NEW WHALING COMPANY.

Australian-Norwegian Links.

WELLINGTON (N.Z.), August 26.—As a result of negotiations with certain Australian financiers, a new whaling company, to be known as the Pacific and Ross Sea Whaling Co., has been registered in Sydney and Dunedin simultaneously.

The capital of the company consists of 500,000 shares of £1 each, of which 50,000 Ordinary shares have been reserved for Norwegian residents. This fact, combined with the appointment of M. Magnus Kornow, who is now managing director of the Ross Havet Whaling Co., to the post of manager of the new company, is significant in view of the New Zealand Government restrictions in the matter of granting whaling licences for the Ross Sea to Norwegians.

It is believed that an amalgamation of the two companies is possible at some future date. —*Reuter.*

A later message from Reuter's Oslo Correspondent states:—

Inquiries made here regarding the statement that M. Magnus Konow, managing director of the Norwegian Whaling Co. Ross Havet, had been appointed manager of the Pacific and Ross Sea Whaling Co. elicited a denial of the report from the company. Nothing is known, it is added, about a possible amalgamation of the two companies.

FACTORY SHIP.

32,000-ton Whaler Undergoes Her Trials.

From Our Own Correspondent.

BELFAST, Tuesday.

of the most remarkable ships in the world went her trials in Belfast Lough to-day. s the whaling factory Kosmos, built for the ios Whaling Company, of Sandefjord, Nor- She is of 32,000 tons and is fitted with hes capable of hauling 40 tons.

ie largest whales can be hauled aboard with ease, skinned, cut and treated in a factory in the upper 'tween decks.

The vessel is the first of her kind ever floated. An airplane co-operated in the trial run and came alongside. Aboard the ship were leaders of the Norwegian whaling industry.

THE WHALING INDUSTRY.

Why is it that the pursuit of whales, both in Antarctic and European waters, seems to have fallen into the hands of the Norwegians? Dundee used to be a great whaling port. From all accounts, with modern ships and appliances, there seems to be money in it, with employment for our shipbuilders, sailors, and fishermen.—DR. HENRY C. MARTIN.

A MENACE TO WHALING.

R.R.S. DISCOVERY REPORT.

DESTRUCTION BY FACTORY SHIPS.

NEW VESSEL'S 'PLANE.

By a coincidence, the report was issued yesterday of the R.R.S. Discovery's investigations into the Antarctic whaling industry, and on the same day the Kosmos, the largest whaling factory ship yet built, left Belfast after successful trials.

The Discovery's report is critical of the modern pelagic whaler, or "factory ships." It states:

"There is at present no means of restricting the number of pelagic whalers or of the catchers they employ. Pelagic whaling thus is not merely a less economic method, but it permits of indefinite extension of the grounds worked and indefinite increase in the intensity of whaling."

The great increase in destruction consequent upon these methods, it points out, is sufficient to alarm experienced whalers and increases the need for a speedy attainment of definitive results in researches.

"IRREPARABLE DAMAGE."

"The facts have to be faced that the industry may be irreparably damaged before the greatest diligence in research can furnish complete solutions of all the problems with which they deal, and that measures of a tentative and temporary character may have to be decided upon by the Governments interested in order to avoid a possible collapse."

The report describes the pelagic whaler as "a large floating factory equipped with a slipway in stern or bow, by which the whale can be taken bodily on board for dismemberment and 'trying down.' As long as she works outside territorial limits she is subject to no regulation except those imposed by the Government of her own country, and at present, while there is hope that certain steps may be taken to prohibit her from destroying cow whales with calves, it is difficult, if not impossible, for her to work up whale meal or guano, and there is reason to suppose that the extraction of oil from the carcase is less complete and therefore less economic than at a shore factory."

The whaling season of 1927-28 in the Antarctic, it is pointed out, was a momentous one. Off the South Shetlands 5,500 whales were taken, with an oil yield of 66,000 tons, an increase in output of 47 per cent. over the previous record year. The output of the Falkland Islands Dependencies was 134,000 tons of oil.

The policy of the Government there had been the conservative one of restricting whaling to its present dimensions, while energetically seeking the basis for a definite judgment as to the maximum intensity of whaling desirable.

Direct evidence as to whales' migration is sought by marking whales with numbered darts, which, when returned by whaling stations, in response to a small reward, will show the course travelled.

These darts are shot from a shoulder-gun, used from the William Scoresby, whose design, mainly that of a whale catch enables her to make the necessary approach to within striking distance of the whale.

THE WORLD'S LARGEST WHALER.

'PLANE FOR SCOUTING.

FROM OUR OWN CORRESPONDENT.

BELFAST, Tuesday.

The Kosmos, the largest whaling factory ship yet built, left Belfast to-day after successful trials. Built by Messrs. Workman, Clark Ltd., she is of 32,000 tons displacement, and is intended for service in the Antarctic Ocean by a Norwegian company.

She has an aeroplane on board for scouting and will be attended by a fleet of chasers. The machinery installed for dealing with whales and by-products is very elaborate.

Owing to the shipyard joiners' strike at Belfast, the joinery work will be completed in Norway.

SCIENTISTS IN S. AFRICA.

GEOLOGISTS' PART IN DEVELOPMENT.

SURVEY AND WEALTH.

(FROM OUR OWN CORRESPONDENT.)

JOHANNESBURG, JULY 30.

When the British Association reassembled at Johannesburg to-day Sir Albert E. Kitson, Director of the Geological Survey of the Gold Coast Colony, gave his presidential address to the Section of Geology, and explained the nature and purposes of geological surveys, especially in comparatively unknown countries.

He gave two examples from the Gold Coast of cases in which prospectors had missed valuable opportunities from want of knowledge. One prospector had sunk a shallow hole on the side of a hill, apparently for gold, and unearthed good manganese ore, but, not recognizing its identity, and probably regarding it as iron slag, took no notice of it. While the Director of the Geological Survey was surveying the Insuta manganese ore deposit, he found this old hole, and noted that the prospector had failed to discover what proved to be one of the largest and richest deposits of manganese ore in the world—one that was of great importance to the life of the British nation at a most critical stage of the Great War, when sufficient supplies of high-grade manganese ore were unobtainable for the manufacture of effective munitions.

The other example was that of a prospector for gold who had sunk a shaft, over 40ft. deep, through bauxite. He had used the shaft constantly without knowing, until informed by the geologist, that the material he had excavated was bauxite. In both cases the want of geological knowledge was the cause of the failure of the prospectors to recognize the valuable materials they had discovered. To show the value of geological surveys the president gave the following list of practical results in the Colonies:—

NIGERIA.—The mineral survey of Southern Nigeria discovered the large black coal field in 1909, surveyed it in detail over the greater portion of a length of some 24 miles and width of 10 miles, and prepared a geological-topographical map of the country, showing altitudes, outcrops of coal, and other information. Further work was done later and the coal-bearing area extended considerably. Mining operations by Government were commenced on the largest seam in 1916, and since then development has continued steadily. The total quantity of coal, in round numbers, produced from 1916 to March 31, 1928, is 2,210,000 tons, valued at the mine at £1,282,000.

The annual average over the three years ended March 31, 1928, is: coal production, 313,720 tons; revenue, £148,340; expenditure, £82,234; profit, £66,106. The total net profit to Government to March 31, 1928, is £452,559. The mine now employs some 30 Europeans and 2,400 natives. The coal is used principally by the Nigerian and Gold Coast railways, the Nigerian tin mines, and by shipping companies.

THE GOVERNMENT'S PROFIT.

The total cost of the geological survey of Nigeria since its inception in 1919 to March 31, 1928, is approximately £68,700, and of the mineral survey of Southern Nigeria for the period 1903-1913 about £20,000, or a total of approximately £88,700. Thus the total profit to the Government from this one discovery by a Government geologist is more than five times the total cost of the geological and mineral surveys, while the average annual profit for the past three years is nearly nine times the average annual cost of the geological survey during the same period.

The surveys also discovered large and valuable deposits of good brown coal and lignite, some of which will probably be exploited later for the distillation of oil, or for the sale of the coal in the form of briquettes. Besides these discoveries others were made of limestone of good quality in several districts, oil-shales, phosphate of lime—of value as a local fertilizer—excellent pottery, tile, and brick clays, some lead-zinc-silver deposits, ornamental, engineering, and building stones. Doubtless some or all of these will be developed later and will prove of great value to the Colony.

GOLD COAST.—The specially important discoveries made by the geological survey of the Gold Coast are huge deposits of manganese ore and bauxite (aluminium ore), and widespread alluvial deposits of diamonds. The manganese deposits were found in 1914, before the Great War, but not exploited until 1916, when the vital need for high-grade manganese ore caused the development of these deposits. Production of ore commenced in 1916, and the total production to March 31, 1928, is 1,785,643 tons of high-grade ore, valued at £3,350,706, free on board ship at Sekondi. Of this quantity the annual average during the past three years is 364,975 tons, valued at £656,132.

The Government Railway Department transports this ore to the seaboard at Sekondi, and has received, in round numbers, £550,000 for freight to March 31, 1928. Besides this, the Railway Department has obtained large sums for freight on the great quantities of mining machinery, building materials, and supplies transported from Sekondi to the mine.

In addition to the profit the Railway Department has made on freight of ore and supplies between the port and the mine, the Government gets a royalty of 5 per cent. on the profits of the company that owns the deposit. The mining royalty for the year 1927-28 was £10,000. During the last three years the average number of Europeans engaged on the mine staff was 52, and of natives 2,000. Diamonds were first discovered in February, 1919. These diamonds, though small, are of very good quality and have a ready sale for industrial purposes and jewelry.

CONTINUOUS BENEFITS.

Since mining operations were commenced in 1921 there has been a large progressive increase each year till, for the year ended March 31, 1929, the figures are: production, 648,343 carats; value £538,860; export duty paid, nearly £27,000. The total weight of diamonds produced is 1,824,030 carats, valued at £1,758,348, on which the Government has received roundly £87,900 from the export duty of 5 per cent. on the total value. The annual average for the past three years is: production, 520,572 carats; value, £482,157; export duty, £24,108; mine staff, Europeans 21, natives 1,163; cost of the geological survey, £9,342. The export duty received by Government for last year was nearly 2½ times the cost of the geological survey for that year.

The benefit, therefore, that has accrued to the Gold Coast, directly and indirectly, from these two discoveries by the Geological Survey is apparent, and it will continue for a long period.

The Gold Coast has a great potential asset in its huge deposits of high-grade bauxite—the total conservatively estimated quantity being upwards of 250 million tons. These deposits are not yet developed, owing mainly to the high cost of transport of bauxite to a port of shipment. Bauxite is an ore of low value and so cannot bear heavy charges for freight, but, with extension of railway communication and reduction of freight charges, the Colony should see a great development of this particular source of wealth, and a further mineral example to be added to revenue from Geological Survey discoveries.

The Survey is also responsible for finding many occurrences of alluvial gold and some of reef gold, large deposits of iron ore (hematite), and good limestone, pottery, tile and brick clays, ornamental and general constructional stones, refractory substances, and smaller occurrences of tin, arsenic, molybdenum, copper, and platinum. None of these is as yet developed.

SIERRA LEONE.—The Geological Survey of this Colony is much younger than those of Nigeria and the Gold Coast. The Director has discovered large deposits of iron ore (hematite) of good quality, and considerable deposits of alluvial platinum and gold—all now being developed—besides occurrences of chromite, corundum, ilmenite, rutile, manganese, and graphite, all of them also minerals of economic value. If found on further examination to occur in promising quantities these deposits should prove to be of commercial value.

The West African Geological Surveys have no offices and laboratories in the Colonies. During the dry and tornado seasons of the year the geologists are engaged on geological surveys and examinations of various kinds in the Colonies, but during the rainy season field work is suspended and the staffs return to England. In these respects their organization differs from that of the other Colonies. The specimens of rocks and concentrates collected are then examined and distributed for various modes of treatment, and reports not made or completed on the Coast, as well as microscopic examination of thin sections of rocks, are done in London. The greater portion of the chemical work, such as assays and analyses, devolves upon the Imperial College of Science and Technology and the Imperial Institute under special arrangements.

The field work comprises mainly the geological mapping of areas, detailed surface and underground surveys of mining fields, detailed and rapid surveys of special areas and deposits, and such other matters as are indicated in another section of this address.

SUDAN.—Owing to the geological character of the country the discoveries made by the Sudan Geological Survey are of non-metallic substances. They comprise valuable limestone deposits and underground water supplies, while great assistance has been given in connexion with sites for wells, tanks, dams, and buildings, and advice on building materials, fireclays, manufacture of salt, and other matters.

TANGANYIKA.—The energies of the Tanganyika Geological Survey, a young one, have been devoted very largely towards mapping certain areas, examining deposits of minerals found in the country, and reporting on geological aspects relative to railway location. Besides, much valuable advice and assistance have been given in various directions in connexion with water supplies.

NYASALAND.—The Geological and Mineral Surveys discovered large deposits of bauxite and of limestone; also seams of coal and lignite, and deposits of asbestos, graphite, talc, tinstone, silver-lead, iron, and several other minerals. Owing to these discoveries a prospecting company has been formed with a view to examining the country thoroughly for minerals. Valuable work has been done in connexion with the discovery of water supplies in various districts, and most useful reports published.

A COSTLY ERROR.

FEDERATED MALAY STATES.—The energies of the Federated Malay States Survey have been devoted chiefly to the exploration of large areas with alluvial and lode tin, the determination of the character and age of certain intrusive rocks and limestone deposits, reports on mineral deposits, advice on road metal, sites for dams and roads, schemes for boring and prospecting, assays of ores and minerals.

As some of the benefits derived by Malaya from geological maps and advice given by the Survey may be mentioned the extension of tin-bearing country, in which dredging operations are now in progress, and the prevention of certain useless schemes proposed for boring for minerals, and prospecting for oil and water, thus saving much expense to the Government and private interests. As an example of non-acceptance of such advice may be cited a case in which nearly £20,000 was lost by a syndicate through boring for oil in a raised beach of dead shells, said by a tin miner to be an excellent indication of oil.

UGANDA.—The operations of this survey comprise mainly the geological mapping of the country. During such work areas likely to prove mineral-bearing are noted and mining companies and individual prospectors advised to test them. The Survey has, however, made discoveries directly, or through prospectors acting on advice given. In one such instance it was proved that owing to earth-movements the drainage of a stream had been reversed, and the source of the gold in it was found to be down, instead of up, the course of the stream. Another interesting discovery, a recent one, which may prove to be valuable, was the occurrence, in considerable quantity, of a bismuth-tantalum mineral, new to science, in pegmatite. A unique adjunct is a branch of seismological research, with a view to possible prediction of earthquakes, since Uganda is situated on an unstable portion of the earth's crust.

CEYLON.—The Mineral Survey of Ceylon made numbers of discoveries of valuable minerals, including deposits of limestone, mica, iron ore, monazite, corundum, gemstones, and various rarer minerals with radio-active properties, notably one new to science—thorianite (thorium oxide), which occurs both in gravels of streams and in dykes of pegmatite. Occurrences of platinum, and of manganese, chromium, molybdenum and copper minerals were noted, and hot saline springs found.

JAMAICA.—Valuable stratigraphical work was done by this Survey through its discovery of fossils. By their aid the various zones of the strata were revealed, and the nature and occurrence of underground supplies of water determined. Numerous dykes and sills of basic rocks, from which can be obtained vast quantities of road-metal, much more durable than the limestone then being used, were discovered by the Survey.

GEOLOGICAL MAPS.

BRITISH HONDURAS.—The operations of the Mineral Survey embraced the geological mapping of the country, and the preparation and publication of a useful geological sketch map. Large deposits of limestone were discovered, and occurrences of tinstone and molybdenite noted.

BRITISH GUIANA.—Following the original survey already mentioned, much important work was done and reports published by the late Sir John Harrison, describing valuable occurrences of bauxite, diamonds, gold and palladium. Other useful reports issued later were by Messrs. H. J. C. Connolly and Smith Bracewell, on the geology and economic features of the gold and diamond fields.

GAMBIA.—A rapid geological survey of this small Colony has been made by Dr. W. G. G. Cooper, of the Gold Coast Geological Survey, and a comprehensive report with map, sections, and photographs published. Many interesting features were noted, and useful information given, specially with regard to water supply and brick and pottery clays.

SOMALILAND.—A brief examination by Mr. A. R. Farquharson of portion of this Protectorate resulted in his discovery of seams of black coal and lignite, and of occurrences of lead and strontium minerals. Other minerals and rocks were noted—among them salt, barite, oil-shale, marble, and large deposits of gypsum. Many useful remarks were also made regarding water supplies and soil, and a report with sketch map published.

ZANZIBAR.—An important report with map, sections, and photographs on the geological survey of these islands, by Mr. G. M. Stockley, has been published. Among the economic materials found are clays and limestones for building and road purposes, and gypsum—possibly of value for manure for the clove plantations. Useful information regarding water supply was obtained and many fossils discovered, which have aided considerably in the correlation of the strata with those of the mainland of East Africa.

FALKLAND ISLANDS.—A geological survey of these islands was completed by Dr. H. A. Baker, and a report with map, sections, and plates published. This survey extended the work done by geologists who had previously examined portions of the islands. Numerous additional fossils were discovered, and the close relations confirmed between certain formations of the islands and those of South Africa, as had been suggested by previous observers.

It should be stated that the minerals mentioned under the various Colonies and Malaya do not embrace all that have been found in them. There are many others that were known, and in some cases were being mined, before geological and mineralogical surveys were established—such, for instance, as alluvial tinstone in Nigeria and the Federated Malay States, gold in the Gold Coast, Tanganyika, and Nyasaland, and diamonds in British Guiana. These Surveys, however, can fairly claim to have done most useful work in these tinfields by their examinations and reports before the regions were effectively developed.

AEROPLANE TO HUNT FOR WHALES.

32,000-TON SHIP AS FACTORY AND OIL TANKER.

WONDERS OF ITS EQUIPMENT.

The largest "factory ship" yet made for the whaling industry has just left the yards at Belfast, where she has been built for the Norwegian firm, the Kosmos Whaling Company, by Messrs. Workman, Clark (1928), Ltd.

She is called the Kosmos, and is to [illegible] as a floating

Kosmos.		Mauretania.	
Displacement (tons)	32,000	Displacement (tons)	32,500
Length (feet)	550	Length (feet)	762

The chief novelty of the ship, however, is that she will carry an aeroplane for use in hunting the whale. No longer will the watcher in the "crow's nest" shout "There she blows!" on sighting a whale in the ocean. Instead a wireless message will be received in the operator's cabin from the aeroplane reporting the presence of whales.

The crew, including the men to operate the elaborate plant for dealing with the whale products, will number some 200.

Seven whale boats will accompany the Kosmos. The procedure after killing a whale is as follows: The carcase is inflated with compressed air to keep it floating until it has been drawn towards the factory ship. It is then hoisted on deck, or hauled there through great portholes 18 feet in diameter, to be cut up and treated so as to produce oil from the blubber and ambergris from the intestines.

The Kosmos has winches capable of handling loads of 40 tons at a time, and has been fitted to deal with a maximum "catch" of whales.

The whole of the "factory" portion of the ship is situated between the upper decks, which are more than 15 feet deep. The weather deck above has been cleared so that no obstruction will hamper the operation of handling and cutting up the whales.

The Kosmos has been built as a factory ship and oil tanker, so that she will be able to refine the oil on board and store it in her tanks.

Existing "factory ships" are converted tankers, so that the Kosmos claims the distinction of being the first vessel to be specially built as a whaling "factory ship."

