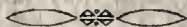


INTERNATIONAL  
WHALING STATISTICS

IV

EDITED BY

THE COMMITTEE FOR WHALING STATISTICS  
APPOINTED BY THE NORWEGIAN GOVERNMENT



OSLO 1933

*Price: Kr. 3.00.*

DET NORSKE HVALRÅDS STATISTISKE PUBLIKASJONER

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STEENSKE BOKTRYKKERI JOHANNES BJØRNSTAD A/S  
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## Preface.

*International Whaling Statistics IV* contains the statistics of the catch in the season 1931–1932 and the succeeding summer season 1932. They are quite complete. We have not, however, succeeded in procuring any statistics from Chile for 1932.

On the other hand, we have received from the *Consulado de Chile*, Oslo, complete specifications of whaling catches off Chile in the years 1928–1931. In previous issues of *International Whaling Statistics* this catch has been given only as a rough estimate. It now appears in its own table (Table No. 6, page 40).

As in previous years we are including measurements of whales from the various grounds. In the case of the Antarctic and adjacent waters the animals are collected into three size-groups, with figures to show the percentage falling within each group.

Further, we have added the percentage of sexually mature animals which occur in the measurements at the various southern grounds.

Finally, we have also in the present issue stated the oil production per calculated blue-whale for the various grounds. The other species are converted into blue-whale, according to the formula:

1 blue-whale = 2 fin-whales =  $2\frac{1}{2}$  humpbacks = 6 sei-whales.

In instances where sperm-whales have been caught, the sperm oil produced is not included in the estimate.

In this issue we are publishing, in addition, the review of the results of international whaling statistics mentioned in an earlier issue. It has been prepared by Mr. Gunnar Jahn, Chairman of the Committee.

Oslo 27<sup>th</sup> of June 1933.

*Johan Hjort.*

*Gunnar Jahn.*

*Sigurd Risting.*



## Review of the Results of International Whaling Statistics.

In the first issue of these statistics published in 1930 we stated that we deemed it desirable for many reasons to carry out an analysis of the statistical material relating to the whaling industry, but that we found it best at that time to defer such a survey until the returns were complete. In the second edition of these statistics published in 1931 we endeavoured to collect all the statistical material available for catches of fin-whale since modern whale hunting was started in 1868. In that issue will be found the statistical data for catches from 1868 up to and including 1909, in the review prepared by Sigurd Risting. In the supplementary table to this review the returns of the number of whales caught at the various grounds up to 1909 are given. The main statistical tables contain the returns for the number of whales caught in each of the years from 1910 to 1930 inclusive. In *International Whaling Statistics III*, published in 1932, the statistics are brought forward to 1931 inclusive, and in the present publication up to 1932.

The returns now issued conclude—at all events for the present—a period in the history of whaling in which the whaling industry, viewed collectively for the whole world, has been in continual growth. The year 1932 is the first post-war year in which there is a substantial curtailment of the catch, due mainly to the prevailing economic conditions. It will therefore be natural at this point to give a survey of the catch in the 65 years which have now elapsed. Such a review will, in our opinion, serve to throw light upon many conditions which will be of significance also in time to come, and will be an aid in the appraisal of any course that may be adopted for the regulation of whale hunting. We do not, of course, mean to suggest that the statistics now published, and whose main object is to show the number of whales killed at the various grounds, will afford an adequate basis on which to judge with certainty of the relation between the stock of whales and the catches. Yet the experience that can be gained by a study of these figures will not be without value in that respect.

In addition to the statistics published under the title of *International Whaling Statistics*, «Det Norske Hvalråd» (The Norwegian Whaling Board) has published in its Paper No. 3 a number of statistics of catches in the Antarctic. These statistics, which comprise two years, are based on the whaling registers which each floating factory is obliged to keep, according to the Norwegian Whaling Act. These statistics give in many directions more detailed information than those we shall deal with here; but they cover as yet so brief a period that it would be far too early to draw conclusions on the basis of them alone. An attempt has also been made in «Det Norske Hvalråd»s Paper No. 9 to evolve a method of estimating the stock of whales.

The principal returns in *International Whaling Statistics* give the number of whales of various kinds, caught at the several grounds, and the number of catchers employed. The main results of these statistics will be seen from the following table:—

**Table a.**

Years.	Total number of whales caught.	Years.	Total number of whales caught.
1868.....	30	1901.....	2,204
1869.....	17	1902.....	3,065
1870.....	36	1903.....	3,867
1871.....	20	1904.....	4,931
1872.....	40	1905.....	4,592
1873.....	36	1906.....	3,519
1874.....	51	1907.....	4,490
1875.....	39	1908.....	5,509
1876.....	45	1909.....	8,490
1877.....	36	1910.....	12,301
1878.....	116	1911.....	20,408
1879.....	130	1912.....	24,838
1880.....	163	1913.....	25,673
1881.....	283	1914.....	22,980
1882.....	351	1915.....	18,320
1883.....	569	1916.....	17,542
1884.....	485	1917.....	10,088
1885.....	1,423	1918.....	9,468
1886.....	986	1919.....	10,242
1887.....	925	1920.....	11,369
1888.....	709	1921.....	12,174
1889.....	585	1922.....	13,940
1890.....	799	1923.....	18,120
1891.....	910	1924.....	16,839
1892.....	1,330	1925.....	23,253
1893.....	1,607	1926.....	28,193
1894.....	1,528	1927.....	24,175
1895.....	1,526	1928.....	23,524
1896.....	1,925	1929.....	27,896
1897.....	1,791	1930.....	37,674
1898.....	1,993	1931.....	42,874
1899.....	1,541	1932.....	12,797
1900.....	1,635	Total 1868—1932	529,015



This table shows that in the period in which whaling on modern lines has been prosecuted—65 years—a total of 529,015 whales caught has been registered, and this is a minimum figure. In previous annual issues of *International Whaling Statistics* it has been pointed out that we lack information as to the number of whales caught in Japan prior to 1910, and that the registration of the number of whales caught is not complete for some areas for all years; but, broadly speaking, this is of but minor importance. Of the 529,015 whales caught, as comprised in these statistics, the far preponderating number are caught in the latter half of the period, viz., 506,990 in the years 1900–1932 against 22,025 in the period 1868–1900. Such a division does not, however, give a complete picture of the expansion of the whaling industry; it merely shows that the catches have gradually undergone a vigorous growth. If we take the figures for the various years we find that there have been strong fluctuations. For instance, in the first period there is a pronounced maximum of 1,423 whales in 1885, with a decline in the following years. In 1893 this maximum is exceeded at 1,607 whales, and from that year onward the figure varies from 1,528 to 1,993 whales up to the year 1900, and then soars to 4,931 in 1904. Then follow 3 years with smaller catches—3,519 to 4,592. From 1908 there is a sharp increase from 5,509 whales until a new maximum is reached in 1913 of 25,673 whales. From 1914 inclusive to the end of the Great War there is a falling off, and the catch sinks to the minimum figure of 9,468 whales in 1918. The year 1919 introduced the last great expansion of this hunting, which in the first few years up to and including 1922 showed a constant figure. In that year the catch went up to 13,940. Then in 1923 it rose to 18,120, fell slightly in 1924, but soared at a tremendous rate in the next two years, attaining the figure of 28,193 in 1926, thus exceeding the pre-war maximum. Then followed a slight decline in the catch in 1927 and 1928. In 1929, 1930, and 1931 there was a tremendous increase, the catch reaching its absolute maximum at 42,874 whales in 1931. In 1932 it then fell off to 12,797.

This brief review of the table reveals that, despite wide fluctuations, the whaling industry has expanded at an exceptional rate in the period it has existed, but that is all it does show. The increase of the catches is a consequence of an extension of the whaling area and of whaling equipment, and not until we study these questions can we have any hope of utilising the statistics in the elucidation of the important issue of the relation between catches and stocks.

In order to give an orientation as to how whaling has developed in the various main areas, we have drawn up the following table:—

Table b.

Years.	All areas.		Antarctic.		Arctic.		Africa.		Pacific, north.		Japan.		Others.	
	No. of whales caught.	Per cent.	No. of whales caught.	Per cent.	No. of whales caught.	Per cent.	No. of whales caught.	Per cent.	No. of whales caught.	Per cent.	No. of whales caught.	Per cent.	No. of whales caught.	Per cent.
1868-1899	22,025	100	-	-	22,025	100	-	-	-	-	-	-	-	-
1900	1,635	100	-	-	1,514	92.6	-	-	121	7.4	-	-	-	-
1901	2,204	100	-	-	2,099	95.2	-	-	105	4.8	-	-	-	-
1902	3,065	100	-	-	2,648	86.4	-	-	417	13.6	-	-	-	-
1903	3,867	100	-	-	3,010	77.8	-	-	857	22.2	-	-	-	-
1904	4,931	100	-	-	3,656	74.1	-	-	1,275	25.9	-	-	-	-
1905	4,592	100	195	4.2	3,505	76.4	-	-	892	19.4	-	-	-	-
1906	3,519	100	582	16.5	2,508	71.4	-	-	429	12.1	-	-	-	-
1907	4,490	100	1,112	24.8	2,897	64.5	-	-	481	10.7	-	-	-	-
1908	5,509	100	2,312	42.0	2,696	48.9	106	1.9	395	7.2	-	-	-	-
1909	8,490	100	3,883	45.7	3,182	37.5	724	8.5	518	6.1	-	-	183	2.2
1910	12,301	100	6,099	49.6	2,318	18.8	1,531	12.4	1,131	9.2	968	7.8	254	2.2
1911	20,408	100	10,230	50.1	1,932	9.5	4,377	21.4	1,451	7.1	1,938	9.5	480	2.4
1912	24,838	100	11,727	47.2	1,311	5.3	6,859	27.6	1,799	7.2	1,586	6.4	1,556	6.3
1913	25,673	100	10,760	41.9	1,174	4.6	9,270	36.1	941	3.7	1,605	6.2	1,923	7.5
1914	22,980	100	9,408	40.9	1,130	4.9	5,590	24.3	1,601	7.0	2,022	8.8	3,229	14.1
1915	18,320	100	9,864	53.8	579	3.2	2,765	15.1	1,327	7.2	2,100	11.5	1,685	9.2
1916	17,542	100	11,792	67.2	190	1.1	1,945	11.1	1,211	6.9	1,803	10.3	601	3.4
1917	10,088	100	6,474	64.2	-	-	922	9.1	802	8.0	1,697	16.8	193	1.9
1918	9,468	100	4,304	45.5	864	9.1	695	7.3	1,233	13.0	2,177	23.0	195	2.1
1919	10,242	100	4,787	46.7	785	7.7	1,282	12.5	1,556	15.2	1,671	16.3	161	1.6
1920	11,369	100	5,441	47.9	1,456	12.8	1,310	11.5	1,763	15.5	1,279	11.2	120	1.1
1921	12,174	100	8,448	69.4	310	2.5	1,263	10.4	129	1.1	1,487	12.2	537	4.4
1922	13,940	100	7,023	50.4	918	6.6	2,335	16.7	1,356	9.8	1,506	10.8	802	5.7
1923	18,120	100	9,910	54.7	1,204	6.6	3,105	17.1	1,363	7.5	1,422	7.9	1,116	6.2
1924	16,839	100	7,271	43.2	1,667	9.9	3,649	21.7	1,102	6.5	1,526	9.1	1,624	9.6
1925	23,253	100	10,488	45.1	1,523	6.6	4,384	18.8	1,892	8.1	1,875	8.1	3,091	13.3
1926	28,193	100	14,219	50.4	1,588	5.7	4,646	16.5	1,804	6.4	2,148	7.6	3,788	13.4
1927	24,175	100	12,665	52.4	1,403	5.8	4,144	17.1	2,064	8.5	1,546	6.4	2,353	9.8
1928	23,524	100	13,775	58.6	1,561	6.6	3,835	16.3	1,412	6.0	1,607	6.8	1,334	5.7
1929	27,896	100	20,341	72.9	1,159	4.2	3,362	12.1	1,241	4.4	1,463	5.2	330	1.2
1930	37,674	100	30,167	80.0	1,472	3.9	3,498	9.3	975	2.6	1,312	3.5	250	0.7
1931	42,874	100	40,201	93.8	703	1.6	823	1.9	-	-	1,147	2.7	-	-
1932	12,797	100	9,572	74.8	827	6.5	1,043	8.1	319	2.5	1,036	8.1	-	-
Total														
1868-1932	529,015	100	283,050	53.5	75,814	14.3	73,463	13.9	33,962	6.4	36,921	7.0	25,805	4.9
1868-1904	37,727	100	-	-	34,952	92.6	-	-	2,775	7.4	-	-	-	-
1905-1913	109,820	100	46,900	42.7	21,523	19.6	22,867	20.8	8,037	7.3	6,097	5.6	4,396	4.0
1914-1919	88,640	100	46,629	52.6	3,548	4.0	13,199	14.9	7,730	8.7	11,470	12.9	6,064	6.9
1920-1932	292,828	100	189,521	64.7	15,791	5.4	37,397	12.8	15,420	5.3	19,354	6.6	15,345	5.2
Number per year.														
Total.	8,266		10,109		1,185		2,939		1,061		1,605		1,173	
1868-1904	1,048		-		971		-		555		-		-	
1905-1913	12,202		5,211		2,391		3,811		893		1,524		879	
1914-1919	14,773		7,772		710		2,200		1,288		1,912		1,011	
1920-1932	22,525		14,579		1,215		2,877		1,285		1,489		1,395	

This table gives the absolute catch in number of whales, and the percentage share of the catch contributed by each area. To prevent any misunderstanding, we must emphasise that the percentages apply to the number of whales caught, and do not reflect the economic importance of the various areas. This importance very greatly depends upon the species of whale caught and the quantity of oil that can be extracted.

According to the table all whaling is concentrated round the Arctic and the northern stretches of the Atlantic up to the year 1900, and by far the greater part of the catches are made at these grounds up to and including 1906, and even so late as 1908 the Arctic was the leading ground gauged by the number of whales. But the table also reveals that the two areas which have marked the expansion from 1909 onward are Africa and the Antarctic, Africa primarily in the years 1910–1914, whereas the Antarctic—which in every year since 1908 has been the most important area—has gradually grown predominant. It should be noted that it is only from 1929 onward that the percentage of the whales caught in the Antarctic reaches the figures that the Arctic could show before 1906.

