

C.S.

WHALING

SGD/WHA/2 # 10

1923

No. 749/23

S. of S. No. 65

SUBJECT.

1923

9th August

British Museum Report of various aspects of the Whaling Question.

Previous Paper.

631/21, 569/22

MINUTES.

S of S. Resolved of 9th August etc 65

Encl (1)

Government Naturalist.

For your observations.

W.L. 17

Di C/Sec

17 Oct 1923

Hon. Col. Sec.

Thank you. I have read the report with much interest.

2. This is practically a digest of a number of papers, of which many are concerned with the whaling in this colony, but S. Africa and the Seychelles etc are also dealt with.

3. With reference to the letter of 27th March, para 5. I have not seen nor heard of any dolphins in Scotland.

4. With reference to that of the 19th March, Section 2, para. c. it is of course clear that the numbers of the three species do not tally with the "total".

Section VI

Subsequent Paper.

Section VI D. True figure for the Blue Whales of the 1915/16 season was taken from the Report of the Interdepartmental Committee and was 3,026.

I certainly agree that the oil for a given period (less than the whole season) almost certainly cannot be regarded as derived from the whales taken in the same period.

The reasons for this are, I submit, obvious.
Section VII 5. ? Would it be possible to secure copies of the Anglo-Norwegian Trading Journal for February 1923, vol 9, no. 98, and of that number containing the promised further statement, and of "Nature" Dec. 16, 1922, vol 110, to which Sir Sidney Harmer refers.
6. M.P.s. 637/22 and 539/22 contain papers dealt with in this report.

J. H. Hamilton.

Govt. Naturalist

1/11/23.

V.E. Submitted.
M.L. 17
Dir/Sec
5 Nov 1923

Will you please ask C.A. to forward the journals for which Mr. N. asks

~~11/11~~ 5 - Nov. '23

Letter to Crown Agents, 7th Nov. 1923. Encl. (2)

C.S.O. No. 749/23

Inside Minute Paper.

Government Naturalist

Sheet No. 2

For note

APh. 18

Di'c'ser

9 Nov 1923

Hon. Col. Sec.

Thank you, noted and
returned please.

glt Hamilton.

gov. Naturalist

2/11/23

Crown Agents Letter of 28th Jan: 1924 - Encl (3)

G.O. Submitted

APh. 18

Di'c'ser

7 April 1924

File

ttttt 8 April 24



DUPLICATE

FALKLAND ISLANDS

NO 65

DOWNING STREET,

9 August, 1923.

Sir,

With reference to previous correspondence, I have the honour to transmit to you the accompanying copy of a letter with enclosure from the British Museum dealing with the various aspects of the whaling question.

2. The Colonial Office letter of the 30th December last enclosed a copy of the Governor's despatch No.102 of the 11th September 1922, and that of the 5th January 1923 a copy of despatch No.103 of the 13th September 1922.

From B.M. 27 March.

*enc 4 of
H.O. 12/22
enc 3
369/22*

I have the honour to be,

Sir,

Your most obedient,

humble servant,

(Signed) DEVONSHIRE

THE OFFICER ADMINISTERING
THE GOVERNMENT OF
THE FALKLAND ISLANDS.

Copy.

British Museum (Natural History),
Cromwell Road,
London, S.W.

27th March 1923.

Sir,

I have had the honour of submitting to the Trustees of the British Museum a number of papers, which have been received since June 1922, from the Colonial Office and other sources on the subject of Whaling. These include the Colonial Office letter (No.56914/22) of December 30 last, and I have to express my regret for not having noticed that this was an urgent matter calling for the reminder which was sent to the Museum on March 5.

2. The papers in question deal with various aspects of the whaling question, and it has been necessary to discuss them at some length. In order to avoid unnecessary repetition I am to send you the enclosed copy of my Report to the Trustees, dated March 19, 1923, and particularly to refer to the list of papers under review on pp.1, 2, and to the general summary on pp.19-22.

3. (Sect.II of Report). The desirability of imposing a size-limit in granting licences for the capture of Sperm Whales has formed the subject of informal correspondence with the Colonial Office since November 3 last, the date of my latest

official

The Under Secretary of State,
Colonial Office,
S.W. 1.

official letter on the subject. It appears to the Trustees that a size-limit of 25 feet would be too small if it merely protected whales of this and lesser lengths. They hope that it will in practice protect whales of a somewhat larger size as well, in the way suggested by Mr Allen, and they agree that it will be most important to reconsider the matter in two years. In order to provide the facts on which a re-consideration can be based, I wish to express the hope that any Whaling Companies to which Licences may be issued will be required to fill in and return to the Museum the statistical details indicated in our Form 132, as is done by the Companies in South Georgia and elsewhere.

4. (Sect.IV.A.) The circumstances under which the Magistrate of South Georgia has been authorized to issue temporary permits for the capture of Humpbacks have been noted. It is obvious that the matter will require careful watching.

5. (Sect.V.) The Trustees agree that the crews of whaling vessels cannot be expected to take trouble in obtaining specimens without having some personal interest in the matter, and that the scale recommended by the Government Naturalist in his letter September 7, 1922, is reasonable for small whales of 20 feet or more in length. It is extremely desirable to obtain other species as well, and it will probably be agreed that a lower rate of pay would not be unreasonable for services rendered in connection with Dolphins only a few feet long. Should
any

any such specimens be sent, there will probably be no difficulty in arranging terms, with the assistance of a recommendation from Mr Hamilton.

In answer to a question received from the Governor I am to state that the re-payment of freight by the Trustees will offer no difficulty. Mr Middleton's Services to the Museum have been greatly appreciated, and I propose to write to him direct on this subject.

6. Attention may be directed specially to the tables on pp.11, 12 of my Report, which reproduce the more important figures referring to the South Georgia Whaling Season 1921/22.

7. Copies of the photographs of South Georgia Whaling Stations, which were enclosed in Sir Herbert Read's letter (No.56915/1922) of January 5 are being made for the use of the Museum, and the originals will shortly be returned to the Colonial Office, in accordance with the request contained in that letter.

I have, etc.,

(Signed) S.F.HARMER.

March 19, 1923.

The Director has the honour of reporting to the Trustees that numerous papers on whales and whaling have been received at the Museum, and that the following are the most important of those which have not already been reported.

Sect. I. Mr J.E.Hamilton's remarks on earlier Reports.

Registered Number.	Number in file.	
3452/22	255	a. Colonial Office, Aug.30, 1922. b. Governor of Falkland Islands, June 24. c. Hamilton J.E., June 20.

Sect.II. Seychelles Islands.

4521/22	267	a. Allen, H.T.(Colonial Office) Nov.4, 1922. b. Bruce, the late Dr.W.S., Report June 26, 1916. c. Bruce, the late Dr.W.S., Report Jan.19, 1917.
82/23	292	Allen, H.T., Jan 4, 1923.
	299	Harmer, S.F., Jan 22, in reply.
	305	Allen, H.T., Feb 14.

Sect.III. South Africa.

	277	Gilchrist, Dr.J.D.F., Nov.22, 1922.
5040/22	280	Union of South Africa, High Commissioner, Dec.9.
	282	Harmer, S.F., Dec.16, to Colonial Office.

Statistical Returns.

	268	Natal, 1922.
	296	
4534/22	268	
	296	Cape Colony, 1922.
776/23	309	

Sect.IV. Legislation.

3597/22	256	a. Colonial Office, Sept.11,1922. b. " " to Governor of Falkland Islands, Aug. 24.
---------	-----	---

Registered Number.	Number in file.	
83/23	294	a. Colonial Office, Jan.5, 1923. b. Governor of Falkland Islands, Sept. 18, 1922.
<u>Sect. V Expenses of procuring Specimens of the smaller Antarctic Cetacea.</u>		
2483/22	244	a. Colonial Office, June 19, 1922. b. " " to Governor of Falkland Islands, June 13.
5227/22	285	Governor of the Falkland Islands, Oct. 17, 1922.
2/23	290	a. Colonial Office, Dec.30, 1922. b. Governor of Falkland Islands, Sept.11, 1922. c. Hamilton, J.E., Sept.7.
989/23	321	Colonial Office, Mar.5, 1923.

Sect.VI. South Georgia, Whaling Season 1921-1922.

84/23	293	a. Colonial Office, Jan.5, 1923. b. Governor of Falkland Islands, telegram, Oct.10, 1922. c. Hamilton, J.E., Sept.11. d. Governor of Falkland Islands, Sept.13 e. Binnie, E.B., June 10; Report on the Season ended May 31, 1922. f. Whaling Stations, 10 photographs of (to be returned to the Colonial Office).
-------	-----	--

Statistical Returns.

4722/22	273	1921-1922.
730/23	307	

Sect.VII. Statistical Returns

See under III and VI

Sect.VIII. Norwegian Press Comments.

327, b Anglo-Norwegian Trade Journal, Extract
(correspondence) from Vol.9, No.98, Feb. 1923.

Sect.IX. Summary and Observations.

Sect. I.

March 19, 1923.

Sect. I. Mr J.E.Hamilton's observations on earlier Reports.

(The Reports principally referred to are those dated respectively May 19, Sept.28 and Oct.18, 1921.)

A. In his letter of Oct.31, 1921, Sir Sidney had requested the Colonial Office to ask Mr Hamilton to enquire into the question of the reliability of the statistical returns furnished to the Museum by the Whaling Companies, particularly with regard to the length and sex of whales recorded. Mr Hamilton replies (p.1.) that the lengths given by the whalers may be regarded as accurate within five feet or less, and (p.4) that there is no reason to doubt the substantial accuracy of the sex-determinations, which are made by experienced observers. He gives some interesting information with regard to foetal records, pointing out (p.1) that post mortem abortion during flensing is common, and probably takes place even while dead whales are being towed in to the land-station; a result which is no doubt partly due to the pressure arising from the gas injected to make the whale float. This helps to elucidate a statement which had previously been made by Mr A.G.Bennett (Report July 18, 1922, p.5), and it is of considerable importance in studying the Statistical Returns, since it indicates the probability that the number of small foetuses recorded is less than the real number. Mr Hamilton's observations on the practical difficulty of obtaining complete foetal records, particularly

particularly at the South Shetlands, are useful, though some of these difficulties have been borne in mind throughout. His remark (p.1) that the carcasses of many whales were formerly not opened by the floating factories, but that existing regulations now make this operation necessary, is of considerable interest. The investigator on the flensing platform is certainly entitled to sympathy, in view of the unpleasant nature of his work, which is another point referred to.

B. In commenting (p.2) on Sir Sidney's Report, Sept.28, 1921, on the South Shetlands, Mr Hamilton points out that the regulation with regard to the proportion to be observed between the amounts of press oil and blubber oil (Report p.7, II.b) was not embodied in the Regulations of Oct.17, 1921 (Official papers, No.235.c) because it was considered that Regulations 10-14, and particularly No.11, would be effective in controlling waste. No.11 makes it necessary for floating factories to utilize the head, jaw-bones, tongue, tail and inside fat.

C. Mr Hamilton next deals with the oil-production of the 1921/22 season at the South Shetlands, pointing out the considerable improvement on the 1920/21 season; a matter which has already been reported to the Trustees (Report, July 18, 1922, pp.3, 6, 8). His remarks on the increased number of Blue Whales have also been anticipated in the same Report (pp.4, 8). The discrepancies between his figures and those obtained by an analysis of
the

the Whalers' Statistics (Supplementary Report, Oct. 19, 1921, p.1) are probably due partly to carelessness; and steps are under contemplation for impressing the need of accuracy on the Managers.