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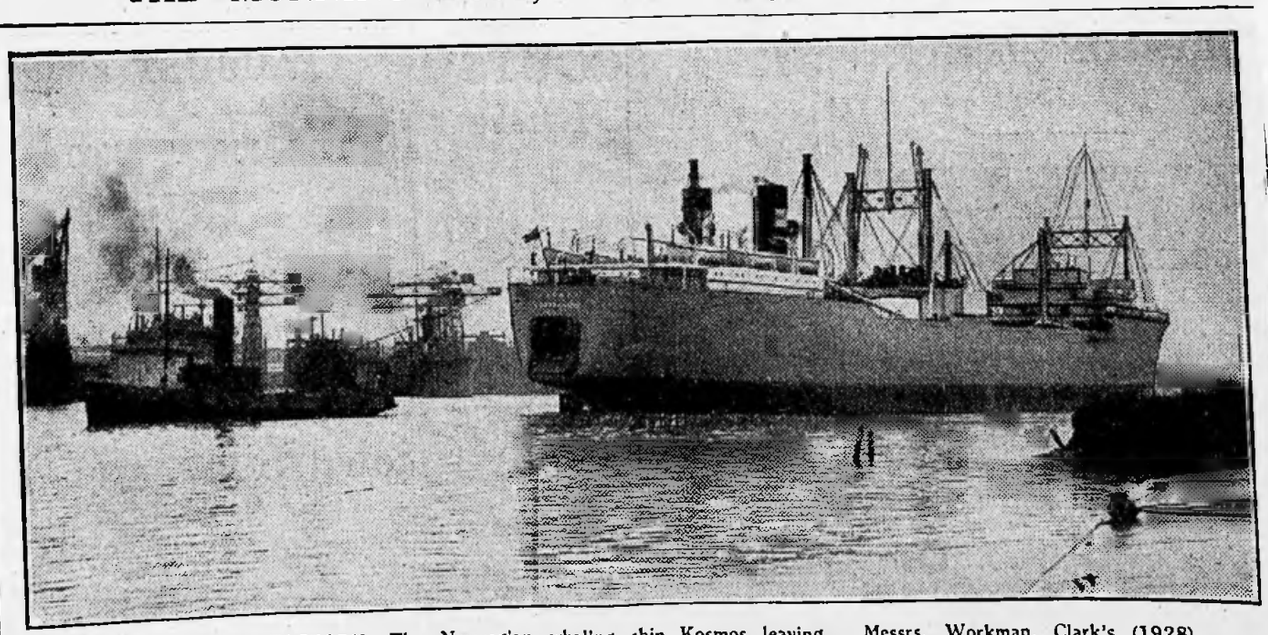
THE MORNING POST, THURSDAY, AUGUST 1, 1929.

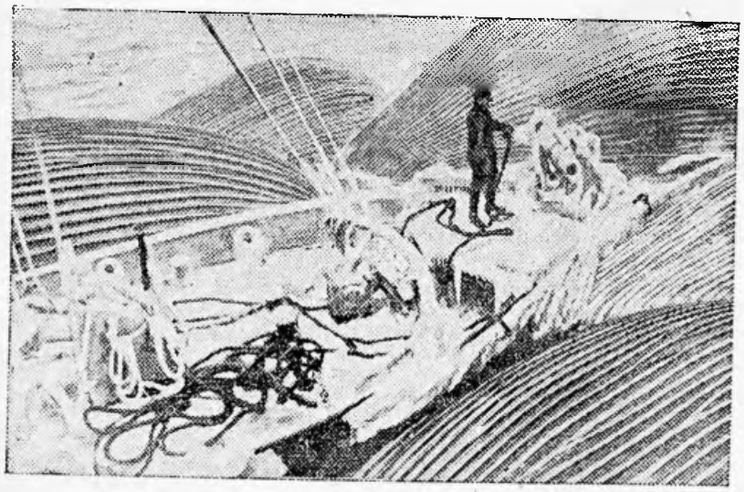


A FLOATING FACTORY.—The Norwegian whaling ship Kosmos leaving Messrs. Workman, Clark's (1928), Ltd., North Yard, Belfast, for her trial trip.

THE MEN WHO CAPTURE WHALES

By G. M. THOMSON,

Who in the following article gives some surprising facts about whalers and whaling. Norway, he says, is anxious about the activities of the British in the whaling industry.



[Copyright : Arnesen, Christensen & Smith, Ltd., Naval Architects.

This extraordinary photograph shows a Whaler in the Polar Seas, crusted with Ice and entirely surrounded by the huge carcasses of captured Whales.

The building at Belfast for a Norwegian company of the largest whaling factory ship ever launched—Kosmos 32,000 tons displacement—gives special interest to this article. The Kosmos will carry to the Antarctic an aeroplane to scout for whales, and very elaborate machinery for dealing with the products of the industry.

The writer of the article reveals the significant fact that the Norwegian companies are gradually coming under British control.

TONSBERG (NORWAY).

IS Britain about to capture the whaling industry of the world? That is the question which is agitating this little Norwegian town. For Tönsberg, though it has only 16,000 inhabitants, is the headquarters of the greatest fishing in the world, the fishing of the whale. Of the 6,000 Norwegians who man the whale-catchers, and the factory ships, about 4,500 come from its neighbourhood.

THE GIRLS CATCH THEM.

You may see them now, bronzed young men in blue serge suits, waiting in the clear Northern sunshine outside the companies' offices or drinking milk—can milk be the whale-hunter's drink?—in the cafés of the town. The ships are taking on supplies just now and engaging new crews; in a few weeks they will set out for their nine months' vigil in the Antarctic. And, in the meantime, the columns of the local newspaper are crowded with the announcements of engagements and marriages.

The maidens of this part of Norway look with favour upon the stalwart whalermen. And small wonder. For they are the plutocrats of the world's seafaring population. Each of them has a substantial bonus upon every whale that is caught, or every barrel of oil that is brought home by his factory ship.

The whaleshooters—who command the little whale-catching ships and aim the harpoon gun—have Cabinet Ministers' salaries. Many of them can count on five thousand pounds a year, and in an exceptionally good year this may be doubled. All over this lovely fir-clad countryside you see their handsome new houses standing in deep gardens and orchards. All of them began as ordinary seamen before the mast in the traditional Norwegian manner. And they earn their wealth.

"We don't pay those fellows for fun," said one prominent whaling company proprietor to me. "The difference to us in catch and cash of a good shooter is worth the salary we give him. Even with modern whaling apparatus, whale guns, harpoons with explosive heads, and all the rest of it, the personal element remains as strong as ever. A good shooter can tell by instinct, by some hue or appearance of the water, imperceptible to others, that he is near whales, and can manœuvre his boat so as to get in the fatal shot quickly and surely."

The whole prosperity of this animated little town and its surrounding countryside—which is said to contain some of the oldest cultivated land in Northern Europe—depends on the whaling industry. And that is why Tönsberg is disturbed by the prospect of Britain taking the whaling industry from her.

At the present time the conquest has not reached very formidable proportions, but a tendency towards increasing British control is unmistakable. The control of two companies has passed into British hands within the last few months, and one new company has been formed in which British capital predominates. But in each case the actual management of the concern remains in Norwegian hands, and the crews are entirely Norwegian.

VAST PROFITS AT STAKE

Still, Norway is disquieted. Management and staff are apt to take on the nationality of the financial control sooner or later, and Norway could ill afford to lose a rich industry which employs thousands of her sons and five or six millions sterling of her capital. And for these very reasons it would be an excellent thing for war-scarred Britain, with her great seafaring traditions, if she could take the leadership in the world's whaling. After all, whaling used to be an important British enterprise; the Dundee fleet of whalers was once famous.

Enormous profits have been made by the whaling companies in the last few years. The technique of the industry has been revolutionised by the introduction of the factory ship, which enables the stout, little whale-catchers to penetrate into the whale's farthest haunts in a way which was impossible when they were tied to shore stations in the South Shetlands, South Georgia and elsewhere. To-day wireless enables the companies from their offices in Tönsberg to communicate with ships south of the Antarctic Circle in two hours or less.

And it may happen in the end that the killing of whales may become extermination. But that is a matter they do not discuss too much in Norway. The present is good; let the future look after itself. In the meantime, there are the British. . . .

Cutting from Journal of Commerce

Issue dated 2.8.29 Liverpool

A New Whaling Factory.

THE whaling factory Kosmos, which has been completed by Messrs. Workman Clark and Co. for the Kosmos Whaling Company, of Norway, has been referred to in quite a number of instances as being unique, in view of the belief that it was the first vessel of the kind specially built for this purpose. Nearly two months ago it was pointed out in *The Journal of Commerce* that as far back as 1920 the 10,000-ton steamer Ronald was built at Glasgow, having been specially designed for use as a whale factory, a function which she still continues to perform very satisfactorily. The Kosmos will be employed in the Antarctic. Her crew will number 300, of whom 200 will be employed in the factory. She is fitted with elaborate machinery, and she will have accommodation for an aeroplane, which will be used to locate the whales.

THE WHALE

WHAT IS GOING TO HAPPEN TO IT?

More Being Killed Than Ever Before in History

NO CHANCE AGAINST ITS ENEMIES

All who are interested in animal life will regret that one of the most fascinating of animals is being threatened with such rapid diminution that if international action is not taken promptly some of its species may entirely perish.

The whale, that strange mammal which lives in the sea and so is wrongly thought by the hasty to be a fish, is the latest victim of unrestrained slaughter. The favourable view of the whale's fate depends largely on the vigorous action that may be taken by a strong committee of the American Museum of Natural History, which is rallying to the defence of the monster of the deep.

The Annual Slaughter

It will be news to most people that more whales are being killed at the present time than ever before. The number slaughtered annually is believed to reach 30,000. It is not that more ships are whaling but that the means used leave the whales small chance of escape. Instead of being hunted by men in open boats who depend on a thrown harpoon, the whale is pursued today by swift steamers that fire an explosive harpoon from a cannon. A modern Norwegian whaling-vessel will sometimes kill as many as fifteen whales in a day.

There was a time when whales were plentiful in every sea. Whaling in the Bay of Biscay is the first that is known in history. Now the only waters where they are numerous are those of the Antarctic Ocean, and it is there where they are being most relentlessly pursued.

Nothing but international action will be effective, for each country engaged in the business puts the blame for ungenerous slaughter on the rest. Nor is the protection of the whale easy, for it lives in the open sea, which is free to all, and supervision is difficult. The best check would be a general agreement to prevent the products of whaling from being landed except under strict regulation.

Some Species Almost Extinct

The whale can only increase in numbers slowly, for one young whale annually is the limit of birth from each mother whale. Some species, such as the bowhead whale, are already almost extinct, and the rate of slaughter is constantly exceeding the rate of birth.

There are serious scientific reasons why the whale should be preserved. One is that it possesses the secret of living long under water without being poisoned by the gases that are generated in its own lungs when it cannot breathe freely. Whales have been known to stay under water for more than an hour without breathing. How do they do it?

If their method of defying for such a length of time the impurities which fresh air alone, as far as we know, can remove could be discovered it might lead to greater safety in mines as well as in submarines.

It is to be hoped that Great Britain will be foremost in cooperating with the American committee in their investigations and their proposals for giving the whales a fairer chance against their human enemies.

PLANE TO LOOK FOR WHALES.

EYES OF EXPEDITION.

Mr. Leif Lier, one of Norway's leading airmen, who assisted in the search for General Nobile at the North Pole, left England during the week-end piloting a D.H. Gipsy Moth seaplane which is to be used in connection with the coming whaling expedition of the 23,000-ton ship Kosmos. The machine can be used also as a land plane

The Kosmos will act as the "mother" ship to eight other whalers, and will be away for about seven months.

The aeroplane will be used for signalling the approach of whales, and will be exceedingly useful in discovering passages through the ice floes for the ships. This will save much time, and give great assistance to the whalers.

THE USE OF AIRCRAFT IN WHALING.

A NORWEGIAN EXPEDITION.

A Moth light aeroplane is being used in a whaling expedition which will leave Norway shortly, and during the week-end the Norwegian pilot, Mr. Lief Lier, who assisted in the search for General Nobile at the North Pole, left Stag-lane aerodrome for Norway in the machine which will be used during the whaling. It was purchased through National Flying Services, and will be housed on the Norwegian whaling ship ss. Kosmos (23,000 tons), which leaves for the Antarctic seas next Saturday, and which will be the mother ship to eight other whalers. The machine, which can also be used as a seaplane, was on view at the recent Aero Show.

Aircraft have been used before in searching for seals off the Canadian coasts and for herring off the Scottish coasts, but it is stated that this is the first occasion on which an airman has been called to scout for whales. It is anticipated that the pilot will be able to secure valuable information as to the best way through the ice floes and save the expedition time in working through a given area.

Plenty of Whales

With floating factories and their attendant "catchers" more numerous than ever, fears are finding expression that there will soon be no whales at all in the Antarctic's icy waters. Experts who know the ground do not share that pessimistic view. The price of oil may be lower than it was and the number of people in the trade greater, but there are still, they say, plenty of whales, and hunting them is not much less profitable a business than it was. According to one whose concern is chiefly financial the whale is in no danger at all. "Dividends will be," he said, "in danger of extinction long before the whale is."

Shetlands.

New Whale Catchers.

While the rejuvenated whaling industry is not affording employment to British seamen it has given a considerable amount of work to our shipyards. One of the greatest sights of the year in shipbuilding is on the Tees, where they are building and fitting out a fleet of 26 whale catchers for the great convoy that will shortly go to the South Seas. Some of the larger ships range from 8,000 to 18,000 tons. By December next the largest number of ships ever known will be carrying out operations. Some of the towns in Norway will be almost denuded of men, who will work from 10 to 15 hours daily, and make enough money in the southern summer to lay back all the winter at home.

THE WHALING FACTORY SHIP "KOSMOS."

uesday of last week Workman Clark (1928) Limited successcompleted the official trials of the large whaling factory ship *smos*, built to the order of the Kosmos Whaling Company for e as a whale oil factory ship and oil tanker. A large party was ntertained on board by the builders and included Mr. Anders Jahre, managing director of the Kosmos Whaling Company, and Mr. Svend Foyn Brunn, chairman, and other directors of the company.

The *Kosmos* is a vessel of about 32,000 tons displacement with dimensions as follow :—

Length, overall	570 ft.
Breadth	77 ft.
Depth	50 ft. 6 in.

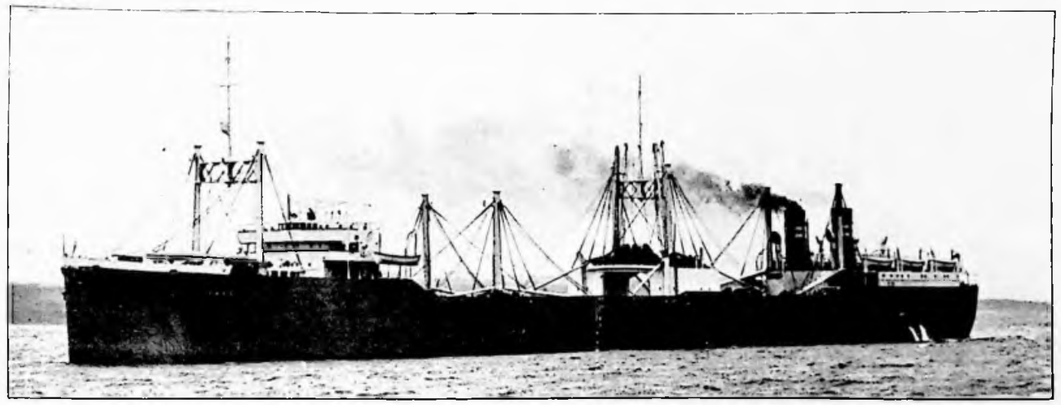
She is constructed on the longitudinal system to the highest requirements of Lloyd's Register and the Norwegian Sea Control regulations. The whaling factory is situated in the upper 'tween decks, which has a depth of over 15 ft., and is equipped with the latest machinery for the economical extraction of oil from the maximum catch of whales. The weather deck above the factory has been arranged clear from obstructions to facilitate the handling of the whales and the cutting-up process. This deck is arranged with a large slipway at the after end, along which the whale carcases are drawn from the sea by powerful winches and special derricks.

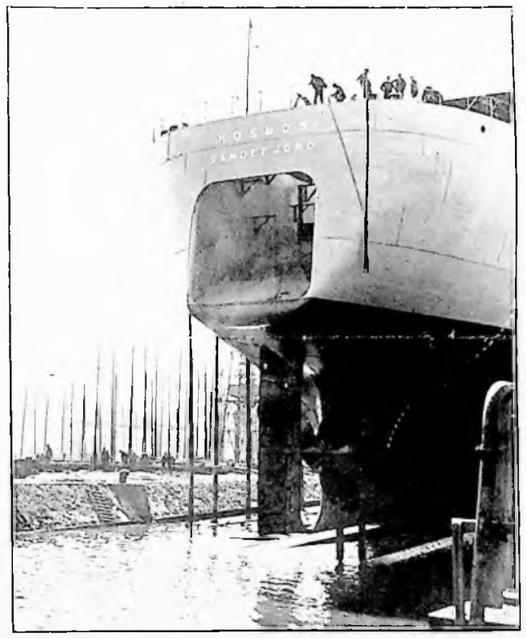
Accommodation is provided for over 300 persons who form the vessel's navigation, engineering, and factory crew, while extensive refrigerated and ordinary storerooms and cooking facilities are provided, due to the extent and nature of the vessel's trade, which necessitates long absence from home waters. In this connection reference might be made to the very large fresh-water distilling plant, which is carried to ensure a constant supply of fresh water.

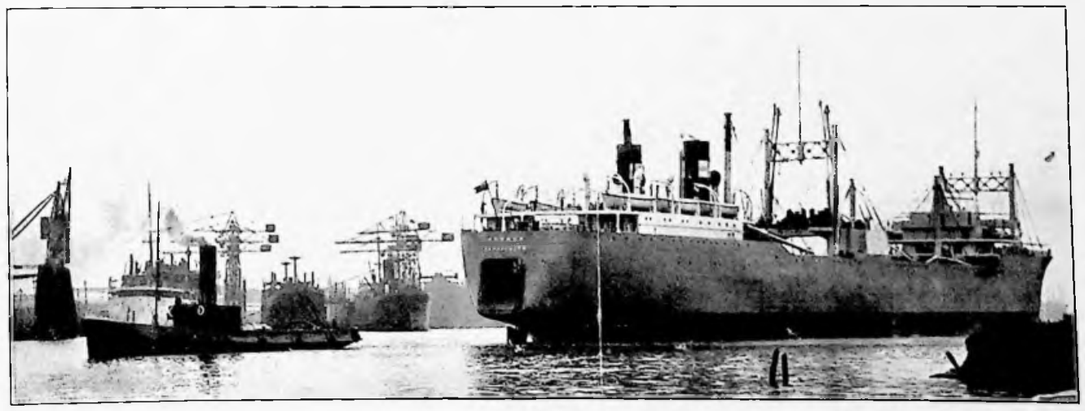
The propelling machinery, also constructed by Workman Clark (1928) Limited, consists of one set of quadruple-expansion engines taking superheated steam from five oil-fired, cylindrical boilers, working at a pressure of 250 lb. per sq. in. under forced draught. In the engine-room are a number of special features designed to cope with the trade on which the vessel will be employed in the Antarctic.

It is interesting to note that the *Kosmos* is the first ship to be specially built as a whaling factory, all the existing vessels to date having been converted to make them suitable as factory ships. On completion of the trials the vessel proceeded to Sandefjord, from which Norwegian port she will shortly leave on her owners' service.

During construction the vessel has been under the supervision of Arnesen, Christensen & Smith, Newcastle-on-Tyne.







Four Views of the Whaling Oil Factory "Kosmos," showing the Peculiar Structural Features for Hauling the Carcases on Board and dealing with them on Deck. (*See opposite page.*)

NORWAY'S WHALING INDUSTRY.

ANTARCTIC FLEET INCREASE.

FROM OUR OWN CORRESPONDENT.

OSLO. (*By Mail.*)

According to reports from the whaling towns of Sandefjord and Tonsberg, the total Norwegian whaling fleet which will leave for the Antarctic in a couple of months will be about 50 per cent. larger than last year. No less than 190 whale boats, 37 floating factories and seven transport vessels are going South, and something like 7,000 men, about 2,000 more than last year, will find employment in connection with the industry.

Judging from the information now available, the following companies will be represented:—

A/s Hektor, with a permanent station at Deception, South Shetlands, and with three floating factories, Hektoria, Ronald and Maudie, for operation near the ice barrier. The company has also acquired the transport vessel Melville, and will be operating 16 whale boats.

A/s Tonsberg Company, with a permanent station on South Georgia, operating a transport vessel and four whale boats. In addition, the company is operating the floating factory Orwell and four whale boats off the South Orkneys.