The table further reveals that there have been sharp fluctuations in the catches also within the separate areas. The most consistent results are those for Japan, which are not markedly affected by the war period as is the case with other grounds.

We further observe that the Antarctic is the only area whose catch in the post-war period has increased far in excess of the pre-war maximum catch. Arctic and Africa do not in the post-war period rise to the pre-war level, and in the others specified here—Pacific and Japan—the maximum catches made in post-war years are but slightly in advance of pre-war figures.

In order to be able to give a more concentrated picture of the importance of the grounds in the various periods we have collected in the table (on page 6) the catch for the periods 1868–1904, 1905–1913, 1914–1919, 1920–1932.

A comparison of these periods clearly reveals how the importance of the Antarctic has gradually increased, and that of other grounds decreased. In the first period the number of whales caught in the Antarctic constituted 42.7 % of the total, in the second 52.6 %, and in the third 64.7 %. All the other grounds have a smaller share of the catch in the last period than in the first one. In the war period 1914–1919, the share of Japan and the Pacific rises, as these grounds were affected but little by the war. The calculation made in the table in respect of the average catch per year in the period, also clearly reflects the strong expansion of whaling in the Antarctic, and shows how greatly the whaling in the Arctic and Africa has been affected by the war. Also in the two last-named areas the average catch in the post-war period does not rise



Svalbard.			Pelagic whaling in the Arctic.			Total.			Newfoundland, Davis Strait and Gulf of St. Lawrence.			Spain and Portugal.			Total of whales caught in North Atlantic and Arctic.
Whales.	Boats.	Whales per boat.	Whales.	Boats.	Whales per boat.	Whales.	Boats.	Whales per boat.	Whales.	Boats.	Whales per boat.	Whales.	Boats.	Whales per boat.	
-	-	-	-	-	-	30	1	30	-	-	-	-	-	-	30
-	-	-	-	-	-	17	2	8	-	-	-	-	-	-	17
-	-	-	-	-	-	36	2	18	-	-	-	-	-	-	36
-	-	-	-	-	-	20	2	10	-	-	-	-	-	-	20
-	-	-	-	-	-	40	2	20	-	-	-	-	-	-	40
-	-	-	-	-	-	36	2	18	-	-	-	-	-	-	36
-	-	-	-	-	-	51	2	25	-	-	-	-	-	-	51
-	-	-	-	-	-	39	2	19	-	-	-	-	-	-	39
-	-	-	-	-	-	45	3	15	-	-	-	-	-	-	45
-	-	-	-	-	-	36	4	9	-	-	-	-	-	-	36
-	-	-	-	-	-	116	4	29	-	-	-	-	-	-	116
-	-	-	-	-	-	130	4	32	-	-	-	-	-	-	130
-	-	-	-	-	-	163	4	41	-	-	-	-	-	-	163
-	-	-	-	-	-	283	11	26	-	-	-	-	-	-	283
-	-	-	-	-	-	351	15	23	-	-	-	-	-	-	351
-	-	-	-	-	-	569	28	20	-	-	-	-	-	-	569
-	-	-	-	-	-	485	32	15	-	-	-	-	-	-	485
-	-	-	-	-	-	1,308	34	38	-	-	-	-	-	-	1,308
-	-	-	-	-	-	897	36	25	-	-	-	-	-	-	897
-	-	-	-	-	-	837	36	23	-	-	-	-	-	-	837
-	-	-	-	-	-	709	34	21	-	-	-	-	-	-	709
-	-	-	-	-	-	565	31	18	-	-	-	-	-	-	565
-	-	-	-	-	-	787	34	23	-	-	-	-	-	-	787
-	-	-	-	-	-	910	36	25	-	-	-	-	-	-	910
-	-	-	-	-	-	1,330	38	35	-	-	-	-	-	-	1,330
-	-	-	-	-	-	1,607	42	38	-	-	-	-	-	-	1,607
-	-	-	-	-	-	1,528	44	35	-	-	-	-	-	-	1,528
-	-	-	-	-	-	1,526	45	34	-	-	-	-	-	-	1,526
-	-	-	-	-	-	1,925	46	42	-	-	-	-	-	-	1,925
-	-	-	-	-	-	1,791	45	40	-	-	-	-	-	-	1,791
-	-	-	-	-	-	1,986	49	40	7	?	?	-	-	-	1,993
-	-	-	-	-	-	1,486	51	29	55	?	?	-	-	-	1,541
-	-	-	-	-	-	1,402	51	27	112	?	?	-	-	-	1,514
-	-	-	-	-	-	1,925	55	35	174	?	?	-	-	-	2,099
-	-	-	-	-	-	2,317	55	42	331	?	?	-	-	-	2,648
-	-	-	-	-	-	2,152	58	37	858	?	?	-	-	-	3,010
-	-	-	-	-	-	2,380	64	37	1,276	?	?	-	-	-	3,656
-	-	-	-	-	-	2,613	63	41	892	?	?	-	-	-	3,505
-	-	-	-	-	-	2,069	64	32	439	?	?	-	-	-	2,508
-	-	-	-	-	-	2,416	66	36	481	?	?	-	-	-	2,897
-	-	-	-	-	-	2,300	70	33	396	?	?	-	-	-	2,696
-	-	-	-	-	-	2,664	68	39	518	?	?	-	-	-	3,182
-	-	-	-	-	-	1,934	68	28	384	5	77	-	-	-	2,318
-	-	-	-	-	-	1,542	59	26	390	6	65	-	-	-	1,932
-	-	-	-	-	-	937	53	18	374	12	31	-	-	-	1,311
-	-	-	-	-	-	862	36	24	312	10	31	-	-	-	1,174
-	-	-	-	-	-	891	27	33	239	9	27	-	-	-	1,130
-	-	-	-	-	-	356	9	39	223	5	45	-	-	-	579
-	-	-	-	-	-	190	6	32	-	-	-	-	-	-	190
-	-	-	-	-	-	763	18	42	101	2	50	-	-	-	864
-	-	-	-	-	-	785	17	46	-	-	-	-	-	-	785
-	-	-	-	-	-	1,456	33	44	-	-	-	-	-	-	1,456
-	-	-	-	-	-	310	6	52	-	-	-	356	2	178	666
-	-	-	-	-	-	750	16	47	168	3	56	600	2	300	1,518
-	-	-	-	-	-	944	20	47	260	5	52	1,116	2	558	2,320
-	-	-	-	-	-	1,323	20	66	344	6	57	1,367	10	137	3,034
-	-	-	-	-	-	1,192	26	46	331	3	110	1,648	14	118	3,171
-	-	-	-	-	-	1,228	26	47	360	3	120	1,480	14	106	3,068
26	1	26	-	-	-	1,040	26	40	363	5	73	423	7	60	1,826
51	2	26	-	-	-	1,053	26	40	508	7	73	-	-	-	1,561
-	-	-	-	-	-	777	28	28	382	3	127	-	-	-	1,159
-	-	-	-	-	-	695	11	63	1,151	28	41	-	-	-	1,472
-	-	-	-	-	-	555	7	79	683	13	50	-	-	-	703
-	-	-	-	-	-	518	7	74	797	16	50	-	-	-	827

to the level of the average catch in the years 1905–1913. This is the case also with Japan, while the average catch in the Pacific, which is slightly less in 1920–1932 than in the war period, lies appreciably above the average catch in 1905–1913.

The returns for these great areas can, indeed, give an orientation as to the expansion of whaling, but a deeper insight cannot be gained without a study of the returns for each separate ground.

We begin this study with the *Arctic* and the *North Atlantic* and follow the catch from year to year in the various sub-areas.

In the table c on page 8 the most important data of the catch are grouped separately for North Norway, West Norway, Iceland, Faroes, Shetlands, Hebrides and Ireland, Svalbard, pelagic whaling in the Arctic, Newfoundland, and Spain and Portugal.

For all these grounds, with the exception of Newfoundland, we have returns for the number of catchers that have been engaged in each year. For Newfoundland such returns are available only for recent years. For this reason we have divided the table into two parts, and given a separate total for the number of whales caught and number of catchers for all grounds, excluding Newfoundland and Spain and Portugal. For all grounds we have given the aggregate of whales caught. A study of the figures for the catch in these northern areas taken together shows, as already pointed out, a culminating point in 1885, with a falling off in the succeeding years. From 1890 the catch begins to increase and up to 1900 moves up and down without showing any marked tendency. In the last 10 years of the past century the catch increases, and remains generally at a higher level until it culminates in 1904 at 3,656 whales. In the years up to 1909 the figure is slightly lower, but also for these years the returns cannot be said to indicate any decisive drop. The decrease does not begin until 1910, but this movement is interrupted by the war period, which brings the catch down to a minimum. Examining the figures for this period we find that the first culminating point in 1885 synchronises with a distinct culminating point in the whaling at the coast of Finmark. The figure—1,287—reached that year was not subsequently attained in that field. The rise in the number of whales caught in the 'nineties is, as the table indicates, partly due to the fact that the catch was at a slightly higher level in Finmark in those years than in the latter part of the 'eighties. But this circumstance alone could not have brought the figures up beyond those for 1885. The reason is that fresh grounds were exploited, first Iceland from 1883, then the Faroes from 1894, Newfoundland from 1898, Svalbard from 1903, and then the Shetlands from 1904. In the year 1902, for instance, the catch ran up to 2,317 animals. The table shows that this is due to Iceland having touched the peak in that year,

and to the catch off the Faroes and Newfoundland having begun to play its part. The year of culmination for total catch in these grounds was 1904, as already pointed out. In that year the catch at the coast of North Norway had dropped sharply, Iceland had passed the culminating point, Newfoundland was at a culminating point, the Faroes had not yet reached it, and the Shetlands and Svalbard were beginning to figure to some extent. In other words, the figures show that whaling at several of the leading grounds was already on the downward trend in the year the catch for the whole of the Arctic and North Atlantic reached its peak. If we follow these figures further down we find that the same thing repeats itself. In 1909, for instance, 3,182 whales were caught. In that year whaling operations at the coast of North Norway came to an end; Iceland, Svalbard and Newfoundland were, as we now know, on the decline, and at the Faroes, Shetlands, Hebrides, and Ireland they were at culminating point. Even such a summary consideration of pre-war figures shows that the reason why whaling in the Arctic shows the highest figures between 1900 and 1910 is that new grounds—which at that point of time had not been fully exploited—are included. In other words, they present a picture of a catch that is being maintained by exploiting new grounds, but which makes heavier inroads upon the stock than the power of reproduction of the stock permits.

If we further follow the figures for the northern grounds collectively, after the partial standstill in the war period, we find a repetition of the same state of affairs. The operations of the first years of the latter war period are influenced by the catches at the new grounds off West Norway. Later it is the whaling off the Faroes and the Shetlands which gives relatively good results, although not so high a figure taken all round as in pre-war years. In 1923–1926 it is the exploitation of the grounds off Spain and Portugal that raises the catch on a level with several of the best pre-war years, and in 1929–1932 the catch is sustained by the pelagic whaling in the Arctic. Thus, also in these years it is the exploitation of fresh grounds which lifts the catch to a high level. The characteristic feature therefore is that the catch may increase or be maintained by the inclusion of new grounds, while the old grounds are gradually exhausted. In order to show this more closely it is of value to study each ground by itself.

We shall commence with *North Norway*. In the first years the whaling is operated along the north-eastern coast of Norway from shore stations around Varanger Fjord. The material used to start with is 1 boat, and after 12 years' operations not more than 4 boats are employed. Nor is the catch a large one—163 whales in 1880, comprising in the first years exclusively blue-whales. This species represents the bulk of the catches up to and including 1881 (see table on page 6 of Sigurd Risting's survey

in *International Whaling Statistics II*). From 1881 to 1885 the whaling was greatly extended. In the first place, the number of boats was increased in these years from 4 to 33, and the catch, too, naturally increased very considerably, from 163 to 1,287 whales. We also note that the blue-whale gradually comes to play an altogether secondary role. The great bulk of the catch is fin-whales; in some years sei-whales and a number of humpbacks. According to the complete specification available for the years 1885, 1886, 1888, and 1890, the catch is distributed as follows among the various species:—

Years.	Total of whales.	Blue-whale.	Fin-whale.	Sei-whale.	Humpback.
1885	1,287	34	437	724	92
1886	872	114	609	61	88
1888	627	68	346	144	69
1890	627	22	368	213	24

In the 'eighties there occurred, in addition to an extension of whaling equipment, also an expansion of the grounds westward; but as late as 1888 the preponderating number of stations and boats were on the eastern grounds. From 1891 onward the centre shifted to western grounds. The number of boats on the eastern grounds gradually decreased. In Sigurd Risting's book "*Av Hvalfangstens Historie*" we find a number of tables which enable us to follow the whaling separately for the eastern and western areas for the years 1885–1890 and 1896–1904. On the basis of these figures we have prepared table d, on page 13.

This table shows that 986 whales were shot at the eastern stations in 1885 out of a total of 1,287. From that year the catch in the eastern section began to fall off. In 1890, for instance, only 259 whales were killed on these grounds out of a total of 627. From 1896 the number of whales caught at western stations increased, and there was a culmination in 1898 at 807 whales out of a total of 1,072. The catch at eastern stations showed a continual falling off. From the close of the 'nineties whalers began to operate farther away from land. One company, Ingebrigtsen's, took up this whaling at an early date, and therefore we have separate returns for this company in the table. From 1899 the catch decreased on both western and eastern grounds, and it was the extension to the waters around Bear Island, from where the carcasses were towed in by special craft, which sustained the whaling in latter years. The catches for those companies which used such tugboats are given as separate returns in the table, and it is apparent that it is these remote grounds alone which have sustained the hunting.

