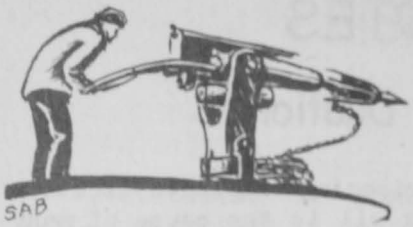
New copper gaskets will harden with age. All copper gaskets should, therefore, be heated with a torch to a red heat and immersed in water, immediately before being used. The copper will then become dead soft and will properly seal the joints.

The fittings, with which the gaskets of Figure 1 were used, are the so-called French type employing a cast member having a hollow screw going through the fitting and sealed by a gasket under the head of the screw with another gasket under the fitting itself. The seats on a number of the fittings were scarred and roughened from previous use with hard gaskets. In such cases, the seats should be smoothed by polishing them against a flat stone. Where the seat under the head of the screw is scarred, it too should be scrapped and a new one used.

After the joints are made tight, they should be tested for fuel oil leakage. This can be done by putting pressure on the fuel system with the engine secured. Inspect all joints thoroughly. Even slight seepage will be indicated by blowing on each joint through a piece of rubber tubing having a small bore. If any leaks are observed, they must be corrected before the engine is placed in operation.

Only by the procedure outlined above can fuel joints be kept tight. It is poor economy to try to use old gaskets and rough fittings, as the expenses resulting from diluted lubricating oil are out of all proportion to the cost of new gaskets and fittings.

1/ This article is an excerpt from Bulletin of Information No. 3, July 1, 1941, Bureau of Ships, Department of the Navy.



Whale Oil--

World Production and Trade[1/]

Whale-oil production for the 1945-46 season reached about 160,000 short tons, which is around three times the average wartime output but only about 30 percent of the prewar average. With Germany and Japan removed from the industry, only Norway and Great Britain engaged in pelagic whaling in Antarctic waters during 1945-46. Because a number of the floating factories were lost during the war, only 9 participated in the last catch, compared with 35 that operated in 1938-39.

Whale oil, prior to the war, constituted around 8 percent of the total volume of international trade in fats and oils and made up about two-thirds of the world production of all marine oils. Almost all this commodity originated in the Antarctic Ocean.

The whaling industry is expected to recover fairly rapidly, and volume production may be achieved in the 1946-47 season. A limiting factor, however, will be the number of new and converted floating factories and catcher boats. A number of these vessels are now in process of construction, with more expected to be built.

The future output of whale oil, however, may never reach the prewar figure of 559,000 tons. To guard against depletion of the whales, a possibility conceded before the war, international agreements are now in force limiting the size of the 1945-46, and probably the 1946-47, catch to a maximum of 16,000 blue-whale units. Should this limitation continue, the future annual Antarctic whaling output would not exceed 280,000 or 300,000 tons.

The position of whale oil among the consuming nations is more difficult to predict. Consumption in Great Britain and Norway possibly may reach prewar levels. The future situation in Germany, formerly one of the largest consumers, remains obscure. Other countries, unless permitted to engage in whaling, will probably consume smaller quantities.

Two types of oil, sperm and whale, result from rendering and processing whales. Each has characteristics and uses distinct from the other. Produced in smaller volume, sperm oil is mostly utilized in liquid waxes and is inedible. Its use in fine machinery is well-known. Because it does not gum, it is especially valuable in lubrication. Sperm oil is little affected by extremes of temperature and is, therefore, an excellent lubricant for motors operating under such conditions. It is also employed, on a minor scale, in cutting oils and as a softening agent in leather. Previously, it was widely employed as fuel for lamps, but petroleum fuels and electricity have replaced sperm oil in the lighting field.

1/Reprinted from Foreign Agricultural Report No. 11, Fats and Oils--World Production and Trade (U. S. Department of Agriculture, August 1946). Written by the staff of the Fats, Oils, and Rice Division, International Commodities Branch, Office of Foreign Agricultural Relations, USDA.