A/s Antarctic and Pelagos, with two floating factories and 10 whale boats.

A/s Pontos, with a floating factory and three whale boats. This company will co-operate with the Antarctic and Pelagos companies.

A/s Africa, with the floating factory Strombus and four whale boats.

A/s Skytteren, with a floating factory and five whale boats.

Anglo-Norse, Ltd., with a floating factory and five whale boats.

Falkland Whaling Company, with a floating factory and five whale boats.

Bryde and Dahls Whaling Company, with two floating factories, one transport vessel and ten whale boats.

A/s Frango, with three whale boats.

A/s Mexico, with the floating factory Esperanza and three whale boats.

A/s Odd, with a floating factory and four whale boats.

A/s Sevilla, with a floating factory and four whale boats.

A/s Sydhavet, with the floating factory Svend Foyn I. and four whale boats.

A/s Rosshavet, with the two floating factories C. A. Larsen and Sir James Clark Ross and ten whale boats.

A/s Vestfold, with a permanent station on South Georgia, a transport vessel and four whale boats.

A/s Kosmos, with a floating factory and four whale boats.

A/s Ornen, with two floating factories and seven whale boats.

Viking Whaling Company, Ltd., with a permanent station on South Georgia, two floating factories—Southern Princess and Southern Empress—the transport vessel Southern King and fourteen whale boats.

Cia Argentina de Pesca, with a permanent station on South Georgia, a floating factory, a transport vessel and eight whale boats.

A/s Globus, with a floating factory and five whale boats.

A/s Atlans, with a floating factory and five whale boats.

A/s Polaris, with a floating factory and five whale boats.

A/s Norge, with a floating factory and four whale boats.

A/s Laboremus, with a floating factory and four whale boats.

Knut Knutesen, with a floating factory and four whale boats.

Chr. Salvesen and Co., Leith, with a permanent station on South Georgia, and the three floating factories Carmarthenshire, Cardigan[illegible] and Saragossa, the transport [illegible]da, and twenty whale boats.

Belfast's Whaling Factory Ship.

THE whaling factory ship *Kosmos*, which has been built by Workman, Clark (1928), Ltd., Belfast, for the Kosmos Whaling Company, carried out her official trials last week. Constructed on the longitudinal system to Lloyd's Register's highest class and in compliance with the requirements of the Norwegian Sea Control, she is 570 ft. in overall length, 77 ft. in breadth and 50 ft. 6 in. in depth. The displacement is about 32,000 tons. The factory is in the upper 'tween deck, which has a depth of over 15 ft. and is equipped with the latest machinery for the economical extraction of oil from the maximum catch of whales. The weather deck above the factory is clear of obstructions to facilitate the handling of the whales and the cutting-up process. At its after end is a large slipway along which the whale carcases are drawn from the sea by means of powerful winches and special derricks. Spacious accommodation is fitted for the vessel's officers, engine-room complement and factory crew, who number more than 300, while extensive insulated and ordinary store-rooms and cooking facilities are provided to meet the requirements of the vessel's special trade, which necessitates long absence from home waters.

A VERY large distilling plant is carried to ensure a constant supply of fresh water. The propelling machinery —which has also been constructed by Messrs. Workman, Clark—consists of a set of quadruple expansion engines taking steam from five oil-fired cylindrical multi-tubular boilers, fitted with superheaters and working at a pressure of 250 lb. In the engine-room are a number of special features designed to cope with the requirements of the special trade in which the vessel will be employed in the Antarctic seas. The *Kosmos* is, it may be added, the first vessel to be built especially as a whaling factory.

WHALING INVENTION.

SUCCESSFUL TEST OF NEW APPARATUS.

FROM OUR OWN CORRESPONDENT.

OSLO, 8TH AUGUST.

The new invention by the engineer, Mr. B. Holm-Hansen, for killing whales by electricity is reported to have undergone successful trials. A whaling expedition sent out to try out the invention has this week instantaneously killed three whales near the Faröe Islands.

Leading men in the whaling industry consider the invention to be revolutionary, as the capacity of whaling boats will be more than doubled.

The invention provides for an electric charge through the harpoon line, which causes immediate paralysis to the whale

It is intended to form a new company to exploit the invention, which has been patented.

5,500 WHALES KILLED IN A SEASON.

ANTARCTIC INDUSTRY INVESTIGATED.

The second report of the Discovery Investigations Committee deals with the Southern whaling season from January, 1927, to May, 1928 (Stationery Office, price 1s. net). The main purpose of the committee is to make a serious attempt to place the whaling industry on a scientific basis. Other objects are to render service to navigation by conducting a hydrographic survey of the whaling areas, to inquire into the resources of the region from the point of view of fisheries, and to add to scientific knowledge of the sea.

"The whaling season 1927-28," says the report, "proved a momentous one for whaling in the Antarctic. Whaling off the South Shetland Islands was more successful than in any previous year. Five thousand five hundred whales were taken, and the yield of oil was over 66,000 tons, an increase in output of 47 per cent. on the previous season, itself a season only once surpassed for output in the history of South Shetlands whaling; and the whales were taken by catchers working neither from shore stations nor from mother-ships anchored in the shelter of land, but from factory ships operating along the edge of the ice. It is true that the success attending the operations very probably may have been due to climatic conditions which occur only from time to time, but its magnitude, coupled with the particular character of the whaling, resulted in an enormous expansion of whaling enterprise. The accompanying increase of catching power must inevitably modify profoundly the future of whaling and the problems attending its regulation.

"It is fortunate," adds the report, "that the Discovery Investigations have not only made considerable progress in the study of the whale stock and the conditions affecting the distribution and abundance of whales, but that they have incidentally secured records of these conditions before and during the season which has proved the occasion of such remarkable changes in the magnitude of the industry and in the methods it adopts. Rate of growth and reproduction, distribution, and migration, the causes determining natural good and bad seasons, are of the essence of any problem of whaling regulation. The great increase which will occur in the destruction of whales—a destruction sufficient to alarm experienced whalers, whose immediate interest is in an expanded industry—greatly increases the need for a speedy attainment of definitive results in the researches.

"The facts have to be faced that the industry may be irreparably damaged before the greatest diligence in research can furnish complete solutions of all the problems with which they deal, and that measures of a tentative and temporary character may have to be decided upon by the Governments interested in order to avoid a possible collapse."

Full consideration of the material secured by the committee is proceeding, and the first volume of full reports will appear this year.

ELECTRIC WHALING HARPOON.

(FROM OUR CORRESPONDENT.)

OSLO, AUG. 8.

A Norwegian civil engineer, M. Holm Hansen, has invented an electric harpoon containing 76 volts for killing whales. The invention has been tried successfully three times during the last eight days off the Faeroe Islands, the whales being killed instantaneously. This new method has excited great interest in whaling circles, where it is regarded as much more economical than the present means of killing.

new inherited characters originate in animals and plants. While it may not be inferred from existing evidence that such radiation is the direct cause of mutation, yet a way is now open by which this question can be attacked experimentally. It is our intention to conduct a second experiment which will approximate fairly closely to the requirements of a crucial test of this important question.

E. B. Babcock.
J. L. Collins.

College of Agriculture,
University of California,
Berkeley, California.

Mammalian Life in High Latitudes.

How far seals and whales migrate north in the summer months is a moot question, but the following facts suggest that the latitude reached in the case of the floe-seal, the narwhal, and the Greenland whale is a high one.

The occurrence is recorded, in log-books of whaling vessels in my possession, that in the Greenland Sea, in lat. 80°—a situation in which, owing to the direction of the prevailing winds, the ice is usually drifting south—in May of numbers of floe-seals—seals which, as Stefansson explains in his "Friendly Arctic", are tied to sheets of ice, of moderate thickness, the product of a single winter's frost, which therefore must have drifted south from a higher latitude during the winter and early spring. For example, on May 27, 1887, lat. 79° 58′ N., long. 3° E., "got into a Floe-water; some Narwhals and many floe-seals".

The occurrence is also recorded in my father's log-books, that in the Greenland Sea, in lat. 80°, in May, large numbers of narwhals were often seen going north-east and in the direction of the high latitude in which the observers in the *Fram* saw them. Example, May 28, 1887, lat. 80° N., long. 2° E., "Numbers of Narwhales passed us during the night; all going north-east".

The Greenland whales, with the exception of a few old ones, mostly males, which in some seasons were seen off the Greenland coast in the summer months, deserted the waters between Greenland and Spitsbergen in June (in late seasons, not until July) and were not seen again by the whalers until the following spring. As Scoresby says: "It has often happened that not a single whale has been seen by any individual belonging to the whole Greenland fleet after perhaps the middle of June". They disappeared going north-west, but how far they went in that direction the whalers, being unable to follow them, never knew. Example, July 7, 1876, lat. 78° 40′ N., long. 2° W., "Saw a whale . . .; whale (the last one seen that season) making much headway to north-west".

The Greenland whale appears also to make the Arctic Ocean its usual breeding place; the fully grown whales that Scoresby speaks of seeing in latitude 80°, in the spring, which disappeared by the end of April, might quite well have been pregnant females on their way to produce their young in the Arctic Ocean. As mentioned in my letter on the "Breeding Habits of the Greenland Whale" (Nature, April 13, 1929), Greenland whales were seldom seen in the Greenland Sea with calves with them, and then usually in the spring, in lat. 79° or 80°, on the confines of the Arctic Ocean. That they did have calves was proved beyond a doubt, as my father says, by the numbers of young whales that were frequently seen.

It seems also worth while pointing out that each of the Greenland whale's haunts communicates with the Arctic Ocean and that they migrate towards it in the spring: the whales of the Bering Sea going north through the strait of the same name, those of the Greenland Sea north through the strait between Greenland and Spitsbergen, and those of Davis Strait and Baffin Bay west through Lancaster Sound, etc. Lastly, in the Antarctic, where there is no polar ocean to which it can retreat in the summer months, it is absent.

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FURTHER INCREASE IN WHALING INDUSTRY.

FEARS OF OVER-EXPANSION.

(FROM A CORRESPONDENT.)

COPENHAGEN.

For a long time warnings have been pronounced against the over-expansion of the whaling industry, and last autumn an attempt was made to prevent the formation of new companies. This effort was, however, in vain, and the number of floating factories for the 1928-29 season showed an increase of about 75 per cent. on the previous season. Further increases of 30 per cent. in the number of floating factories and of 50 per cent. in that of whalers have since been reported. The *Økonomisk Revue* says, therefore, that it is time to publish a serious warning.

The stock of whales is certainly not increasing; on the contrary it is in all probability decreasing, and there can be little doubt that the continual additions to the equipment for hunting the whale will result in a serious diminution in the stock of the animals. In these circumstances international regulation seems absolutely necessary. It is deep-sea whaling that has caused the great expansion of killing. Obviously this form of whaling has various advantages, but it is disastrous to the stock and may bring about the extermination of the species. The total number of Norwegian whaling companies and companies managed by Norwegians operating during the coming season is 23, possessing 30 floating factories, 145 whaling boats, three fixed stations, and four transports. There are four companies, not Norwegian, with seven floating factories, 47 whaling boats, three fixed stations, and three transports. For the coming whaling season 8,400 men have been engaged in Norway.

NEW TERROR FOR WHALES.

OSLO, Friday.—A joint stock company with a capital of £275,000 is being formed to exploit an invention for killing whales by electricity.

As soon as the special harpoon strikes into the blubber the whale is seized with tetanus and dies, while the body remains floating.—Reuter.

ELECTROCUTING WHALES.

£250,000 COMPANY TO WORK NOVEL INVENTION.

OSLO, Aug. 8.

Whales will in future be electrocuted f a new invention which has been ested is taken up by whaling com- panies. Norwegian engineers have levised a method of killing whales nstantly by electric currents in the iarpoons.

Three whales were instantly killed ast week by the electric harpoons in . test off the Faroe Islands. The new nvention is considered of enormous alue since, as whales do not sink /hen dead, the number of whaling essels could be reduced by half.—:.U.P.

An Exchange message from Oslo tates that a company with a capital f £250,000 is being promoted there to xploit the invention.

Aeroplane for Whaling

WHEN THE great Kosmos Whaling Expedition leaves for Antarctic seas this month there will be on board Mr. Lief Lier, the famous civil airman.

This is a new departure in the history of whaling. In his special Moth machine, the Norwegian aviator will scour the seas in search of the gigantic fish and lead the expedition by means of prearranged signals to the most promising fishing grounds.

The scope of the expedition will be greatly enlarged by the advent of the airman, and it is expected that before long there will be systematic co-operation between fishing fleets and "outposts in the air."

Lief Lier, the airman, is to accompany a whaling expedition

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rom FINANCIAL TIMES.

Dated 13 AUG 1929.

AUSTRALIAN WHALING

COMPANY FORMED IN SYDNEY.

FROM OUR OWN CORRESPONDENT.

SYDNEY, 11TH AUGUST.

An Australian whaling company has been formed in Sydney with an authorised capital of £750,000, of which £415,000 will be offered for subscription, for the purpose of exploiting the whaling resources of the Antarctic and Southern Seas and the acquisition of a whaling station at Norwegian Bay, Point Cloates, in the North-West of Western Australia, already operating, and the construction of a shore station on the South Coast of New South Wales.

It is proposed to purchase five whaling gunboat chasers, a whaling factory ship of 80,000-barrels oil capacity, and a fully-equipped mother ship to accompany the chasers.

The estimated net profits of the Norwegian Bay whaling station, based on actual catches for several years are £107,000. The directors point to the profits of Norwegian whaling companies domiciled 14,000 miles from their hunting bases. The close proximity of Australia should permit equivalent profits on more extensive operations. Four Norwegian companies have shown an average annual dividend for four years of 45 per cent.

The resources of the Antarctic are still almost unlimited. Although the oldest Antarctic fields have been consistently worked for 22 years, they returned during the first three months of 1929 120,000 barrels of oil.

Valuable markets are available for whale oil and its by-products for the manufacture of margarine, lard, soaps, lubricants, leather dressing, glycerine, candles, cosmetics and wax substitutes.

Sir Arthur A. C. Cocks, an ex-Treasurer and ex-Agent-General of New South Wales, is acting as chairman of the directors.

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THE WHALING INDUSTRY.

TWO NEW NORWEGIAN REFINERIES

The next few weeks will be a period of feverish activity at Sandefjord, Tönsberg, and the other Norwegian ports which are the headquarters of a very large proportion of the world's whaling industry. Nearly two hundred whalers will, during the coming season, participate in the hunt for this valuable mammal, compared with about a hundred last season. In addition to seven shore stations, there will be 37 floating refineries, the whole having a total capacity of something over two million barrels of oil. It has been estimated that the total production last season was 1,600,000 barrels.

Two recent acquisitions of the Norwegian whaling industry visited Norway for the first time last week. One was the floating refinery *Kosmos*, which has been built by Workman, Clark (1928), Ltd., Belfast, and which arrived at Sandefjord, the other being the *Skytteren*, the former White Star liner *Suevic*, which has been converted into a floating refinery at the Germania Werft, Kiel, and which arrived at Oslo. The *Kosmos* is Norway's largest ship, having a displacement of 32,000 tons, and is expected to leave Norway this week after taking in provisions. In conversation with a representative of the "Norges Handels og Sjöfartstidende," Mr. Anders Janre, the manager of the Kosmos company, expressed the view that the *Kosmos* was the ideal size for whaling in the Ross Sea, as she could carry sufficient fuel oil for a voyage of five months, compared with 3½ months for the other refineries operating in those waters. Another advantage possessed by the *Kosmos* was the large working space, the flensing deck having an area of 2400 square metres. From Norway the *Kosmos* will proceed to Venezuela, where she will take in 20,000 tons of fuel oil.

The *Skytteren* was the first job of the kind to be undertaken by the Germania Werft. She is 550 ft. in length, and has tanks for 80,000 barrels of oil, compared with the 140,000 barrels of the *Kosmos*. Her daily capacity is 2000 barrels of oil and 200 bags of meal. A slipway has been constructed in the stern, up which the whales are hauled by 50 ton winches on to a flensing deck upon which there is ample space for two whales to be dealt with at a time. The blubber passes through hatches down to the blubber boilers, while the flesh and bones are hauled up a small slipway to a deck which is provided with powerful saws for cutting up the bones. The oil-extraction equipment includes 17 boilers and three sets of Hartmann apparatus, six oil separators, and a patent installation, the first of its kind, for converting into meal the grax which is left after the oil has been extracted from the blubber.

her Whaling Company

...TING company has been formed in Sydney (N.S.W.) ... authorised capital of £750,000, of which £415,000 ... offered for subscription, for the purpose of exploiting whaling resources of the Antarctic and Southern Seas ... the acquisition of a whaling station at Norwegian Bay, Point Cloates, in the North-West of Western Australia, already operating, and the construction of a shore station on the south coast of New South Wales. It is proposed to purchase five whaling gunboat chasers, a whaling factory ship of 80,000-barrels oil capacity, and a fully equipped mother ship to accompany the chasers. Sir Arthur A. C. Cocks, an ex-Treasurer and ex-Agent-General of New South Wales, is acting as chairman of the directors.

AN AUSTRALIAN WHALING COMPANY.—An Australian whaling company has been formed in Sydney with an authorised capital of £750,000, of which £415,000 will be offered for subscription, for the purpose of exploiting the whaling resources of the Antarctic and Southern Seas, for the acquisition of a whaling station at Norwegian Bay, Point Cloates, in the North-West of Western Australia, already operating, and the construction of a shore station on the South Coast of New South Wales. Sir Arthur A. C. Cocks, an ex-Treasurer and ex-Agent-General of New South Wales, is acting as chairman of the directors.

Whaling Industry Booming.

The whaling industry is booming at present (says a Durban correspondent), owing to the number of excellent catches. Over 600 whales have been captured by two whaling companies with 17 ships, since the season started at the beginning of May.

The Union Whaling Co., with nine ships, has captured 351 whales to date, against the corresponding total last year of 276 whales. With this company Fin whales predominate. The biggest catch for a single week totalled 61, which is claimed to be a record.

The Premier Company, which has only eight ships out against the Union Company's nine, has a bag to date of about 250 whales, and the company is stated to be doing quite well.

The catch is claimed to be excellent all round, though there appears to be slightly less oil content per unit than last year. Whales are plentiful about 50 miles out off Port Shepstone.

WHALING WORK AT GOTHENBURG

During the past few days two large whale-oil factories have occupied the two floating docks of Eriksbergs mek. Verkstad at Gothenburg. The *Anglo-Norse*, belonging to an Anglo-Norwegian whaling company, went to Gothenburg in April as the *Maricopa*, a tanker previously owned by Messrs. Wilhelmsen, of Oslo, and has been converted at the yard. Her equipment includes 24 blubber boilers, six sets of Hartmann apparatus, and seven separators. Above the factory is a flensing deck 256 ft. in length. There are four 15-ton and four 50-ton derricks on six pole masts, and the vessel, which has a capacity of 55,000 barrels of whale oil, has accommodation for 200 men. The second vessel in dock was the *Maudie*, belonging to a Tonsberg firm, which has been repaired and fitted with eight new blubber boilers.

The South African ...

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GERMANY AND THE WHALING INDUSTRY.

iew of the active interest recently shown in the whaling industry the article below, which the Seifensieder Zeitung *extracted from the* Frankfurter Zeitung, *is of value in showing German opinion.*

SPECIALLY TRANSLATED.

FOR some months past there have been more or less authenticated rumours of newly formed companies in Germany having as their main object the production of whale oil and the ownership of whaling fleets with all the most modern equipment. Near the end of last year a company was formed at Brake under the name of "Deutsche Hochsee-Wallfang-Ges. Tobias & Co.," but it is possible that this is an independent concern, having no connection with the whaling "Interessen" group. Little has been heard lately of this group since last March, when the Hamburg Chamber of Commerce issued a vigorous protest against any State participation in ventures of this kind, to which protest the "Interessen" subsequently replied. The time seems opportune, says the "Frankfurter Zeitung," for an impartial survey of the whole position in regard to whale oil, with special reference to the place Germany may be expected to take in this important world industry.