We may further observe that the blue-whale figures to an ever-diminishing extent at eastern grounds, and that the increase in the latter years in



Table d.

ears.	Stations, etc.	Number of boats.	Number of whales.					Number of whales per boat.				
			Blue-whale.	Fin-whale.	Sei-whale.	Hump-back.	Total.	Blue-whale.	Fin-whale.	Sei-whale.	Hump-back.	Total.
885	Western stations ..	10	14	109	149	29	301	1	11	15	3	30
	Eastern stations ..	21	20	328	575	63	986	1	16	27	3	47
886	Western stations ..	9	18	165	58	32	273	2	18	6	4	30
	Eastern stations ..	24	96	444	3	56	599	4	19	—	2	25
887	Western stations ..	9	32	128	137	11	308	4	14	15	1	34
	Eastern stations ..	21	53	290	103	19	465	2	14	5	1	22
888	Western stations ..	6	7	103	95	14	219	1	17	16	2	36
	Eastern stations ..	27	61	243	49	55	408	2	9	2	2	15
889	Western stations ..	6	?	?	?	?	175	—	—	—	—	29
	Eastern stations ..	23	—	—	—	—	325	—	—	—	—	14
890	Western stations ..	13	10	160	185	13	368	1	12	14	1	28
	Eastern stations ..	14	12	208	28	11	259	1	15	2	1	19
896	Western stations ..	16	49	517	65	89	720	3	32	4	6	45
	Eastern stations ..	11	9	216	41	85	351	1	19	4	8	32
	Ingebrigtsen's comp.	1	7	58	11	19	95	7	58	11	19	95
897	Western stations ..	13	34	284	343	44	705	3	22	26	3	54
	Eastern stations ..	10	60	116	170	12	358	6	12	17	1	36
	Ingebrigtsen's comp.	1	13	38	23	10	84	13	38	23	10	84
898	Western stations ..	15	17	337	408	45	807	1	23	27	3	54
	Eastern stations ..	8	7	111	139	8	265	1	14	17	1	33
	Ingebrigtsen's comp.	1	11	45	11	16	83	11	45	11	16	83
899	Western stations ..	15	27	199	113	42	381	2	13	7	3	25
	Eastern stations ..	8	20	57	4	12	93	3	7	—	2	12
	Ingebrigtsen's comp.	1	14	27	1	16	58	14	27	1	16	58
900	Western stations ..	17	6	220	38	61	325	—	13	2	4	19
	Eastern stations ..	6	6	43	1	7	57	1	7	—	1	9
	Ingebrigtsen's comp.	1	1	40	—	28	69	1	40	—	28	69
901	Western stations ..	17	9	277	13	97	396	—	16	1	6	23
	Eastern stations ..	3	2	70	9	21	102	1	23	3	7	34
	Ingebrigtsen's comp.	1	1	30	—	24	55	1	30	—	24	55
902	Western stations ..	16	51	353	27	129	560	3	22	2	8	35
	Eastern stations ..	4	7	104	6	26	143	2	26	1	9	38
	Ingebrigtsen's comp.	1	37	22	—	39	98	37	22	—	39	98
903	Western stations ..	14	126	124	55	51	356	9	9	4	3	25
	Eastern stations ..	3	—	16	4	7	27	—	5	1	2	8
	With tugboat . . . . .	6	105	45	25	38	213	18	7	4	6	35
904	Western stations ..	14	233	142	21	39	435	17	10	1	3	31
	Eastern stations ..	2	2	19	3	—	24	1	9.5	1.5	—	12
	With tugboat . . . . .	14	233	142	21	39	435	17	10	1	3	31

e. The returns for Ingebrigtsen's company and for those companies which used tugboats are included in the figures for the western stations.

blue-whale catches in the western area is almost exclusively due to the extension of operations to the grounds around Bear Island. The species that keeps the whaling going is the fin-whale. The sei-whale, which also figures prominently, has given a more uneven yield, this being attributable to the irregular occurrence of this species on the whaling grounds. The humpback has never been of any great significance at the coast of North Norway. In the first years this species was not hunted at all, because whalers were not familiar with its movements. But even after its migratory

habits became known, the catches under this head have not been of any great importance.

The yield per boat is higher at western stations for most of the years specified here, but even the western grounds do not give a very large yield per boat in the later years. The largest catch per boat is shown by those companies operating farther away from the coast in the direction of Bear Island; and Ingebrigtsen's company records an exceptionally big catch. Taken all round, the figures we have point to the fact that the area is gradually being overworked, and that the whaling, even if it had not been stopped as a result of Norwegian legislative measures prohibiting whaling off the coast of Finmark from 1905 onward, would have ebbed out. The figures appear, however, to indicate clearly that these grounds have been worked too hard long before there was any noticeable falling off in the catches; that, in other words, the whaling industry has not been able to find a point of equilibrium between catch and stock.

The next area in northern waters to which Norwegian whalers turned their attention was *Iceland*. Whaling began here in 1883 off the north-western coast. In this instance, too, the initial operations were on a moderate scale. The material employed comprised only two catchers in 1889, from which date the outfit was gradually extended, and reached its maximum in 1902 with 30 catchers. In that year the whaling culminated with a yield of 1,305 whales. Also in this area there is a shifting of operations to new grounds, but in Iceland a shifting from west to east. This movement commenced in 1900, from which time the centre of the whaling was pushed eastward and in the last few years the whalers extended their operations to Jan Mayen, the West Ice, far into Denmark Strait, and southwards towards the Faroes. Unfortunately, no returns are available to enable a distinction to be made between the catches of the western and eastern stations, but from the sparse returns that do exist, it is apparent that it is the new grounds to the east that, generally speaking, sustain this whaling after its culmination in 1902. It may further be noted that the decline is not a constant one. Not till 1910 onward does it become obvious that this area cannot be worked on a profit-earning basis, and from that year the catch shows a marked and rapid drop; this area was abandoned as being unremunerative in the years 1914-1915. In other words, the Iceland whaling presents the same picture as we find for North Norway: A generally increasing catch and an extension of whaling equipment throughout a term of years, then culmination, and extension of the area exploited, and a gradual decline of the catch, a reduction of equipment until whaling is discontinued. Both these grounds have in some years yielded a good catch after the peak has been passed, catches that lead to an extension of whaling outfit, which, in turn, precipitates the decline.

The specification of the various species in the Iceland whaling is very incomplete, but the blue-whale figured far more prominently in those waters than at North Norway grounds. Besides the blue-whale, the fin-whale has been the most important species; the humpback played a part only for a few years. To give a characteristic of the composition of the catch we are appending some returns taken from Sigurd Risting's work: "Av Hvalfangstens Historie", furnished by individual companies from 1889 to 1904:

Years.	Blue-whale.	Fin-whale.	Sei-whale and humpback.	Total.
1889 <sup>1)</sup>	24	38	1	63
1890 <sup>1)</sup>	50	23	1	74
1891 <sup>1)</sup>	39	43	1	83
1892 <sup>1)</sup>	80	47	1	128
1893 <sup>1)</sup>	77	113	5	195
1894 <sup>1)</sup>	127	79	10	216
1895 <sup>1)</sup>	219	112	12	343
1896 <sup>1)</sup>	219	45	7	271
1897 <sup>2)</sup>	137	96	12	245
1898 <sup>3)</sup>	190	127	78	395
1899 <sup>3)</sup>	217	140	54	411
1900 <sup>3)</sup>	186	172	36	394
1901 <sup>2)</sup>	72	99	22	193
1902 <sup>1)</sup>	21	18	17	56
1903 <sup>1)</sup>	16	21	13	50
1904 <sup>1)</sup>	19	40	11	70

<sup>1)</sup> 1 whaling company. <sup>2)</sup> 2 whaling companies. <sup>3)</sup> 3 whaling companies.

The third ground to be exploited in the eastern area of northern waters was the *Faroës*. This ground, too, shows a small increase of whaling equipment in the first years. Whaling commenced with 1 boat in 1894, and in 1900 3 boats were working, giving a catch of 197 whales. From that year there began an expansion which culminated in 1909 with 17 boats and 773 whales. In these years the number of whales per boat was maintained at quite a high figure, but in 1910 there was a sharp drop, and from that year the catch appears to decline. Whaling equipment was reduced, but still there was a particularly good yield in 1915, and operations were continued also in 1916. The ground was not abandoned that year, but work was discontinued on account of the war until 1920. Also in respect of the *Faroës* there does not exist any complete specification of the species caught. In the first few years a number of blue-whales were caught, but on the whole the whaling has been sustained by the fin-whale. The humpback has been of minor importance, but in some years the sei-whale has occurred in considerable numbers; it may be added that this species occurs with less regularity than the others.

Off the *Shetlands*, *Hebrides*, and *Ireland* whaling was commenced in 1904. In this area a far larger outfit was employed from the beginning, and in the course of few years the catch reached its maximum in 1909. From the latter year it dropped, but was at a fairly high figure at the outbreak of the war; and it cannot be said on the basis of the returns that the area was exhausted at that time. Whaling was suspended in 1914, and was not resumed until 1920. In Shetlands waters the great bulk of the catch has been fin-whale. In some years the sei-whale has figured largely, whereas the blue-whale and the humpback have been very few in number. Off the Hebrides, on the other hand, a number of blue-whales have been shot, representing in some years a not inconsiderable part of the catch. A specification of the catches at the various grounds is given in *Whaling Statistics II*.

Whaling off *Svalbard* was begun in 1903, and underwent considerable expansion in the succeeding years, the second year giving an exceptionally big yield per boat. However, this ground was, generally speaking, very disappointing, the maximum being reached as early as the second year; this ground was abandoned in 1912.

In the western part of northern seas the *Newfoundland* whaling is the most important one. It was started as far back as 1898, and, taken on the whole, shows the usual development, with a strong expansion of operations, until the peak was reached in 1904 with 1,276 whales. In 1903 the catch comprised 225 blue-whales, 345 fin-whales, 287 humpbacks, and 1 sperm-whale. In 1905 the result was 263 blue-whales, 460 fin-whales, 161 humpbacks, and 8 sperm-whales; but that year gave a poor financial yield, as the whaling equipment was larger in 1905 than in 1904, and the number of whales killed showed a decline. From 1906 to 1908 the number of boats was reduced, and the number of whales caught fell off sharply. A specification of the catch exists for 1908. In that year the result was 26 blue-whales, 345 fin-whales, 24 humpbacks, and 1 sperm-whale. With a temporary increase in 1909 the decline continued in the succeeding pre-war years. In 1910 and 1911 there were only 5 and 6 boats in operation, but as the yield per boat was quite a large one—77 and 65 whales respectively—the outfit was extended to 12 boats in 1912, and the yield per boat fell to 31 whales. The number of boats then dropped in the following years from 10 to 9 to 5, when whaling ceased on account of the war. In these waters whaling was resumed experimentally in 1918–19, but it was not till 1923 that regular operations were recommenced.

As mentioned in the foregoing, whaling, and thereby expansion at all grounds in northern seas, was interrupted by the war. This afforded the whale some years of protection, and when the war came to an end hunting was resumed at some of the old grounds; one or two new ones that had not been tried before were also experimentally exploited.

As early as 1918 whaling was started on the west coast of *Norway*, first by the State as a measure of emergency with a view to procuring raw material for the manufacture of margarine. To start with the whalers operated from 2 stations on the old ground of West Finmark and 4 stations from Trøndelag and along the coast southward. In the two years this undertaking was run entirely by the State, the yield was quite a good one, and there turned out to be a fairly considerable stock of fin-whales along the coast. In 1919 these operations were curtailed, but were continued in 1920 also for Government account. In these years the catch per boat was maintained on a level with that of the first two years, and must be said to have been a very good result. Whaling off the west coast of Norway was continued for private account from 1921, and showed the usual course of development. The outfit was gradually enlarged and the catch increased. The yield per boat was a good one, more boats were put in operation, and the foundation of a stable industry appeared to have been created. Then the catch per boat began to fall off, the number of boats was reduced, and the catch declined. On the basis of the few years this ground has been worked it cannot really be concluded that it is exhausted, but there are strong indications that also in this instance the catches have been greater than the stock has been able to bear.

Hunting off the *Faroes* was resumed in 1920 with 12 boats, but was prosecuted on an appreciably smaller scale in the succeeding years. The number of boats in 1921-22 was 4. This gave a comparatively good yield per boat—44 whales—and the number of boats was increased to 7 in 1923 and to 8 in 1925. This brought the yield per boat down to 29. The number of boats was again reduced for 2 years, the yield per boat rose to 39, and the number of boats was again increased to 7 in 1928 and to 8 in 1929, with the result that the catch per boat again dropped. The figures for the number of whales caught, which in no year are comparable to the yield in pre-war years, do not give the impression of the catch having fallen to a minimum; but there seems to be little probability of the stock of whales in that area being capable of affording a basis for hunting on any large scale.

Whaling off the *Shetlands* and the *Hebrides* was resumed in 1920 with very good results, 11 boats accounting for 749 whales or 68 whales per boat. In 1921 these grounds were not worked. From 1922 onward operations were continued here with approximately the same number of boats until the year 1928. The catch per boat was a very large one, but in the last few years of the period, viz., 1927-28-29, there was a clearly expressed decline. From 1929 onward this ground has not been worked.

In *Svalbard* waters attempts have been made in some post-war years to resume operations, but the yield has been so small that it has not paid to continue.

At *Newfoundland*, as already mentioned, hunting was resumed in 1923 with 2 boats. The catch per boat was exceptionally large in all the post-war years, and the trend in the number of whales shot does not reflect a definite fall. It is however too early to express any definite opinion as to whether the whaling industry in these waters has succeeded in finding a constant ratio between catch and stock.

In 1929 *pelagic whaling* was initiated in northern seas, and has been carried on in 1929, 1930, 1931, and 1932. The results have so far been very good, but the working period is far too short to give any idea as to how this form of whaling will develop.

In 1921 up to and including 1927 fin-whales were hunted off the coasts of *Spain* and *Portugal*. To start with 2 boats were used, and the yield per boat was an exceptionally good one, viz., 178. This ground was worked with 2 boats up to 1923 inclusive, and the yield per boat continually increased, being in 1923 1,116 whales or 558 per boat. In 1924 the equipment was enlarged to 10 boats, in 1925 to 14 boats, and the number of whales shot rose to 1,648, but the yield per boat sank to 118. In 1926 the total catch was 1,480 whales, or 106 per boat. In 1927 only 7 boats were engaged, and both the number of whales caught and the number of whales per boat dropped very considerably, with the result that the ground was abandoned.

The post-war whaling statistics for northern seas, which we have just dealt with, appear, generally speaking, to confirm the experience which was given by the statistics of the catch in northern seas in pre-war years: That years with a good yield lead to the extension of the whaling equipment, with the result that the stock is overtaxed and the catch gradually falls off. The whaling industry does not yet appear to have succeeded in finding a point of equilibrium between exploitation and stock.