Mr Hamilton gives the total catch of the Sydhavet Company for February and March, 1921 (wanting in the Whalers' returns) as follows:

Blue Whale	Fin Whale	Humpback
22	210	5

These numbers do not add up to 223, as stated in the copy of his observations received, and there has probably been a mistake in copying his figures.

D. In allusion to a statement often made Mr Hamilton expresses the opinion (p.5) that the increased capture of Fin Whales and Blue Whales which has characterized the industry in its later phases may have been due more to a diminution in the number of Humpbacks than to an enlargement of the size of the whale-catchers.

E. The only other statement in his observations needing remark is that during 1921 there was no whaling by companies belonging to the Norwegian Whaling Association in Iceland, Faroe Islands or the British Islands; but that the Wrangel Company of Hangesund finished at the Faroe Islands.

Sect.II. Seychelles Islands. (contd. from Report, Oct. 19, 1922)

Various letters on this subject have passed between the Director and Mr H.T.Allen of the Colonial Office. In the enclosures to Mr Allen's letter (No.207) of Nov.4, 1922, information is

given

given with regard to the St. Abbs' Whaling Company, obtained through the late Dr. W. S. Bruce. Dr. Bruce was at the Seychelles from April to November 1915, and during the whole of that time the entire catch consisted of Sperm Whales. Before his arrival, Blue Whales had been caught on three or perhaps four occasions; but the activities of that locality were essentially concerned with the Sperm Whale, and not with other species.

The Company, which went into liquidation on Oct. 21, 1915, had three whaling vessels, and its land-station, of which details are given, was on St. Anne's Island, four miles from Mahé. The number of whales caught from Oct. 1914 to July 1915 was 122. Mr W. G. Burn Murdoch's name appears first in the list of Directors.

With regard to the suggestion which was made to the Colonial Office for the protection of the Sperm Whale, Mr Allen replied on Jan. 4 last (No. 292) that an application for whaling facilities in Seychelles waters had been received from Messrs Salvesen, and that the authorities were disposed to consider favourably the imposition of a size limit in the case of the Sperm Whale, if a licence were given. In view of the importance of opening up a new industry in the Colony and of not imposing terms so onerous as to lead to the dropping of the project, the Colonial Office considered the limit suggested (35 feet) impracticable, and Mr Allen suggested that 20 feet should be adopted instead,

for

for the Sperm Whale alone; with the further provisions that the taking of females with calves should be prohibited and that a close season might be imposed later.

The Director replied to the above letter on Jan.22 (No.299), submitting evidence that (a) the imposition of a size-limit of 20 feet would be absolutely useless. It would protect calves subsisting on a milk-diet, but it would not have saved the life of a single Sperm Whale which has been recorded by the Companies in South Georgia and South Africa in the statistics received at the Museum.

(b) A size-limit of 25 feet would have protected 3 out of 479 Sperm Whales, and its effect would be negligible.

(c) 30 feet would be rather better, but 35 feet is not too high.

He urged that the most careful consideration should be given to the possibility of accepting 35 feet.

The reply (Feb.14, No.305) to the above letter concedes a size-limit of 25 feet, subject to revision after two years. It is suggested that in order to be on the safe side, the hunters would confine their attention to whales of a considerably larger size.

The Director has little doubt that 25 feet is too small; but if the regulation works in practice in the manner suggested it may protect whales up to 30 feet. He accordingly suggests that

no further protest should be made at present, but that the necessity of re-considering the matter in two years should be emphasized.

Sect. III. South Africa.

The proposed Commission (Report, Oct. 20, 1922, pp. 3, 4) on the whaling industry is not to be appointed. According to information given by the High Commissioner's Office (Dec. 9, 1922, No. 280), two experts have been requested to conduct the enquiry, instead of setting up a Commission. An unofficial letter (Nov. 22, No. 277) from Dr. J. D. F. Gilchrist explains that he himself is one of the experts referred to, and that the other is Mr. van der Byl.

The Director has submitted copies of the above letters to the Colonial Office.

Sect. IV. Legislation.

A. With reference to the proposed relaxation of the regulation forbidding the capture of Humpbacks (Report, July 18, 1922, pp. 7, 8) at the South Shetlands, the Colonial Office submit a copy of Mr. Secretary Churchill's letter, Aug. 24, 1922 (No. 256 b) to the Governor of the Falkland Islands, stating that in view of the representations of the Trustees he considers it inadvisable to legalize the taking of Humpback Whales during the season 1922/23.

In a later communication (No. 293a), however, the Colonial Office state that, in view of the information contained in a telegram from the Governor, the Secretary of State did not feel justified in further

opposing

opposing the view of the local authorities as regards the issue of temporary permits for the taking of this species during the season 1922/23, and therefore approved the Governor's recommendations in the matter. All permits granted are to be recorded in the reports of the whaling officers, and reasons are to be given for their issue.

The telegram, of which a copy (No.293 b) was submitted, stated that the Magistrate of South Georgia had been given authority to grant temporary permits, if it should be necessary at the time, in order to keep a station at work. If Humpbacks are abundant, as during the preceding year, and other species are scarce, total prohibition of the capture of Humpbacks is likely to give rise to labour troubles since a large proportion of the men's earnings is derived from the oil-bonus. As the Government Naturalist considers that permission can be given without detriment to the whales, the Governor is of opinion that, in the interest of public tranquillity, the authority already given should not be withdrawn, and that a similar arrangement should be applied to the South Shetlands. (See also No.293 d).

B. The effect of the new regulations (Oct.17,1921 No.235 c) in preventing waste is referred to in the papers (Nos.293, 294) submitted by the Colonial Office on Jan.5, 1923. So far as conclusions can be drawn from a single season, the results are most encouraging, and they appear to indicate that the principles embodied in the regulations are based on sound assumptions. This is strikingly brought out

by

by reference to the Vestfold Company, which operates at Stromness, South Georgia. Its average oil-production in 1921/22 was 74 barrels per whale, while the average in 1920/21, its first season, was 44.47 barrels. It may be observed that the higher figure is only just short of 75 barrels, an amount which has been taken as the average production of all the Blue Whales by themselves (Report, Sept. 28, 1921, p.15).

C. Mr. Hamilton's remarks (Sect. I B) on the measures which have been adopted for reducing waste should also be noticed.

Sect.V. Expenses of procuring specimens of the smaller Cetacea.

In his Report, May 23, 1921, the Director called attention to the importance of taking advantage of the presence of whaling stations in the far South for obtaining skeletons of the smaller Cetacea of those regions, and this suggestion was approved by the Trustees.

The Colonial Office accordingly made enquiries (No.240) of the Governor of the Falkland Islands, and have now submitted his reply (No.290) enclosing a Minute from the Government Naturalist, Mr.J.E.Hamilton. This contains the proposal that a bonus should be paid to the whalers for services rendered in the collection of specimens. The scale suggested is the bonus in force at the time for Fin Whales, at present 185 kroner, for each specimen, to be paid at the current rate of exchange. At the time of writing (Sept.11, 1922) this would have worked out

at

at about £7.14.0, and at the pre-war rate, at about £10.

The Director thinks that the crews of whaling vessels cannot be expected to take trouble in obtaining specimens without having some personal interest in the matter, and that the scale suggested is reasonable for small whales of 20 feet in length or more. But this rate seems to be unnecessarily high for the smaller Dolphins of only a few feet in length. It is extremely desirable to obtain these as well, and the suggestion might be made that specimens less than 20 feet in length should be paid for at a lower rate.

The Director, with the concurrence of the Keeper of Zoology, accordingly recommends that an answer in the above indicated sense be sent to the Colonial Office.

Mr. J. Middleton, C.M.G., the Governor of the Falkland Islands, has also written to the Museum. In his letter (No.285) he asks the Director to assure the Trustees that every endeavour will be made to meet any wishes which they may express with regard to the collection of specimens. After referring to the proposal for the payment of a bonus to the crews of whalers for lesser whales, he adds that the cost of freight has hitherto been borne by his Government. On the assumption that the Trustees will be willing to refund such expenditure, he has given instructions that the cost of freight should in future be recovered from them by the Crown Agents for the Colonies.

The

The Director suggests that a letter be sent to Mr. Middleton, conveying the best thanks of the Trustees for the valuable assistance he has already given and for his promise of future help; with the intimation that the re-payment of freight will offer no difficulty.

It has hitherto been uncertain who were to be regarded as the donors of specimens received from the Falkland Islands through Mr. J. E. Hamilton, Mr. A. G. Bennett or others. In reply to an enquiry on this subject, the Governor states that

All specimens should be regarded as having been presented by the Government of the Colony of the Falkland Islands and its Dependencies; and the name of the collector will be stated in each case. Mr. Bennett has recently been given a special allowance as Assistant to the Government Naturalist and any naturalist work done or specimens collected by him or by Mr. Hamilton will be at the disposal of the Government.

Sect. VI. South Georgia Whaling Season 1921-1922.

A. The covering letter (No. 293 a) of the Colonial Office, enclosing the papers dealing with the results of this season, refers specially to the relaxation of the protection of the Humpback and to the effect of the new regulations in minimising waste. Both matters have been referred to above, in Sect. IV, A. B.

B. The Governor's letter (No. 293 d.) refers principally to the General results of the season's working, the total catch, the high yield of oil and the question of the Humpbacks. The Southern Whaling and Sealing Company receives adverse criticism, owing to
the

the low productiveness of its factory at Prince Olaf's Harbour; and it is indicated that it may be necessary to station a Whaling Officer there, to supervise operations.

C. The main facts are given in Mr. E.B. Binnie's Report (No. 293.e) on the season ending May 31, 1922, as follows:-

(i) The total catch was 3350 whales, which yielded 245,762 barrels of oil, as against 3705 whales and 176,997 barrels of the previous season (Cf. Report, May 20, 1922, pp. 6, 7); showing a decrease of 355 whales, but an increase of 68,765 barrels. The total value of the oil is estimated as £1,228,800, an average of about £367 for each whale, an increase in valuation over the previous season of £343,815 for the oil and of £127 for each whale. The number of bags of guana was 5077, as against 11,811 for 1920/21.

(ii) Tables for 1920/21 and 1921/22.

As the Report of May 20, 1922, did not include the tables necessary for comparison with the year now under consideration, Table I is here added, in order to give the most important details.

The figures for 1920/21 are taken from the official paper numbered 229, and the remaining Tables, for 1921/22 have been constructed from Mr. Binnie's current Report (No. 293.e). The capture of Humpbacks, Right Whales and Sperm Whales was prohibited in 1921/22 but 10 Humpbacks and 4 Sperm Whales were killed before notice of the prohibition had been received.

Table I.

Table I. South Georgia, 1920/21. Monthly Figures.

	Hump- back.	Blue Whale	Fin Whale	Sei Whale	Right Whale	Sperm Whale	Total Whales	Oil Barrels
September	-	15	19	-	-	-	34	1,496
October	-	59	35	-	-	5	99	4,907
November	26	100	176	-	1	10	313	13,722
December	21	41	223	1	2	6	294	15,855
January	25	42	736	-	-	3	806	25,382
February	7	94	617	6	1	-	725	30,873
March	3	237	365	29	5	6	645	33,088
April	15	206	330	1	3	-	555	33,717
May	5	78	151	-	-	-	234	17,957
Total	102	872	2652	37	12	30	3705	176,997
Percentage Total Whales	2.7	23.5	71.6	1.0	0.3	0.8	99.9	-

Table II. South Georgia, 1921/22. Monthly Figures.