Owing to recent advances in the technology of oils and fats, and the refining thereof, it is now possible to obtain whale oil of such quality and absence of odour that it is admirably adapted to the manufacture of margarine. The demand for whale oil for this purpose has grown enormously of late years. The total world production of whale oil last year, according to the "Frankfurter Zeitung," was over a million tons (?), of which 90,000 tons, or barely 10 per cent., went to Germany. For the present year Germany's requirements of whale oil will amount to at least 100,000 tons. According to the most recent Customs Returns for the port of Hamburg, over 80 per cent. of the whale oil imports remain in Germany, the balance being sent to Holland, Italy, and the United States. The chief consumer in Europe is the Margarine Trust (Jurgens and van den Bergh). This concern has denied the persistent rumours that it was in any way interested in whaling. Besides the use of whale oil in margarine manufacture, the soap-making industry uses fairly considerable quantities, including whale oil by-products.

Just before the War the vastly augmented demand for whale oil had nearly precipitated a crisis in the industry, inasmuch as the supply of whales in Northern European waters became practically exhausted, owing to the ceaseless and ruthless pursuit of whaling and the reckless and indiscriminate methods adopted. This led to the almost complete abandonment of whaling in northern waters, in place of which there was an almost universal diversion of interest to the southern oceans. Led by the Norwegians, the whaling industry found in South Georgia, the South Shetlands, Ross Sea, and other parts of the great Antarctic abundant supplies of whales; but the same ruthless methods have been adopted, and now, even here, there is said to be imminent risk of early extermination. It is difficult to get at the real truth of this. Some of the leaders in the industry scoff at the idea of extermination, and confidently assert that the widely expressed fears on this head are groundless; and, further, the scientific expeditions which have been sent to the South, e.g., that of the "Discovery" by the British Government, are quite inconclusive in their results, that definite results are unattainable by the methods used, and that, on the whole, these expeditions are a complete waste of public money. However this may be, one may well suppose that, in their own interests, the whaling companies would do all they can to stave off the evil day of extermination and pursue, on the contrary, an intelligent policy of conservation. The latest Norwegian reports estimate the production of whale oil for the season 1928-29 at 1,600,000 barrels, as compared with 1,400,000 barrels the previous year. [At six barrels to the ton this means 267,000 tons, and nowhere near the million tons above mentioned.] Norway's predominating part in the whaling industry is well known, and amounts to something like 80 per cent. of the whole world production. New companies are constantly being formed in Norway, and the total capitalisation for that country alone is probably not far short of £10,000,000, much of it being English money. The new system of floating whale oil factories, whereby the whales are captured by "feeder" whaling boats and conveyed to the floating factories at sea, is being widely adopted. In this way the whalers are not dependent on the land factories, and can go much further afield in search of their prey.

Before the War, Germany took little part in this great whaling industry, a strange neglect for which she has paid dear; but since the War it is rather remarkable that, in view of all the facts, she has not taken a more prominent place, the pertinent facts referred to being, firstly, that she is a large consumer of whale oil for her margarine and other factories, and, secondly, in other branches of deep sea fishing she does take a prominent place.

Germany has not, it is true, any skilled harpooners or other trained whaling staff, but it should not be difficult to train men for the work, and in any case other countries, like England and the U.S.A., have to look to Norwegians to staff their whaling ships, and Germany could do the same. The fact that the whaling industry is usually of a highly speculative character should not deter Germany from entering the field; and, in any case, the profits realised of late years have been high, and the industry has proved extremely remunerative, dividends paid ranging from 15 to 30 per cent. by many of the Norwegian companies, and values of shares are well up. The price of crude whale oil during the past few years has constantly risen, namely, from round about £20 per ton to £33 per ton. An important question for Germany at the moment seems to be whether Government assistance should be given to help finance a large whaling enterprise. In view of the present state of German finances and the many other calls on her resources, it is doubtful whether any such schemes would find much support among Government officials, and the recent protest by the Hamburg Chamber of Commerce against any form of Government participation probably indicates the main trend of opinion in business and financial circles.

WONDERS OF A FLOATING TOWN.

WHALER THAT WAS ONCE A LUXURY LINER.

A floating industrial town now lies in the Queen Alexandra Dock, Cardiff, at the present time. It is the Pelagos, one of the largest and best equipped whaling ships of the present day.

In October the Pelagos, with five whalers, will steam into the lonely wastes of the Antarctic, and for six months the fleet will remain among the ice and snow harpooning whales and extracting the valuable oil from the carcases.

CAPTAIN SCHJELDSOE.

The Pelagos, in which the carcases will be cut up, the blubber boiled and the oil extracted and refined, was a stately White Star liner a few years ago.

As the Athenic, it was carrying passengers between England and Australia.

The Transformation.

The liner has undergone a remarkable transformation, however, and, to-day, decks upon which rich passengers once lounged are covered by derricks, winches, saws, and whaling gear.

Saloons, lounges and libraries have disappeared, and in their places are workshops, refineries, and boilers.

The vessel has come to Cardiff to ship 12,000 tons of bunkers.

No crew works harder than the 200 picked Norwegians aboard the Pelagos —a 16-hour day is accepted by them as a matter of course.

But no crew has better facilities provided for them than the hardy Norsemen who spend half the year beyond the pale of civilisation.

A miniature farm is run on the aft-part of the steamer, and livestock is killed aboard for the crew's food.

The wireless equipment is most modern, and every day the operator will receive a special news bulletin from Norway.

Real Cooks!

The galley is fitted up luxuriously, and is superintended by skilled cooks.

A stalwart Norseman stood smoking on the bridge when a *South Wales Echo* reporter stepped aboard to-day. He was Mr Sverre Schjeldsoe, who combines the offices of master mariner and factory manager.

When I chatted to him (writes the reporter), a typewriter ticked merrily in a nearby cabin. The captain of a whaler is a busy man. Mr Schjeldsoe finds a secretary an indispensable part of his equipment.

What a contrast with the grimy whaling masters of old was this brawny, clean-shaven man!

His suit was tailor-made, fitting his athletic form like a glove. In quiet, well-chosen language, he discussed whales, the whaling industry, and the scientific side of his occupation.

What They Don't Know.

It's an astonishing thing, he remarked casually, but no one has ever learnt the whale's age. Expeditions have been sent out, but have never succeeded in ascertaining it.

"Personally, I think a whale is fully grown at two years of age."

"What! exclaimed the reporter. "Whales weigh 100 tons! A two-year-old of that weight seems incredible."

"Ah! but you must remember whales are pretty heavy when they are born. Newly born ones are generally 15ft. long."

"Oh no, we don't waste much on this steamer," said the captain in answer to a query.

"We extract the oil from all the carcase.

"See here, these are powerful saws. They are used for cutting up the whale bones.

Boiled Tongue.

"The whale's tongue is also boiled for the oil. But the tongue is rather a hefty proposition, and too valuable to throw away. Tongues are usually 10 feet long, four feet wide, and two feet deep.

The captain explained that whales are harpooned and brought alongside the Pelagos by the whalers.

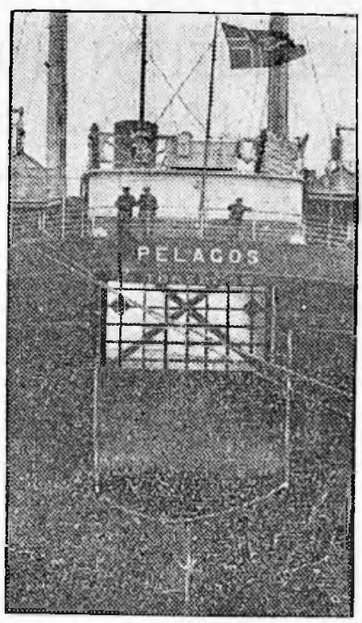
"And how do you get them aboard?" asked the reporter.

"I'll show you," said the captain. We've a big slipway aft. Come and have a look at it."

He pointed out a slipway as wide as Wharton-street. Two derricks reared their mightiness above it.

"We draw the whales out of the water with these," said the captain, indicating two winches, each capable of pulling 40 tons. "And we use 5in. steel wire to tow the whales.

"The blubber is cut off the carcase on deck and thrown through these openings," said Mr Schjeldsoe drawing attention to covered apertures on the deck, "and afterwards it is minced to pulp and pumped into the boilers."



The slipway in the stern of the ship, along which whales are drawn to the deck.

Blubber Boilers.

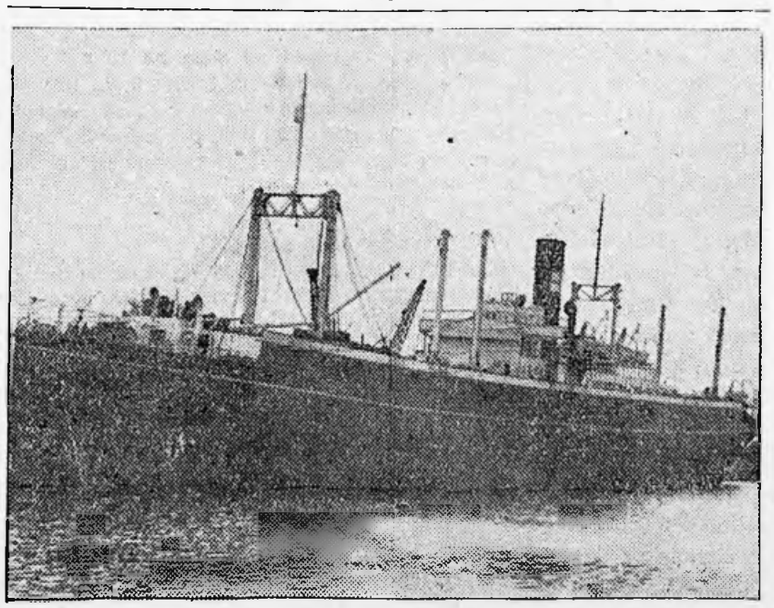
Boilers line the sides in the lower decks. There are no fewer than 21 huge blubber boilers on the vessel, each with a holding capacity of 40 tons, and in addition there are some 34 press boilers.

In the fore part of the ship engineers were busy in a machine shop fitted with lathes and many of the latest engineering appliances.

In another workshop blacksmiths were at work.

Asked to account for their presence, the captain said "We have to do everything ourselves on the high seas. We don't see port for six months, and have to fend for ourselves. Any needed repairs must be carried out at sea. That is why we have workshops, engineering shops and a smithy aboard."

There are no idlers on the Pelagos.



THE WHALING BOOM.

THE boom in the whaling industry, particularly in Norway, is not only causing magnificent new material to be built for the well-exploited fields, and numerous new companies to be floated for the purpose of working it, but also the acquisition of a considerable quantity of smaller and at first sight less promising tonnage for the exploitation of the lesser known fields and for the discovery of new ones. Among the tonnage thus acquired are the two purchases of a recently-formed Norwegian company, which apparently intend to prove that whaling can be done on a more reasonable scale than is the intention of the greater part of the industry. As a mother ship they have purchased the Norwegian twin-screw motorship Grosholm, which was built as the Danedronning in 1920, a vessel with a gross tannage of 1,734. As her catcher they have acquired the German trawler Nordfriesland, built in 1900 with a gross tonnage of 190. She was an excellent vessel of her type, one of the well-known North Sea trawlers built by Messrs. Smith's Dock Company, as the Alsatian, and as a trawler she has proved herself most successful, both under the British flag and the German. But the requirements of the whaling industry differ considerably from those of the trawling, and excellent little vessel as she is she is not likely to be nearly as successful as the specially-designed whale catchers of which Smith's Dock Company have so long made a speciality.

NORWAY.

Whaling Guns.

The gun section of Kongsberg Vaabenfabrik has been very busy lately on the last whaling guns to be delivered for the season. This year a total of 60 such guns has been turned out at the works, the value being nearly half a million kroner (about £27,475).

The steamer Eva, of 2,350d.w. tons, built by Bergens Mekaniska Verksted for the shipowners, August Kjerland og Co., has made a successful trial trip. This is the first new construction of importance at the Bergen yard since the period of depression in the shipbuilding industry.

WHALE FACTORY SHIP.

Voyage to Ross Sea.

One of the most remarkable vessels afloat leaves Birkenhead Docks to-morrow on a whaling expedition to Ross Sea. She is the "Southern Princess" (7,300 tons), owned by the Southern Whaling and Sealing Co., Ltd., Liverpool, and has been converted from an oil tanker to a floating whale factory with equipment to hoist whole whales aboard.

Her special features include the removal of the funnel to the port side to allow ample room for dealing with the whales, and the building of a new upper deck over the existing deck. From the stern end of the new deck there is a slipway slanting down to the water level, so that carcases of whales will be hoisted up whole.

Below deck are blubber butts, boilers, packing machines, and settling tanks. The existing oil tanks will be used for carrying fuel for the ship, and for the five steam whalers to accompany her on the voyage. She can carry 75,000 barrels of whale oil, equalling 12,500 tons.

WHALING UP TO DATE.

TANKER AS FLOATING FACTORY.

ROSS SEA TRIP.

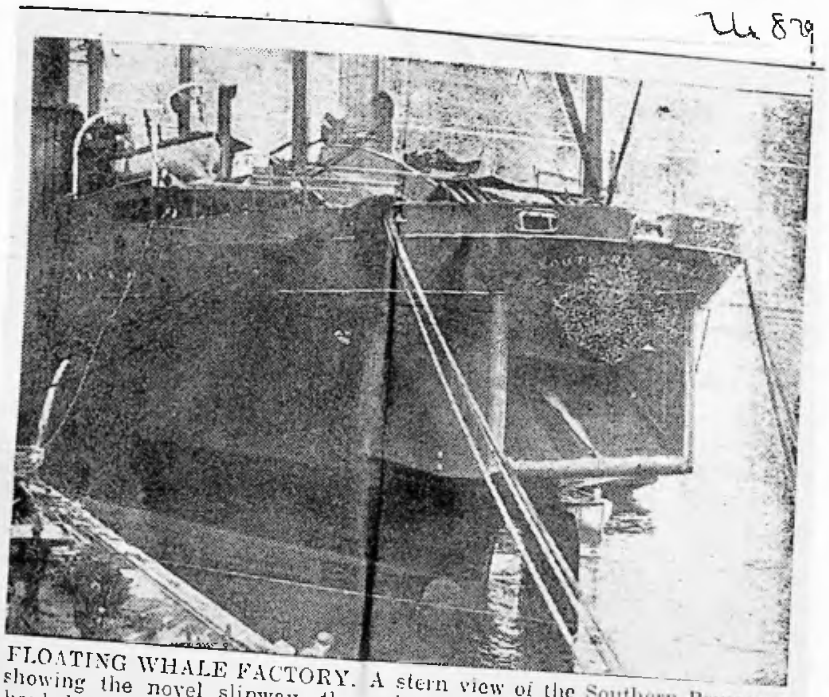
One of the most remarkable vessels which sails the seas will leave Birkenhead to-morrow for a whaling expedition to Ross Sea.

She is the Southern Princess (7300 tons), and has been converted from an oil tanker to a floating whale factory, with equipment to hoist whole whales aboard.

From the stern end of the new upper deck which has been added there is a slipway slanting down to the water level, for hoisting up the carcases.

Below deck are blubber butts, boilers, packing machines, and settling tanks.

The existing oil tanks will be used for carrying fuel for the ship, and for the five whalers which are to accompany her on the voyage.



FLOATING WHALE FACTORY. A stern view of the Southern Princess, showing the novel slipway through which complete whales can be hauled on board. The ship, a converted oil tanker, will leave the Mersey, from Birkenhead, tomorrow.

NEW FLOATING WHALE FACTORY.

Liverpool Vessel to Leave for the Antarctic.

EX-OIL TANKER.

One of the most remarkable vessels to sail the seas will leave Messrs. Cammell Laird's Birkenhead docks for a whaling expedition to the Ross Sea tomorrow.

She is the Southern Princess (7,353 tons), owned by the Southern Whaling and Sealing Co., Ltd., of Liverpool, which has been converted from an oil tanker to a floating whale factory, and which has been reconstructed to allow whales to be hoisted aboard whole.

The Southern Princess was formerly the San Patricio, an oil tanker then owned by the Eagle Transport Co., of London. She was brought to the Mersey about two months ago. The funnel has been moved to the port side to allow of ample room for dealing with whales, and a new upper deck has been built over the old one.

From the stern end of the new deck is a cleverly constructed slipway slanting down to the wate. level, and it is on this that the carcases of whales will be hoisted up on deck whole.

Below this deck are housed blubber butts, boilers and packing machines, and some of the old oil tanks will be used for settling tanks. Most of the existing main oil tanks will be used for carrying the fuel oil for propelling the ship, and also for the five steam whalers which will accompany her on her voyage in Southern waters.

The Southern Princess has a carrying capacity for 75,000 barrels of whale oil, equalling about 12,500 tons. No time will be lost in leaving the Mersey since it is essential that she should reach her destination as early as possible in September, otherwise she would be locked out of the whaling ground by the pack ice.

FLOATING FACTORY.

HOISTING WHALES ABOARD.

One of the most remarkable vessels to sail the seas leaves Birkenhead Docks to-morrow for a whaling expedition to Ross Sea.

She is the Southern Princess (7,300 tons), owned by the Southern Whaling and Sealing Company Ltd., Liverpool, and has been converted from an oil tanker to a floating whale-oil factory.

From the stern end of a new upper deck there is a slipway slanting down to the water level so that carcases of whales can be hoisted up whole.

Below deck are blubber butts, boilers, packing machines, and settling tanks. The vessel can carry 75,000 barrels of whale oil, equalling 12,500 tons.

Growth and Longevity of Whales.

In his letter to Nature of June 15, p. 910, Mr. Gray suggests that there is evidence that the Greenland whale grows and multiplies slowly, and attains a considerable age, and he contrasts this with the conclusion mentioned in my paper at the British Association, 1928, that blue and fin whales reach sexual maturity in a comparatively short period. He refers (1) to the length of the Greenland whale and its whalebone at different stages of the whale's growth, (2) to the absence of any sign of increase in the numbers of this species, and (3) to the finding of old harpoons in Greenland whales.

1. It is not explained on what evidence the lengths of the Greenland whale at birth, weaning, and sexual maturity are arrived at, and even if the figures mentioned are accurate, it does not necessarily follow that maturity is reached only after a comparatively long period. The growth of the whalebone should be considered with caution in this connexion, for there is evidence that it undergoes a sudden increase in length immediately after weaning.

2. It is true that the early attainment of sexual maturity would favour comparatively rapid increase or replenishment of numbers, but we have to set off against this the very slow rate of reproduction; for a female, at least in the case of blue and fin whales, normally gives birth at intervals of not less than two years, and, except on very rare occasions, brings forth only one young at a time.

3. In view of Mr. Gray's evidence from the finding of old harpoons, it is difficult to avoid the conclusion that the Greenland whale may reach an age of forty years or more. It is possible that this species attains to a greater age than the rorquals, but I do not in any case think it impossible that, say, a blue whale might live to an age approaching forty years, though it seems probable that the majority of those killed in the sub-Antarctic are very much younger than this.

I should perhaps mention that the question of the growth and age of blue and fin whales is discussed in detail in a paper, now in the press, by Mr. J. F. G. Wheeler and myself, dealing with part of the Discovery Investigations.

N. A. Mackintosh.

c/o The Secretary,
Discovery Committee,
Colonial Office,
London, S.W.1.

NEW WHALING COMPANY.
Registered in New Zealand—Norwegian Manager.

WELLINGTON (N.Z.), Monday.

As a result of negotiations with certain Australian financiers, a new whaling company, to be known as the Pacific and Ross Sea Whaling Company, has been registered in Syndey and Dunedin simultaneously.

The capital of the company consists of 500,000 shares of £1 each, of which 50,000 Ordinary shares have been reserved for Norwegian residents.

This fact, combined with the appointment of M. Magnus Konow, who is now managing director of the Ross Hanet Whaling Company, to the post of manager of the new company is significant, in view of the New Zealand Government restrictions in the matter of granting whaling licences for the Ross Sea to Norwegians.

It is believed that an amalgamation of the two companies is possible at some future date.—Reuter.

BIG NEW WHALING COMPANY

50,000 SHARES RESERVED FOR NORWEGIANS

WELLINGTON, Monday.