If we are to form any opinion of the supply of whales on the basis of experience from northern seas, it would appear as if there never can have been any particularly great stock of whales in those waters. They have never been taxed to any very great extent in any year, 3,600 animals at the most, and this must have been more than the stock could stand. Blue-whales have presumably been fewest in number, and have rapidly been decimated in the areas where they have occurred. The fin-whale and sei-whale have had the largest stocks, while the hump-back has not occurred in large numbers. At all events, it would seem certain that the present supply of whales in northern waters cannot form the basis of an industry on any large scale until it is allowed to grow again, and the experience of the war-period seems to indicate that such growth will take a long time.

Whaling off the *coast of Africa* was begun in 1908 in Natal with 2 boats. It expanded rapidly and vigorously to various areas on the east, south, and west coasts of Africa, and the catch culminated in the short period of 5 years after the start, viz., in 1913 at 9,270 whales caught by 89 boats. In 1914–1916 there was a strong decline, and normal developments were thereupon broken off by the war, which brought the catch down to a minimum, 695 whales caught by 12 boats in 1918. Whaling was resumed in 1919, and the number of whales shot rose until the peak was reached in 1926 — 4,646 whales and 47 boats. The year before, in 1925, the result was 4,384 whales and 53 boats. From those years onward the catch has shown a falling tendency. The number of boats was reduced in 1927, remained practically unchanged in 1928–1929, and attained a new maximum at 56 boats in 1930, the largest number of boats employed on the coast of Africa since the great whaling was carried on there in the years 1912–1913 and 1914. In contrast to the Arctic and North Atlantic, it is a characteristic feature of the African coast that the whaling equipment is extended very quickly and that the maximum catch is attained within a few years, but as the course of development was broken by the war, it is difficult to compare the list of figures for Africa with those for northern seas.

The number of whales caught per boat has all the time been substantially higher on the coast of Africa than in the northern seas. Whereas the catch in the latter area between 1910 and 1916 has swung between 20 and 41 whales per boat, the figures for Africa were 146 and 56, and from 1920 onward the catch in northern seas has fluctuated between 64 and 37 per boat, and on the coast of Africa between 102 and 62. From these figures we cannot, however, draw any definite conclusion as to whether the yield has been greater off the coast of Africa than in the northern seas.

The fact is that the economic value of the yield depends upon the kind of whale caught, and obviously, also upon the various working costs of the whaling industry in different areas. Prior to the war, however, the variations in the number of whales per boat were greater on the coast of Africa than in the Arctic and North Atlantic, and the catch per boat shows a distinct decline as far back as 1911 and onward. After the war the catch per boat off the coast of Africa has been more constant. It showed a decline in the years 1929–30, but rose largely in 1932.

It would, however, be premature to judge of the development of whaling off the coast off Africa on the basis of the aggregate figures. Also in this instance it is of importance to split up the catch in the various areas. This has been done in the following table, showing the number of whales caught, the number of boats employed, and the number of whales per boat.

Table e.

Years.	Coast of Africa. Total.			East Africa.			Natal.			Cape Colony.			Walvis Bay.			Angola.			Congo.		
	Whales.	Boats.	Whales per boat.	Whales.	Boats.	Whales pr. boat.	Whales.	Boats.	Whales per boat.	Whales.	Boats.	Whales per boat.	Whales.	Boats.	Whales per boat.	Whales.	Boats.	Whales per boat.	Whales.	Boats.	Whales per boat.
1908	106	2	53	-	-	-	106	2	53	-	-	-	-	-	-	-	-	-	-	-	-
1909	724	8	90	-	-	-	170	2	85	317	4	79	-	-	-	237	2	118	-	-	-
1910	1,531	12	128	108	2	54	532	7	76	170	-	-	-	-	-	721	3	240	-	-	-
1911	4,377	30	146	537	4	134	1,051	10	105	500	6	83	-	-	-	2,289	10	229	-	-	-
1912	6,859	68	101	1,200	15	80	1,006	18	56	918	14	66	192	2	96	3,125	16	195	418	3	139
1913	9,270	89	104	900	5	180	1,344	25	54	721	16	45	351	4	88	3,432	20	172	2,522	19	133
1914	5,590	86	65	412	6	69	1,061	22	48	735	14	52	143	4	36	1,479	17	87	1,760	23	76
1915	2,765	51	54	205	5	41	980	23	43	775	13	60	-	-	-	805	10	81	-	-	-
1916	1,945	35	56	-	-	-	853	18	47	772	13	59	-	-	-	320	4	80	-	-	-
1917	922	16	58	-	-	-	176	8	22	746	8	93	-	-	-	-	-	-	-	-	-
1918	695	12	58	-	-	-	142	3	47	553	9	61	-	-	-	-	-	-	-	-	-
1919	1,282	23	56	-	-	-	641	11	58	641	12	53	-	-	-	-	-	-	-	-	-
1920	1,310	25	52	-	-	-	704	15	47	606	10	61	-	-	-	-	-	-	-	-	-
1921	1,263	20	63	-	-	-	905	13	70	358	7	51	-	-	-	-	-	-	-	-	-
1922	2,335	23	102	-	-	-	711	10	71	1,010	9	112	-	-	-	-	-	-	614	4	154
1923	3,105	38	82	81	5	16	809	10	81	1,010	11	92	296	4	74	213	3	71	696	5	139
1924	3,649	42	87	-	-	-	1,038	15	69	1,545	14	110	239	4	60	430	4	108	397	5	79
1925	4,384	53	83	-	-	-	1,284	15	86	1,584	15	106	321	4	80	404	4	101	791	15	53
1926	4,646	47	99	-	-	-	1,238	15	82	2,235	19	117	375	4	94	396	3	132	402	6	67
1927	4,144	44	94	-	-	-	1,089	15	72	2,041	20	102	444	6	74	570	3	190	-	-	-
1928	3,835	45	85	-	-	-	1,370	15	91	1,641	20	82	310	7	44	514	3	171	-	-	-
1929	3,362	45	75	-	-	-	1,797	17	106	1,210	20	61	355	8	44	-	-	-	-	-	-
1930	3,498	56	62	-	-	-	1,261	17	74	1,342	24	56	303	9	34	-	-	-	592	6	99
1931	823	10	82	-	-	-	823	10	82	-	-	-	-	-	-	-	-	-	-	-	-
1932	1,043	8	130	-	-	-	1,043	8	130	-	-	-	-	-	-	-	-	-	-	-	-



As will be seen from this table, there are only two grounds that have been worked all the time, viz., Natal and Cape Colony. From the coast of East Africa hunting has been carried on only in the years 1910–1915 and in 1923, at Walvis Bay in 1912–1914 and 1923–1930, at Angola in 1909–1916 and 1923–1928, and off the Congo in 1912–1914, 1922–1926, and in 1930. As previously mentioned, the first grounds to be exploited were those off Natal, then came in the following year Cape Colony and Angola. In 1910 East Africa was included, and then came Walvis Bay and the Congo in 1912. The greatest extension of operations took place in 1912. In 1913, when the highest number of whales was caught, and the number of boats reached its maximum figure, the catches off East Africa were already on the decline, and the equipment had been reduced from 15 to 5 boats.

A study of the figures for the separate grounds shows that *East Africa* has a sharp rise. In the course of 3 years the maximum is reached, and after that the decline is a marked one. Operations off *Natal* reach the peak before the war, in 1913, they are limited to a minimum during the war, have then a rising tendency with some few breaks until 1929, when the maximum was reached. In 1930–1931 the results reveal a marked decline, but a rising again in 1932. At *Cape Colony*, too, the highest level was reached before the war, in 1912, and remained quite constant with a slight fall until 1917. After the war the catch increased and attained the maximum figure in 1926, after which the number of whales caught fell off. At *Walvis Bay* whaling was prosecuted only 3 years before the war. After the war it was resumed in 1923, and the catches have been comparatively constant. At *Angola* the peak was touched in 1913, upon which there followed an exceptionally sharp drop. Whaling was resumed in 1923, and in the intervening years the catch falls considerably short of the pre-war figure, but has not shown any falling tendency. In the *Congo* area the years 1913–1914 yielded very good results. Whaling was resumed in 1922 and has been somewhat uneven, but the figures fall far short of pre-war returns. Such a summary treatment of these returns reveals a distinct decline for certain of the grounds during the post-war period, but does not tell us very much beyond that.

A closer understanding of the movements of the figures will perhaps be found in the statement of the number of whales caught per boat. Taking *East Africa* first we find that the yield the first year, 1910, was 54 whales per boat, the next year 134. The year after the equipment was extended from 4 to 15 boats, with the result that the total catch rose tremendously, but the yield per boat fell to 80 whales. As that year gave whalers poor profits, the number of

boats was reduced in the following year, 1913, from 15 to 5, and the yield per boat touched the maximum at 180 whales. The following year, 6 boats were put in action, with a result of 69 whales per boat. In 1915 5 boats were working, and the result was 41 whales per boat. In 1923 an attempt was made with 5 boats, which accounted for 16 whales per boat. At this ground the catches were almost exclusively humpbacks, and the figures appear to indicate that the humpback stock has been most heavily taxed in the few years the whaling has been carried on.

Off the coast of *Natal* the yield in the first year (1908) with 2 boats was 53 whales per boat, in the following year with 2 boats it was 85 per boat, in 1910 with 7 boats 76 per boat, in 1911 with 10 boats 105 whales per boat. In 1912 the number of boats increased to 18, and the catch was 56 whales per boat. The year after the number of boats was increased to 25, and the catch was 54 whales per boat. In the succeeding years the number of boats was lower, and the catches ranged from 43 to 48 whales per boat; an exception was the year 1917, when 8 boats were in operation and the yield was 22 whales per boat. In 1918 only 3 boats were working, and the catch was 47 whales per boat. After the war there are not such marked variations in the number of boats. Whaling commenced in 1919 with 11 boats, continued in 1920 with 15, in 1921 with 13, in 1922 and 1923 with 10, in 1924 to and including 1928 with 15, in 1929 and 1930 with 17, in 1931 with 10, and in 1932 with 8 boats. From 1921 onward the catch has varied from 70 to 130 whales per boat. The highest figure was in 1932.

In the first few years the catch in the Natal area mainly comprised humpbacks, in addition to which the fin- and sperm-whale played a considerable part in pre-war years. Since the war the humpback has decreased in importance, and the catch has been composed of blue-whale, fin-whale, and sperm-whale. If we follow the figures for the various species we cannot have any doubt that the humpback stock provides an ever-decreasing quota of the catch, and that the sperm- and blue-whale have grown in importance in recent years, whereas the share of the catch contributed by the fin-whale has been more constant. On the whole it is palpable that the whale stock hunted off the coast of Natal has been more comprehensive in composition and has withstood the inroads made upon it far better than have the grounds off the coast of East Africa.

The *Cape Colony* whaling, in contrast to the other African grounds, gives as a whole a better result in post-war years than in the pre-war period (but the post-war type of boat is larger and more powerfully-engined with a wider radius of action). This applies both to the aggregate result of the whaling and to the yield per boat. It should also be observed

that the whaling outfit, measured in number of boats, has been greater at these grounds in recent years than in the pre-war period. In these waters the maximum of whales caught was not reached until 1912, the figures being 918 whales and 14 boats. The average number of whales per boat varies in pre-war years between 45 and 83. When operations were resumed after the war, the maximum was touched in 1926, when the number of boats totalled 19. In the years 1927-1930 the number of whales caught stood at a lower figure, while the number of boats was greater. The peak was touched in 1930 with 24 boats. The number of whales per boat varies from 56 in 1930 to 117 in 1926.

Judging by the returns available, the humpback is of secondary importance in this area. It is the fin-whale and blue-whale which have predominated in most years. In some years the sei-whale has featured largely, but the occurrence of this species seems here as elsewhere to be irregular. In most recent years sperm-whale hunting has attained great importance. How far we may, on the basis of the figures available, draw any definite conclusion that the stock is falling off is questionable, as the whaling results comprise too brief a term of years; but we note that the catch of blue-whales, which from 1922 to 1926 increased from 599 to 1000, has fallen below 500 in the years 1929-1930. The fin-whale catch, which also culminated in 1926, does not reveal so strong a decline in recent years, and it is possible that the falling off may be due to circumstances that have no connection whatever with a diminution of the stock. The sperm-whale hunting reached its apex in 1928.

At *Walvis Bay*, as we have already mentioned, whaling was carried on for 3 years prior to the war. The catch was comparatively small and consisted mainly of humpbacks. Since the war this ground has been worked with 4 boats in the years 1923 to 1926 with a yield varying from 60 whales per boat to 94 in 1926. In the following years the outfit was extended from 4 to 6, 7, 8 and 9 boats, and the number of whales caught per boat sank to 74, 44 and 34. Before the war, and in 1923, the humpback catch was the leading one, but later on it played a less and less important part. Latterly, the blue-whale has predominated in these waters. It reached its highest point in 1927 at 316 whales, and shows a decline in the following years. The fin-whale has not figured so importantly at this ground, the highest number, 101, being caught in 1929. If we are to judge from the catch per boat, it would appear that the ground has been too heavily exploited in recent years.

Whaling off *Angola* was started in 1909 and underwent a rapid development. It was in these waters that the highest percentage of whales off the African coast was caught in the years 1911-1914, and on no other ground does the yield per boat run to such high a figure. The

maximum was reached in 1913, when the whaling outfit consisted of 20 boats and the catch was 172 whales per boat. But the yield per boat culminated as early as 1910 at 240 whales per boat, and then dropped year by year, so that in 1915 it was down at 81 whales per boat. The equipment was reduced to an exceptionally great extent in these years. Whaling was resumed in 1923 and continued until 1928 with 3 or 4 boats. The yield per boat was not a poor one, varying from 190 to 71. If we follow the figures for the whales caught, we cannot on this basis state that there was a decisive decline in the post-war period. The whaling in these waters in pre-war years was almost exclusively for humpbacks. After the war this species has been of minor importance. In other words, this decline of humpback stock seems to have set in already in pre-war years. Since the war the blue-whale and sei-whale, and in one year, 1925, the fin-whale, have been of prime importance. In 1928 the sperm-whale catch was of great importance, 140 sperm-whales out of a total of 514 whales. The returns for the separate species indicate an extremely uneven stock from one year to another.