	Hump- back.	Blue Whale	Fin Whale	Sei Whale	Right Whale	Sperm Whale	Total Whales	Oil Barrels
September	-	-	-	-	-	-	-	-
October	-	83	7	-	-	-	90	4,267
November	10	212	42	-	-	2	266	15,726
December	-	364	249	-	-	2	615	41,445
January	-	618	150	-	-	-	768	59,802
February	-	665	40	1	-	-	706	53,174
March	-	440	13	2	-	-	455	44,925
April	-	135	75	40	-	-	250	15,901
May	-	37	104	59	-	-	200	10,522
Total	10	2554	680	102	-	4	3350	245,762
Percentage Total Whales	0.3	76.2	20.3	3.0	-	0.1	99.9	-

Table III

Table III. South Georgia, 1921/22.

Total Catch of Individual Companies.

	Hump- back	Blue Whale	Fin Whale	Sei Whale	Sperm Whale	Total
Southern	10	746	163	12	2	933
Vestfold	-	548	139	15	-	702
South Georgia	-	514	161	28	-	703
Tonsberg	-	432	121	19	2	574
Comp. Arg. de Pesca	-	314	96	28	-	438
Total	10	2554	680	102	4	3350

Table IV. South Georgia, 1921/22.

Total Catch (Percentages).

	Hump- back	Blue Whale	Fin Whale	Sei Whale	Sperm Whale	Total
Southern	1.1	79.9	17.5	1.3	0.2	100.0
Vestfold	-	78.1	19.8	2.1	-	100.0
S. Georgia	-	73.1	22.9	4.0	-	100.0
Tonsberg	-	75.3	21.1	3.3	0.3	100.0
Comp. Arg. de Pesca	-	71.7	21.9	6.4	-	100.0

Table V. South Georgia, 1917/18 - 1921/22.

Average oil-production (barrels per whale).

1917/18	1918/19	1919/20	1920/21	1921/22
66.0	53.2	49.8	47.8	73.36

Table VI.

Table VI. South Georgia, 1921/22.

Average oil-production of individual Companies.

	Number of Whales	Barrels of Oil	Average Oil-production	Number of Whale-catchers
Southern	933	64,679	69.3	5 and 4
Vestfold	702	52,155	74.0	5
S. Georgia	703	49,000	69.7	4
Tonsberg	574	45,050	78.5	3 and 4
Comp. Arg. de Pesca	438	34,878	79.6	4
Total	3350	245,762	73.36	

(iii) Oil-production.

The average number of barrels per whale was 73.36, as against 47.8 in 1920/21, an increase of 25.56 barrels per whale. January to March proved, as usual, the best months for Blue Whales, which are in the finest condition in February. The average production in March accordingly rose to 98 barrels, the catch being always slightly in advance of the output, a point which Mr. Binnie illustrates in his Report by graphs.

It may be remarked, with regard to these graphs, that the season 1921/22 is specially favourable for showing the influence of the gigantic Blue Whale on the average oil-production, in view of the relatively small numbers of other species captured. The graphs must be read with some caution, however, as will be seen from Table II. Thus Blue Whales were 5 times as numerous as Fin Whales in November, $1\frac{1}{2}$ times in December, and 4 times in January; and these and other facts are only imperfectly represented in the graphs.

To take

To take an extreme case indicating the want of relation between the whales caught and the oil produced in the same month, the average oil-production per whale of the Vestfold Company, in May 1922, is given by Mr. Binnie in his table at the top of p.2 as 292 barrels. Further enquiry shows that this surprising figure is obtained by dividing 585 barrels produced in that month by 2, the number of whales caught. These were both Sei Whales, a small and unproductive species; and nearly all the oil produced in that month must have been derived from whales taken in April.

Table V, showing the average oil-production per whale for the entire season, in five successive years is much more instructive; and it brings out strikingly the remarkable character of the figures for the current season.

Mr. Binnie states that every effort was made to obtain a record output of oil, and that the attempt was conspicuously successful, though the result was achieved at the expense of the guano, which fell from 11,811 bags to 5,077.

(iv) Details of the individual Companies.

The Vestfold Company (Nov.27 to May 5) recently took over the Ocean Company's Station at New Fortuna Bay, rebuilding it at Stromness, and it may now be regarded as the best equipped Station in South Georgia. Particulars are given of its plant, which included 26 open boilers and 60 pressure boilers, which were kept working continuously;

night

night and day, from the beginning of December till early in May. It may be added that this Company was formed by the amalgamation of the Saudefjord and Ocean Whaling Companies, and that it operated for the first time in the season 1920/21. (Official papers, No.229, p.4.)

The Southern Whaling and Sealing Company (Oct.3 to May 6) received censure for having permitted waste. It was reported that they had been seen towing carcasses out to sea, and on a surprise visit of inspection 47 whales were found moored to the buoy; a number which it would have been impossible for the Company to work up completely. Their catch was the largest of the season, and their average oil-production the lowest. The details of the plant are recorded in the case of this Company and of the others successively noticed.

The results of the South Georgia Company (about Nov.20 to May) were affected by the destruction, by fire, of their pressure boiler factory in March. Many tons of whale-meat were used as food during April and May, apparently for the most part the meat of the Sei Whale.

The Campania Argentina de Pesca (Dec. to May) produced 34,878 barrels of oil from 314 Blue Whales, 96 Fin Whales and 28 Sei Whales (total 438), an average 79.6 barrels per whale, the best results of the season. 2675.4 bags of guano (of 100 kilogr. to the bag) were manufactured; and it may be noted that this is more than half the total production of all the Companies together.

The

The Tonsberg Whaling Company (Dec. 3 to May 30), although credited with 4 whale-catchers, did nearly all its work with three, as the fourth was slow and out of date, and captured only 25 whales altogether. The total of 574 was made up of 432 Blue Whales, 121 Fin Whales, 19 Sei Whales and 2 Sperm Whales. The station is a very efficient one, but its operations were hampered by troubles with its whale-catchers. In spite of these difficulties its average oil-production was nearly equal to the best of the season.

(v) Monthly occurrence and movements of Whales.

November was the best month of the season, and large schools of Blue Whales and Humpbacks were reported about 30 miles to the N.W. of the Island, both kinds being found in numbers later to the N.E. after a change of weather, accompanied by heavy sea and strong winds. A few Sperm Whales were also seen.

December was stormy, almost throughout. Fin Whales remained nearly the whole time, to the N.E., 10 to 30 miles out, but on the 20th they moved to other feeding grounds, and were replaced by Blue Whales and Humpbacks, the latter in great numbers. These movements were confirmed by the reports from the N.W., which showed diminishing numbers of Blue Whales and Humpbacks, with the arrival of a few Fin Whales. The weather was at this time characterized by continual snow and fog.

January was a month of constant storms, with snow and fog. Blue Whales were mostly to the

E.N.E.

E.N.E. and were in excellent condition, while Humpbacks were still plentiful. The weather was too stormy to allow the smaller catchers to hunt.

February continued the foggy conditions during its first week, when the sea was high and the whales were travelling in all directions. The whaler "Sperm" of the Tonsberg Company was charged by a Sperm Whale, and had to make for the station, where it arrived in a leaking condition.

March was consistently stormy. The Gunner of one of the catchers reported the largest school of Fin Whales he had ever seen, and 3 out of 5 females killed by him had "just left their young, as milk was still in evidence and they were without foetus". These whales seemed to be travelling Eastwards.

April was marked by the absence of Blue Whales, which were supposed to have gone to the N.E. The few that were taken were in such excellent condition that some of them floated when killed. Fin Whales were in "faulty" condition. Sei Whales, a good number of Right Whales, and some Humpbacks and Sperm Whales were seen. The catchers were hunting in all directions. The whales seemed to keep more in schools, apparently of the same species and of the same sex. Although there was plenty of whale-food near the shore (about 10 miles out), it was still necessary to go further to hunt whales, though at Wilson Harbour, on the W. side, Right Whales were seen within a few fathoms of the beach.

May

May. Right Whales, Sei Whales and Fin Whales were numerous, but there was a marked absence of Blue Whales. These last were in such good condition that they gave up to and over 200 barrels of oil each. The weather was still stormy, and snow and fog interfered with the operations of the whalers. Large numbers of whales were observed, but the Fin Whales had become very shy. Whale-food was still abundant, and a fish to which the whalers apply the well known Norwegian name of "Torsk" was also common, one vessel having caught 1500 in a few hours.

Efforts to obtain evidence as to the directions in which whales travelled were not very successful. Food was so plentiful that they travelled N.W, to S.E. or vice versa. Fresh batches of whales, which could be recognised by their poorness, appeared occasionally. Humpbacks were more numerous than at any other time since 1912. The ice-conditions were similar to those of 1916/17, when a record catch was made at South Georgia.

(vi) Waste.

The shortcomings of the Southern Whaling and Sealing Company are further alluded to on page 10 but the production generally of the season was better than it had ~~been~~ for a long time, and the new regulations worked well. The restriction as to the number of carcasses which may be on hand at any one time is singled out for special approval.

(vii) Photographs. (293.f)

Mr. Binnie submits photographs of the

Whaling

Whaling Stations, but the Colonial Office wish to have these returned. Steps have been taken for keeping copies.

D. Mr. Hamilton's Observations (293.c)

Mr. Hamilton calls attention to many of the points above noted. He calls special attention to the fact that Blue Whales formed 76 per cent of the total catch, and that the number captured has only once before (in 1915/16) been exceeded. (It should be noted that the figures in the possession of the Museum show a total of 2,398 Blue Whales in 1915/16, a smaller number than the 2,554 captured in 1921/22. See Report July 17, 1920, p.21). He states that the South Shetlands figures were similar in the same year (1921/22) and in 1915/16. He thinks that the very low number of Fin Whales recorded may be due to the abundance of Blue Whales (which the whalers prefer to the Fin Whales, as being more productive). He shows by calculation that the total yield of oil was better than that which would have been obtained on the basis of the figures which Sir Sidney had given (Report, Sept.28, 1921, p.15) as the normal averages of the three principal species. His table of monthly oil-production seems to be open to the same criticism as given (Sect.VI, C (iii),) on Mr. Binnie's similar table; namely that the whales taken in any particular month only partially correspond with the oil produced in that month, and that the average monthly production is thus not a figure which can be taken as accurate. His conclusion that the Blue Whale is capable of producing more than

than 75 barrels (the figures which Sir Sidney had used) is proved, however, by the fact (see Table VI, Sect.VI, c (ii),) that the Tonsberg Company and the Compania Argentina de Pesca both obtained more than 78 barrels per whale for the entire season.

Mr. Hamilton remarks that it is unfortunate that the two British Companies (Southern and South Georgia) show the least satisfactory results. The Southern Company shows the largest total catch and the lowest average oil-production (Table VI), with the highest percentage of Blue Whales (Table IV); while all these are reversed in the case of the Compania Argentina de Pesca, which has the smallest total catch, the highest oil-production and the lowest percentage of Blue Whales, the most productive of all the species.

Mr. Hamilton recommends that the capture of Humpbacks should be permitted, if necessary, in order to avoid unemployment and labour troubles, but that this action should not be taken if it can be avoided (see Sect.IV). In his summary, he calls special attention to the plentiful occurrence of Humpbacks in November, December and January and to the increase of the average oil-production by 25.56 barrels per whale, which is in excess of what might have been anticipated, even allowing for the high proportion of Blue Whales.

Sect.VII. Statistical Returns.

The following Statistical Returns have been supplied by Whaling Companies since the Report dated

July

July 18, 1922.