A new whaling company, the Pacific and Ross Sea Whaling Company, with a capital of £500,000 in £1 shares, has been registered simultaneously in Dunedin and Sydney.

Fifty thousand of the shares will be reserved for Norwegian residents.

This fact, combined with the appointment of Mr. Magnus Konow, who is now managing director of the Ross Hanet Whaling Company, to the post of manager of the new company, is significant, in view of the New Zealand whaling licenses for the Ross Sea to Norwegians.

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SHIP CONVERSION RECORD.

OIL TANKER'S NEW GUISE.

WHALING FACTORY LEAVES THE MERSEY.

A SHIPREPAIR and conversion job just completed by Messrs. Cammell Laird and Co. for the Southern Whaling Co., Ltd., Liverpool, is believed to be a record in British ship-repairing. On May 25th last the Southern Whaling Co. placed an order with the firm for the oil tank steamer San Patricio (purchased from the Eagle Oil Transport Co., of London) to be converted into a whaling factory, and to-day the Southern Princess—for such the San Patricio has been renamed—is sailing from the Mersey for the Azores and the Ross Sea whaling grounds via the Panama Canal.

The conversion has been completed in 85 days, the work being the first of its kind to be carried out by a shiprepairing firm on the west coast. The contract was obtained for Merseyside in the face of keen competition with the north-east coast and the Continent. It was stipulated that the job should be completed by the 25th August to enable the vessel to store and sail in time for the whaling season, but it was, in fact, finished by the 17th August. The owners were able to place on board 600 tons of stores, 250 tons of coal bunkers, 1,600 tons of oil fuel bunkers, and provisions for the whole season.

It may be noted that about five miles of pipes were utilised in fitting up the Southern Princess, and the added weight resulting from the alerations approximate 1,700 to 2,000 tons.

The Southern Princess has been fitted with a slipway aft, by which the whales will be hauled on to a new deck, which has been erected above the existing upper deck for practically three-quarters of the length of the ship. On this deck the cutting operations, viz., removing the blubber, meat and intestines and cutting up the bone will be effected, waste being thus avoided. Below this deck are housed the blubber butts, boilers, Hartman apparatus, packing machines, &c., and on the next deck the settling tanks. The existing main tanks will be utilised for carrying fuel oil outwards for the use of the factory, ship, and the five accompanying steam whale catchers.

SELF-CONTAINED.

The Southern Princess will be capable of carrying sufficient oil to provide for herself and the accompanying fleet. and from the time she is loaded at the fuel oil port she will be self-contained througout the expedition, until her return to port at the end of the season. As the fuel oil is used it will be replaced by whale oil. The factory contains all the most modern whaling appliances.

The conversion work included the fitting of the slipway, erection of the new deck, installation of vats, and the necessary machinery, and the fitting of accommodation for 250 whaling hands, complete with messrooms, &c.

The Southern Princess is also fitted with Marconi wireless apparatus, comprising a short wave transmitter, a half kw. transmitter and receiver, direction finder, half k.w. telephony set, and she is to be controlled by gyro compass. Apart from being able to take the whale on to the deck, whales may be worked in the more customary manner along side in the water, and derricks, having 50 tons lifts, have been fitted for this purpose. The ship presents an unusual appearance, as in the case of this type of tanker the engines are situated aft, and in order to bring the whale up over the stern and on to the deck it was found necessary to move the funnels from the centre line of the ship on to the port and starboard sides.

The voyage from the Mersey to the Ross Sea will occupy 75 days, and the vessel will be on the whaling grounds for a period of probably 100 days, after which in all probability she will return to Liverpool.

She has a carrying capacity of some 75,000 barrels of whale oil, which at six barrels to the ton equals about 12,500 tons. Her daily maximum productive capacity is approximately 2,000 barrels or 333 tons. A factory ship of this type requires approximately 150 tons of fresh water per day, and the whole of this supply will be provided by evaporators supplied by Messrs. G. and J. Weir and Co., Ltd., Glasgow.

The Southern Princess is the third converted floating whale factory owned by the Southern Whaling Company, and in each instance the work of conversion has been done in British yards.

The conversion work was carried out under the supervision of Mr. A. C. Hay, of Messrs. Hay and Smart, consulting engineers and naval architects to the owners, Tower-building, Liverpool.

WHALING COMPANY.

WELLINGTON, N.Z., Monday.

As a result of negotiations with certain Australian financiers, a new whaling company, to be known as the Pacific and Ross Sea Whaling Company, has been registered in Sydney and Dunedin simultaneously.

The capital of the company consists of 500,000 shares of £1 each, of which 50,000 ordinary shares have been reserved for Norwegian residents. This fact combined with the appointment of M. Magnus Konow, who is now managing director of the Ross Hanet Whaling Company, to the post of manager of the new company, is significant in view of the New Zealand Government restrictions in the matter of granting whaling licenses for the Ross Sea to Norwegians. It is believed that amalgamation of the two companies is

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NEW WHALING COMPANY FORMED

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WIPING OUT THE WHALE

By GLEN STUART

SOMEWHERE the shades of our East Coast whalers of old must be restless and in despair. Some time, not so very far distant, the last of the Moby Dicks will yield its natural wealth. Man, with his enterprise, will have exterminated another creature; one of the oldest and romantic marine industries must of necessity disappear, and only literature will bear witness to the existence of a fantastic fish that could shiver the timbers of vessels with its mountain of blubber.

Nature plans to preserve species, but when man takes to hunting whales by airplane, as is now mooted, even nature is beaten. Soon the mammoth of the oceans will be as extinct as the dodo!

One Norwegian whaling company proposes to hunt whales with amphibian planes, tracking the oceans with a huge floating factory and depot ship of about 10,000 tons.

Menace to the Whale

In that very announcement lies a menace which is alarming scientists the world over, and which recalls the last voyage of the Discovery (now Southward bound again), when she sailed down into the Antarctic to find out how near to being wiped out was the whale.

Just two years ago the modern methods employed in whale hunting in the Ross Sea raised a storm of protest from every quarter.

Old-fashioned whaling, when harpooners were heroes and inspirations for novelists, had its effect on the numbers of the species; but nowadays a season's catch for one station almost equals the total catch of an area fifty years ago.

Two seasons ago a Norwegian company, by employing fast motor boats to hunt for schools, accounted for 700 whales, yielding a total oil value of about half a million sterling. A dividend of 40 per cent. was paid by the company, which, in addition, gave a royalty of half a crown per barrel to the New Zealand Government.

Now airplanes are to be used in the campaign, and the question of restriction arises.

Very little is known about the actual life of the whale—whether the Southern types are of the same species

Captured Blue Whales round a whaling boat.

as the Northern and migrate to different oceans. One of the tasks of the Discovery was to label whales in the Antarctic so that they might be identified in later years in other parts of the Seven Seas.

It is known, however, that with the lack of control in the northern areas whaling had reached its last gasp. In the season of 1911-1912 alone more than 10,000 "humpback" whales were taken from the northern waters. A significant decline in the species was evident. The same decline was noted on the African stations.

Almost Extinct

As early as the 16th century the Nordkaper whale was practically exterminated in the Biscayan fishing grounds; the East Coast fleets, which at one time hunted every season off Greenland and into the bays of Spitzbergen, were disbanded, and became no more on account of the lack of prey. The grey whale, which had its home in the Californian lagoons, was wiped out of existence many years ago; and now the Antarctic species is threatened with a speedier extinction by the activities of commercial agencies such as the vast Norwegian company now operating so profitably in southern waters.

The whole whaling industry is now practically confined to one slowly-diminishing area in the Southern Hemisphere—a comparatively limited sea expanse lying between South Georgia and the South Shetlands. This field was first exploited about 1904. According to first surveys by hunters, every whale that ever existed seemed to have been reborn and was haunting that area; but to-day, so serious has been the depletion—over 10,000 per annum—that a totally different tale is told.

Wily Survivors

Strangely enough, however, the Norwegians themselves do not fear the approaching end of the industry. According to them, thousands of whales visit the Ross Sea every summer, and that there are enough to keep whalers employed during the seasons for generations to come.

The adoption of speedy motor boats, and now airplanes, they state in defence of their activities, has been necessary on account of the remarkable "cuteness" of the giant mammals. Centuries of hunting, it would seem, have made them wary of boats and men, and the modern methods have been introduced to overtake the fleeing whales.

But against that argument there is the more weighty one of the expense willingly shouldered by the Dependencies of the Falkland Islands to finance an expedition to see what steps might be taken to prevent the complete extinction of the whale.

"MOBY DICK"
MINUS
THE ROMANCE

The Strenuous Business of Whaling Up-to-Date

AT the present moment there are several hundred huge whales swimming about in the waters round the South Pole with large round discs, like big drawing pins, sticking in their hide. Those whales will in time help to provide an answer to the question which is beginning to agitate the scientific world: Is the whale doomed?

Within the last few years the whole question of whale-fishing has grown immensely more serious. For the old days of sailing vessels and hand-thrown harpoons are gone. The harpoon still remains, sometimes in the old form, with four twelve-inch barbs, more often with the addition of an explosive head to bring the resistance of its victim to an earlier termination. But now, instead of being thrown by a burly man in a small boat, the harpoon is discharged at the whale from a special piece of small artillery, the Svend Foyn gun, which greatly reduces the chances of the whalers' prey.

But the most recent and the most important change that has come over whaling is the introduction of the factory ship. This has completely altered the whole character of the industry, which up till a year or two ago was confined to coastal areas or areas close to island bases, from which the small, sturdy whale-hunters would set out and to which they would return, towing their catch. At the base was a factory where the tasks of flensing the whale (*i.e.*, stripping the blubber from it) and converting the blubber into whale-oil were performed.

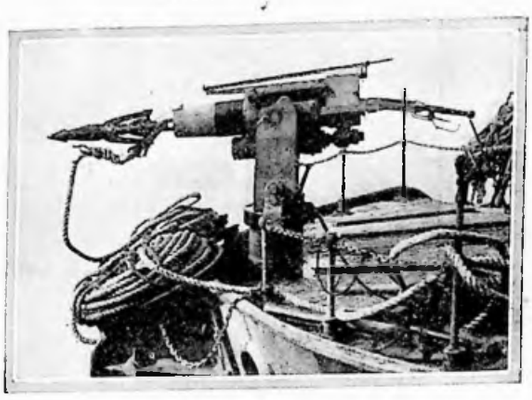
"Flensing." Workers on an up-to-date factory ship dealing with a whale's tongue.

But now the great factory ships, capable of holding from five to seven thousand tons of whale oil, have given the whaler the freedom of the ocean. The age of pelagic whaling, as it is called, has dawned, and with it has come a new unexampled prosperity to the industry. The factory ship sets out, accompanied by a flock of six or seven one-hundred-and-fifty-ton whale-hunters, each with a crew of eleven men and—most important of them all—the gunner. The whaling-ground reached, the hunters scour the seas in every direction for trace of whale. They bring their catch back to the factory ship, which opens the great door in its bow and pulls the whales aboard up a sloping plane. Cutting-up, boiling, and barrelling are all performed on the ship.

If no whales are found in one area, then the fleet moves off to another. No more is the whaler compelled to rely on the caprice of the whale; he can search out the whale in his farthest haunts; the leash that held him fast to a land-base is now attached to a mobile floating base. But the new freedom of movement conceals a danger—is the hunting of the whale in its up-to-date form too efficient? Is the whale in peril of extermination?

Let us say at once that any danger that there may be is not more imminent than thirty or forty years. Whales do not breed fast, but they have a long start of the

"Moby Dick" *Minus* the Romance



The deadly harpoon of the modern whaler. The point is an explosive bomb.

hunters, who have up till now only touched the fringe of the whales' native seas. And then, the gloomy prediction that the whaling industry was doomed has been made many times. In the 'eighties and 'nineties of last century, after the decline of the North American whaling industry, whale-hunting in European waters returned to prosperity, armed with the Norwegian Svend Foyn's gun and steam-driven ships. When whale-fishing in Arctic waters passed its best, the hunters went south, to South Georgia and the South Shetlands, among the dependencies of the Falkland Islands.

The production of whale-oil has grown from seventy-five thousand barrels in 1906 and eight hundred thousand barrels in 1913 to one million and twenty thousand barrels in 1925. At the present moment it is estimated that about one hundred and six thousand whales are killed every year.

The industry is entirely in the hands of Norwegians, who have developed the highest technical skill as whale-hunters and are now essential to the industry. Over seventy per cent. of the capital invested is Norwegian—although British financiers are beginning to take a greater interest in the prospects of whaling as a field for British money—but the *personnel* of the whaling companies is Norwegian to a man.

In spite of the new scientific devices whaling still remains an art rather than a science. Instinct and long training alone will fit a man for the vital post of look-out man, on duty in the crow's nest of the whale-hunter, the dizziest and most tempestuous post in the seven seas. Only an uncanny mingling of knowledge and observation sharpened to the point of clairvoyance will give that glance which, when it sees a certain colour, a certain sheen on the surface of the waves, undetected by the ordinary man, shouts "*Hoal*" (whale) and knows that the hunt is up.

As for the gunner, on him the whole success or otherwise of the expedition depends. There is no use finding whales if you can't hit them; and the whale, though large enough, is not always an easy target as he glides through the green Antarctic waters with only a few black inches of his back showing. Careful manœuvring will bring the gunner within range, but only a trained eye, a steady hand, and a reasonable amount of luck will crown the chase with success.

The gunner is the best-paid member of the whale-hunters' crew. A specially successful man can make fabulous sums, for he is paid five percentage on the value of each whale he kills. Almost all these hunters come from the small island of Nötterö, near Tönsberg, in Norway, and when the hardy wanderers come home in July after a long spell in the lonely Antarctic, there are immense jollifications, an immense amount of buying of motor-cars, fur coats, and other luxuries—and an immense amount of eating and drinking.

But meanwhile the problem of the whale remains. Will the new pelagic whaling, which has pursued the whale into the Ross Sea, the very nursery of his great race, destroy the largest of the mammals? It was to answer this question that the numbered discs, already mentioned, were shot into the hides of whales by British scientists.

A chaser makes for the factory with a catch of inflated whales in tow.

WHALES THREATENED WITH EXTINCTION.

NORWAY'S GIANT FLEET OUT FOR 11,000 CATCH.

37 FLOATING FACTORIES.

WHALES are threatened with extinction by the enterprise of Norwegian companies.

The killing of whales on a huge scale is causing anxiety in the Falklands, where a considerable revenue has been made from whales caught in the sheltered bays of the islands.

The new vessels which the various Norwegian companies have built allow the whales to be hunted through hitherto inaccessible waters, particularly in the Ross and Wedell Seas in the Antarctic.

Last year no fewer than 5,000 whales were killed in this sanctuary. Since then the boom in whaling shares in Norway has caused new vessels to be built, and this year it is hoped that the catch will amount to 11,000.

Share Gambling.

It will require a good catch to justify the amount of new capital that has been sunk in the business. The gambling in whaling shares in Norway has been equal to the gambling in rubber or oil in this country.

Several new depot ships have been built in British yards, and several old steamers, ranging from passenger liners to oil tankers, have been converted for the purpose.

The fleet which sails this year will consist of no fewer than 37 floating factories, some of them to operate on the coast and others to haul their catch on board bodily, seven transport steamers to take down supplies to the fleet and bring back their catch, and 90 whale-catchers.

Seven thousand skilled men are employed in this fleet, every one of them an experienced whaleman.

The Rigorous Life.

Although not so severe as in old-time whaling ships described in "Moby Dick," the life of these men is bound to be hard, and once the whales are encountered the work goes on at top pressure with only the shortest possible breaks for food and sleep.

All the men are Norwegians; in fact, they are almost the only people who go in for whaling nowadays. Even the Japanese whaling companies operating in the North Pacific have to go to Norway for their harpooners and highly-skilled men.

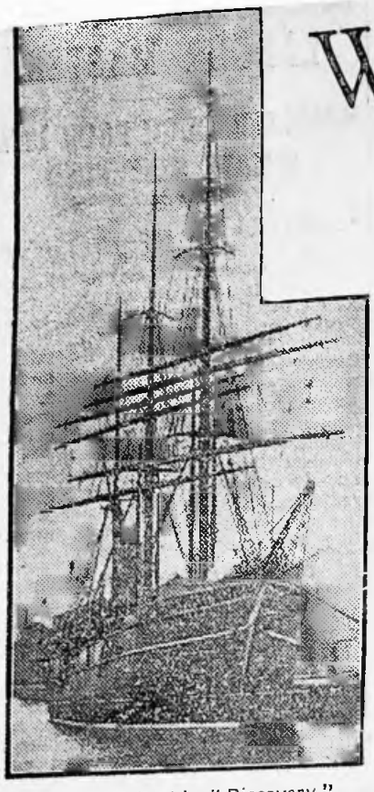
The number of whales has apparently been steadily decreasing for a century and more, but a fleet like this let loose among them, with the very latest equipment, will kill as many in a single voyage as a big fleet of barque-rigged whalers, running into hundreds, did in years.

The Crown Agents for the Colonies are building another Discovery for the purpose of investigating the breeding and feeding habits of whales, still a mystery, and it is hoped that the work will provide sufficient information to pass protective laws.

WIPING OUT THE WHALE

MOBY DICK NEAR THE END OF HIS TETHER . . . SEAPLANES AND HARPOON GUNS HAVE PROVED TOO MUCH FOR HIM

By Glen Stuart



The explorer's ship "Discovery."

SOMEWHERE the shades of our East Coast whalers of old must be restless and in despair. Some time, not so very far distant, the last of the Moby Dicks will yield its natural wealth. Man with his enterprise will have exterminated another creature; one of the oldest and romantic marine industries must of necessity disappear and only literature will bear witness to the existence of a fantastic fish that could shiver the timbers of vessels with its mountain of blubber.

Nature plans to preserve species, but when man takes to hunting whales with aeroplanes as is now mooted, even nature is beaten. Soon the mammoth of the oceans will be as extinct as the dodo!

One Norwegian whaling company proposes to hunt whales with amphibian 'planes, tracking the oceans with a huge floating factory and depot ship of about 10,000 tons.

Menace to the Whale

In that very announcement lies a menace which is alarming scientists the world over, and which recalls the last voyage of the Discovery (now Southward bound again), when she sailed down into the Antarctic to find out how near to being wiped out was the whale.

Just two years ago the modern methods employed in whale hunting in the Ross Sea raised a storm of protest from every quarter.

Old-fashioned whaling, when harpooners were heroes and inspirations for novelists, had its effect on the numbers of the species; but nowadays a season's catch for one station almost equals the total catch of an area fifty years ago.

Two seasons ago a Norwegian company, by employing fast motor-boats to hunt for schools, accounted for 700 whales, yielding a total oil value of about half a million sterling. A dividend of forty per cent. was paid by the company, which in addition gave a royalty of half-a-crown per barrel to the New Zealand Government.

Where Do They Go?

Now aeroplanes are to be used in the campaign, and the question of restriction arises.

Very little is known about the actual life of the whale—whether the Southern types are of the same species as the Northern and migrate to different oceans. One of the tasks of the Discovery was to label whales in the Antarctic so that they might be identified in later years in other parts of the Seven Seas.

It is known, however, that with the lack of control in the Northern areas whaling had reached its last gasp. In the season of 1911-1912 alone more than 10,000 "humpback" whales were taken from the Northern waters. A significant decline in the species was evident. The same decline was noted on the African stations.

Almost Extinct

As early as the sixteenth century the Nordkaper whale was practically exterminated in the Biscayan fishing grounds; the East Coast fleets which at one time hunted every season off Greenland and into the bays of Spitzbergen were disbanded and became no more on account of the lack of prey. The grey-whale which had its home in the Californian lagoons was wiped out of existence many years ago; and now the Antarctic species is threatened with a speedier extinction by the activities of commercial agencies such as the vast Norwegian company now operating so profitably in Southern waters.