In earlier years, whale oil was principally used as a fuel oil. But in the past two decades it has been put to a number of new uses through technical advances registered in refining and hydrogenation. With the objectionable fishy odor removed and the oil hardened, widespread utilization was made of this oil by European countries in compounds and margarine. In the United States, it was primarily employed as a soap fat. It is used to a certain extent in the leather, paint, lubricating, and printing-ink industries. A valuable characteristic is its keeping quality; even after 4 or 5 years' storage there is only slight deterioration.

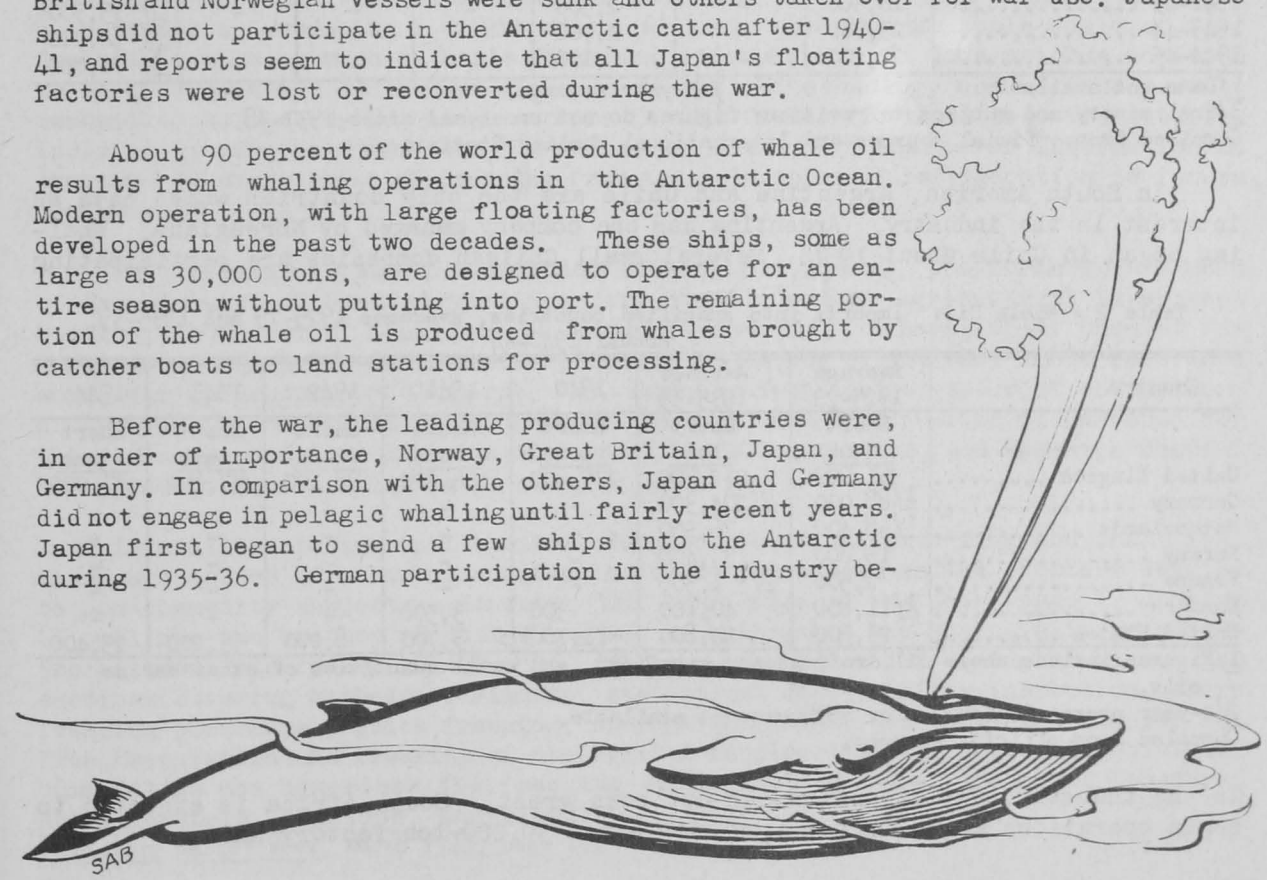
Prewar utilization of whale oil was concentrated primarily in two countries, Great Britain and Germany, with Netherlands and Norway consuming smaller quantities. In all these countries, this commodity was mostly used for edible purposes. In the Western Hemisphere, the United States has been the only significant consumer. In other countries, whale oil has been a negligible part of the fats and oils supply.