Natal	1922	(No.268, 296).
Cape Colony	1922	(No.268, 296, 309).
South Georgia	1921/22	(No.273, 307).

Sect.VIII. Norwegian Press Comments.

An article entitled "Is the Whale being exterminated?" has recently appeared in the Anglo-Norwegian Trade Journal (Vol.9, February, 1923, No.98) commenting on a lecture which was delivered by the Director before the Association of Economic Biologists, as reported in abstract in "Nature", Vol.110, Dec.16, 1922, p.827. The lecture formed the basis of an article which was published in "The Morning Post" on the importance of taking steps for the protection of whales. The matter has aroused considerable interest in Norway, where large trade-interests are involved, and a further statement of the subject is promised by the Anglo-Norwegian Journal.

The number contains the final report

The Editor of "Nature" has asked the Director to contribute a descriptive paragraph on the subject to his Journal, and this might easily lead to a newspaper controversy. Sir Sidney desires to know the views of the Trustees with regard to the desirability of his accepting the invitation. He would himself be inclined to write a short article, calling attention in particular to the history of whaling operations in the past and to the necessity for caution in the future. In view of the progress which is being made with the preparations for a Whaling Research Expedition, to which the Colonial Office is already committed (C.28 Jan.22: 5), and of
the

the fact that the success of this investigation will depend partly on obtaining the co-operation of the Whaling Companies, it would be advisable in any case to avoid alienating the sympathy they at present show with the project. If the article is written it should indicate that the Trustees do not desire to take up an extreme position in the matter (assuming that to be the case), but that their efforts are directed to the restriction of whaling to an amount which is not inconsistent with the permanent preservation of whales.

Sect. IX. Summary and Observations.

A. The outstanding feature of the present Report is the information contained in it with regard to the South Georgia Whaling Season 1921/22 (Sect. VI), a most remarkable one in several ways. The Blue Whale, which had shown distinct signs of falling off in number (Report May 19, 1921, Appendix, p.1), and in 1920/21 formed about 24 per cent of the three principal species (Report, May 20, 1922, p.7), has risen to more than 76 per cent of the total catch. The figures are not entirely comparable with those of the earlier years, as the season ended two months later than the old principal whaling season, ending March 31, on which the earlier results had been calculated; and moreover the capture of the Humpback was prohibited during 1921/22. This variation in the period does not affect the main result, that the Blue Whales were nearly four times as numerous as the Fin Whales. A preponderance of Blue Whales was also noticed in the South

Shetlands

Shetlands results of the same season (Report July 18, 1922, p.4). Mr. Hamilton (No.293.c, p.1) suggests as a possible explanation of the low number (20.3 per cent., see Table II) of Fin Whales caught that when both species are available the whalers hunt the more productive kind; and this explanation sounds probable. Somewhat similar relative proportions of Blue and Fin Whales occurred, at South Georgia, in the Winter Season 1917 and in the principal Whaling Season 1917/18; and at the South Shetlands in the Season 1916/17 (Report May 19, 1921, Appendix, pp.1, 2). It is probable that these fluctuations are dependent on variations in the ice-conditions in successive years (see Mr. Binnie's statement under Sect.VI, C (v), May), and do not necessarily indicate a reduction in the number of Blue Whales as had previously been suspected.

B. The very striking improvement in oil-production (Sect.VI, C (iii),) is a gratifying feature of the season's work. It is attributed by those on the spot to the beneficial effect of the new whaling regulations (Sect.I, A; IV, b), but it has in any case been largely due to the high percentage of Blue Whales caught. The nearest approach to the current average, 73.36 barrels, is the figure, 66.0, for 1917/18, another year in which Blue Whales formed a specially high percentage of the total catch. Mr. Binnie makes the important statement (Sect.VI, C, v.) that Blue Whales captured during May yielded up to and over 200 barrels each. It may thus be hoped that the improvement in the current season is not the greatest possible. It is significant, as shown by Table VI,

that

that the oil-production is exactly in inverse proportion to the total number of whales caught, a relation which has often been noted in earlier Reports. The least satisfactory result was that of the Southern Company, which captured more than 200 whales in excess of any other Company, and is censured for having permitted waste (Sect.VI, C. iv). There is evidence, moreover, that the good oil-production of the Companies generally was realized at the expense of the Guana (Sect.VI, C. iii); and it seems clear that the Whaling Companies should be kept up to the mark in all possible respects by being prevented from killing more whales than can be dealt with completely.

C. Mr. Hamilton's information, under Sect.I, A, confirming the substantial accuracy of the whalers' statistics, is important. The explanation he gives with regard to the loss of small foetuses by post mortem abortion also has a significant bearing on the interpretation of the statistics. Under C. of the same section will be found his remarks on certain discrepancies between his own figures and those derived from the study of the statistics.

D. South Shetlands 1920/21 (Sect.I, C). Mr. Hamilton supplies the total numbers of three species of whales captured during February and March, 1921, to complete a deficiency which had been noticed on p.1 of the Report Oct.18, 1921.

E. Whaling in Northern Waters (Sect.I, E). Mr. Hamilton states that no whaling was carried on
by

by Companies belonging to the Norwegian Whaling Association, in the Atlantic Area, during 1921.

F. Seychelles Islands Sperm Whaling (Sect.II).

Further information is given on this subject, and the proposed imposition of a size-limit of 25 feet for the Sperm Whale is noticed and discussed.

G. South Africa (Sect.III). The substitution of a Committee for the proposed Commission to enquire into the Whaling question is recorded.

H. Legislation. The beneficial effect of the new Antarctic Regulations in reducing waste is noticed (Sects.I.B, IV.B, IX.B) together with the conditional permission to re-commence the capture of Humpbacks (Sect.IV.A).

I. Payments for obtaining specimens of the smaller Antarctic Cetacea. (Sect.V.) The proposed scale is indicated, with the intimation that the Museum will have to bear the expenses of freight in future. The proffered assistance of the Governor of the Falkland Islands is gratefully acknowledged, and it is noted that specimens thus obtained are to be registered as gifts of the Government of the Colony of the Falkland Islands.

J. Monthly occurrence and movements of Whales (Sect.VI, C, v.). The information given by Mr. Binnie on these subjects is very useful, and it may be hoped that he will continue to supply particulars of this kind.

K. Right Whales (Sect.VI, C, v.). Mr. Binnie's
record

record of numerous Right Whales, off South Georgia, in April and May, 1922, is of special interest. In April they were seen within a few fathoms of the beach. The capture of this species is at present prohibited.

L. Sei Whales (Sect.VI, C. (ii), Table II). Whales of this species were specially numerous, off South Georgia, in April and May, 1922.

M. Humpbacks (Sect.VI, C (v)) The capture of these whales was prohibited during 1921/22, but large numbers were seen off South Georgia.

N. Sperm Whales (Sect.VI, C (v).) This was also a prohibited species, but a certain number were seen off South Georgia.

The Director requests permission to forward a copy of this Report to the Colonial Office, and to take any other action that may be necessary.

(Signed) S. F. HARMER.

749/23.

7th November, 23.

Gentlemen,

I am directed by the Acting Governor to attach an extract from a memorandum by the Director of the British Museum relating to various aspects of the whaling question and to request that the publications to which reference is made may be obtained and forwarded.

I am,

Gentlemen,

Your obedient servant,

G. R. L. Brown.
for Colonial Secretary.

The Crown Agents for the Colonies,
4, Millbank, Westminster,
London, S.W. 1.

EXTRACT FROM MEMORANDUM BY THE DIRECTOR OF THE
BRITISH MUSEUM 27th March. 1923.

Sect. VIII. Norwegian Press Comments.

An article entitled "Is the Whale being exterminated?" has recently appeared in the Anglo-Norwegian Trade Journal (Vol.9. February, 1923. No. 98) commenting on a lecture which was delivered by the Director before the Association of Economic Biologists, as reported in abstract in "Nature", Vol. 110, Dec. 16, 1922, p. 827. The lecture formed the basis of an article which was published in "The Morning Post" on the importance of taking steps for the protection of whales. The matter has aroused considerable interest in Norway, where large trade-interests are involved, and a further statement of the subject is promised by the Anglo-Norwegian Journal.

The number containing this statement.

3



ALL COMMUNICATIONS
TO BE ADDRESSED TO THE
CROWN AGENTS FOR THE COLONIES,
THE DATE OF THIS LETTER BEING QUOTED,
AND THE FOLLOWING REFERENCE: 18 G/Falkland 1723.
TELEGRAMS, "CROWN, LONDON."
TELEPHONE, 7730 VICTORIA.

4, MILLBANK,
WESTMINSTER.
LONDON, S.W. 1.

28th January 1924.



Sir,

Referring to your letter No. 749/23 dated the 7th November, I have the honour to enclose cuttings from the Anglo-Norwegian Trade Journal dealing with the whaling question, togetherwith the copy of "Nature" asked for. The cost of the latter is one shilling, and this amount will be found debited in our accounts for January.

I have the honour to be,

Sir,

Your obedient Servant,

for Crown Agents.

The Colonial Secretary,
Falkland Islands.



Anglo-Norwegian TRADE JOURNAL.

OFFICIAL ORGAN OF THE

Norwegian Chamber of Commerce, London,
INCORPORATED.

Registered Offices: NORWAY HOUSE, 21/24, COCKSPUR STREET. LONDON, S.W. 1.

Vol. 9

February, 1923.

No. 98

NOTICES.

Articles appearing in this Journal do not necessarily express the official views of the Chamber.

ANNUAL SUBSCRIPTIONS to the Chamber become due on 1st January. The office work of the Chamber will be much facilitated if Members will be kind enough to (1) now remit the amount, and (2) give their Bankers standing instructions to remit regularly on the 1st January each year. Cheques should be crossed "Hambros Bank Limited."

CORRESPONDENCE & INFORMATION.—The Journal is issued in furtherance of the Chamber's principal objects, which, stated briefly, are the extension of trade relations between Norway and the British Empire, and the promotion and strengthening of a good understanding between the two peoples. Readers in all parts of the world are cordially invited to submit for consideration of the Editor letters discussing matters coming within the scope of these objects, also to send news and information likely to interest other readers.

ADVERTISEMENTS.—Firms and Companies will find the Journal an excellent medium for keeping their business announcements before existing and prospective clients. The advertising rates (which are moderate) will be gladly furnished by the Secretary.

W. A. MASSEY & SONS,
HULL,

GOOLE, GRIMSBY & IMMINGHAM.

Telegrams—"MASSEY"—at each Port.

SHIPOWNERS & BROKERS,

Shipping, Chartering & Forwarding Agents

**AGENTS FOR THE SALE AND PURCHASE OF
EVERY DESCRIPTION OF SHIPPING PROPERTY.**

Steam Trawlers, Herring Drifters, and other
Fishing Craft a Speciality.

Coal and Coke Exporters and Bunkering Contractors.

[107]

IS THE WHALE BEING EXTERMINATED?

In November last Sir Sidney F. Harmer, F.R.S., Director of the National History Departments of the British Museum and a member of the British Inter-departmental Committee which reported in 1919 upon the whaling industry in the Antarctic, read before the Association of Economic Biologists a paper on the present position of the whaling industry. The paper has not been published, but its substance was recorded in the well-known scientific journal *Nature*, and from the report in that excellent publication the following extract is now reproduced. Part of the report not reproduced relates only to the early history of this centuries-old industry:

Modern whaling is concerned mainly with the humpback whale, the fin whale, and the blue whale, all of which are widely distributed in nearly all seas, although it is not certain whether each of these whalers' names indicates the same species in all parts of the world. After rorquals had been hunted in such localities as the Varanger Fjord, Newfoundland, Iceland, the British and Norwegian coasts, and elsewhere, whaling on an unprecedented scale commenced off the edge of the Antarctic Continent in 1905, and is still being conducted energetically. The total catch in this area has exceeded 10,000 in a single year. . . .