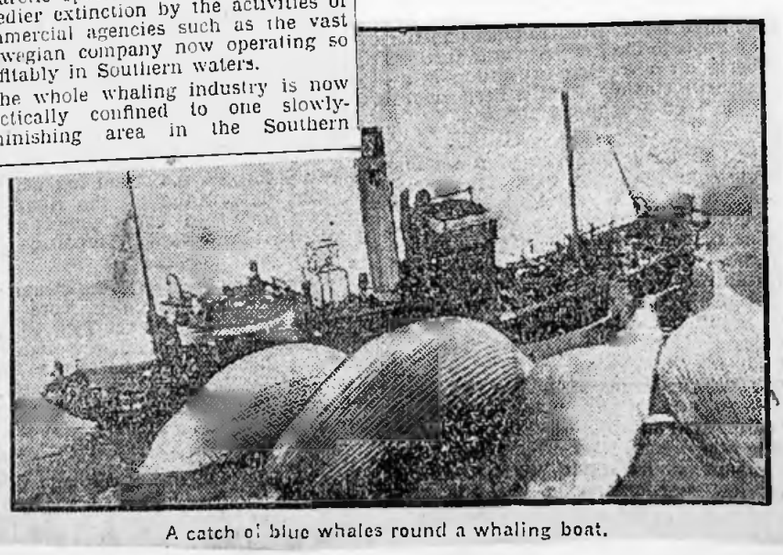
The whole whaling industry is now practically confined to one slowly-diminishing area in the Southern Hemisphere—a comparatively limited sea expanse lying between South Georgia and the South Shetlands. This field was first exploited about 1904. According to first surveys by hunters every whale that ever existed seemed to have been re-born and was haunting that area. But to-day, so serious has been the depletion—over 10,000 per annum—that a totally different tale is told.

Strangely enough, however, the Norwegians themselves do not fear the approaching end of the industry. According to them thousands of whales visit the Ross Sea every summer, and that there are enough to keep whalers employed during the seasons for generations to come.

Modern Methods

The adoption of speedy motor-boats, and now aeroplanes, they state in defence of their activities, has been necessary on account of the remarkable "cuteness" of the giant mammal Centuries of hunting, it would seem have made them wary of boats and me and the modern methods have bee introduced to overtake the fleein whales.

But against that argument there is th more weighty one of the expens willingly shouldered by the Dependen des of the Falkland Islands to financ an expedition to see what steps migh le taken to prevent the complet extinction of the whale.



A catch of blue whales round a whaling boat.

Revision of the Whaling Industry

While it is impossible to refrain from admiring the enterprise of the Norwegians in their prosecution of the whale fishery, there can be no doubt that the time has arrived when the conditions of the industry must be reviewed. Otherwise, though "numberless the nation" of these giant mammalians, whaling will die of inanition, for without doubt the whale is being hunted to extermination. Time was when the chase of the blubber-coated leviathan made a sporting appeal, but that was in the days when his pursuers risked their lives in frail boats. Now the harpoon and explosive bomb are fired at him from the deck of a steamship, and, more deadly still, he is to be finished off by electrocution. Thus has modern science been requisitioned in the cause of destruction. It is claimed for this last lethal force that it will double the killing power of a whale boat. The principal campaign against this unfortunate cetacean is fought out in the dreary wastes of the Antarctic, where formerly the whale enjoyed a certain immunity by hugging the ice barrier—his own home town, so to speak. This sanctuary, however, is now denied to him by the factory ships, which cruise along the ice pack, assassinate their victims on their own door step, then "commercialise" their remains and repeat the operation *ad nauseam* until their holds are overflowing with the oil of the slain. We fear there is a bad time in store for these Antarctic whales during the 1929–30 season, for a veritable armada of whaling craft will leave Norway in a couple of months. The fleet will embrace 37 floating factories, 7 transports and 90 whale boats, manned by 7,000 hands. Last year's casualties—of whales—in these waters totalled 5,500, but it is *hoped* this season to double the volume of slaughter. We wonder it has not occurred to these usually level-headed giant-killers that they may be killing the goose, etc., for if this policy of ruthless extermination is so assiduously practised there will soon come a time when the whale, despite his or her fecundity, will yield poor bags indeed, and, in fact, the game will not be worth the proverbial candle. We rather think, however, that the British *Discovery* Investigations Committee, who are exploring the whole subject, will succeed in placing the whaling industry on a more scientific and economically sound basis than it is at present. We preserve the seal rookeries and have a close season for salmon, protect the spawning grounds and immature of our food fishes, and even safeguard the lions and rhinos of equatorial Africa from promiscuous slaughter. Why, then, should not the same commonsense consideration be extended to the whale family? It is utter foolishness recklessly to deplete the seas of this useful minister to human needs.

NOTES AND COMMENTS

THE NEW WHALING SEASON.

The great activity among whaling companies, which are expecting with the new or converted tonnage which they have had built for this season to double "the catch," draws attention to the possibilities of the whale being exterminated by such a concerted and scientifically equipped attack as is now to be made against it. It is reported from Norway that the preparations for the new season have been on an unprecedented scale, and have been carried on with feverish activity, to quote the *Anglo-Norwegian Trade Journal*. The result is that it is estimated that no less than 39 floating factories, six land stations, and 199 catchers, manned by upwards of 10,000 Norwegians, will be engaged in Antarctic whaling during the season. In addition, aeroplanes are to be pressed into service against the unfortunate whale, and the new method of killing whales by electricity is to be employed by several catchers. These figures and facts show justification for the fear that the whale may be exterminated, and the greatest importance, therefore, attaches to the British Discovery Investigations Committee, who are seeking a rational basis for the regulation of whale killing. Meanwhile, it may be noted that the Norwegian Government has appointed three whaling inspectors for the Antarctic during the 1929-30 season whose duty it will be to see that the new law regulating the catching of whales is observed.

Floating Whale Factory.—The conversion of the oil tank ship *San Patricio*, 11,877 tons gross, which has been renamed *Southern Princess* by her new owners the Southern Whaling Co. Ltd., has been completed by Cammell Laird & Co. Ltd., at Birkenhead, and the vessel left the Mersey this week on her first whaling expedition to Ross Sea. This important conversion job has taken the Birkenhead firm nearly three months to complete. The funnel aft and its uptakes have been moved to the port side and a new upper deck has been built over the existing deck. From the after end of the new deck there is a slipway slanting down to the water level, so that carcases of whales will be hoisted up whole. Below deck are blubber butts, boilers, packing machines, and settling tanks. The existing oil tanks will be used for carrying fuel for the ship and for the five steam whalers which will accompany her on the voyage. She can carry 75,000 barrels of whale oil, equalling 12,500 tons.

SHIP CONVERSION RECORD.

OIL TANKER'S NEW GUISE.

WHALING FACTORY LEAVES THE MERSEY.

A SHIPREPAIR and conversion job just completed by Messrs. Cammell Laird and Co. for the Southern Whaling Co., Ltd., Liverpool, is believed to be a record in British ship-repairing. On May 25th last the Southern Whaling Co. placed an order with the firm for the oil tank steamer San Patricio (purchased from the Eagle Oil Transport Co., of London) to be converted into a whaling factory, and on Tuesday the Southern Princess—for such the San Patricio has been renamed—sailed from the Mersey for the Azores and the Ross Sea whaling grounds via the Panama Canal.

The conversion has been completed in 85 days, the work being the first of its kind to be carried out by a shiprepairing firm on the west coast. The contract was obtained for Merseyside in the face of keen competition with the north-east coast and the Continent. It was stipulated that the job should be completed by the 25th August to enable the vessel to store and sail in time for the whaling season, but it was, in fact, finished by the 17th August, so that the owners have already been able to place on board 600 tons of stores, 250 tons of coal bunkers, 1,600 tons of oil fuel bunkers, and provisions for the whole season.

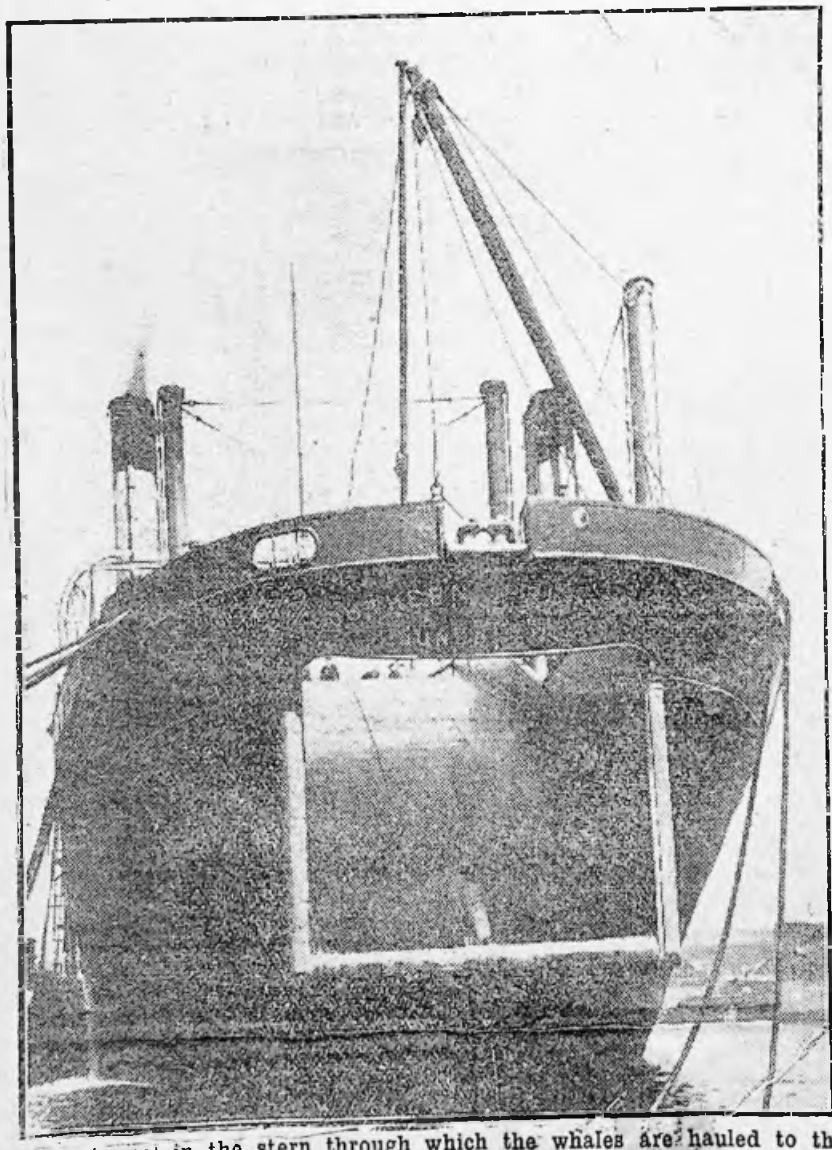
ship. On this deck the cutting operations, viz., removing the blubber, meat and intestines and cutting up the bone will be effected by steam-driven whale bone saws, waste being thus avoided. Below this deck are housed the blubber butts, boilers (seventy in number). Hartman apparatus, packing machines, &c., and on the next deck the settling tanks. The existing main tanks will be utilised for carrying fuel oil outwards for the use of the factory ship, and the five accompanying steam whale catchers. After the boiling is done the oil is passed down to the refinery, situated in the old 'tween decks, where it is stored in graded settling tanks, and then deposited in the main cargo tanks.

SELF-CONTAINED.

The Southern Princess will be capable of carrying sufficient oil to provide for herself and the accompanying fleet, and from the time she is loaded at the fuel oil port she will be self-contained throughout the expedition until her return to port at the end of the season. As the fuel oil is used it will be replaced by whale oil. The factory contains all the most modern whaling appliances.

The conversion work included the fitting of the slipway, erection of the new deck, installation of vats, and the necessary machinery, and the fitting of accommodation for 250 whaling hands, complete with messrooms, &c.

The Southern Princess is also fitted with Marconi wireless apparatus, comprising a short wave transmitter, a half kw. transmitter and receiver, direction finder, half kw. telephony set, and she is to be controlled by gyro compass. Apart from being able to take the whale on to the deck, whales may be worked in the more customary manner along side in the water, and new winches have been fitted, two at 50 tons, four at 20 tons, and eight at 5 tons on Sampson posts. The ship presents an unusual appearance, as in the case of this type of tankor the engines are situated aft,



The tunnel in the stern through which the whales are hauled to the flensing deck: note the twin funnels made necessary by this aperture.

It may be noted that about five miles of pipes were utilised in fitting up the Southern Princess, and the added weight resulting from the alterations is about 1,700 to 2,000 tons.

The Southern Princess has been fitted with a slipway aft 18ft. wide and 13ft. high, by which the whales will be hauled on to a new flensing deck 14ft. high and 285ft. in length, which has been erected above the existing upper deck for practically three-quarters of the length of the ship. On this deck the cutting operations, viz., removing the blubber, meat and intestines and cutting up the bone will be effected by steam-driven whale bone saws, waste being thus avoided. Below this deck are housed the blubber butts, boilers (seventy in number). Hartman apparatus, packing machines, &c., and on the next deck the settling tanks. The existing main tanks will be utilised for carrying fuel oil outwards for the use of the factory ship, and the five accompanying steam whale catchers. After the boiling is done the oil is passed down to the refinery, situated in the old 'tween decks, where it is stored in graded settling tanks, and then deposited in the main cargo tanks.

and in order to bring the whale up over the stern and on to the deck it was found necessary to move the funnel from the centre line of the ship and provide two new funnels, one on the port and one on the starboard side.

In addition to the work in connection with the factory, the plating on the bows were dealt with, and the framing suitably stiffened for 85ft. from the stem in order to resist the pressures encountered in the icefields, through which she has to work. The machinery and the remainder of the ship was put through a special survey. It is the first time that the work of fitting up a slipway at the after end in a vessel having engines and boilers aft has been attempted, and Messrs. Cammell Laird's are to be congratulated on the success of their work.

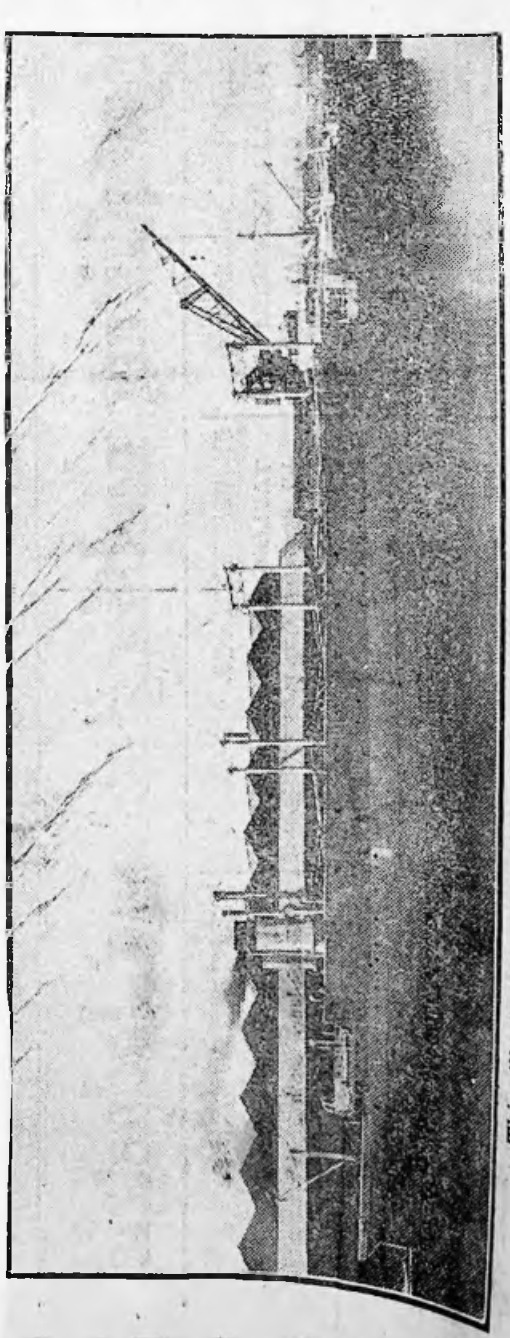
Everything, except the boilers and the grinding and hacking machines were made, supplied, or fitted by Messrs. Cammell Laird and Company. Forward of the bridge a new house has been erected for the accommodation of the crew. Considerable alterations have been made in the engine room, particularly in relation to the evaporating plant, as the vessel has to provide fresh water for, in addition to the crew and her own complement, the crews of the whale-catching vessels which are attached to her. In addition to the evaporators, three new electric generators, each of 35 kw., have been installed to provide that work can be carried out throughout the day and night if necessary.

The voyage from the Mersey to the Ross Sea will occupy 75 days, and the vessel will be on the whaling grounds for a period of probably 100 days, after which in all probability she will return to Liverpool.

She has a carrying capacity of some 75,000 barrels of whale oil, which at six barrels to the ton equals about 12,500 tons. Her daily maximum productive capacity is approximately 2,000 barrels or 333 tons. A factory ship of this type requires approximately 150 tons of fresh water per day, and the whole of this supply will be provided by evaporators supplied by Messrs. G. and J. Weir and Co., Ltd., Glasgow.

The Southern Princess is the third converted floating whale factory owned by the Southern Whaling Company, and in each instance the work of conversion has been done in British yards.

The conversion work was carried out under the supervision of Mr. A. C. Hay, of Messrs. Hay and Smart, consulting engineers and naval architects to the owners, Tower Building, Liverpool.



This illustration of the Southern Princess shows the new superstructure deck.

Cutting from Shipping Supplement
Issue dated 29.8.29

JOURNAL OF COMMERCE. Shipping Supplement
29.8.29.

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CURRENT TOPICS

WHALING CONTRACTS. In a year not marked by great activity in the shipbuilding industry 1929 cannot be said to have shown the needed improvement on its predecessors—the contribution of the whaling industry to the work on hand in British yards has been considerable and very welcome. A number of important contracts for new vessels, as well as for the conversion of existing ships, have been obtained by British yards and spread over the various centres, though with a majority on the North-East Coast, they have made a notable contribution to the output of the year. It may well be in fact, that 1929 will be best known in shipbuilding for the amount of whaling work completed, for never before has the whaling industry contributed so much to British shipyards, and never before has so much work of this class been on hand at the same time. It is of interest to set out the contracts which British yards have obtained, the completion of which is being rapidly carried out. On the North-East Coast Messrs. Smith's Dock Company are busy with the construction of a number of whale catchers, and the reference made in our columns last month that the firm had fourteen of these vessels on the stocks and thirteen fitting out afloat is an indication of what this particular firm alone owes to the activities of whaling companies. Eight whale catchers had previously been completed by the concern, making thus a noteworthy aggregate of thirty-five vessels of this type on order with one firm this year. Messrs. Smith's are also rapidly proceeding with the conversion of the two old Royal Mail steamers Carmarthenshire and Cardiganshire, now the Sourabaya and Salvestria, into whaling factories. On the Tyne Messrs. Palmers Shipbuilding and Iron Co. will shortly complete the Hektoria, formerly the White Star liner Medic, similarly to be used as a whaling factory; while four new vessels of this type have been ordered in British yards—one, the Kosmos, completed by Messrs. Workman, Clark and Co., another, Vikingen, now being completed by Messrs. Swan, Hunter and Wigham Richardson, and the third and fourth ordered from Messrs. Sir W. G. Armstrong, Whitworth and the Furness Shipbuilding Co. respectively.

CAMMELL, LAIRD'S GOOD WORK. The Mersey's contribution has been the conversion of the tanker San Patricio, now the Southern Princess, into a factory ship, and Messrs. Cammell Laird and Company are to be congratulated on the expeditious manner in which they have carried out the contract, well under the stipulated time. The Southern Princess has been fitted up with all the elaborate machinery the modern whaling factory ship requires, all of which, except the boilers and the grinding and hacking machines, was made and fitted by Messrs. Cammell Laird and Company. An interesting feature of this job lay in the construction of the usual slipway aft, up which the whales are hauled on to the flensing deck. As customary in a tanker, the San Patricio's engines were aft, and the boiler uptakes had therefore to be led to port and starboard, so that the vessel now has two funnels abreast instead of one on the centre line. This arrangement is similar to that of the Kosmos, to which the Southern Princess, as she lay in the Mersey prior to sailing, bore a fairly close resemblance. A full description of the vessel, with illustrations, appears in these columns to-day, from which it will be seen how big a job this conversion involved. In completing it a week under contract time Messrs. Cammell Laird and Company have accomplished an outstanding performance, one, indeed, which is believed to constitute a record in British shiprepairing.