Whale-oil production in 1945-46 reached about 160,000 short tons compared with 70,000 tons in 1944-45 and the prewar average of 559,000 tons (Table 1, p. 32). Norway, the leading producer, accounted for about 90,000 tons. To compensate for the lack of floating factories, in 1945-46 the whaling season, normally from December 8 to March 7, was lengthened, the new period being from November 24 to March 24.

During the war, whaling activities were seriously curtailed. The German fleet was unable to continue expeditions because of the Allied blockade. A number of British and Norwegian vessels were sunk and others taken over for war use. Japanese ships did not participate in the Antarctic catch after 1940-41, and reports seem to indicate that all Japan's floating factories were lost or reconverted during the war.

About 90 percent of the world production of whale oil results from whaling operations in the Antarctic Ocean. Modern operation, with large floating factories, has been developed in the past two decades. These ships, some as large as 30,000 tons, are designed to operate for an entire season without putting into port. The remaining portion of the whale oil is produced from whales brought by catcher boats to land stations for processing.

Before the war, the leading producing countries were, in order of importance, Norway, Great Britain, Japan, and Germany. In comparison with the others, Japan and Germany did not engage in pelagic whaling until fairly recent years. Japan first began to send a few ships into the Antarctic during 1935-36. German participation in the industry be-



gan in the latter part of 1936. The United States, one of the leaders of the industry in the nineteenth century, was only a small producer at the outbreak of war. Of the two United States factory ships, one was sold in 1939 and the other dismantled in 1941. High costs of operation and various regulations caused operators from this country to withdraw from pelagic whaling.

Table 1 - Whale Oil: World production, averages 1925-26 to 1929-30 and 1933-34 to 1937-38, annual 1925-26 to 1944-45

Period	Norway	United Kingdom	Japan	Germany	United States	Others	World Total
	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons
1925-26	123,700	71,000	-	-	-	20,500	215,200
1926-27	128,600	72,600	-	-	-	21,300	222,500
1927-28	149,300	74,700	1/	-	1/	22,700	246,700
1928-29	226,000	95,100	1,300	-	6,700	22,400	352,100
1929-30	335,300	159,900	2,200	1/	5,500	19,500	522,500
5-year average	192,600	94,800	211,800	-	2/6,100	21,300	311,800
1933-34	234,000	222,300	4,300	2,200	4,600	15,000	482,400
1934-35	231,200	240,500	7,800	8,200	4,600	18,200	510,500
1935-36	217,000	231,300	13,900	29,200	15,200	58,500	565,100
1936-37	222,400	240,100	35,300	72,600	28,100	61,800	660,300
1937-38	218,100	243,700	78,800	90,200	31,000	37,800	699,600
5-year average	224,500	235,600	28,000	40,500	16,700	38,300	583,600
1938-39	159,400	-	111,300	101,000	-	-	3/539,000
1939-40	176,900	-	128,600	116,600	-	-	3/476,600
1940-41	38,400	-	5,200	-	-	-	3/184,500
1941-42	33,600	-	2,600	-	-	-	3/ 38,900
1942-43	26,500	-	2,500	-	-	-	3/ 35,900
1943-44	29,900	-	4,700	-	-	-	3/ 54,700
1944-45	27,200	-	1,100	-	-	-	3/ 70,000

1/Data not available. 2/2-year average.
3/Preliminary and subject to revision; figures do not cross-add after 1937-38.
Compiled from official sources and International Whaling Statistics.