With the exception of the Antarctic whaling, which has had a career of less than twenty years, whaling has been carried on consistently to an excessive amount, leading to the most serious reduction of the number of whales. The Atlantic and Greenland right whales were decimated almost to the point of extermination, the sperm whale industry has practically disappeared, and little remains now but the Antarctic whaling grounds. The efforts of all lovers of Nature should be directed to the restriction of whaling to an amount which is not inconsistent with the permanent preservation of these magnificent marine mammals and of the industry which they are so unfortunate as to support.—*Nature*.

ALARMIST SUGGESTIONS.

Basing its remarks upon the last sentence in the above report, the *Morning Post* recently published under the heading, "The Whaling Industry: How long will it last?" an article in which—after referring to "relentless, reckless, and insensate slaughter" of whales in the southern seas, and after stating its belief that the Colonial Office was "taking steps to control the 'fishing'"—it hoped that the number of vessels engaged would be reduced and that floating factories would be prohibited.

As summaries of the article telegraphed to the Norwegian press naturally attracted considerable attention in whaling circles the article is reproduced here *in extenso*. It appears to have been worked up from the well-known blue-book of a few years back with the addition of a sprinkling of somewhat immoderate and alarmist references—unsupported by any sort of evidence—to possible depletion.

In a recent lecture, before the Association of Economic Biologists, on the present position of the Whaling Industry, Sir Sidney Harmer insisted that the efforts of all lovers of Nature should be directed to the restriction of whaling to an amount which is not inconsistent with the permanent preservation of these magnificent marine animals, and of the industry which they are so unfortunate as to support.

This industry is now mainly confined to the South African coast and the Antarctic seas; areas unexploited by whalers till 1905. Since then, till now, slaughter on a scale unprecedented in the annals of whaling has been relentlessly and recklessly prosecuted.

DIMINISHING NUMBERS.

When the Antarctic "fishery" commenced, from whaling stations established at South Georgia, humpback whales and orquals swarmed there. During the first few years the first-named species was alone pursued. Up to 1913, they were killed in thousands. From that time their numbers began seriously to diminish, so that it became necessary for the whalers to turn their attention to the more agile orquals, which in turn became subjected to the same devastating pursuit.

That men of science look upon this insensate slaughter with feelings of horror and disgust goes without saying, for unless immediate and drastic measures are taken to restrain those engaged in this industry "balcen" whales will soon share the fate of the dodo and the great auk. For the hand of the destroyer leaves these creatures no chance of recuperation. They come down from the coasts of South Africa, lean and hungry, to feed on the swarms of minute crustacea, known to the whalers as "kril." For here only, in the great wide sea, do these tiny creatures find such favourable conditions. For three or four months these leviathans of the deep gorge themselves, and, having waxed fat, return northwards to breed. Here they are no less harassed from a series of stations established from Portuguese West Africa, south and eastwards to Durban.

A RAY OF HOPE.

The humpbacks again suffer first. They are easily approached and slain during the pairing season, and the cows and calves are no less easily victimised later.

But there remains a ray of hope that at least a remnant may be saved. South Georgia is one of the Dependencies of the Falkland Islands, which is under our control. And we believe that our Colonial Office has taken note of the matter and is taking steps to control the "fishing." We trust that the number of vessels engaged will be reduced, and that "floating factories" will be prohibited. Though to effect this it will probably be necessary to secure international agreement.

The whalers themselves endeavour to explain the falling off of the number of humpbacks killed during the last few years by urging that these creatures have sought other hunting grounds. These have no existence in fact. Whales, like all other creatures, must eat to live, and such as live south of the Equator can find a sufficiency only in Antarctic waters. They can be saved from annihilation only by absolute protection in their breeding area, and at least partial protection in their feeding area.—*Morning Post*

THE QUESTION UNDER INVESTIGATION.

The matter of the preservation of the whaling industry is one which, for some years has had the careful attention of British Government departments, whose investigations have been willingly assisted by the industry. So far as our information goes, on the question of serious diminution of stock, judgment should be suspended and accusations of "insensate slaughter, arousing feelings of horror and disgust" should not be swallowed too readily. In such a setting the mention of the killing of 10,000 whales is liable to present a distorted picture, such as might also be suggested by a similarly presented record of the number of cattle killed to provide a large town with meat.

Whether steps should be taken to protect the stock of whales from diminution is a question yet to be decided. Obviously, nothing could be more dangerous to the industry itself than that the whale should be exterminated; that is why the whaling companies cheerfully pay on each barrel of oil a contribution towards the expenses of further scientific research

to decide the question. Some Norwegian experts are of opinion that there is no danger. Further, they aver that from the point of vantage from which alone operations can take place, they are able to reach only the edge of the routes followed by whales on the way south. We have heard reports of shoals of whales so great that the whole surface of the sea was alive as far as the eye could see in every direction.

The Colonial Office can hardly have felt certain of any likelihood of extermination, because since the present investigations commenced it has granted additional licences to British companies.

With regard to floating factories, as is well-known, these are operated from South Shetland, while at South Georgia the whales are brought into land stations. This latter method is the better, but probably has not proved practicable at other places, otherwise it would undoubtedly be adopted. The floating factories have been continuously improved with the object of more economic utilisation of the products.

We hope to be able shortly to place before our readers a statement of the situation as it is viewed by those who, over a long period, have been in touch with this question on its scientific as well as on its commercial and industrial side.

NORWEGIAN—U.S.A. SHIPPING ARBITRATION.

The American Government's proposal to honour the Hague award has now been accepted both by the House of Representatives and by the Senate.

NORWEGIAN CUSTOMS TARIFF.

Dating from the 9th February, 1923, all dutiable goods imported into Norway are subject to a temporary supplement of 20 per cent. on the calculated amount of duty to which they are ordinarily liable. Excepted from the supplement are the following goods:—

No. in Tariff.		No. in Tariff.	
163	Fruits 1a.	327	Cork, B.a.2.
164	" 1b.	532	Nuts, a.
165	" 1c.	591	Rice, not shelled, loose.
171	" 2c.	592	" " " " packed.
172	" 2d. raisins.	593	" shelled.
174	" 2f.	773	Wine, 1a.
175	" 2g almonds.	774	" 1b.
223	Vegetables 1b.	775	" 2a.
229	" 3a.	66	Spirits, 1.
326	Cork B.a.1.	67	" 2.
298	Coffee, raw.	686	Sugar and Syrup.
299	" "	687	" " "
300	" roasted.	689	" " "

The Customs Department (in pursuance of authority received) has decided that all fishing tackle intended for direct use as such, and materials therefor (but excepting tackle for sports fishing and materials for same) shall be exempt from the above-mentioned supplement.

The temporary rates of duty shown in "Supplement to the Customs Tariff" are also subject to the said supplement of 20 per cent., with the proviso that the duty payable shall in each case amount to at least the regular duty to which the goods would be liable if charged by weight or by the piece as the case may be.

A NEW ANTARCTIC EXPEDITION.

By ROWLAND DARNLEY (*Colonial Office*).

Reproduced from *The Nineteenth Century and After* by courtesy of the Editor and the Author.

I

In the spring of 1920 a Blue Book* was published dealing with research and development in the dependencies of the Falkland Islands. No great notice was taken of it by the public, which does not expect to find interest in Blue Books, and would, indeed, have had to embark upon a minor research to find the interest in this one: but, concealed in a somewhat unwieldy body, this Blue Book had a soul, and that consisted in a proposal for the employment of research ships on a scale comparable with the expeditions of the MICHAEL SARS or the CHALLENGER.

Many projects that have died an early death from financial starvation are embalmed in Blue Books, but this proposal has the means of support behind it in the shape of a great whaling industry, and adds nothing to the burdens of the home Treasury. It is true that the cost of shipbuilding has remained so inordinate that the proposal has undergone curtailment, at least temporarily; but at the present date the funds in sight have proved adequate to justify the purchase of the DISCOVERY, although she will need extensive reconstruction.

There could be no surer way of diminishing the utility of the scheme than by restricting it entirely to researches with immediate economic aims, and there was, and is, no intention of doing this. Nevertheless, it must be recognised that the whaling industry of the dependencies, which pays the piper, will call a good many of the tunes; and it is, therefore, well to prefix to these remarks a brief account of that industry. In the Book of Job we find the inquiries, "Canst thou draw out leviathan with an hook? . . . Canst thou fill his skin with barbed irons?" For several centuries these questions might have been answered in the affirmative as regards whales which float when dead, but not until the Norwegian, Svend Foyn, invented the harpoon gun in 1865 could it be so answered for those which normally sink when they are killed. Nearly all the whales found in the dependencies are of the latter class, and Svend Foyn's invention when perfected rendered possible the rise of a great new industry, by which his countrymen continue to benefit to this day. That industry started in South Georgia in 1904, and in the South Shetlands in 1906, and its products already exceed £25,000,000 in value. Among its pioneers the most notable names are those of Mr. Alexander Lange, who died lately in Norway, and Captain C. A. Larsen, who is still in the full tide of activity and enterprise. Captain Larsen has another title to fame, derived from his wonderful voyage on the JASON in the Weddell Sea. Now the Weddell Sea is to ships what the Bight of Benin used to be to travellers:

Beware and take care of the Bight of Benin,
For one that comes out there are forty go in.

But the JASON came out, after a voyage described by Fricker as the most important since those of Ross.

The local whaling industry is almost confined to the two dependencies already mentioned, although it is

*Report of the Inter-Departmental Committee on Research and Development in the Dependencies of the Falkland Islands (Cmd. 657).

occasionally pursued also in the South Orkneys and in the Falkland Islands themselves. The main objects of attack are the humpback, the fin, and the blue whales, scientifically known as *Megaptera nodosa*, *Balænoptera physalus*, and *Balænoptera musculus* respectively. In the early days of the industry the catch consisted almost entirely of humpbacks, the smallest of the three varieties; later on the catch of fin whales increased, exceeding in 1913-14 that of any other kind; and since 1913-14 the proportion of blue whales caught has become large. The blue whale is the greatest monster of the deep, ordinarily 90 feet long, and occasionally 100 feet. Apart from other causes which may have affected the relative numbers caught of each species, it is clear that the earlier types of whaling steamer were too small to cope effectually with blue whales, while recently humpbacks have been protected in the belief that they had been overfished. All three species of whale belong to the family of fin whales, in which the whalebone is of little value, and although there are several minor products of the industry, its mainstay is whale oil, which has usually brought in over 95 per cent. of the takings. This oil is used for lubrication, fibre dressing, and currying leather, but principally for making soap, and, since the development of the hydrogenation treatment, for the manufacture of edible fat. During the war whale oil assumed great importance for the manufacture of glycerine for explosives, and the entire output of the dependencies was acquired for this purpose.