Whaling in *Congo* waters before the war, in common with that off Angola, was solely for humpbacks. Also in this instance the catch in the three pre-war years was exceptionally high, and the yield per boat was highest in the early stages. In 1912 it was 139 per boat with 3 boats; and then the number of boats was increased to 19 the following year. The number of whales per boat dropped to 133; the number of boats was further increased to 23 in 1914, and the number of whales caught per boat sank to 76. After the war the hunting in these waters, in contrast to other grounds, is still mainly concentrated on the humpback. But operations are carried on to a very limited extent. In the years 1922-1924, 4 or 5 boats were working. The yield per boat in the first year was 154, in the second 139, in the third 79 whales. In 1925 the equipment was extended to 15 boats, and the yield dropped to 53 whales per boat. In 1926 the number of boats was reduced to 6, and the yield was 67 whales per boat. In 1930 whaling was resumed with six boats, and the yield was 99 whales per boat.

Whaling in African waters shows far greater fluctuations than in northern seas, but presents the same picture in certain directions: Too strong an extension of the equipment with subsequent decline, and even at those grounds where the outfit has more or less been stabilised, as in Natal and Cape Colony waters, there are signs that the whaling industry has failed to find any balance between exploitation and stock. The most typical feature of whaling off the African coast is, however, the partial extermination of the humpback which most of the grounds show — a circumstance revealed by all re-

turns of this whaling. There is reason to devote attention to these returns of catches given in *Whaling Statistics II*. This certainly applies to East Africa and Angola, but also the whaling in the Congo, Natal, and Walvis Bay areas must be characterised as a marked overtaking of the species.

The aggregate figures for humpback catches off the coast of Africa given in *Whaling Statistics II*, p. 28, from which the following figures have been taken, show that practically all the whales caught in the years in which this whaling was at its height before the war were humpbacks. The unspecified returns, which are very high for certain years, also comprise mainly humpbacks—as will be seen from the details of the catch under the various grounds. After the war the humpback catch plays an altogether minor role in most years. This is partly attributable to the fact that the grounds where humpback dominated have no longer been worked, or have at all events been worked only on a very limited scale in post-war years. But this last circumstance must, in turn, be presumed to be due to the stock of humpbacks having been so greatly reduced that operations at the old grounds have not been maintainable on the old scale. If we take ground by ground this will be still more evident.

The *East African* catch in pre-war years consisted, as we have seen, almost entirely of humpbacks. It grew from 108 in 1910 to 1,200 in 1912, and then dropped violently in the following years. A similar trend is displayed by the humpback catch off *Angola*. It increases in 1910 from 718, culminates in 1913 at 3,400, and thereupon relapses violently in the succeeding years. In post-war years the humpback constitutes an altogether negligible part of the catch. In *Congo* waters, too, there is this violent variation in the returns; from 418 humpbacks in 1912 the figure soars to 2,522 in the following years, and drops the year after to 1,760, when operations cease. In post-war years, when whaling has on the whole been operated on a far more limited scale, the absolute catches obviously fall far short of pre-war figures, but the same thing applies to the yield per boat in all years subsequent to 1923. There are strong signs in the returns that also this humpback stock has been far too heavily worked prior to the war, and that it cannot yet have been retrieved.

Also the figures for *Natal* show that the humpback in pre-war years figured more largely than at a later date, but here the movement in the figures is not so violent as for the other grounds we have just mentioned, although there must be said to have been an appreciable decline in the number of humpbacks caught in post-war years. At *Walvis Bay* the humpback was of predominant importance in the first 2 years this whaling was carried on before the war. This is the case also in the first post-war year 1923, when hunting was resumed. Since that

time the humpback catch has dropped to an altogether negligible figure. For *Cape Colony* no specification is available in respect of the catch in pre-war years, and for the post-war period the catch of humpback is quite insignificant.

We are of the opinion that the figures we have picked out point to an extremely heavy exploitation of the humpback stock, particularly in the first working years before the war, and that this overworking has unquestionably decimated the stock.

The fact is, of course, that when whalers first began to exploit these African grounds they had been attracted by the occurrence of humpback whales, and it was not until a later date when they found less of this species—at any rate at some grounds—that they changed over to hunting the fin-whale and sperm-whale. Angola may perhaps be taken as a typical instance in this respect. In post-war years it is the blue-whale, sei-whale, and in some years the fin-whale along with the sperm-whale which have enabled the working of the ground. Off Natal the fin-whale and sperm-whale catches have figured prominently from the very first, and in post-war years there was a strong expansion of the blue-whale catch. This applies also to Cape Colony, where, however, the blue-whale has played a greater part than at any of the other grounds. The blue-whale figures largely also in Walvis Bay catches.

It is not an easy matter to interpret the returns for blue-whale catches. For the whole coast of Africa taken together these figures could be construed to mean that the blue-whale hunting culminated in the years 1926–1927, and has subsequently declined, and this would indicate that the stock has been over-exploited. The returns for Cape Colony reveal this marked increase in 1926–1927, with a subsequent falling off, whereas the figures for other grounds, e. g., Natal coast, have not this movement, although there, too, there is a drop in the years 1928–1929. Culmination in 1927 with a later fall is shown by the catches at Walvis Bay and Angola. But whether all this reflects fluctuations in whale migration or is due to other causes, is not easy to say on the basis of a column of figures that shows such comparatively small movements and which extends over so few years. Nor for the other fin-whales may it be said that the figures display any definite tendency. On the other hand, it appears as if the sperm-whale will gradually come to feature more prominently at several of the grounds.

As previously mentioned, it is the *Antarctic* whaling that has gradually taken the lead in the whaling industry.

We are giving on next page the returns for the various grounds from 1905, when these grounds were worked for the first time.

Table f.

Years.	Antarctic. Total.			South Georgia.			South Shetland.			South Orkney.			Falkland Islands.			Ross Sea.			Kerguelen.			Pelagic whaling in Antarctic.		
	Whales.	Boats.	Whales per boat.	Whales.	Boats.	Whales per boat.	Whales.	Boats.	Whales per boat.	Whales.	Boats.	Whales per boat.	Whales.	Boats.	Whales per boat.	Whales.	Boats.	Whales per boat.	Whales.	Boats.	Whales per boat.	Whales.	Boats.	Whales per boat.
1905..	195	1	195	195	1	195	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1906..	582	4	145	399	2	199	183	2	91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1907..	1,112	8	139	321	2	160	791	6	132	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1908..	2,312	15	154	1,382	7	197	930	8	116	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1909..	3,883	19	204	1,940	8	242	1,643	9	183	-	-	-	-	-	-	-	-	300	2	150	-	-	-	-
1910..	6,099	37	165	3,516	17	207	1,997	12	166	-	-	-	463	5	93	-	-	123	3	41	-	-	-	-
1911..	10,230	48	213	6,529	19	344	3,322	22	151	-	-	-	292	5	58	-	-	87	2	44	-	-	-	-
1912..	11,727	58	202	6,535	21	311	4,813	30	160	276	3	92	103	4	26	-	-	-	-	-	-	-	-	-
1913..	10,760	62	174	4,850	21	231	5,044	32	158	779	6	130	87	3	29	-	-	-	-	-	-	-	-	-
1914..	9,408	63	149	3,349	21	159	5,259	32	164	621	6	104	179	4	45	-	-	-	-	-	-	-	-	-
1915..	9,864	61	162	5,097	22	232	4,133	32	129	379	3	126	255	4	64	-	-	-	-	-	-	-	-	-
1916..	11,792	57	207	7,361	28	263	4,431	29	153	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1917..	6,474	44	147	4,471	32	140	2,003	12	167	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1918..	4,304	48	90	3,196	32	100	1,108	16	69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1919..	4,787	50	96	2,792	28	100	1,995	22	91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1920..	5,441	44	124	2,832	26	109	2,609	18	145	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1921..	8,448	47	180	3,682	21	175	4,766	26	183	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1922..	7,023	46	153	3,395	20	170	3,628	26	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1923..	9,910	60	165	5,363	23	233	4,224	35	121	323	2	162	-	-	-	-	-	-	-	-	-	-	-	-
1924..	7,271	66	110	3,675	23	160	3,080	35	88	295	3	98	-	-	-	221	5	44	-	-	-	-	-	-
1925..	10,488	65	161	5,818	24	242	3,741	33	113	502	3	167	-	-	-	427	5	85	-	-	-	-	-	-
1926..	14,219	70	203	7,825	23	340	4,684	35	134	623	3	208	-	-	-	531	5	106	-	-	556	4	139	-
1927..	12,665	80	158	5,215	23	227	4,836	35	138	589	3	196	-	-	-	1,239	15	82	-	-	786	4	197	-
1928..	13,775	84	164	3,637	23	158	1)	-	-	580	3	193	-	-	-	2,208	15	147	-	-	7,350	43	171	-
1929..	20,341	111	183	5,132	23	223	1)	-	-	553	3	184	-	-	-	2,072	15	138	-	-	12,584	70	180	-
1930..	30,167	194	156	4,185	27	155	1)	-	-	1)	-	-	-	-	-	4,971	26	191	-	-	21,011	141	149	-
1931..	40,201	232	173	2,736	27	101	1)	-	-	1)	-	-	-	-	-	5,223	21	249	-	-	32,242	184	175	-
1932..	9,572	45	213	2,205	12	184	1)	-	-	1)	-	-	-	-	-	-	-	-	-	-	7,367	33	223	-

1) For these years the catch is included in the figures for «Pelagic whaling in Antarctic».

For the grounds taken collectively the catch reached a maximum in 1912, followed by a relapse for some years, and a fresh peak in 1916. The catch thereupon dropped sharply in the war period, rose again in post-war years, and in 1926 exceeded the pre-war maximum. For 1927-1928 the catch returns show relatively little movement, but the catch increased very considerably in the three following years and culminated in 1931, when the catch in the Antarctic exceeded 40,000 whales, i. e. more than were shot in northern waters from the inception of whaling in 1868 up to and including 1904, when operations at the oldest ground in the northern seas were brought to a close.

The most conspicuous feature is the extraordinary strong expansion of whaling equipment in recent years, but what does not appear from this table is the qualitative growth of the equipment which has occurred, at the same time as the number of catchers has increased. We shall not, however, deal further with this point for the present, but will now consider more closely the catches at the several grounds.

The oldest ground, *South Georgia*, which has been worked all the time from shore stations, was in the early stages exploited on a comparatively modest scale, then came the extension of hunting equipment, with a subsequent increase in the number of whales caught. The first maximum was recorded in 1912. There followed a slight fall in the number of whales, then a slight rise in 1915, a new peak was reached in 1916, but then followed a number of years of strong decline, despite the fact that the number of boats continued to rise in the early period. In the post-war period, 1919 onward, the catch slightly increased; it moved up and down, and recorded a new maximum in 1926. This maximum exceeds the pre-war one. Later the number of whales caught dropped to some extent, and had got down to a very low level in 1932. The movement in the number of whales caught at South Georgia does not, in other words, differ a very great deal from the trend of the figures for many other grounds. They show a ground that has attained the maximum of its capacity without it being really possible to interpret the figures as indicating a definite decline. Also at this ground and at South Shetland there has however, in reality, been an extension of the whaling area.<sup>1)</sup>

The *South Shetland* ground shows nearly the same movement as South Georgia. Here a maximum was reached in 1914, later a drop in the war period, then a post-war increase, when the catch did not, however, reach the same height as in 1914. It should be noted, however, that this

<sup>1)</sup> See Stanley Kemp, Sc. D., F. R. S., and A. G. Bennett «Discovery Reports», on the distribution and movements of whales on the South Georgia and South Shetland whaling grounds. (Cambridge 1932.)



ground as well as the *South Orkney* has been worked mainly from floating factories, and that for this reason the figures—at all events those for recent years—are not a full guarantee that the whaling has covered the same ground from year to year.

In contrast to all these old grounds, the *Ross Sea* shows, in the short term of years it has been exploited, a vigorous expansion of the productive equipment, and a strong and, we may say, uninterrupted increase in the number of whales caught. But, it must be noted that whaling in recent years has not been done within Ross Sea but beyond along the ice edge.

The same thing applies in still greater measure to the *pelagic whaling* in the Antarctic, which is based on the large modern floating factories, which has the effect that the hunting in any one season for the individual company is no longer limited to a definite area to the same extent as before. It is the pelagic form of whaling that has been predominant in recent years, but for this whaling the returns, in the form given in *International Whaling Statistics*, cannot give information as to which grounds are exploited. On the other hand, an attempt has been made in "Det Norske Hvalråd's" Paper No. 3 to describe the expansion of the grounds in respect of the Norwegian share of the catches. With the aid of whaling journals it has been possible to follow the work of the various floating factories from sector to sector around the south-polar cap. When such returns are forthcoming for a term of years we shall have material also for the south seas by which to follow the expansion of the whaling from ground to ground.

The sharp decline of the catch in 1932 is, as will be known, bound up with the position of the whale-oil market, which caused the Norwegian whaling fleet to stay at home. Also in the year 1933 the catch will fall short of the peak year of 1931, this too being due to the economic conditions which led Norwegian whalers to restrict the catch.

The catch in southern waters, like that off Africa, commenced as a humpback hunting, but in these waters the humpback has come to be of ever-diminishing importance. At South Georgia, for instance, where in 1909–1910 to 1911–1912 the humpback constituted by far the greater part of the catch, and where in 1912–1913 it represented about half of the total catch, it has since played an altogether minor part. The same remarks apply to South Shetland. This species, we may add, is now protected at these grounds. Also at the South Orkney and Falkland Islands the humpback whaling has undergone a marked decline. If we are to judge from the returns, there are strong signs that there has been an excessive exploitation of the humpback also on those southern grounds where it has been hunted on a large scale.

The two species which, broadly speaking, have sustained the whaling in southern waters are the blue-whale and the fin-whale. The stock of blue-whale must have been unusually great, and the figures, even for a ground like South Georgia which has been worked longest, do not show any signs of a reduction of the stock, but neither do they reveal any marked increase in the number of animals caught. But it should be noted that also here there has been an expansion of the whaling area through the employment of catchers of greater efficiency and with a far wider radius of action than was possible in the earlier stages. The large increase in the number of blue-whales shot is primarily due to the pelagic form of hunting, and, in addition, to the whaling in Ross Sea. The fin-whale catch, along with that of the blue-whale, figures very prominently, first of all on the old grounds. At South Georgia this species has played an important part all the time, but the returns indicate that this species, like the blue-whale, does not occur regularly, and the fin-whale appears to occur in the largest numbers in some years and the blue-whale in others. But with the returns available for the catch at the various grounds in the southern seas it is not possible to draw any definite conclusion as to how far these species have been exploited to excess; for such a purpose the returns cover too brief a term of years.