"THE LONELY ISLAND"

A WIRELESS MESSAGE TO TRISTAN DA CUNHA

When Mr. Arnold Hodson, Governor of the Falkland Islands, was last in this country Mr. Douglas Gane, the honorary secretary of the Tristan da Cunha Fund, interested him in the welfare of those who live in "the lonely island." On the installation in Tristan of a wireless receiving set, the gift of the *African World*, Mr. Gane suggested the sending of an experimental message to the inhabitants from the Falkland Islands, and he has now received from the Acting Colonial Secretary of the Falkland Islands the text of a message sent by the Governor. It was as follows:—"On behalf of the people of the Falkland Islands his Excellency congratulates you heartily on possessing a wireless receiving set and hopes it may prove most useful."

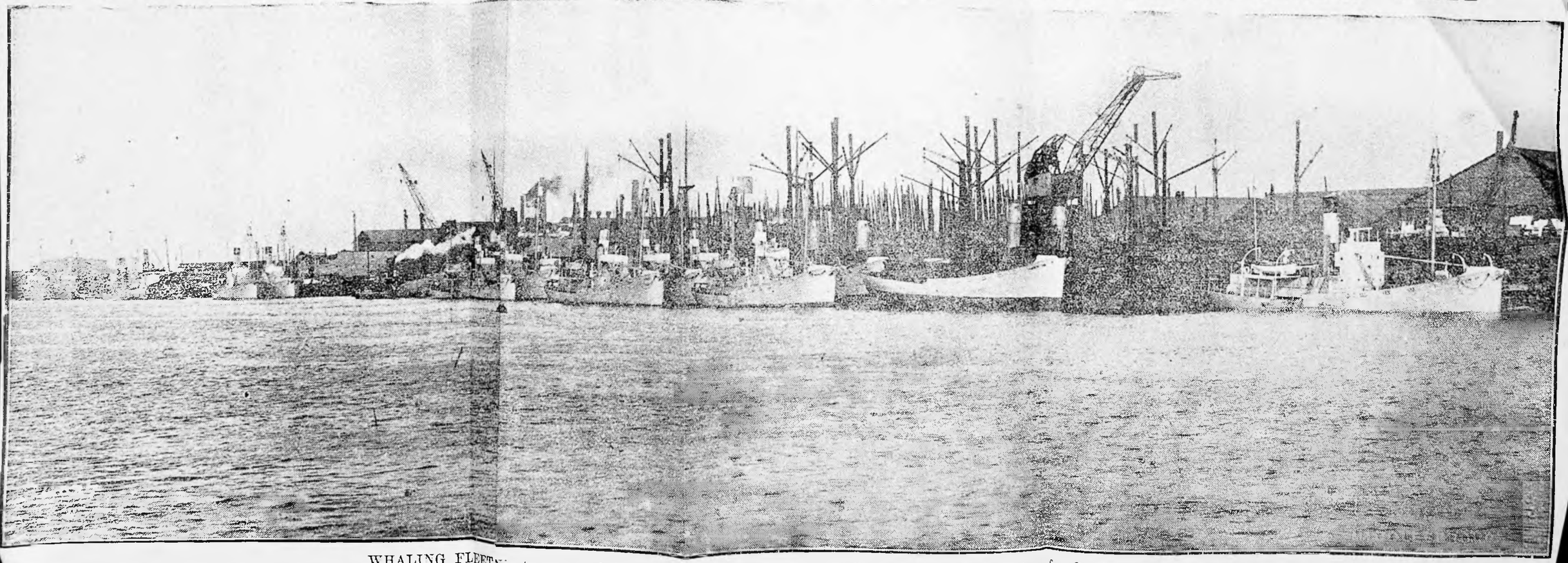
WHALE FACTORY SAILS.

"Anglo-Norse" for Antarctic

After coaling at Cardiff the "Anglo-Norse," a floating factory engaged in the whaling industry, yesterday proceeded on her maiden voyage to the Antarctic. The "Anglo-Norse" was built at Palmers Shipbuilding Yard, and has been converted into a whale-oil factory; she is 425 ft. in length and of 10,350 tons deadweight and is owned by the Anglo-Norse Co., Ltd., in which concern Anglo-Norwegian Holdings Co., Ltd., hold the controlling interest.

The vessel is classed 100 A1 at Lloyd's, and is equipped with the latest machinery, including four 50-ton cranes for hoisting dead whales on board. She has a capacity of 45,000 barrels of whale oil, and will work in co-operation with a fleet of whale chasers, with which she will be in constant communication by wireless.

TEES-BUILT WHALING FLEET : IRON AND STEEL INSTITUTE'S VISIT



WHALING FLEET.—Nineteen new whalers alongside Smith's Docks, South Bank, prior to their departure for Southern Seas.

SECOND NEW FACTORY SHIP.

VIKINGEN'S TRIALS COMPLETED.

WHALES AND PIGS.

THE second whaling factory ship to be built this year in a British yard is completed, the Vikingen, built and engined by Messrs. Swan, Hunter and Wigham Richardson, Ltd., for the Viking Whaling Co., of London, having completed her trials off the mouth of the Tyne. As with other whaling factory ships, the Vikingen is very completely fitted up, and by the time the carcase of a whale has been treated on board there will be very little residue. In fact, what does remain is to be used to feed pigs which will be kept on board!

The leading dimensions of the Vikingen are 490ft. in length, 71ft. in width, with a moulded depth of 34ft, and a deadweight carrying capacity of over 14,000 tons. She has been built on the longitudinal system of framing with a closed super-structure deck, and she carries Lloyd's highest class, and also conforms to the regulations of the British Board of Trade. She has been specially designed as a factory for extracting oil from the carcases of whales, and for carrying oil in bulk. The design of the ship and the whole of her construction have been supervised by Messrs. Arnesen, Christensen and Smith, Ltd., consulting naval architects and marine engineers of Newcastle-upon-Tyne and Oslo.

The twin-screw, main engines and the boilers of the Vikingen are in the after-end of the ship. They have been built by Messrs. Swan, Hunter and Wigham Richardson, Ltd. at their Neptune Works. The engines, which are of triple-expansion type, develop 4,300 i.h.p., steam being supplied by four single-ended boilers with a working pressure of 210 lbs. In addition to these, there are two auxiliary boilers installed at the fore-end of the machinery space which supply steam to the deck machinery and to the plant in the whaling factory. The steering gear has been supplied by Messrs. Donkin and Co.

CREW'S QUARTERS.

Accommodation for the engineers and stokers is provided at the after-end of the ship. The captain, officers and sailors and also the factory workmen have their quarters at the after-end of the ship underneath the navigating bridge on three decks. Among the ship's personnel are a doctor, and also craftsmen, such as blacksmiths and fitters. The accommodation also includes various messrooms, wash places and changing rooms, as well as quarters for the owner, consisting of a day room, communicating with a bedroom and bathroom.

Besides being a floating oil factory, the Vikingen will act as a mother ship to a flotilla of small fast steamships known as whale-catchers, each of which is equipped with a harpoon gun on the forecastle, and also has very quick turning steering gear enabling them to manoeuvre when chasing whales. The head of the harpoon contains an explosive charge which kills the whale almost at once. As soon as this has been done it is inflated with compressed air and a flag is stuck into the carcase to mark its position. When two or three whales have been obtained in this way, they are towed to the factory. The catchers then get fresh supplies of oil fuel and fresh water from the mother ship and set off again to chase more whales. The Vikingen also provides accommodation for the crews of these whale catchers, namely, the gunners, officers and engineers.

EXTRACTING THE OIL.

The size of the whales varies from about 40ft. to 100ft. in length and may weigh anything up to 100 tons. By means of two powerful winches amidships the whale's carcase is bodily hauled up the slipway, built in the stern of the ship, on to the blubber deck, which is practically flat and sheathed with wood. The flukes of the tail are cut off, and then the blubber, which is the fatty outer portion of the carcase, is removed by means of long slicers and knives. On a well-fed specimen the blubber may be as much as 18 inches thick. This valuable fatty matter is passed through holes in the deck to the factory which is the 'tween decks for nearly the whole length of the ship. The carcase of the whale is next hauled by means of the forward winches to the meat deck, where the flesh is cut up and the bones sawn into pieces by steam-driven saws. The pieces of the carcase thus obtained are passed through a number of small hatches at the sides of the deck into steam boilers in the forward part of the factory, in order to extract oil and other residues.

In the 'tween deck factory are installed a large number of great steam boilers, tanks, pumps, and sundry patent apparatus for boiling down the blubber, flesh and bones, and extracting from them various grades of oil. The blubber yields the finest quality of oil, that from the remainder of the carcase varying in quality. The blubber residue is known as "[illegible]" and is pumped to a great press to extract further oil. Very little of the whale is wasted. Even a lot of offal is used to feed pigs which are kept on board, and which provide a welcome change of diet for the crew. The ship carries a number of heavy derricks used for lifting and turning the immence carcases. There are also about a dozen lighter derricks enabling them to handle whales in the water alongside the ship.

During the trials there were present on board Messrs. Moe and Konow, directors of the owning company; Mr. F. Christensen, consulting naval architect; and Messrs. Somme, Walter Guinness and Leff. The builders were represented by Messrs. C. S. Swan, Norman Hunter, and G. H. Wright.

A new whaling company, to be known as the Pacific and Ross Sea Whaling Company, has been registered in Sydney and Dunedin simultaneously. The capital of the company consists of 500,000 shares of £1 each, of which 50,000 ordinary shares have been reserved for Norwegian residents.

WHALE OIL FACTORY.

Comprehensive Equipment of New Vessel.

Messrs. Swan, Hunter, and Wigham Richardson, Ltd., Wallsend, have completed and handed over to the owners, the Viking Whaling Co., Ltd., of London, the floating whale oil factory, Vikingen.

The vessel has been specially designed and built for service with the whaling fleets. It has a dead-weight carrying capacity of 14,000 tons, and is equipped with special machinery for hauling the carcases of whales on board and boiling down the blubber into oil, which is then stored on the ship.

THE THREATENED EXTINCTION OF WHALES.

There seems to be quite an epidemic lately of requests for preserving various animals threatened with extinction. For many weeks past there has been correspondence in the Press regarding the preservation of game in Tanganyika; this week there has been an outcry against excessive killing by West African natives of gorillas, in which locality it is estimated there are only about 50 animals left, and the latest anxiety is in regard to the killing of whales in the Falklands, where it is stated whales are threatened with extinction by the enterprise of Norwegian companies. The new vessels which the various Norwegian companies have built allow the whales to be hunted through hitherto inaccessible waters, particularly in the Ross and Wedell Seas on the Antarctic, and last year no fewer than 5,000 whales were killed in this sanctuary; this year it is hoped to catch 11,000. The number of whales has apparently been steadily decreasing for a century or more, and the Crown Agents for the Colonies are building another "Discovery" for the purpose of investigating the breeding and feeding habits of whales, and it is hoped that the work will provide sufficient information to pass protective laws.

The Whaling Fleets.—A late Norwegian return gives the estimated number of whale oil and products factories to be engaged in the coming season as thirty-nine floating factories and six land stations. The number of whale-catching vessels is given as 199, and the number of Norwegians to be employed in the whaling industry as 10,000. Aeroplanes are to be used to some extent as means of indicating the location of whales, and the electric killing harpoon is to be used experimentally.

SECOND NEW FACTORY SHIP.

VIKINGEN'S TRIALS COMPLETED.

WHALES AND PIGS.

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The leading dimensions of the Vikingen are 90ft. in length, 71ft. in width, with moulded depth of 34ft, and a deadweight carrying capacity of over 14,000 tons. She has been built on the longitudinal system of framing with a closed super-structure deck, and she carries Lloyd's highest class, and also conforms to the regulations of the British Board of Trade. She has been specially designed as a factory for extracting oil from the carcases of whales, and for carrying oil in bulk. The design of the ship and the whole of her construction have been supervised by Messrs. Arnesen, Christensen and Smith, Ltd., consulting naval architects and marine engineers of Newcastle-upon-Tyne and Oslo.

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The steering gear was supplied by Messrs. Donkin and Co., Ltd., and is of the W.P. type, controlled by means of their patent duplex ram hydraulic telemotor.

EXTRACTING THE OIL.

The size of the whales varies from about 40ft. to 100ft. in length and may weigh anything up to 100 tons. By means of two powerful winches amidships the whale's carcase is bodily hauled up the slipway, built in the stern of the ship, on to the blubber deck, which is practically flat and sheathed with wood. The flukes of the tail are cut off, and then the blubber, which is the fatty outer portion of the carcase, is removed by means of long slicers and knives. On a well-fed specimen the blubber may be as much as 18 inches thick. This valuable fatty matter is passed through holes in the deck to the factory which is the 'tween decks for nearly the whole length of the ship. The carcase of the whale is next hauled by means of the forward winches to the meat deck, where the flesh is cut up and the bones sawn into pieces by steam-driven saws. The pieces of the carcase thus obtained are passed through a number of small hatches at the sides of the deck into steam boilers in the forward part of the factory, in order to extract oil and other residues.

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THE WHALING INDUSTRY.

Norwegian Companies to Acquire Motor Tankers.

A new development in connection with the Norwegian whaling industry is about to take place. The profits earned by some of the principal companies during the past few years have been on such a large scale that much new capital has been attracted and the fleet taking part in this season's whaling is much larger than ever before. Fears have been expressed that with the modern equipment for catching and killing the whales, the supply of these mammals will soon be reduced so as to make the industry unprofitable, and it will be recalled that legislation has recently been passed in Norway which is designed to regulate the killing of whales. Some Norwegian whaling companies, notably those which operate shore stations, already possess their own tankers which are used by transporting the whale oil from the South Seas to the markets in Europe and the United States, and two of the leading Norwegian companies, whose reports have just been issued, announce that they each intend to acquire a motor tanker. The "Norges Handels og Sjöfartstidende" welcomes this decision, observing that the companies will thus have two legs to stand on. The new vessels can not only be used for the transport of whale oil during the season but will also be available for conversion into refineries when the existing vessels are worn out. The companies referred to are the A/S. Sydhavet and the A/S. Vestfold.

The report of the A/S. Sydhavet states that the refinery *Svend Foyn I.* left Sandefjord on Aug. 23, 1928, and commenced operations in the ice on Oct. 14. By Jan 28, 1929, when these grounds were left, 34,600 barrels of oil had been produced, although the vessel had lost nearly a month through having to return to South Georgia twice for fresh water and coal and to discharge oil. The expedition stated operations at South Shetland on Feb. 19 and continued for two months. Altogether, 503 whales were caught, the production being 42,070 barrels of oil, of which 22,600 barrels was shipped in tankers. After making allowance for depreciation, &c., the accounts show a surplus of 1,007,525k., and a dividend of 25 per cent., absorbing 712,500k., is proposed. The report further states that the motor tanker *Mazorca*, 3400 tons deadweight, has been chartered to carry coal and fresh water to the expedition and to bring back oil, so that last season's loss of time shall not be repeated. The directors have for some time had under consideration the question of acquiring a motor tanker, and a 9000-ton vessel would cost about £145,000, and one of 11,000 tons £170,000. A mortgage for a large part of the purchase price could be arranged with the builders, and as the freights now earned by motor tankers give a good profit, the directors propose to use part of the company's reserves to pay the cash part of the purchase price of a tanker of 9000-11,000 tons capacity for delivery as soon as possible.

The report of the A/S. Vestfold states that during last season 1081 whales were caught, from which 75,825 barrels of oil, 56,008 bags of guano and 2103 bags of bone meal were produced. After allowing for depreciation, &c., the accounts show a surplus of 1,983,196k. The proposed dividend of 20 per cent. will absorb 1,197,000k. It is further stated in the report that, a licence having been obtained for seven instead of five whalers, two more vessels have been ordered from Smith's Dock Company, Ltd., Middlesbrough, at a cost of £28,000 each. They are to be delivered this month and will be named *Ch. Castberg* and *Norrona*. All the company's material is now oil-fired, except the land station, where oil-firing is at present being installed. The development in recent years has resulted in the tanker *Peder Bogen* being unable to carry more than the fuel oil required at South Georgia, and the directors therefore propose to place an order for a 9000-ton motor tanker to be delivered in 1930. Similar reasons are put forward as in the case of the Sydhavet Company, which, together with the Vestfold Company, is managed by Messrs. Johan Rasmussen & Co., of Sandefjord.

TYNE-BUILT SHIP FOR WHALING

MAY COME TO NATIVE RIVER FOR CONVERSION

OLD DANUBIAN

By Our Shipping Correspondent

The Norwegians have bought another British tank steamer for conversion into a pelagic whale depot. She is a ship well known in Tyneside circles, although it is not yet settled whether she will come to her native river for the work of conversion.

The name she carries now is British Knight, on the British Tanker Co.'s service to the Persian Gulf, but she is better known on the Tyne under her original name of Danubian, as which she was built on the Tyne in 1909 by Swan, Hunter and Wigham Richardson for Lane and MacAndrew's Petroleum Steamship Co.

Practically all this fleet hailed from the North-East coast, but the Danubian was regarded as a considerable improvement on the Servian, Carpathian, and Roumanian, which preceded her.

DIFFERENT BUILD

A single screw ship of 5,064 tons, with triple expansion engines giving her a sea speed of 10½ knots, she differed from most tankers in that her machinery was amidships instead of aft, a feature which will certainly make her less convenient for whaling purposes than some of the tank steamers which have recently been purchased and converted without difficulty. But she is still in excellent condition, and with her deadweight capacity of 7,250 should be a very useful acquisition.

Before the war she was running almost entirely to the Port Arthur oil terminal in Texas, her destination on this side of the Atlantic varying with each voyage, but frequently bringing her home to the Tyne. She was on this service when she was taken up by the Admiralty in the latter part of August, 1914, and became H.M. Oiler No. 35, which she remained until the end of the war.

WAR ADVENTURES

During this period she had plenty of excitement. The first event occurred in April, 1916, when she met and escaped from a German submarine on the west coast of Scotland while she was serving the Grand Fleet at Scapa Flow.

In March, 1917, she was not so lucky, and came to grief where her officers had every reason to suppose that there was no danger. Quite close to Aden she struck a mine and was only taken into port with difficulty. This unsuspected field was laid by the Turitella, a British tank steamer which had been captured by the raider Wolf and commissioned as a minelayer to deposit her "eggs" where they were least expected. Happily the Danubian was her only victim.

While she was under repair she and her consorts of the Petroleum Steamship Company were transferred to the management of the British Tanker Co. for the Persian Gulf service, being the nucleus of their fleet. She was named British Knight in line with the rest of their ships and did useful work.

ECONOMICAL WHALING.

THE USE OF ELECTRICITY.

From Our Own Correspondent.

BERLIN, Sept. 7.

The idea of killing whales by electricity was discussed in various quarters last winter and rejected as impracticable. In the meantime, however, according to the Hamburg "Fremdenblatt," a company has been formed to try out the new method. The experiments carried out in the waters round the Faroe Islands have, it is alleged, been so successful that every confidence is expressed that whaling will henceforth become less expensive, less dangerous and more remunerative.

Under the new method, a small, weak current plant of from 2 to 3 h.p. is taken on board the boat. The generator which supplies the current belongs to the type known as the short-circuit safety type. The one pole is connected by means of a specially constructed electric conductor which is in front of the whale gun with a new type of harpoon. The other pole of the apparatus is connected with the side of the ship. As soon as a whale comes in sight, the small apparatus is set in action without the electric conductor in front of the gun being coupled up with the current. The recoil apparatus of the gun is so arranged that as soon as the shot has been fired it automatically switches the current on to the line, while the line is about 30 ft. from the muzzle of the gun. The current is quite isolated as far as the head of the harpoon, while the point of the harpoon carries the current towards its aim. At the moment when the electricity reaches the body of the whale, it rapidly spreads to all the parts of the animal where the blubber is thinnest, and then flows back into the water towards the ship's side. The circuit is then closed and, according to experts, the whale must at the same moment be electrocuted. One of the consequences of this electrocution is that the air is prevented from escaping from the lungs, with the result that the whale remains floating on the surface.