In the seventeenth, eighteenth, and early part of the nineteenth centuries Britain took a leading part in the whaling of the day, which consisted chiefly in the pursuit of "right," or whalebone, whales in the waters of Spitsbergen and Greenland. The pioneers were the Company of Muscovia Merchants, who despatched the MARY MARGARET to Greenland in 1611, under the command of Thomas Edge, and carrying six Biskayners experienced in whaling. In 1622 Captain Edge furnished a description of eight varieties of whale found off Greenland and an account of the methods of hunting them and boiling down the blubber, to which he added a number of quaint drawings. The new industry thrived, and two centuries later was still in full swing. In 1820 Captain W. Scoresby, F.R.S.E., published a complete treatise on whaling, dealing fully with the capture of whales, their cutting up, or flensing, the packing of the products, and their subsequent manufacture in the United Kingdom. Beautifully illustrated, provided with minute diagrams of all apparatus, and illuminated by all the scientific knowledge of that time, this book still remains unrivalled in whaling literature. But the glory has departed, "right" whales are nearly extinct, the British practical whaler is no more, and Svend Foyn's invention, with its subsequent development in Norwegian coastal whaling, has had the not unnatural result that technical skill in modern methods of whaling with the harpoon-gun is almost confined to his countrymen. There is much British capital embarked in the industry, but scarcely any trained British personnel. As the whaling industry is the main support of several Norwegian towns, it cannot be expected that the Norwegians should show much zeal to teach others their means of livelihood, while the British seaman is disposed to

prefer the comfort of a roomy fore-castle in a comparatively steady vessel to a life of pitch and toss on a whale-catcher not more than 100 feet long, and abnormally unstable, because she is made without a keel, so as to turn quicker in pursuit.

Those who would take to whaling must expect not only hardship, but adventure also, and more of both than is necessarily involved in life on small vessels in unchartered seas. On a calm day, in the waters of the South Shetlands, an astonished captain beheld a huge sea, a veritable wall of water, bearing down on his little craft. With the presence of mind universal in his profession, he gave instant orders to the helmsman to put her nose on to the wave. This, no doubt, saved the vessel from complete destruction, but notwithstanding masses of water swept her from end to end, destroying the bridge and injuring all on deck. No other waves followed, and the vessel limped home unmolested for repairs. The cause of the occurrence was never certainly known, but was believed to be a submarine volcanic eruption.

On another occasion an enraged sperm whale succeeded in charging the vessel with so much effect that one of her steel plates was deeply dented, sixty rivets were started, and the fore-castle filled with water so fast as to necessitate a hasty return to harbour.

Although the whales are caught mainly on the high seas, the industry cannot profitably be carried on without the use of harbours, in which the carcasses can be cut up and boiled down, either at factories on land or upon specially equipped vessels known as floating factories. This need for harbours renders the industry amenable to the control of the local Government, in this case that of the Falkland Islands. The nearest foreign harbours are Chilean, and are too far from the haunts of the whales. Accordingly the problem of controlling the industry fell to Britain.

Reference has already been made to the collapse of the Spitsbergen and Greenland whaling industry owing to the practical extinction of the quarry, and the history of whaling is full of similar instances. It may be inferred that the industry in the dependencies is subject to a like peril, and it is the part of wise government to investigate the problem and, if possible, to take measures to obviate the danger. But when the Colonial Office, in co-operation with the local Government, came to consider the matter, it was confronted by a mass of opinions, often interested and usually conflicting, which proved upon inquiry to have but a slender basis of ascertained fact. A review of the position disclosed that most of the information necessary for framing a scientific policy remained to be acquired. The whales appeared in the waters of the dependencies in widely varying numbers at uncertain times during the Southern summer. The migrations of the fin and the blue whales at other seasons of the year were quite unknown. There were records of a migration of humpbacks up and down the West Coast of Africa in the Southern winter, or English summer months, but these migrants had not, and have not, been identified with the schools of humpbacks hunted in the dependencies. The anatomy of whales was well understood, but there was complete ignorance of their breeding habits. The period required for a whale to reach maturity was variously estimated at from five to fifty years.

Most important of all, it was not clear whether the whales seen and hunted every year in the dependencies constituted the entire stock, or whether, as Dr. Hjort and other Norwegian authorities believed, these whales were merely a small fraction of a stock widely distributed in the Southern circumpolar regions, forming a reservoir from which the visible stock in the dependencies was continually replenished.

The financial success of the pioneers led to a flood of applications for whaling facilities, and it soon became clear that without the gravest risk the exercise of control could not be deferred pending the settlement of these difficult scientific questions. The prevention of waste and the protection of female whales accompanied by calves were obviously desirable measures, but, clearly, it was also necessary to restrict the total catch. The Government decided to effect this by limiting the number of the small steamers provided with harpoon guns which actually catch the whales. The system was embodied in leases, licences, and legislation, and has been steadily maintained. But it has always been recognised that this system, although framed in the light of the best technical opinion, lacks a firm basis of definite scientific knowledge.

The need for obtaining such a basis has been kept constantly in view, with the object, not only of safeguarding the existing industry against collapse, but also of ascertaining whether it could safely be extended. Before the war arrangements were made for collecting measurements and other statistical data at all the whaling stations. Major G. E. H. Barrett-Hamilton, a well-known biologist, was despatched to South Georgia to study whaling on the spot, and a committee was appointed to collect information in London. Major Barrett-Hamilton did work of much value and greater promise, but his labours were brought to an end at an early stage by his premature death in the dependency. The work of the committee was suspended on the outbreak of war. Towards the end of the war another committee was appointed with a wider scope, including not only whaling, but other industries present or possible in the dependencies, and also the question of what purely scientific investigations are most required in connection with those regions. This was the committee which published the report of 1920 and recommended the employment of research ships. In the meantime a measure had been adopted to provide the necessary funds by increasing the local export duty on whale oil, and these funds have now accumulated sufficiently to enable the matter to be taken in hand seriously.

Under the guidance of Sir Sidney Harmer, who has made the subject of the biology of whales peculiarly his own, the committee arrived at the conclusion that the solution of the many problems regarding these animals which required elucidation could only be obtained by means of investigations conceived on broad lines, and it is accordingly contemplated that the research ship should not merely pursue the direct study of whales both in the waters of the dependencies and in other seas, but should avail itself of all the resources of oceanography and meteorology for the study of whale food, the temperature, salinity and currents of the sea, and the ice and climatic conditions which might have a bearing on whaling. Among the

many lines of research which present themselves, one of the most important is the study of the geographical distribution and migration of the stock of whales which is at present known only at the points of attack in the dependencies. That will involve prolonged voyages, not improbably extending to the tropics. In this connection it is of vital importance to discover a practical method of marking whales, so that means may exist of tracing the migrations of individual specimens. Several experiments for this purpose have been conducted since the committee reported, and at present the most promising method appears to be the employment of small darts fired, not from a gun, but from an imitation of the mediæval cross-bow. But the matter is not one in which success is likely to be easily attained.

The study of geographical distribution and migration can conveniently be combined with the oceanographical and meteorological work already mentioned, and with the study of the food and the natural enemies of the whale. The humpback, the fin, and the blue whale are all nourished by the floating organisms known as plankton, and, it is believed, mainly by minute crustacea (such as *Euphausiidae*). These are strained from the sea water in great quantities by means of the whalebone of the mouth. Accordingly it may be expected that much light will be thrown on the distribution of whales by the study of plankton, its composition and seasonal and local occurrence. But that study is so large that care will be required to keep it within practical and immediately valuable limits.

In the records of early travellers in China we find mention of a Chinese method of execution in which 3,000 gobbets of flesh were abstracted from the victim before he expired. Some similar fate occasionally overtakes a whale which is attacked by a party of killer whales or grampuses (*Orca gladiator*). These ferocious creatures are abundant in Antarctic seas, and, while it is believed that they are seldom successful in slaying large whales, they may kill calves or frighten whales from their usual feeding grounds, and for this and other reasons deserve some attention.

The breeding habits of the whale especially need study both by direct observation from the research vessel and by work at the whaling stations in continuation of that begun by Major Barrett-Hamilton. Most of the females caught in the waters of the dependencies are pregnant, and the study of foetal lengths, together with the facts that pairing has seldom been observed there and birth never, has led to the belief that both normally take place elsewhere probably in warmer waters nearer the Equator during the Southern winter. It is also probable that the period of gestation does not exceed twelve months, and that it is not far short of that period in the case of the blue and the fin whale, although the humpback may have a somewhat shorter period. Observations made in the Pacific and on the African coast indicate that whales migrate in winter towards the Equator, mainly for the purpose of breeding, and in summer towards polar waters, where food is abundant and the whales rapidly fatten. But this has not been verified for the whales of the dependencies, and their migration routes and breeding grounds remain to be discovered. Nor is it known whether the females usually breed annually or at longer intervals.

(To be continued).

LEGAL CASE.

Charter Party.—Freight.—Bunker Coal Price Clause.
William Hansen, Bergen v. Gabriel, Wade & English,
Limited, London. King's Bench Division, 16th and
17th May, 1923.

In February, 1920 at a meeting between Scandinavian shipowners and representatives of the timber trade in the United Kingdom it was agreed that the following clause should be inserted in all charter-parties :

If and when good class bunker coal ordinarily used in this trade is reduced to 80s. per ton the freight to be 10s. per standard less.

In March, 1920, the North of England United Coal Associations and the Monmouth and South Wales Association issued a circular wherein they agreed to provide bunker coal at certain prices (the highest being 80s. per ton f.o.b.) for all foreign-going ships.

Under a charter-party dated 12 June, 1920, containing the above-mentioned clause the plaintiff carried in the steamship AGGA a cargo of timber to Wisbech. On June 30 and July 1, 1920, the steamship was bunkered at Middlesbrough, but suitable coal not being available from collieries usually supplying bunker coal at Middlesbrough the coal had to be obtained from another colliery, and the price therefore included leadage. As the price of bunkers to plaintiff, including brokers' commission and leadage, exceeded 80s. per ton he contended that the above-mentioned clause was not applicable, and now claimed £296, balance of freight. He admitted that bunkers could have been obtained at the Tyne for 80s. per ton, but contended that the clause must be construed with reference to the port at which it was contemplated bunkers would be taken and there was no obligation to go to the Tyne.

In giving judgment, Mr. Justice Bailhache said it was necessary to decide whether the brokers' commission ought to be included in the price. Whilst hearing in mind that it was necessary for a foreign owner to buy through a broker, he came to the conclusion that the price referred to in the clause was the colliery price exclusively, and that, therefore, the commission should not be included in the price. As the exclusion of the commission reduced the price below 80s. per ton it was not necessary to decide whether leadage should be included, but if it were necessary to decide the question he would have included the leadage in the price, as the leadage was incurred through circumstances peculiar to the port, i.e. the failure of local and usual sources of supply at Middlesbrough, and not through circumstances peculiar to the ship.

Judgment was accordingly entered for the defendants with costs.

Solicitors : Botterell & Roche for plaintiff ; Trinder, Capron, Kekewich & Co. for defendants.

IS THE WHALE BEING EXTERMINATED?—A Colonial report just issued upon the "Falkland Islands and its Dependencies" says that credit must be given to Norwegians for their initiative and energy. The report also states that "it is not yet proved that whaling in these waters will, as has happened elsewhere, exhaust the supply."

the welfare of the sailors, is the fact that, after the war, Kr. 15,000,000 was set aside for the benefit of Norwegian sailors and for their survivors. Sundry of the federation's sources of income are also devoted to the same purpose.

LEGAL CASE.

Charter Party.—Insurance in kroner or sterling?—Larsen v. Anglo-American Oil Company, Limited.—King's Bench Division, 19th-22nd June, 1923.

In this case H. Westfal-Larsen, Bergen, claimed to recover damages suffered by him as a result of defendants having insured the steamer *MALMANGER*, chartered by them, for an amount in sterling (£117,650) instead of for Kr. 2,000,000, as provided by the charter-party. Defendants, while denying that a policy in sterling was a breach of the charter-party, claimed that the breach, if any, had been waived by plaintiff's broker in London having accepted tender of the covernote for £117,650 without objection.