Besides the grounds we have now mentioned, the whaling on the *Pacific coast* and that off *Japan* and *Corea* play the greatest part, as will be seen from the survey on page 6. In point of both yield and material employed, the Pacific whaling has fluctuated rather widely in the different years, but, taken on the whole, the figures given do not, we consider, really indicate that the catch is on the decline. Nor is there any possibility of furnishing any closer picture of the catch of the several species of whale, as we lack a specification of the majority of the animals caught.

Of all whaling that off *Japan* is perhaps the most interesting, because it has been worked on approximately the same scale for a number of years—a circumstance due in part to the legislative restriction in the number of boats. There is no other ground at which the number of boats has varied so little as in Japan, and at no other ground is the whale utilised in the way it is there; for a great part of the whale is used as human food. The result is that the whale can be made to realize a far higher price than when the whaling has to be based mainly on the sale of oil. The returns for the Japanese catches are very constant; they do not show any marked rise or fall (see table g on next page).

Table g.—Whaling off Japan and Corea.

Years.	Blue-whale.	Fin-whale.	Hump-back.	Sei-whale.	Sperm-whale.	Grey-whale.	Right-whale.	Total number of whales.	Number of boats.	Number of whales per boat.
1910	97	217	29	156	27	6	—	1)968	22	44
1911	243	974	60	375	163	121	2	1,938	30	65
1912	236	743	68	236	107	193	3	1,586	30	53
1913	58	839	138	361	77	131	1	1,605	30	54
1914	123	1,040	160	239	304	155	1	2,022	30	67
1915	57	817	105	723	252	139	7	2,100	30	70
1916	75	739	93	419	391	78	8	1,803	30	60
1917	75	745	32	581	195	69	—	1,697	30	57
1918	24	700	20	739	588	104	2	2,177	30	73
1919	53	522	52	532	461	46	5	1,671	30	56
1920	35	438	83	393	245	85	—	1,279	30	43
1921	37	475	101	477	302	95	—	1,487	30	50
1922	34	390	82	391	562	47	—	1,506	30	50
1923	35	431	70	488	364	34	—	1,422	30	47
1924	33	337	160	642	336	18	—	1,526	30	51
1925	35	562	230	499	497	52	—	1,875	34	55
1926	36	636	119	568	772	17	—	2,148	35	61
1927	9	441	95	531	450	20	—	1,546	30	52
1928	10	455	90	551	482	10	9	1,607	30	54
1929	16	386	74	364	606	17	—	1,463	29	50
1930	55	331	58	330	527	9	2	1,312	30	44
1931	20	337	70	418	283	11	8	1,147	20	57
1932	17	270	90	370	268	7	14	1,036	20	52

1) A number of 436 of these whales are not specified.

These figures show the fluctuations that occur, and which must occur, in all catches. This applies no matter whether we consider the absolute figures or the catch per boat. On the other hand, the returns for the individual species of whale appear to reflect a definite trend. We have observed that the blue-whale has declined relatively. This refers also, and in a far more marked degree, to the grey-whale, which occurs on both sides of the northern coasts of the Pacific Ocean. For example, in the early years a not inconsiderable number of grey-whales were caught, and in recent years scarcely any. But the fin-whale, too, now represents a lower figure in catch returns than it did prior to 1919. The hump-back catch as well appears to have fluctuated widely; there is a marked peak around 1924–1925 with a later drop. But a similar wave is revealed by the figures around 1914, so that it is not an easy matter to say whether we are here dealing with a purely casual movement or with the result of excessive exploitation. In some years the sei-whale has furnished a very substantial share of the catch, and, as is the case with this species, the figures fluctuate rather widely from one year to another, without there being any justification for drawing conclusions as to the decline of this species solely on the basis of the returns. On the other hand, we can with great certainty infer from the figures that in late years there has been a far larger increase in sperm-whale catches than at an earlier period, and that in very recent years this species has played a relatively greater part in Japanese whaling than

any other species. The whaling off Japan has in a way been stabilised during a number of years in point of both hunting outfit and catches; and if we were to judge by the total number of whales caught, it might appear as if a point of equilibrium between catch and supply had been attained. But if we follow the figures for the separate species we find that here, too, the most valuable species have probably been overworked. In other words, the returns suggest that there are extremely great difficulties in the way of finding a point of equilibrium, determined so as to maintain the total whale stock and the stock of the several species.

In *International Whaling Statistics* there are a number of returns that have not been mentioned in the foregoing, viz., those for the catches off Chile and Peru and those for the coast of Australia.

The grounds off *Chile* and *Peru* have been worked on quite modest lines, and up to 1923 the figures kept very constant, except for a single year which includes also catches off the *Mexican coast*. From 1924 this whaling has been extended through the inclusion of some floating factories, and the quantity of whales caught soared to big figures, but in later years the catch has receded to its old level, and, as far as we can see, the yield appears to be quite constant. Off *Australia* whaling was prosecuted some few years before the war, 1912–1916, and some few years after the war. This has been a humpback hunting with the same typical fluctuations in the catch as are found from other grounds, without the figures showing, for the brief period the whaling has lasted, any sign of a decimation of the stock.

In *International Whaling Statistics* we have given, in addition to the returns dealt with above, a number of returns in respect of the average size of blue-whales and fin-whales caught at the various grounds. These returns are given in table h (on next page), which has been supplemented with previous returns published in “Norsk Hvalfangsttidende”.

These returns show, in the first place, that the average size of blue-whales is highest in the Antarctic, and then come northern waters. The blue-whales caught at the coast of Africa comprise considerably smaller animals. In *International Whaling Statistics III* and *IV* we have, in addition to the average size of the blue-whale, also a division for the Antarctic of the whales according to size. These returns reveal that a not inconsiderable number of young, sexually immature, whales are shot. In 1930–1931 a total of 16.54 % and in 1931–1932 12.84 % of all blue-whales belonged to this group. The table of the average size shows that it has fluctuated from year to year, but has for several years been lower at South Georgia than in the other parts of the Antarctic. The classing of the whales according to size also reflects this, and in 1931–1932, when the average of the blue-whales caught off South Georgia did not exceed 70.9 feet, there was shot at this ground a relatively

Table h.—Average size of blue-whales and fin-whales.

Kind of whale and whaling grounds.	1931- 1932.	1930- 1931.	1929- 1930.	1928- 1929.	1927- 1928.	1926- 1927.	1925- 1926.	1924- 1925.	1923- 1924.
	Engl. feet.	Engl. feet.	Engl. feet.	Engl. feet.	Engl. feet.	Engl. feet.	Engl. feet.	Engl. feet.	Engl. feet.
<u>Blue-whales.</u>									
South Georgia .....	70.90	75.47	74.07	75.30	76.94	78.68	70.89	74.54	—
South Shetland .....	} 84.03	79.84	80.19	81.11	78.59	76.95	78.21	76.47	—
South Orkney .....					—	75.07	69.20	74.54	—
Pelagic whaling in Ant- arctic .....					—	—	—	—	—
Ross Sea .....	—	82.09	82.10	—	81.56	85.20	—	77.74	—
Coast of Africa:—									
Natal .....	66.67	65.34	69.38	—	—	—	—	—	59.00
Hanglip .....	—	—	68.18	—	—	—	—	—	—
Walvis Bay .....	—	—	66.53	—	—	—	—	—	—
Saldanha Bay .....	—	—	66.80	—	—	—	—	—	—
Pelagic whaling in Arctic Alaska .....	73.47	75.73	73.42	—	—	—	—	—	—
Alaska .....	—	—	74.21	—	—	—	—	—	—
<u>Fin-whales.</u>									
South Georgia .....	62.16	65.74	66.05	—	66.69	69.12	67.42	66.65	—
South Shetland .....	} 69.95	65.46	65.15	—	62.79	64.63	65.75	66.30	—
South Orkney .....					—	62.36	62.35	66.57	—
Pelagic whaling in Ant- arctic .....					—	—	—	—	—
Ross Sea .....	—	69.89	71.17	—	—	—	—	—	—
Coast of Africa:—									
Natal .....	59.69	58.59	62.16	—	—	—	—	—	51.00
Hanglip .....	—	—	59.62	—	—	—	—	—	—
Walvis Bay .....	—	—	55.18	—	—	—	—	—	—
Saldanha Bay .....	—	—	58.54	—	—	—	—	—	—
North Atlantic and Arctic:									
Pelagic whaling .....	63.38	62.31	60.36	—	—	—	—	—	—
Whaling from coast ..	—	—	60.16	—	—	—	—	—	—
Alaska .....	—	—	55.93	—	—	—	—	—	—
Japan and Corea .....	—	—	55.15	—	—	—	—	—	—

large number of immature whales, viz., 71.23 % of the whole catch. To judge from the figures above, indicating the average size of whales killed in different waters, an exceptionally large percentage of the blue-whales caught at the coast of Africa must comprise sexually immature animals. The fin-whale returns also reveal that the biggest animals are caught in the Antarctic.

As already mentioned, the yield per boat is substantially higher for the southern grounds than for the northern ones. Off Africa the yield per boat has generally stood at a higher figure than at northern grounds, but lower than in southern waters. These figures for the yield measured in number of whales per boat do not, however, give any reliable picture of the proceeds of the catch, for the simple reason that the yield is primarily determined by the output of oil, and the latter, in its turn, depends upon the kind of whales caught. This will readily be understood when we mention that the following ratio has been applied in whaling statistics: 1 blue-whale = 2 fin-whales = 2½ humpbacks = 6 sei-whales. In order to find a term for the yield at the several grounds and its fluctuations from one year to another, we

have in the following table (i) compared the figures for oil production, absolute and per boat, for all whaling grounds, and for the principal grounds, the Antarctic, Arctic, and Africa.

Table i.

Years.	All whaling grounds.		Principal grounds.					
	Total oil output.	Oil output per boat.	Antarctic.		Arctic.		Africa.	
			Oil output.	Oil output per boat.	Oil output.	Oil output per boat.	Oil output.	Oil output per boat.
	Barrels. <sup>1)</sup>	Barrels.	Barrels.	Barrels.	Barrels.	Barrels.	Barrels.	Barrels.
1910.....	284,320	1,908	157,592	4,259	67,590	926	48,138	4,012
1911.....	498,498	2,800	291,169	6,066	59,423	914	126,106	4,204
1912.....	669,743	2,668	371,455	6,404	40,118	617	195,168	2,870
1913.....	766,237	3,115	428,573	6,912	33,503	728	242,838	2,729
1914.....	804,118	3,166	432,061	6,858	30,351	843	183,136	2,129
1915.....	705,464	3,876	498,843	8,178	15,367	1,098	89,354	1,752
1916.....	699,669	4,633	558,806	9,804	5,125	854	54,953	1,570
1917.....	403,112	4,288	363,827	8,269	—	—	26,311	1,644
1918.....	385,855	2,968	258,476	5,385	22,338	1,117	26,940	2,245
1919.....	417,245	2,959	245,692	4,914	20,622	1,213	46,500	2,022
1920.....	407,327	2,645	272,817	6,200	35,989	1,091	51,921	2,077
1921.....	471,141	4,206	390,627	8,311	6,661	1,110	48,453	2,423
1922.....	639,276	4,502	452,517	9,837	23,095	1,216	76,680	3,334
1923.....	817,314	4,697	614,547	10,242	30,446	1,218	99,073	2,607
1924.....	716,246	3,692	464,678	7,041	41,563	1,599	125,732	2,994
1925.....	1,040,408	4,446	697,091	10,724	38,208	1,318	150,985	2,849
1926.....	1,152,536	4,925	783,307	11,190	42,732	1,474	139,754	2,973
1927.....	1,191,922	5,138	872,362	10,904	43,927	1,417	135,031	3,069
1928.....	1,321,313	5,979	1,037,392	12,349	48,854	1,480	135,229	3,005
1929.....	1,886,082	7,826	1,631,340	14,697	39,729	1,282	145,065	3,224
1930.....	2,799,042	8,330	2,546,759	13,128	53,694	1,627	144,446	2,579
1931.....	3,686,976	13,359	3,608,348	15,553	25,268	1,805	37,086	3,709
1932.....	915,842	9,442	808,560	17,968	28,590	1,682	44,112	5,514
1910.....	100.0		55.4		23.8		16.9	
1911.....	100.0		58.4		11.9		25.3	
1912.....	100.0		55.5		6.0		29.1	
1913.....	100.0		55.9		4.4		31.7	
1914.....	100.0		53.7		3.8		22.8	
1915.....	100.0		70.7		2.2		12.7	
1916.....	100.0		79.9		0.7		7.9	
1917.....	100.0		90.2		—		6.5	
1918.....	100.0		67.0		5.8		7.0	
1919.....	100.0		58.9		4.9		11.1	
1920.....	100.0		67.0		8.8		12.7	
1921.....	100.0		82.9		1.4		10.3	
1922.....	100.0		70.8		3.6		12.0	
1923.....	100.0		75.2		3.7		12.1	
1924.....	100.0		64.9		5.8		17.6	
1925.....	100.0		67.0		3.7		15.4	
1926.....	100.0		68.0		3.7		12.1	
1927.....	100.0		73.2		3.7		11.3	
1928.....	100.0		78.5		3.7		10.2	
1929.....	100.0		86.5		2.1		7.7	
1930.....	100.0		91.0		1.9		5.2	
1931.....	100.0		97.8		0.7		1.0	
1932.....	100.0		88.3		3.1		4.8	

<sup>1)</sup> Barrel = 1/6 ton. (1 ton = 1,016 kg.)

As will be seen, the production of oil reached its maximum before the war in 1914 at 804,118 barrels. In that year the total number of whales caught was 22,980. In 1928, when the total number of whales caught was 23,524, the output of oil was up at 1,321,313 barrels, and in 1931, when the catch totalled 42,874, the output had increased to 3,686,976 barrels. One of the main causes of the lack of agreement between the movement in the number of whales caught and the output of oil is, as Table No. 1 in *International Whaling Statistics II* shows, that the more valuable species, e. g., the blue-whale, now plays a relatively far more prominent part than it did before.