In South America, Argentina and Chile are the only countries which have an interest in the industry. Argentina has one company managed by Norwegians. Whaling began in Chile about 1934. Several small Chilean companies are participating

Table 2 - Whale Oil: Imports into specified countries, averages 1925-29 and 1935-39, annual 1940-44

Country	Average 1925-29	Average 1935-39	1940	1941	1942	1943	1944
	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons
United Kingdom	61,000	212,700	279,600	106,200	98,100	57,800	47,000
Germany	1/88,000	2/204,300	-	-	-	-	-
Netherlands	1/58,400	76,900	-	-	-	-	-
Norway	15,800	33,400	-	-	-	-	-
France	2,500	2/ 1,500	-	-	-	-	-
Denmark	1/11,800	40,800	300	3,500	-	-	-
United States	23,900	14,800	11,100	3,700	8,000	59,200	25,400

1/Figures include whale oil, refined and unrefined, and small quantities of other marine oils.
2/4-year average; figures for 1939 are not available.
Compiled from official sources.

in the industry, but expansion has not been great. South Africa is expected to begin operations again next season with a new 30,000-ton factory ship.

In 1938, around 80 percent of the world's whale oil production was imported by Germany and Great Britain. France, Denmark, Netherlands, and Norway accounted for most of the remainder. In prewar years, the United States imported only about 5 percent of the total world output. Prior to the Revenue Act of 1934, the United States imported larger quantities, but the new excise taxes of that year were a factor in reducing subsequent imports (see table 2, page 32).

The Freezing Preservation of Foods

By Donald K. Tressler, Ph.D., and Clifford F. Evers, B.S.

Published by The Avi Publishing Co., Inc.,
31 Union Square, New York 3, N. Y.

932 pages, 209 figures, 88 tables.
$10.00 postpaid Domestic, $10.50 postpaid Foreign.

The second edition of The Freezing Preservation of Foods is a fully revised and considerably enlarged version of the first edition which appeared in 1943. From the standpoint of the fisheries, all the good things said about the first edition can be repeated for this issue.[1/] Dr. Tressler and Mr. Evers not only have drawn on their wide experience but have had the assistance of numerous other authorities in producing a volume which, although covering the whole field of food freezing, contains much valuable fisheries information. It is a welcome addition to the few standard reference works on fisheries technology and will be readily recognized as such by technical workers in this field. To those less technically-inclined it can, nevertheless, serve as an excellent source of information on practically every phase of freezing from the principles of refrigeration to future prospects.

Dr. Tressler is now a consultant in Westport, Conn., but formerly was Head of the Division of Chemistry at New York State (Geneva) Agricultural Experiment Station, Professor of Chemistry at Cornell University, Geneva, Chief Chemist for Birdseye Laboratories at Gloucester, Mass., and author of the well known reference work, Marine Products of Commerce. Mr. Evers is Technical Director of the National Association of Frozen Food Packers. He was formerly Director of Research for the Birds Eye - Snider Division of General Foods Corporation, and Research Chemist for Birdseye Laboratories in Gloucester, Mass.

In addition to two full chapters devoted specifically to fish and shellfish, there are scores of other discussions of fishery products in the chapters devoted to non-commodity subjects. In fact, the first page of the book (page 1, Chapter 1) outlines the history of fish freezing in discussing the potentialities of the frozen food industries. Chapter 17, "The Preparation and Freezing of Fish," has sections covering methods of fishing, statistical data, quality inspection, sharp freezing procedures, quick freezing, storage qualities, and thawing. Chapter 18, "The Preparation and Freezing of Shellfish," handles these products as individual commodities and describes the freezing of shrimp, oysters, crabmeat, lobsters, spiny lobsters, scallops, and clams.

1/ Fishery Market News, March 1943, page 13.

The 21 chapters in the first edition have been increased to 25 in the 1947 edition. Three of the four new chapters will be of especial interest to the fisheries: "Food Freezing - Present Importance and Potentialities," "The Preparation of Precooked Frozen Foods," and "The Microbiology of Frozen Foods - Plant Sanitation." The fourth new chapter--"Preparation of Foods for Home Freezing"--is designed particularly for housewives and contains brief suggestions regarding both fish and shellfish.