Mr. Justice Rowlatt, in giving judgment for plaintiff for the amount claimed (upwards of £19,000), said that if defendants, on finding that they could not effect an insurance in London in kroner, had referred to plaintiff for instructions, it might well have been that plaintiff would have agreed to sterling, but defendants acted without consulting him. The contract referred to kroner and failing circumstances to show that the parties really contemplated kroner or their sterling equivalent, the plaintiff was entitled to kroner.

Some minor points were also decided, partly in favour of plaintiff and partly in favour of defendants.

A stay of execution was granted.

Solicitors: Botterell & Roche for plaintiff; Thomas Cooper & Co. for defendants.

DRAMMENS SPAREBANK 100 YEARS ANNIVERSARY.

In 1822/23, the savings bank idea first took root in Norway, and thus it happens that several important Norwegian savings banks have recently been able to look back upon a hundred years' existence. Among these is Drammens Sparebank which commenced its activities on 31st May, 1823. The start was made in very modest circumstances, but the bank soon proved to have filled a want—it was for fourteen years the only bank in Drammen—and has gradually grown into an institution of great local importance. In connection with its hundredth anniversary, the bank has issued a handsome illustrated book entitled "Drammens Sparebank gjennom 100 aar, 1823-1923," giving an interesting survey of its work, together with biographical and other data concerning its founders and its officials up to the present day. We find in the list of bank's directors the names of many prominent men in Drammen. A table of deposits demonstrates the development of the bank. In 1824 the deposits amounted to Kr. 40,943, in 1835 the hundred thousand mark was passed, and in 1854 the million mark. In 1896 five millions were reached, while there was a rapid increase in the amount of deposits from 1916 (nearly 10 million kroner) to 1922 (Kr. 32,624,842). The bank has in the course of years distributed many gifts for benevolent purposes, amounting in all to Kr. 1,188,614.

A NEW ANTARCTIC EXPEDITION.

By ROWLAND DARNLEY (*Colonial Office*).

Reproduced from *The Nineteenth Century and After* by courtesy of the Editor and the Author.

II.

It was formerly supposed that whales grew very slowly, but there is now an accumulation of evidence to show that the contrary is the case, and that the young of the larger species, at least soon after birth, grow at the rate of several feet a month. Fœtuses up to 29 feet long have been found, and have presumably reached that length in less than twelve months. The observations published by Mr. R. C. Andrews in 1914, relating to calves of the Pacific Grey Whale, and those published by Dr. Hjort, relating to a whale calf seen at intervals in Norwegian coastal waters, go far to prove this point. But the differences in the rate of growth of the various species remain to be studied, and neither the time required to attain maturity nor the ordinary duration of life is known for any species.

It will be realised that extensive inquiries from many different standpoints will be required before the protection of whales can be placed upon an unassailable basis of scientific fact. The antecedent of a sound conservation policy for any living things, whether they are trees or whales, is to know the annual increment and the conditions of reproduction. Both are essential, for the former will fail if the latter are not properly safeguarded.

We have now indicated the nature of the inquiries into whaling which are the primary object of the researches. Let us glance at the area constituting these dependencies and note what opportunities it offers for other inquiries.

The dependencies of the Falkland Islands consist of all the land between longitudes 20° W. and 50° W. south of latitude 50° S., and between longitudes 50° W. and 80° W. south of latitude 58° S. These boundaries include a sector of the Antarctic continent stretching to the Pole, the territory known as Graham Land, which may or may not be continental, and a number of islands, of which the most important are South Georgia, the South Shetlands, the South Orkneys, and the South Sandwich Islands. The whole area amounts to about three million square miles, or 1½ per cent. of the surface of the globe. It includes about one million square miles of sea, fairly accessible for whaling, sealing, and fishing. Naturally most of this is outside the three-mile limit, but, as Britain possesses all the harbours in the vicinity, it is not likely to be invaded by foreign enterprises other than such as can obtain British concessions. Apart from a small sea elephant industry in South Georgia, the only industry now carried on in the area is whaling. With these exceptions, the area may be regarded as a vast undeveloped marine estate, teeming with fish, penguins, and hair seal.

With this area it will, for some purposes, be convenient to consider the Falkland Islands themselves and the adjacent waters. Indeed, from the fishery point of view, it is the waters between the Falkland Islands and the south-eastern coast of South America that appear, upon present information, to be the most promising. There are large grounds where the sea

bed is at a depth suitable for trawling operations, and the general character of which resembles that of grounds in the Northern Hemisphere, which are known to be the site of large fish populations. Shoals of fish have been observed, and many fish of edible species, chiefly *Notothenidae*, have been taken with the line. Not far away, in Argentina, Uruguay, and Chile, markets are available which at present have to import large quantities of salt fish from Europe.

But in these waters there has been a complete absence of experiments with commercial gear, or even with small otter trawls, and such experiments are an essential preliminary to any attempt to estimate the commercial value of new fishing grounds. The research vessel will probably for a long while to come be too fully occupied to undertake work of this kind, and in any case she would be quite unsuitable for making a thorough trial of the grounds. An experimental trawler would probably be necessary. The Colonial Research Committee has repeatedly given publicity to the subject in its annual reports, but up to the present no fishing firm has moved in the matter.

The waters of the dependencies area are known to abound in fish, but it can hardly be expected that in the near future these fish will be put to any use other than to furnish a change of diet to people whose avocations take them into that area.

Of sealing in the dependencies James Weddell wrote in 1823 that the number of fur seals taken in 1821-22 at the South Shetlands might be estimated at 320,000, besides 940 tons of sea-elephant oil. He adds:

This valuable animal, the fur seal, might, by a law similar to that which restrains fishermen in the size of the mesh of their net, have been spared to render annually 100,000 furs for many years to come. This would have followed from not killing the mothers till the young were able to take the water, and even then only those which appear to be old, together with a proportion of the males . . . The system of extermination was practised, however, at Shetland.

The fur seals thus wantonly attacked have entirely disappeared from the dependencies. A few survive on islands adjacent to the Falkland Islands. These are so costly to protect that until recently they were left exposed to the attacks of raiders. It has now, however, proved possible to provide protection, and the rookeries are being carefully guarded, and have been placed under the supervision of a trained naturalist, Mr. J. Erik Hamilton. But they will require nursing for many years before they become of much economic value.

The sea elephants have also disappeared almost completely from the South Shetlands. In South Georgia, however, owing to protection, they are to be found in large numbers which show no sign of diminution.

The other species of seal surviving in the dependencies are the sea lion, sea leopard, Ross seal, and Weddell's seal, all falling under the category of hair seals. Their capture is forbidden, except in the case of the sea leopard. Further inquiry may reveal the possibility of starting an industry in hair seals without endangering the stock, but these animals are of no commercial use except for oil, and yield but little of that. It may be that the sea leopard, a ferocious beast of prey, could be exterminated with positive advantage.

Perhaps the most important question in regard to seals in the dependencies is that of the possibility of

re-establishing the fur seals in the South Shetlands, which at one time swarmed with them.

All the dependencies area abounds in penguins, and reindeer have been successfully introduced into South Georgia.

Leaving now the biological side of the subject, it remains to mention what other tasks might usefully be undertaken by the research ship. The principal heads are oceanography, meteorology, magnetism, geology, and hydrographic survey. Oceanography has already been dealt with in its bearings on whaling, but there will be opportunity for further work, such as deep sea sounding and the collection of samples of the sea bottom. The facilities afforded to meteorology by a roving vessel will be limited, but meteorological observations, particularly in regard to ice conditions, will certainly throw light on whaling, and the general scientific prospects were sufficient to induce Sir Napier Shaw to recommend most strongly that the research ship should carry a trained meteorologist, furnished with special equipment. Valuable results have been obtained in somewhat similar circumstances by Mr. Alexander Buchan from the voyage of the *CHALLENGER*, and by Major G. I. Taylor from that of the *SCOTIA* in 1913.

As regards magnetism, the Astronomer Royal has represented the need for making observations both at new sites and at sites where observations have previously been made, in the latter case for the sake of the determination of the secular changes in the magnetic elements. For reasons of economy it will not be possible to provide a non-magnetic ship, and accordingly the more important magnetic observations will have to be made on land.

As regards geology, it cannot be said that the prospects of discovering payable minerals are alluring. The more accessible areas have been prospected without result and it would, indeed, be a valuable mineral that would be worth extracting from beneath some hundred feet of moving ice, a condition common enough in Graham Land. The Falkland Islands have just been carefully examined by Dr. H. A. Baker, who has ascertained that from their Gondwana beds the strata in which coal elsewhere occurs are missing. Geological investigations in the dependencies are not unlikely to remain of purely scientific interest, but that interest will be considerable, and the South Sandwich group contains a remarkable series of islands actively volcanic, which are at present geologically known only through a few specimens collected by laymen.

The coasts of the dependencies, even those most frequented by whaling vessels, have never been properly surveyed, and are very poorly charted. Many accidents have occurred from the lack of good charts, and insurance rates are correspondingly high. A hydrographic survey is accordingly much needed, but presents somewhat serious difficulties. It would make large demands on the time of the research ship, and would be incompatible with the intensive study of whales. Moreover, trained marine surveyors are obtainable only from the Admiralty, and the Admiralty staff is very fully occupied. It seems certain that survey work must be postponed, and it may have to wait until a second ship can be obtained.

The question of providing a suitable vessel to carry out the researches has been one of great difficulty. The cost of building seemed likely to prove so heavy as to cripple the finances of the expedition. Only wooden ships are suitable for ice navigation, and wood shipwrights have grown so scarce that building must be very slow. Among existing vessels only the *TERRA NOVA* and the *DISCOVERY* appeared thoroughly suitable. But the difficulty has now been happily solved by the purchase of the latter vessel. At present she is little more than a hulk, and her after-part is so rotten that it will have to be renewed almost entirely. But her formidable bow, in spite of past encounters with the heaviest ice, is still sound; and expert opinion is unanimous that by extensive reconstruction she can be made as good as new, though at no little expense. The reconstruction will now be put in hand under the supervision of Sir Fortescue Flannery, and it is hoped that it can be completed in about nine months.

The *DISCOVERY* is a roomy ship of over 400 tons net, and Captain Scott described her as the finest vessel ever built for exploring purposes. But experience discloses some scope for improvement in the best of ships, and Captain Scott pointed out that she was a slow sailer, under-canvased and under-masted, and that the masts were stepped too far aft. Her masts will in any case need to be replaced and the opportunity will be taken to remedy these defects.

With a vessel such as the *DISCOVERY*, the expedition should achieve the greatest safety attainable in circum-polar waters, but in any case it is not contemplated that it will incur such risks as those which were inseparable from the voyage of Captain Scott. The safety of the ship will be the first consideration, and, although physical adventures will probably not be lacking, they will, as far as possible, be avoided. But it would be hard to overrate the splendour of the opportunity for spiritual adventure which will be afforded to fresh minds eager to penetrate into the unknown, and we can confidently anticipate that it will develop men not unworthy to be mentioned in such company as that of Darwin and Hooker, Ross and Nares, Murray and Bruce.

THE ANTARCTIC WHALING SEASON.

Norwegian Whaling Gazette in its May number publishes preliminary figures of results obtained by Norwegian and other whaling companies at South Shetland and South Georgia for the season now concluded.