If we calculate the output of oil per boat, the variations in the figures, besides the absolute quantity of the output, depend upon the number of boats taking part in the whaling. As the table shows, the yield per boat in pre-war years never exceeded a figure slightly beyond 3,000 barrels. After the war the yield per boat in the first few years lies between 4,000 and 5,000, but in the last few years has risen to a far higher figure, in 1931 13,359 barrels. This increase is mainly due to the development in the Antarctic. Oil production in the Antarctic, generally speaking, has, as it appears from the relative figures, played a greater part than is expressed by the number of whales caught, a natural result of that valuable whale—the blue-whale—having been of such prime importance in these waters, particularly in recent years. The number of barrels per boat is much higher in the Antarctic than at any of the other grounds. In most post-war years it has exceeded 10,000, and in 1932 reached 17,968 barrels. The Arctic has a very low figure per boat. Before the war it fell short of 1,000 barrels per boat, and even if this figure has been exceeded in later years, the usual output per boat stands at only between 1,200 and 1,600 barrels. Only in the last three years have the figures run higher. Off the coast of Africa the yield is lower than in the Antarctic, but higher than in the Arctic, and in the post-war period lay between 2,000 and 3,000 barrels per boat; a higher figure has been recorded only in the last two years.

The difference between the yield per boat on the various grounds is due, as already pointed out, to two things: The composition of the whale stock and the yield in number of whales per boat. The main reason why operations can be maintained at the different grounds with a so widely varying yield is obviously that the working costs vary from one area to another. Oil is a world product, the price of which naturally does not vary from one ground to another.

Besides the composition of the whale stock and the increase of the catch, the output is also influenced by the more or less complete utilisation of the whale itself. In *International Whaling Statistics* we have

given the oil production per calculated blue-whale (see Table No. 6 in editions I and II, and Table No. 10 in editions III and IV). The following statement is an extract from these tables.

**Table k.—Average production of oil per blue-whale unit.<sup>1)</sup>**

Years.	South Georgia.	Other grounds in Antarctic.	South Africa.	Walvis Bay.	Arctic.
	Barrels. <sup>2)</sup>	Barrels.	Barrels.	Barrels.	Barrels.
1924-25 . . . . .	87.5	85.0	—	—	—
1925-26 . . . . .	84.0	84.8	—	—	—
1926-27 . . . . .	96.4	91.1	—	—	—
1927-28 . . . . .	106.4	92.8	—	—	—
1928-29 . . . . .	108.2	98.3	—	—	—
1929-30 . . . . .	110.7	109.6	59.0	61.8	74.0
1930-31 . . . . .	100.07	105.6	76.3	—	74.0
1931-32 . . . . .	92.9	102.6	81.2	—	74.0

<sup>1)</sup> Other whales are reduced to blue-whale equivalents on the following basis: — 1 blue-whale = 2 fin-whales = 2½ humpbacks = 6 sei-whales. <sup>2)</sup> Barrel = 1/6 ton. (1 ton = 1,016 kg.)

It will be seen from the table that from 1925-1926 onward there is a distinctly increasing tendency in oil production for the various grounds—a tendency which is most pronounced in southern seas. This trend of development is closely bound up with the greater degree of perfection attained in whaling equipment and the more up-to-date methods employed in the utilisation of the whale.

As it may be of interest to have a list of the prices of whale oil for a number of years, we are appending a table of prices from 1885.

**Table l.—Whale oil prices in the years 1885-1931.**

Whale oil No. 1. — Price per ton.

	£ sh.
1885 . . . . .	25. —
1886 . . . . .	18. —
1887 . . . . .	20. —
1888 . . . . .	22. —
1889 . . . . .	22. —
1890 . . . . .	21. —
1891 . . . . .	17. —
1892 . . . . .	20. —
1893 . . . . .	17. —
1894 . . . . .	16. 10
1895 . . . . .	16. 10
1896 . . . . .	16. 15
1897 . . . . .	16. 15
1898 . . . . .	16. 5
1899 . . . . .	16. 10



## Whale oil prices (continued).

Years.		Highest.	Lowest.
		£ sh.	£ sh.
1900 . . . . .	Barrels included	22. 15	21. 5
1901 . . . . .	»	21. 10	19. —
1902 . . . . .	»	22. —	19. 10
1903 . . . . .	»	20. 10	17. 10
1904 . . . . .	»	16. —	14. —
1905 . . . . .	»	15. 10	13. 10
1906 . . . . .	»	23. 10	15. 10
1907 . . . . .	»	24. —	21. —
1908 . . . . .	»	23. 10	17. —
1909 . . . . .	»	20. —	18. —
1910 . . . . .	»	24. —	19. 10
1911 . . . . .	»	23. 10	18. —
1912 . . . . .	»	23. —	17. —
1913 . . . . .	»	23. 5	21. —
1914 . . . . .	»	24. —	19. 10
1915 . . . . .	Naked	25. —	21. —
1916 . . . . .	»	32. —	28. 10
1917 . . . . .	»	59. 10	48. —
1918 . . . . .	»	60. 10	53. —
1919 . . . . .	»	77. —	58. 10
1920 . . . . .	»	90. —	82. —
1921 . . . . .	»	47. —	27. —
1922 . . . . .	»	33. 10	31. —
1923 . . . . .	»	34. —	32. 10
1924 . . . . .	»	40. —	33. —
1925 . . . . .	»	37. —	34. —
1926 . . . . .	»	34. —	30. —
1927 . . . . .	»	30. —	26. 10
1928 . . . . .	»	31. 10	28. —
1929 . . . . .	»	29. 10	25. —
1930 . . . . .	»	26. —	17. —
1931 . . . . .	»	15. —	10. —

In *International Whaling Statistics* the whaling equipment is indicated only through statements of the number of shore stations, number of floating factories, and the number of catchers. For the Norwegian whaling industry there exist returns covering a number of years of the composition and size of the whaling fleet, given in gross tons. For the whaling fleets of other countries we have not succeeded in securing complete returns, other than for one or two recent years, but we hope to be able to procure them, and shall then revert to the matter in a later issue of the statistics.

By means of the Norwegian returns we can get a more accurate picture of the development of whaling equipment when we calculate the average tonnage per catcher and per floating factory. We have done this for the years 1916, 1919, 1921 and onward (see table m on next page).

Table m.

Years.	Average tonnage of catchers.	Average tonnage of floating factories.	
	Gross tons.	Gross tons.	
1916.....	144.8	4,043.5	
1919.....	153.4	3,988.6	
1921.....	159.7	4,018.3	
1922.....	159.4	3,850.9	
1923.....	145.4	4,416.5	
1924.....	154.6	4,140.4	
1925.....	180.2	5,434.1	
1926.....	187.2	4,987.7	
1927.....	194.1	5,885.4	
1928.....	193.4	6,150.7	
1929.....	200.3	7,089.0	
1930.....	205.5	7,354.7	
1931.....	225.3	7,987.4	
1931 {	Arctic .....	131.6	3,437.0
	Antarctic .....	241.7	7,628.4
	Westward from		
	Ross Sea .....	195.7	13,893.0

It will be seen from this comparison that the average tonnage of the catchers, which at the beginning of the period was 144.8 tons, was 225.3 tons in 1931. At the same time their radius of action has been increased by the installation of more powerful engines. Had it been possible to take this factor into account in the statistics, we should probably have got a stronger impression of the excessive exploitation of whaling stock which has occurred in many areas.

If we compare for the separate years the tonnage for the catchers at the various grounds, we also find that the catchers employed in northern waters are still of the smaller and older type, and that larger boats are in use at the more distant grounds.

A still clearer numerical expression of the development of whaling equipment is afforded by the average tonnage per floating factory. This was about 4,000 tons at the beginning of this period, and at its close stands at about 8,000 tons.

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**Table No. 1.—Whaling in 1931/32 and summer 1932.**

Geographical areas.	Species of whales caught.							Oil production.	Expeditions.		
	Blue.	Fin.	Hump-back.	Sei.	Sperm.	Others.	Total of whales.		Shore stations.	Floating factories.	Catchers.
South Georgia ....	438	1,735	6	16	10	—	2,205	Barrel = 1/6 ton. 1)	2	—	12
Antarctic, others ..	6,050	1,136	178	—	3	—	7,367	686,355	—	5	33
Coast of Natal ....	109	345	309	23	256	2)	1,043	44,112	1	—	8
Coast of Japan and Corea.....	17	270	90	370	268	3) 21	1,036	20,230	5)	—	20
Coast of Norway ..	23	190	1	59	6	—	279	8,431	3	—	9
North Atlantic and Arctic, pelagic...	38	443	9	24	—	2)	4	518	—	2	7
Coast of West Green- land.....	1	25	4	—	—	—	30	—	—	—	1
Pacific (north) ....	—	—	—	—	—	6)	319	319	1	1	7
<b>Total</b>	<b>6,676</b>	<b>4,144</b>	<b>597</b>	<b>492</b>	<b>543</b>	<b>345</b>	<b>12,797</b>	<b>915,842</b>	<b>7</b>	<b>8</b>	<b>97</b>

1) 1 ton = 1,016 kg. 2) Right-whales. 3) 14 right-whales and 7 grey-whales (Calif. Grey). 4) The Japanese statistics have also a rubric: "The out of number whales". These are sperm-whales less than 40 Engl. feet, other whales less than 35 feet, "Minke-whales" and "Killer-whales". 5) Several small stations around in Japanese and Corean waters. 6) No specification.

**Table No. 2.—Norwegian whaling in 1931/32 and summer 1932.**

Geographical areas.	Species of whales caught.							Oil production.	Expeditions.		
	Blue.	Fin.	Hump-back.	Sei.	Sperm.	Others.	Total of whales.		Shore stations.	Floating factories.	Catchers.
Coast of Norway ..	23	190	1	59	6	—	279	Barrel = 1/6 ton.	3	—	9
North Atlantic and Arctic, pelagic ..	38	443	9	24	—	1)	4	518	—	2	7
<b>Total</b>	<b>61</b>	<b>633</b>	<b>10</b>	<b>83</b>	<b>6</b>	<b>4</b>	<b>797</b>	<b>28,590</b>	<b>3</b>	<b>2</b>	<b>16</b>

1) Right-whales.

**Table No. 3.—British whaling in 1931/32 and summer 1932.**

Geographical areas.	Species of whales caught.							Oil production.	Expeditions.		
	Blue.	Fin.	Hump-back.	Sei.	Sperm.	Others.	Total of whales.		Shore stations.	Floating factories.	Catchers.
South Georgia ....	230	1,100	6	11	8	—	1,355	Barrel = 1/6 ton.	1	—	6
Antarctic, others ..	6,050	1,136	178	—	3	—	7,367	686,355	—	5	33
Coast of Natal ....	109	345	309	23	256	1)	1,043	44,112	1	—	8
<b>Total</b>	<b>6,389</b>	<b>2,581</b>	<b>493</b>	<b>34</b>	<b>267</b>	<b>1</b>	<b>9,765</b>	<b>803,955</b>	<b>2</b>	<b>5</b>	<b>47</b>

1) Right-whale.

**Table No. 4.—Whaling of other countries in 1931/32 and summer 1932.**

Geographical areas.	Species of whales caught.							Oil production.	Expeditions.		
	Blue.	Fin.	Hump-back.	Sei.	Sperm.	Others.	Total of whales.		Shore stations.	Floating factories.	Catchers.
South Georgia.....	208	635	—	5	2	—	850	Barrel = 1/6 ton. 48,717	1	—	6
Coast of Japan and Corea.....	17	270	90	370	268	<sup>1)</sup> 21	1,036	20,230	—	—	20
Coast of West Green- land.....	1	25	4	—	—	—	30	—	—	—	1
Pacific (north):—											
Alaska.....	—	—	—	—	—	<sup>2)</sup> 269	269	12 500	1	—	4
California.....	—	—	—	—	—	<sup>2)</sup> 50	50	1,850	—	1	3
<b>Total</b>	<b>226</b>	<b>930</b>	<b>94</b>	<b>375</b>	<b>270</b>	<b>340</b>	<b>2,235</b>	<b>83,297</b>	<b>2</b>	<b>1</b>	<b>34</b>

<sup>1)</sup> 14 right-whales and 7 grey-whales (Calif. Grey). <sup>2)</sup> No specification.

**Table No. 5.—Whaling results for the various countries in 1931/32 and summer 1932.**

Countries.	Species of whales caught.							Oil production.	Expeditions.		
	Blue.	Fin.	Hump-back.	Sei.	Sperm.	Others.	Total of whales.		Shore stations.	Floating factories.	Catchers.
Norway.....	61	633	10	83	6	<sup>1)</sup> 4	797	Barrel = 1/6 ton. 28,590	3	2	16
British Empire....	6,389	2,581	493	34	267	<sup>1)</sup> 1	9,765	803,955	2	5	47
Argentina.....	208	635	—	5	2	—	850	48,717	1	—	6
Denmark.....	1	25	4	—	—	—	30	—	—	—	1
Japan.....	17	270	90	370	268	<sup>2)</sup> 21	1,036	20,230	—	—	20
United States.....	—	—	—	—	—	<sup>3)</sup> 319	319	14,350	1	1	7
<b>Total</b>	<b>6,676</b>	<b>4,144</b>	<b>597</b>	<b>492</b>	<b>543</b>	<b>345</b>	<b>12,797</b>	<b>915,842</b>	<b>7</b>	<b>8</b>	<b>97</b>

<sup>1)</sup> Right-whales. <sup>2)</sup> 14 right-whales and 7 grey-whales (Calif. Grey). <sup>3)</sup> No specification.

**Table No. 6.—Whaling off the coast of Chile in the years 1928—1931.<sup>1)</sup>**

Years.	Species of whales caught.						Oil production.	Expeditions.		
	Blue.	Fin.	Hump-back.	Sperm.	Right.	Total of whales.		Shore stations.	Floating factories.	Catchers.
1928.....	48	126	36	123	1	334	Barrel = 1/6 ton. 14,019	2	—	4
1929.....	139	113	26	99	9	386	18,232	2	—	4
1930.....	85	70	33	86	1	275	12,364	2	—	4
1931.....	43	6	53	43	—	<sup>2)</sup> 145	11,525	2	—	4

<sup>1)</sup> In the previous editions of "International Whaling Statistics" the catch from Chile for these years is only given at an estimate. The particulars in this table have been received from Consulado de Chile, Oslo. <sup>2)</sup> No whaling figures available for the months June—October 1931.