Rapid developments in the food freezing field have required that the original chapters be brought up to date and considerably expanded in some instances. Those interested primarily in fisheries will find, in addition to the sections already mentioned, much of value in the chapters on "Cold Storages, Sharp Freezers, and Sharp Freezing;" "Quick Freezing and the Quick Freezing Systems;" "Packaging Materials and Problems;" "Changes Occurring during the Preparation, Freezing, Cold Storage, and Thawing of Foods;" "The Storage, Transportation, and Marketing of Frozen Foods;" "The Nutritive Value of Frozen Foods;" and "The Importance of Quality Control and Standards in the Frozen Foods Industries;" and, in the Appendix, those parts on "Objective Tests for the Quality of Meat, Poultry, and Fish;" "Bacterial Examination of Products;" and "The Determination of the Rate of Moisture Transmission through Papers and Boards." Practically every one of these contains some specific material on fishery products or the information is directly applicable.

Each chapter is followed by an extensive bibliography, and there is a detailed subject index for the whole book.

--A. W. Anderson

Purchases of Fish by Department of Agriculture

September 1946 purchases of fishery products by the U. S. Department of Agriculture totaled $837,833. This was an increase of $724,830 compared with August. Total purchases for the period January 1 to September 30 were $5,865,865.

Purchases of Fishery Products by USDA

Commodity	Unit	September 1946		January-September 1946	
		Quantity	F.O.B. Cost	Quantity	F.O.B. Cost
FISH			Dollars		Dollars
Fish, ground, canned	Cases	-	-	229,000	794,000
Herring, "	"	-	-	12,688	77,565
Mackerel, "	"	-	-	48,117	414,760
Pilchards, "	"	-	-	171,207	638,856
Salmon, "	"	64,823	837,833	341,857	3,867,247
Sardines, "	"	-	-	15,929	73,437
Total	"	64,823	837,833	818,798	5,865,865

Wholesale and Retail Prices

Wholesale and retail prices for all foods showed small increases from mid-July to mid-August, according to reports from the Bureau of Labor Statistics, Department

of Labor. Average retail prices of fresh and canned and fresh and frozen fish rose 1.0 and 1.3 percent, respectively, during the period and showed increases of 9.1 and 21.1 percent, respectively, over prices of August 14, 1945. The retail price of pink salmon rose 0.4 percent from mid-July to mid-August, while the price of red salmon decreased 1.1 percent during the period.

Wholesale and Retail Prices

Item	Unit		Percentage change from--	
Wholesale: (1926 = 100)		August 17,1946	July 20,1946	August 18,1945
All commodities	Index No.	128.3	+3.3	+21.6
Foods	do	148.9	+4.9	+40.1
		August 1946	July 1946	August 1945
Fish:				
Canned salmon, Seattle:				
Pink, No. 1, Tall	$ per doz. cans	2.167	0	+10.0
Red, No. 1, Tall	do	4.063	0	+ 9.9
Cod, cured, large shore, Gloucester, Mass.	$ per 100 pounds	13.50	0	0
Herring, pickled, N. Y.	¢ per pound	12.00	0	0
Salmon, Alaska, smoked, N. Y.	do	35.00	0	0
Retail: (1935-39 = 100)		August 13, 1946	July 16,1946	August 14,1945
All foods	Index No.	171.2	+3.3	+21.5
Fish:				
Fresh and canned	do	237.6	+1.0	+ 9.1
Fresh and frozen	¢ per pound	40.1	+1.3	+21.1
Canned salmon:				
Pink	¢ per pound can	25.5	+0.4	+ 9.0
Red	do	43.2	-1.1	+ 8.8

MARKETING THE CATCH

Although the South Atlantic and Gulf coasts furnish more than half a billion pounds of fish and shellfish annually, nearly half of this amount consists of menhaden, practically all of which is now processed into meal and oil and so does not enter the ordinary marketing channels. Some 250,000,000 to 300,000,000 pounds remain for distribution as fresh, frozen, canned, salted, or smoked products.

Most of the fish landed at southern ports enters the fresh-fish markets. Despite the recent introduction here and there of the modern processing methods of preparing fillets, steaks, and tenderloins, the most prevalent custom is to ship the fish in the round, that is, without preliminary dressing. This fact makes it difficult for the southern States to compete with New England as a fresh-fish center, for in that area much of the catch is routinely processed in modern plants which turn out a conveniently handled product, neatly packaged and quick-frozen.

--Conservation Bulletin No. 37