With regard to South Shetland, Norwegian companies have, according to preliminary information, obtained a total of 183,910 barrels of oil. None of the companies participating obtained a full cargo, but the result is nevertheless considered satisfactory. The Norwegian oil has already been sold at prices estimated to yield about 26.8 million kroner. British companies have obtained 69,100 barrels. The season at South Shetland which may ordinarily be put at 120-130 days has this year been longer than usual, extending over 150 days.

The catch at South Georgia has amounted to about 144,500 barrels as far as Norwegian companies are concerned, while at South Orkney Tønsberg Whaling Co. has obtained 13,700 barrels, making a total for these

two fields of over 160,000 barrels, representing a value of about 23.2 million kroner.

The total Norwegian catch in southern seas has therefore yielded about 50 million kroner.

British companies at South Georgia are stated to have had an excellent season.

On the whole, it must be said that Antarctic whaling has this season given excellent results, comparable with the best seasons ever experienced there. The stock of whales, especially at South Georgia, has been very numerous, which shows that when the right food is available the whales turn up with a regularity and in numbers which prove, in spite of extinction theories and pessimistic reflections, that there is still an enormous number of whales in the oceans of the world.

TRADE REPORTS.

From LONDON CORRESPONDENTS.

London Timber Trade.

A fair amount of business has transpired between Norwegian ports and London since the publication of our last report, and probably the quantity of c.i.f. business for planed goods would have been even greater had not shippers interposed difficulties by advancing prices.

Contracts calling exclusively for 6 to 7 inch widths are difficult to conclude at less than £22 basis 1 by 7 p.e., but where buyers are willing to include a fair proportion of narrow widths shippers are ready to consider offers of £21 10s. c.i.f. London.

It is very unfortunate that prices of building materials, including timber, should have increased during the past few months, as competent authorities fear that the effect will be to seriously check house building, which industry has shown gratifying signs of a gradual revival since the opening of the year.

Provided that values can be maintained round about the present level, and labour troubles do not materialise, shippers should be able to dispose of a fairly large output for the London market at remunerative prices.
F.T.

Wood Pulp Trade.

During the past month the trade has continued on a satisfactory scale with generally firm prices.

The German competition has also continued on the same basis, and at the same rate as the last few months, and there is so far no sign of any change.

The unfortunate strike which broke out in the pulp and paper mills of Norway on the 16th inst., and the threatened lock-out from the 6th of July may, of course, influence the market considerably if they last for some time, but with the present financial difficulties in Norway it is probable that all the influences will be used to arrive at a speedy settlement.

In spite of this state of affairs in Norway, some of the Swedish mills have just lately reduced their prices slightly both for chemical and for mechanical pulps, which seems to indicate that some of them have accumulated stocks which they want to get rid of quickly, and this may indicate a weaker tendency of the market, anyhow the buyers are apt to get that

NATURE

A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE.

*"To the solid ground
Of Nature trusts the mind which builds for aye."*—WORDSWORTH.

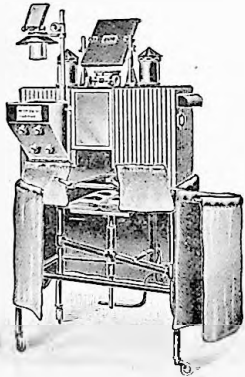
No. 2772, VOL. 110] SATURDAY, DECEMBER 16, 1922 [PRICE ONE SHILLING

Registered as a Newspaper at the General Post Office]

[All Rights Reserved.

NEWTON'S EPISCOPE

for the projection of
OPAQUE OBJECTS
including
MAPS, DRAWINGS,
DIAGRAMS, PRINTED
and TYPED MATTER,
ILLUSTRATIONS,
NATURAL OBJECTS,
etc.

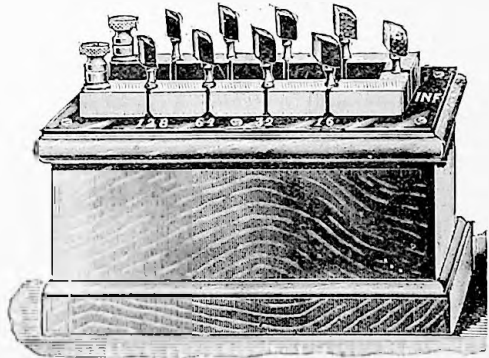


Price list on application.

Opticians to H.M. the King. **NEWTON & CO.** Estab. over 200 years.
Specialists in Optical Projection Apparatus for Visual Instruction,
72 WIGMORE STREET, LONDON, W.1.

REYNOLDS & BRANSON, Limited,

Chemical and Scientific Instrument Makers to His Majesty's Government (Home and Overseas Dominions), Laboratory Furnishers and Manufacturing Chemists.



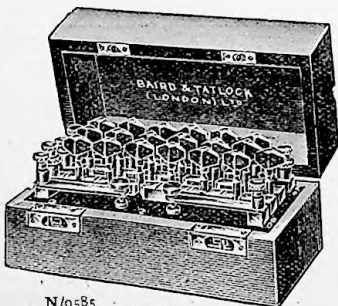
Resistance Boxes, P.O. Boxes, etc., manufactured in our own Workshops.

See Physical Catalogue (Oct. 1921). Post free on application.
Wireless Apparatus and Accessories supplied.
Also New Catalogues of Chemical Apparatus, Chemicals and Reagents.

14 COMMERCIAL STREET, LEEDS.

BAIRD & TATLOCK (LONDON) LTD.

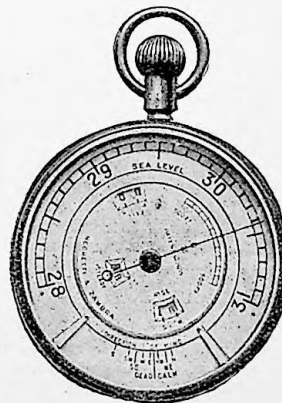
SCIENTIFIC INSTRUMENT MANUFACTURERS
and LABORATORY FURNISHERS.



N/9585
RESISTANCE BOX

Physical
Apparatus
for
Schools
and
Colleges.

11-15, CROSS STREET, BALYON GARDEN, LONDON, E.C.1.



The Weather
Watch is an ideal
Christmas Gift.
It forecasts the
weather for the
coming 12 hours.

In case

£7 10 0

NEGRETTI & ZAMBRA
38, HOLBORN VIADUCT, E.C.1.
LONDON.

The enigma of the three parallel rivers is explained as due to their valleys having been worn out along clefs through which the drainage from south-eastern Tibet was enabled to escape through the mountain rim of Chinese Tibet. This rim had been formed by the Himalayan movements which were due to the intense compression of the crust; on the relief from

that pressure the mountain ranges were broken by transverse clefs, and large blocks sank between a network of fractures. The basins formed by these subsidences gave the rivers great powers of enlarging their channels and thus of excavating the deep steep-sided valleys which are now the most conspicuous features in the topography of south-western China.

The Present Position of the Whaling Industry.¹

WHALING has been practised as an industry for some centuries. The pursuit of the Atlantic right whale was carried on in the Bay of Biscay at an early date, and was active at least so long ago as the twelfth century. The Greenland right whale was hunted in three areas, at successive periods, at first off Spitsbergen from about 1610, when few Atlantic right whales were left, then in Davis Straits from about 1719, and finally in the North Pacific and Bering Sea from about 1840. The sperm whale, which occurred in the whole of the tropical belt, though by no means restricted to this area, was hunted from about 1712.

The successful introduction of the modern harpoon-gun, with a harpoon carrying an explosive charge, dates from 1865, and has revolutionised whaling, by making it possible to capture the large and swift rorquals or fin whales. Modern whaling is concerned mainly with the humpback whale, the fin whale, and the blue whale, all of which are widely distributed in nearly all seas, although it is not certain whether each of these whalers' names indicates the same species in all parts of the world. After rorquals had been hunted in such localities as the Varanger

¹ Substance of a paper read before the Association of Economic Biologists by Sir Sidney F. Harner, F.R.S., on November 10.

Fjord, Newfoundland, Iceland, the British and Norwegian coasts, and elsewhere, whaling on an unprecedented scale commenced off the edge of the Antarctic Continent in 1905, and is still being conducted energetically. The total catch in this area has exceeded 10,000 in a single year.

The principal whale-products of economic importance are: train-oil, sperm-oil, spermaceti, balen, ambergris, whale meat, and the various forms of whale-meal or "guano." In a well-conducted factory all parts of the carcass are utilised.

With the exception of the Antarctic whaling, which has had a career of less than twenty years, whaling has been carried on consistently to an excessive amount, leading to the most serious reduction of the number of whales. The Atlantic and Greenland right whales were decimated almost to the point of extermination, the sperm whale industry has practically disappeared, and little remains now but the Antarctic whaling grounds. The efforts of all lovers of Nature should be directed to the restriction of whaling to an amount which is not inconsistent with the permanent preservation of these magnificent marine mammals and of the industry which they are so unfortunate as to support.

Biometric Studies.

IN the current issue of *Biometrika* (vol. xiv. 1 pts. i. and ii.) Dr. Kirstine Smith discusses the standard deviation of a coefficient of correlation computed from data derived from classes, members of which are mutually correlated, with special reference to the case of fraternal and parental correlations calculated from entries of sibs. She finds, *inter alia*, that the best determination of a fraternal correlation from a given number of observations is obtained by taking $(1+1/r)$ offspring individuals from each family, where r is the fraternal correlation.

Mr. Egon S. Pearson contributes an important memoir on variations in personal equation. The experimental basis of the research was a series of five sets of measurements of different type; the form of sessional change, *i.e.* the resultant of factors operative within each series, is separated from the secular, or long period, change effective from one session to another; appropriate forms for the expression of each are discussed. It is evident that in the determination of the precise value of the correlation between successive judgments in a series, one has to reckon not only with physiological or psychological common factors, the organic basis of the correlation, but also with accidental errors which blur the record—the observational errors of some writers—and reduce the numerical value of the correlation. It is found that the correlations between successive judgments decrease approximately in geometrical progression with the number of intervals, a finding consistent with the assumption that there is little or no partial correlation between the observers' true estimates at intervals greater than one. The chief practical outcome of the work is to show that although "experience and accuracy may be gained by practice, it does not follow that the correlation between successive judgments will disappear."

The memoir is not only of practical interest to all experimenters, but also contains several contributions to statistical algebra. In connexion with the work on pp. 37 *et seq.*, a reference to the memoir of Anderson (*Biometrika*, x. 269) would have been in place, but no doubt Mr. Pearson will deal more fully with the literature of the subject in a sequel. He is to be congratulated on his first appearance in a field where one bearing his name must be judged by the highest possible standard.

Dr. Ernest Warren's paper concludes the account of work partly described in 1917 concerning inheritance in the foxglove. Dr. Warren holds that "the evidence of the present investigation is therefore definitely against any general application of the theory of pure lines and of genotypes of any appreciable magnitude, and further it indicates that selective breeding within self-fertilised generations of a homogeneous race is capable of modifying that race to a marked degree."

Prof. Karl Pearson and Mr. Egon Pearson show how to find a general polychoric coefficient of correlation, *i.e.* to fit the "best" normal surface to data subject to the limitation that the marginal totals are exactly reproduced. The arithmetical work is heavy, and the suggestion is that a determination of the correlation ratio from the array means—not a laborious task—will usually suffice.

Mr. James Henderson discusses the expansion of a function in tetrachoric functions, a matter of some importance to those who use the frequency systems favoured by Scandinavian mathematical statisticians.

It will be obvious that the fourteenth volume of *Biometrika* is as valuable to statisticians as its predecessors.