**Table No. 7.—Average size of blue-whales and fin-whales in the season 1931/32 and summer 1932.**

Geographical areas. Number of whales measured.	Company.	Average size.		
		Males.	Females.	Total animals.
		Engl. feet.	Engl. feet.	Engl. feet.
<b><u>A. Blue-whales.</u></b>				
<i>South Georgia</i> .....	No. 1	70.18	73.82	71.91
Males 216 } Total 438.	" 2	67.92	71.79	69.99
Females 222 }				
Average		69.06	72.69	70.90
<i>Antarctic, others</i> .....	No. 1	85.05	88.47	86.45
Males 2962 } Total 5442. <sup>1)</sup>	" 2	82.99	86.17	84.65
Females 2480 }	" 3	82.51	86.22	84.20
	" 4	77.59	80.58	79.03
Average		82.59	85.75	84.03
<i>Coast of Natal</i> .....	No. 1	65.43	68.02	66.67
Males 53 } Total 109.				
Females 56 }				
<i>Pelagic whaling in North Atlantic and Arctic</i> .....	No. 1	76.00	70.00	75.00
Males 23 } Total 38.	" 2	73.22	73.14	73.19
Females 15 }				
Average		73.83	72.93	73.47
<b><u>B. Fin-whales.</u></b>				
<i>South Georgia</i> .....	No. 1	62.55	63.84	63.11
Males 953 } Total 1733.	" 2	61.16	62.16	61.61
Females 780 }				
Average		61.67	62.76	62.16
<i>Antarctic, others</i> .....	No. 1	70.15	74.26	71.63
Males 547 } Total 943. <sup>1)</sup>	" 2	69.76	72.84	71.26
Females 396 }	" 3	70.04	71.50	70.72
	" 4	66.81	68.93	67.63
Average		68.85	71.48	69.95
<i>Coast of Natal</i> .....	No. 1	60.06	59.22	59.69
Males 194 } Total 345.				
Females 151 }				
<i>Pelagic whaling in North Atlantic and Arctic</i> .....	No. 1	62.43	66.48	64.28
Males 232 } Total 441.	" 2	61.28	63.97	62.60
Females 209 }				
Average		61.84	65.10	63.38

<sup>1)</sup> Measurement returns from one expedition are lost by shipwreck.

**Table No. 8.—Whales caught in the season 1931/32 in the Antarctic, by species, sex and size.**

**Total Antarctic.**

**Blue-whales.**

Engl. feet.	Number of		Total animals.	Engl. feet.	Number of		Total animals.
	males.	females.			males.	females.	
43	1	1	2	75	62	40	102
45	—	1	1	76	59	34	93
47	1	—	1	77	50	24	74
50	1	—	1	78	80	44	124
51	—	1	1	79	95	27	122
52	1	2	3	80	204	115	319
53	1	1	2	81	127	59	186
54	3	4	7	82	236	74	310
55	6	1	7	83	281	94	375
56	3	2	5	84	299	117	416
57	1	—	1	85	363	166	529
58	3	3	6	86	301	216	517
59	2	3	5	87	234	220	454
60	15	10	25	88	214	299	513
61	10	8	18	89	50	110	160
62	11	15	26	90	64	253	317
63	13	11	24	91	21	97	118
64	11	5	16	92	15	137	152
65	28	28	56	93	7	105	112
66	34	9	43	94	4	61	65
67	20	15	35	95	—	46	46
68	26	27	53	96	2	25	27
69	37	24	61	97	—	12	12
70	55	49	104	98	—	12	12
71	22	17	39	100	—	2	2
72	34	30	64	102	—	1	1
73	30	22	52				
74	41	23	64				
				Sum	3,178	2,702	5,880

**Fin-whales.**

40	1	2	3	66	74	44	118
42	1	1	2	67	83	30	113
44	1	2	3	68	82	49	131
45	3	3	6	69	61	36	97
46	2	2	4	70	129	87	216
47	—	1	1	71	25	27	52
48	2	5	7	72	40	35	75
49	2	3	5	73	44	47	91
50	21	9	30	74	32	42	74
51	7	2	9	75	37	51	88
52	10	14	24	76	21	42	63
53	15	11	26	77	7	31	38
54	17	15	32	78	10	31	41
55	63	48	111	79	2	12	14
56	49	38	87	80	4	11	15
57	58	40	98	81	—	3	3
58	50	28	78	82	—	3	3
59	33	34	67	83	—	2	2
60	142	113	255	84	—	2	2
61	44	22	66	85	1	1	2
62	66	49	115	86	1	—	1
63	56	28	84	88	1	—	1
64	53	37	90				
65	150	83	233				
				Sum	1,500	1,176	2,676

Table No. 8 (continued).

## a. South Georgia.

## Blue-whales.

Engl. feet.	Number of		Total animals.	Engl. feet.	Number of		Total animals.
	males.	females.			males.	females.	
43	—	1	1	75	8	5	13
52	1	—	1	76	5	3	8
54	1	1	2	77	6	4	10
55	4	—	4	78	5	—	5
56	1	2	3	79	4	4	8
58	1	1	2	80	2	10	12
59	—	2	2	81	1	2	3
60	7	5	12	82	2	5	7
61	6	7	13	83	2	5	7
62	11	11	22	84	3	6	9
63	5	6	11	85	2	10	12
64	8	5	13	86	—	5	5
65	19	18	37	87	—	5	5
66	20	6	26	88	1	8	9
67	12	11	23	89	3	4	7
68	15	17	32	90	—	4	4
69	18	9	27	91	—	1	1
70	19	15	34	93	—	1	1
71	8	6	14	94	—	1	1
72	7	10	17				
73	2	3	5				
74	7	3	10				
				Sum	216	222	438

## Fin-whales.

40	1	2	3	63	46	25	71
42	1	1	2	64	37	29	66
44	1	2	3	65	124	71	195
45	3	2	5	66	40	24	64
46	2	2	4	67	47	25	72
47	—	1	1	68	36	22	58
48	1	2	3	69	31	19	50
49	2	2	4	70	48	52	100
50	15	9	24	71	6	14	20
51	7	2	9	72	7	15	22
52	9	13	22	73	3	25	28
53	15	11	26	74	5	16	21
54	17	14	31	75	1	21	22
55	54	45	99	76	—	8	8
56	40	37	77	77	1	6	7
57	56	37	93	78	—	1	1
58	46	26	72	79	—	1	1
59	33	31	64	80	1	—	1
60	129	103	232				
61	37	21	58				
62	51	43	94	Sum	953	780	1,733

Table No. 8 (continued).

**b. Antarctic, others.****Blue-whales.**

Engl. feet.	Number of		Total animals.	Engl. feet.	Number of		Total animals.
	males.	females.			males.	females.	
43	1	—	1	75	54	35	89
45	—	1	1	76	54	31	85
47	1	—	1	77	44	20	64
50	1	—	1	78	75	44	119
51	—	1	1	79	91	23	114
52	—	2	2	80	202	105	307
53	1	1	2	81	126	57	183
54	2	3	5	82	234	69	303
55	2	1	3	83	279	89	368
56	2	—	2	84	296	111	407
57	1	—	1	85	361	156	517
58	2	2	4	86	301	211	512
59	2	1	3	87	234	215	449
60	8	5	13	88	213	291	504
61	4	1	5	89	47	106	153
62	—	4	4	90	64	249	313
63	8	5	13	91	21	96	117
64	3	—	3	92	15	137	152
65	9	10	19	93	7	104	111
66	14	3	17	94	4	60	64
67	8	4	12	95	—	46	46
68	11	10	21	96	2	25	27
69	19	15	34	97	—	12	12
70	36	34	70	98	—	12	12
71	14	11	25	100	—	2	2
72	27	20	47	102	—	1	1
73	28	19	47				
74	34	20	54				
				Sum	2,962	2,480	5,442

**Fin-whales.**

45	—	1	1	70	81	35	116
48	1	3	4	71	19	13	32
49	—	1	1	72	33	20	53
50	6	—	6	73	41	22	63
52	1	1	2	74	27	26	53
54	—	1	1	75	36	30	66
55	9	3	12	76	21	34	55
56	9	1	10	77	6	25	31
57	2	3	5	78	10	30	40
58	4	2	6	79	2	11	13
59	—	3	3	80	3	11	14
60	13	10	23	81	—	3	3
61	7	1	8	82	—	3	3
62	15	6	21	83	—	2	2
63	10	3	13	84	—	2	2
64	16	8	24	85	1	1	2
65	26	12	38	86	1	—	1
66	34	20	54	88	1	—	1
67	36	5	41				
68	46	27	73				
69	30	17	47				
				Sum	547	396	943



**Table No. 9.—Whales caught in the season 1931/32 in the Antarctic, by species, sex and groups of size.**

**Total Antarctic.**

**Blue-whales.**

	Number of whales.	Per cent.
Group 1. (70 feet and less) .....	503	8.56
„ 2. (71 feet to 85 feet).....	2,869	48.79
„ 3. (above 85 feet).....	2,508	42.65
	5,880	100.00
Immature males .....	369	11.61
„ females .....	386	14.29
„ animals .....	755	12.84
Mature males .....	2,809	88.39
„ females.....	2,316	85.71
„ animals .....	5,125	87.16

**Fin-whales.**

Group 1. (55 feet and less) .....	263	9.83
„ 2. (56 feet to 65 feet).....	1,173	43.83
„ 3. (above 65 feet).....	1,240	46.34
	2,676	100.00
Immature males .....	587	39.13
„ females.....	507	43.11
„ animals .....	1,094	40.88
Mature males .....	913	60.87
„ females.....	669	56.89
„ animals .....	1,582	59.12

**a. South Georgia.**

**Blue-whales.**

Group 1. (70 feet and less) .....	265	60.50
„ 2. (71 feet to 85 feet).....	140	31.96
„ 3. (above 85 feet).....	33	7.54
	438	100.00
Immature males .....	165	76.39
„ females .....	147	66.22
„ animals .....	312	71.23
Mature males .....	51	23.61
„ females.....	75	33.78
„ animals .....	126	28.77

Table No. 9 (continued).

**Fin-whales.**

	Number of whales.	Per cent.
Group 1. (55 feet and less) .....	236	13.62
„ 2. (56 feet to 65 feet) .....	1,022	58.97
„ 3. (above 65 feet) .....	475	27.41
	<u>1,733</u>	<u>100.00</u>
Immature males .....	520	54.56
„ females .....	460	58.97
„ animals .....	980	56.55
Mature males .....	433	45.44
„ females .....	320	41.03
„ animals .....	753	43.45

**b. Antarctic, pelagic whaling.****Blue-whales.**

Group 1. (70 feet and less) .....	238	4.37
„ 2. (71 feet to 85 feet) .....	2,729	50.15
„ 3. (above 85 feet) .....	2,475	45.48
	<u>5,442</u>	<u>100.00</u>
Immature males .....	204	6.89
„ females .....	239	9.64
„ animals .....	443	8.14
Mature males .....	2,758	93.11
„ females .....	2,241	90.36
„ animals .....	4,999	91.86

**Fin-whales.**

Group 1. (55 feet and less) .....	27	2.86
„ 2. (56 feet to 65 feet) .....	151	16.01
„ 3. (above 65 feet) .....	765	81.13
	<u>943</u>	<u>100.00</u>
Immature males .....	67	12.25
„ females .....	47	11.87
„ animals .....	114	12.09
Mature males .....	480	87.75
„ females .....	349	88.13
„ animals .....	829	87.91

**Table No. 10.—Average production of oil per blue-whale in the season 1931/32 and summer 1932.**

Other whales are reduced to blue-whale equivalents on the following basis:—  
1 blue-whale = 2 fin-whales =  $2\frac{1}{2}$  humpbacks = 6 sei-whales.

Geographical areas.	Company.	Blue-whale equivalents.	Oil production.	
			Total.	Per blue-whale equivalent.
A. <i>South Georgia</i> .....	No. 1	784.4	Barrel = $\frac{1}{6}$ ton. <sup>1)</sup> 73,195	Barrel = $\frac{1}{6}$ ton. <sup>1)</sup> 93.3
	„ 2	526.5	48,617	92.3
	Average	—	—	92.9
B. <i>Antarctic, others</i> (pelagic whaling).....	No. 1	960.6	117,013	121.8
	„ 2	705.3	77,478	109.9
	„ 3	1,211.7	131,728	108.7
	„ 4	1,979.8	189,341	95.6
	„ 5	1,832.8	170,633	93.1
	Average	—	—	102.6
C. <i>South Africa—Natal</i> .....	No. 1	410.0	33,281	81.2
D. <i>North Atlantic and Arctic</i> (pelagic whaling).....	No. 1	116.5	9,909	85.1
	„ 2	154.5	10,250	66.3
	Average	—	—	74.0

<sup>1)</sup> 1 ton = 1,016 kg.

Firm: \_\_\_\_\_

Manager: \_\_\_\_\_

Catching fields: \_\_\_\_\_

Season commenced \_\_\_\_\_ closed \_\_\_\_\_

### Report on number of whales, oil production, etc. Season 19 \_\_\_\_\_

Month	Catcher: _____ Gunner: _____							Catcher: _____ Gunner: _____							Catcher: _____ Gunner: _____							Total production of oil of the whaling firm					Production of guano and bonemeal		
	Blue-whale	Fin-whale	Hump-back	Sei-whale	Sperm-whale	Right-whale	Total	Blue-whale	Fin-whale	Hump-back	Sei-whale	Sperm-whale	Right-whale	Total	Blue-whale	Fin-whale	Hump-back	Sei-whale	Sperm-whale	Right-whale	Total	No. 0 & 1	No. 2	No. 3	No. 4	Sperm	Total		
January .																													
February																													
March ...																													
April, etc.																													

### Report on whales caught from \_\_\_\_\_

by \_\_\_\_\_ whaling firm in the season 19 —19

Date	Species of whales	Length <sup>1)</sup> (Ft.)	Contents of stomach	Sex	Females <sup>2)</sup>			Remarks
					Pregnant	Accompanied by calf	Length of the calf or foetus	

<sup>1)</sup> The length shall be the length of a straight line taken from the tip of the snout to the notch between the flukes of the tail.

<sup>2)</sup> These rubrics must be filled in as exactly as possible.