The inventor of this method, Mr. B. Holm-Hansen, states that the number of vessels necessary can be considerably reduced as the long pursuit of whales that have been struck, a pursuit often lasting for hours, is rendered unnecessary. The long and costly whale lines now become superfluous, nor will whalers henceforth have to carry large quantities of explosives on board as hitherto. Pieces of the exploded shells were often found in the blubber and damaged the presses.

Whalers Don't Care.

AND WHY SHOULD THEY, WHEN HARPOONERS EARN A PRIME MINISTER'S SALARY?

IS this country going to take the lead in the world's whaling industry?

There was a time when Britain had its own whaling fleet, second to none on the seas; but for some years whaling has been virtually a Norwegian monopoly, and a highly profitable one. Now, however, British capital is getting a footing in the Norwegian industry, and there may be important developments in consequence.

Britain also has taken the lead in investigating the conditions in the great Antarctic whale fisheries, upon a knowledge of which the future of the industry depends. For while big "killings" mean high immediate profits, they may lead to the extermination of the whales.

At the moment the whalers aren't worrying about that. A report just issued by the Discovery Investigations Committee, which is trying to put the industry on a scientific basis, shows that, following the adoption of factory-ship methods, 5,500 whales were killed in a single season, and the whale oil obtained was increased by forty-seven per cent.

Along the Antarctic Ice.

The factory-ship system was originally adopted because pressure was brought on the whalers to utilise the whole carcass of the whale. But the factory ship not only enabled this to be done—it also made it possible to catch more whales. For it meant that the catchers no longer required to operate from shore stations, or from mother ships anchored in the shelter of the land; the new factory ships went right along the edge of the Antarctic ice.

So, looking ahead, a reform which seemed in the best interests of the industry may ultimately destroy it unless the whale supply is safeguarded by regulations. It is the job of the Discovery Committee to find out what regulation is necessary.

Meantime, the whalers are having the time of their lives; harpooners are earning salaries equivalent to that of the Prime Minister, and even the most junior member of a whaling-ship crew gets a fat bonus in addition to pay.

Col Lee

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W. H. SMITH & SON,

Strand House, London, W.C.2.

PRESS-CUTTING DEPARTMENT.

Advertisements may be inserted in all Newspapers and Periodicals at Home and Abroad through any Branch of W. H. Smith & Son.

Cutting from TIMES.

Issue dated 10 SEP 1928

NEW STAMPS OF THE EMPIRE

WHALE AND PENGUINS OF FALKLAND ISLANDS

The only British Colony to introduce a change in the design of its postage and revenue stamps during the present year is that of the Falkland Islands. This new issue was released to the public at the beginning of September. It comprises the denominations ½d. yellow-green, 1d. carmine, 2d. deep grey, 2½d. ultramarine, 6d. claret, 1s. black on emerald, 2s. 6d. red on blue, 5s. green on yellow, 10s. red on green, and £1 black on red. Printed by the line-engraved process in sheets of 120, they have the usual Script water-mark, except for the highest value, which is on the old Multiple C.A. paper. The design common to all denominations embodies, in addition to the head of the Sovereign in a medallion, an Antarctic whale and a group of penguins; but while pleasing to the eye, it is not so simple and dignified as the former stamp issues of this Colony.

The transfer of the contract for printing the contemporary postage stamps of Newfoundland has brought about a temporary deficiency of supplies of the 3 cents denomination representing the oversea postage rate in the Dominion, with the result that an emergency issue of surcharged stamps of that value became necessary towards the end of August. For this purpose 100,000 copies of the obsolete 6 cents (series 1923) were converted into provisional "3 cents" stamps by means of an over-print applied by the King's printer at St. John's in two lines of red type. It was anticipated that these will suffice to meet the public demand until the arrival of an expected consignment of the regular 3 cents denomination from the new printers, Messrs. John Dickinson and Sons, of Old Bailey, London, E.C. The new printing of the 2 cent inland postage stamp has already been taken into use, and is from a re-engraved die which presents certain small points of difference from the original.

The use of special labels for collecting postage due upon insufficiently prepaid correspondence is gradually being extended to a number of the British possessions. Northern Rhodesia is the latest to adopt this system, a set of four duties being to hand inscribed with the name of that Colony at the top, but similar in other respects to those now current in other parts of the Empire. Uniformly printed in black upon Script C.A. water-marked paper, they comprise 1d., 2d., 3d., and 4d. respectively.

FEDERATED MALAY STATES

Additional denominations of 25 cents purple and lilac and 30 cents purple and orange have just been included in the current series of the Federated Malay States, in consequence of recent alterations in the postal tariff.

Supplementing the picturesque new series of postage stamps put in circulation earlier in the year, the tiny Republic of San Marino has recently put forth a pair of express delivery stamps, the one for inland use (L.1.25 green) and the other for international usage (L.2.50). The latter has the inscription "Union Postale Universelle" over-printed in small red capitals upon a blue ground. Both stamps present a panoramic view of San Marino city nestling upon the slope of Monte Titano, while to the left of the picture appears a reproduction of the famous statue of Liberty that fronts the Government Palace, after the design of Professor Enrico Federici, recess printed in traverse oblong format by Bradbury, Wilkinson, and Co., Limited, at New Malden, England.

Cutting from Shipping World

Issue dated 11/9/29

A Whale Oil Factory.

Specially designed as a factory for extracting oil from the carcases of whales and for carrying oil in bulk, the *Vikingen* has run successful trials off the Tyne. She has been built by Messrs. Swan, Hunter & Wigham Richardson, Ltd., of Wallsend, for the Viking Whaling Company, Ltd., of London. She is constructed on the longitudinal system, with a closed super-structure deck, to Lloyd's highest class, and is 490 ft. in length by 71 ft. in breadth by 34 ft. in depth moulded. Her deadweight carrying capacity is over 14,000 tons. Steam is supplied by four single-ended boilers with a working pressure of 210 lbs. to the twin sets of triple expansion engines, each with cylinders 22½, 38½ and 61 in. diameter by 39 in. stroke and developing together 4,300 indicated horse power. Two auxiliary boilers are installed for supplying steam to the deck machinery and to the plant in the whaling factory. The machinery, which is installed at the after end of the ship, was constructed at the Neptune Works of the builders of the hull. In the 'tween deck factory are installed a large number of steam boilers, tanks, pumps and sundry patent apparatus for boiling down the blubber, flesh and bones and extracting from them various grades of oil. The blubber yields the finest quality of oil, that from the remainder of the carcase varying in quality. The blubber residue is known as grax, which is collected in troughs and pumped to a grax press to extract further oil. Very little of the whale is wasted. Even a lot of offal is used to feed pigs which are kept on board and which provide a welcome change of diet for the crew. Besides being a floating oil factory, the *Vikingen* will act as a mother ship to a flotilla of small fast steamships known as whale catchers, each of which is equipped with a harpoon gun on the forecastle, and also has very quick turning steering gear, enabling them to manœuvre when chasing whales. The head of the harpoon contains an explosive charge which kills the whale almost at once. As soon as this has been done it is inflated with compressed air and a flag is stuck into the carcase to mark its position. When two or three whales have been obtained in this way, they are towed to the factory. The catchers then get fresh supplies of oil fuel and fresh water from the mother ship and set off again to chase more whales. The *Vikingen* also provides accommodation for the crews of these whale catchers, namely, the gunners, officers and engineers.

Telephone: HOLBORN 4343. Telegrams: BOOKSTALLS, ESTRAND, LONDON.

W. H. SMITH & SON,

Strand House, London, W.C.2.

PRESS-CUTTING DEPARTMENT.

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Cutting from Yachting

Issue dated 12/9/29

Tyne-built Whale Oil Factory.

THE *Vikingen*, a Tyne-built twin-screw steamer, specially designed as a floating whale oil factory, has carried out successful official sea trials. Built and engined by Swan, Hunter and Wigham Richardson, Ltd., Wallsend-on-Tyne, for the Viking Whaling Company, Ltd., London, she is 491 ft. in length, 71 ft. in breadth, and 34 ft. in moulded depth, and has a deadweight carrying capacity of over 14,000 tons. Her construction is on the longitudinal system of framing, with an enclosed superstructure deck, and it complies with the requirements for Lloyd's Register's highest class and also conforms to the requirements of the Board of Trade. The main engines are of a triple expansion type, and develop 4,300 i.h.p., the steam being supplied by four single-ended boilers working at a pressure of 210 lb. Two auxiliary boilers, installed at the fore-end of the machinery space, supply steam to the deck machinery and also to the plant in the whaling factory.

BESIDES being a floating oil factory with extensive spaces for carrying oil in bulk, the *Vikingen* will act as a mother ship to a flotilla of small speedy steamers whose duty is to catch the whales. Accommodation is provided on the mother ship for the expert crews of these little vessels, and also for her own complement, which includes a large number of factory hands. Powerful winches are installed on the blubber deck for hauling the whales up a slipway built in the stern, and for turning the carcases while they are being operated on. The factory is in the 'tween deck, and in it are to be found large steam boilers, tanks, pumps, and sundry patent apparatus for dealing with the blubber, flesh and bones. The lifting gear is a speciality of the installation, and the *Vikingen* is, all over, as interesting a vessel as has left the Tyne in recent years.

Telephone: HOLBORN 3120. Telegrams: ESTRAND, LONDON.

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Cutting from Nature

Issue dated 14 DEC 1929

THE increasing need of reaching biological conclusions regarding the slaughter of whales is emphasised in the second Annual Report of the *Discovery* Investigations (London: H.M. Stationery Office, 1929. 1*s.* net) which covers a period of seventeen months. The Antarctic whaling season of 1927–28 broke all records. Off the South Shetlands, 5500 whales were taken and the yield of oil (47 per cent more than that of the previous season, which itself was all but a record) was more than 66,000 tons; while together the Falkland Island Dependencies exported 134,000 tons of oil, of a value of £28-£30 a ton. The question is whether this enormous slaughter can be sustained without undermining the stock. The *Discovery's* results sound a grave note of warning. A very large proportion of the whales examined from the general catch were immature—in 1925–26, 58 per cent of blue whales and 26 per cent of fin whales. Though these may not have been fair samples of the whole stock, it is clear the proportion suggests a wanton and wasteful slaying. This is the more to be deplored since the evidence collected by the investigators shows that the whale stock is slow-breeding and therefore slow in recuperation. The period of gestation appears to be about a year, and young to be born once in two years at most.

THE "IMPERIAL WHALE."

HUNT IN THE FAR SOUTH.

DANGER OF RAPID EXTERMINATION.

POLAR METEOROLOGY.

By J. L. COPE.
Commander, British Imperial Antarctic Expedition.

It has long been a matter of opinion that polar exploration is of little practical value. Yet one feels certain that, when the clock of time ticks our days back into the past, the story of Captain Robert Falcon Scott and his comrades will be one of the sagas of our race. Men remember these things piously, but fail to seek the good in them, and so the results of much courage and devotion remain in our own age unheeded.

To-day, Canada administers a vast tract of territory lying between the meridian of 60 degrees and 142 degrees West of Greenwich; in the far South, New Zealand administers the Ross Dependency; and the Falkland Islands, on the South American side of Antarctica, govern the Falkland Islands Dependencies. The British Empire, accordingly, extends to both the North and South geographical poles. These acquisitions were not made in the spirit described by Rudyard Kipling as "jelly-bellied flag-wagging." Possession entails responsibility, and this extension of the British Commonwealth of Nations was undertaken as the natural wealth of these regions was made patent by prospectors, explorers, and men of science. Since the war the activities in polar exploration have been renewed with vigour and determination.

The natural wealth of the Arctic is far greater than that of the South Polar area. To-day while we await further developments, the only industry in the south is that of the whale fisheries. It is these that have given Antarctica political significance. The world's output of whale oil has become so centred in the high southern latitudes of the British Empire that the mammal of the deep is no longer a monster, but an Imperial whale. It is a far cry from Jonah!

WEATHER FORECASTS.

Polar meteorology provides a striking il lustration of the practical value of polar ex ploration. Weather conditions in the Arcti and Antarctic are antecedent to those pre vailing in the adjacent land masses, and fro a knowledge of the polar conditions long range weather forecasts are made. Arcti conditions determine the weather prevailin over Europe and the British Isles, while fro Antarctic meteorological data there are mad predictions that are of immense value t agriculture in the Antipodes.

Antarctic meteorology is probably more in portant than that of the Arctic in worl weather forecasts. From data already tained on scientific expeditions accurate fo casts of such remote phenomena as the m soonal intensity in India and the height the Nile flood have been made. The grad establishment of a series of permanent A arctic and sub-Antarctic meteorolog stations linked up with each other and w the mainlands by wireless is a work that a result of previous exploration, should n be nearing completion instead of being ba commenced.

Such a system would not only be inv able to agriculture and navigation, but e unit could serve as a base for further p research in which the aeroplane could pla great part both in maintaining the sta and extending the range of observati From present activities in these parts would seem that the United States of Ame will accomplish that which the British c menced and for which they endured sacr even unto death. Combined action on the p of the various Governments and universiti the Empire could achieve this at an al infinitesimal cost to each compared with value of the results to be obtained.

The Imperial whale could be observed a longer period and a wider range by the of such stations, and an "intelligence vice" could be established in regard to migrations of whales and also as to wea and ice conditions for the benefit of the whaling industry. Another source of income for the maintenance of the stations might be the renting of suitable harbours and shore stations to the whaling companies.

The whale fisheries now established in Antarctica are those of the Falkland Islands Dependencies, which include South Georgia, on the South American side of the continent, and also the very recently established industry in the Ross Dependency on the New Zealand side.

AN ENORMOUS CATCH.

The whales hunted are chiefly the blue whale, some 100 feet in length, and yielding as much as twelve tons of oil; the fin whale, with seven tons, and the humpback, with about five tons oil yield. In smaller numbers right whale, sei, and other species are found, but the bulk of the oil is derived from the first three types. From 1909 to 1918 the total number of whales captured was approximately 90,000, and during this period the value of the products of the industry rose from £250,000 to over £1,500,000. The chief products are whale oil (of which three tres are produced, that derived from the ber being the finest), whale bone, bone- e, margarine, oleine, glycerine, edible meat, and cattle foods, and their nt annual value is over £2,000,000.

nsiderably more than half the world's out- f whale oil and other allied products are uced from the whale fisheries of the Far h. Every whaling company has to pay icences to fish, rents for shore stations, a tax on each barrel of oil to the Govern- of the Dependency in whose waters they

The revenue produced is considerable, in the case of the more established fishe- on the South American side, these charges two-thirds of the total revenue of the rnment of the Falkland Islands.

ere is, however, a feeling of alarm in ing circles, and at the Colonial Office. h ultimately controls these fisheries, that e is a danger of over-fishing these waters. ntly the Colonial Office and the Govern- t of the Falkland Islands jointly des- hed an expedition in Captain Scott's old , The Discovery, to investigate this danger other problems of the whaling industry. alarm is based on the fact that the hump- and the fin wales are figuring less in catches and it is remembered among the ers that the same thing happened in the of the right whale of the north.

IN THE WAKE OF FOOD.

would seem that the presence of the whale e Antarctic during the summer months ainly due to the mammal following the ents in which the micro-plankton forms ts chief food are borne. Furthermore, the es tend to roam in schools over pretty rally determined areas, with, of course, otions here and there in each season. One od, then, of lessening the danger of ex- nation would be to deconcentrate the ities in the present areas by establishing ies in other parts of the Antarctic and nnection with the proposed meteorolo- stations.

From the Northern Hemisphere in 1906 there were taken 47,200 barrels of whale oil. In the same year 4,200 barrels were the product of the Southern Hemisphere. In 1911 the figure for the North dropped to 38,000, while that for the South rose to 306,000. The whole of this output was maintained by Norwegian companies, and in 1917 Norway was responsible for 72 per cent. of the world's whale oil. Surely it is possible to have a more Imperial whale caught and the products delivered by British companies!

It is realised that whaling is a specialised and peculiar industry, but investigations have made it clear that it is possible to increase the number of the few British whaling companies that now operate in and around the Antarctic, and probably the products thereof, if only leading industrialists would give this attention. It was stated recently that whale-steak and chips is now a common order in Liverpool restaurants. Perhaps the Liverpool butchers, although they may not be interested in the chemistry of whale oil, may become shareholders!

FEAR OF WHALE EXTINCTION.

SLAUGHTER PLANS.

30 COMPANIES IN ANTARCTIC.

FROM OUR OWN CORRESPONDENT

CHRISTCHURCH, New Zealand, Thursday.

Whaling operations in the Antarctic are now assuming proportions which threaten an early extinction of the whales.

There is great concern here about the anticipated fearful slaughter this season.

Thirty companies, mostly Norwegian, will be operating within the Antarctic circle, and four big expeditions, including one by a British company, will be working in the Ross Sea.

Unlicensed companies, with their wasteful methods, are also expected to be operating in the Ross Sea.

NORWEGIANS' HOPES.

The whalers of Norway are now setting off to the South Seas for the season

It is hoped by the Norwegians that their catch this year will amount to 11,000. In 1927 they obtained 704,000 barrels of oil—the main product of the industry.

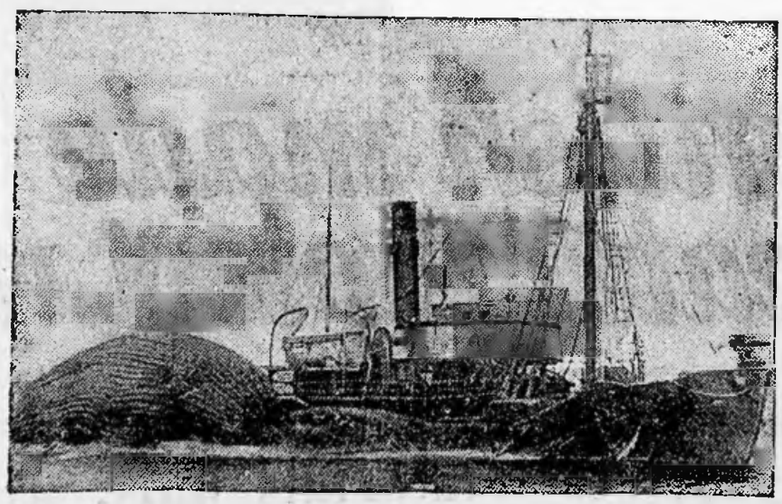
A leading article on this subject is in Page 10.

That Leviathan.

The commercial exploitation of the whale fisheries has in the very recent past been increasing at immense speed, and is now approaching within measurable distance of the extinction of the species.

In the Antarctic, for instance, there will be 200 whalers operating in 1929-30, as against 80 only two years ago; and the 23 that purpose to hunt the Ross Sea are probably sufficient in a very short time to exterminate the whale from those waters altogether.

This would be a deplorable result from every point of view, not least from the economic. But no less will the loss be felt by the scientist and the simple lover of nature, who will lament the impoverishment of the world by the disappearance of one of the most singular and interesting of animals. Only international regulation of the fisheries can avert the peril, and we hope it will not be long delayed.



A whaler with a whale alongside.

Antarctic Whaling Profits.

A statement appears in our advertisement columns regarding the position of the Anglo-Norwegian Holdings Company. This Company, which was incorporated in Canada last March to acquire an interest in the Antarctic whaling industry through the purchase, at a cost of £427,905, of share interests in the Aktieselskabet Tonsbergs Hvalfangeri, a concern registered in Norway, the Anglo-Norse Company, registered in the Falkland Islands, and the Falkland Whaling Company, registered in Jersey. The statement is issued to give the British shareholders in the holding company the information which has been published in Norway concerning the Company's holdings. On the basis of the dividends already declared payable by the subsidiaries in respect of the past season, it is calculated that the total revenue accruing to the holding company will be £98,521.

The capital of the holding company consists of 20,000 7 per cent preferred shares of $100 each (equivalent to £410,960 in all), and 420,000 common shares of no par value. The preferred shares on December 31 next are entitled to a dividend for the nine months from April 1 amounting to $105,000, or £21,575. This dividend would appear to be covered well over four times. On the same date 1,000 preferred shares are due to be drawn for redemption at $110 per share, requiring $110,000, or £22,602, of which all but the premium ($10,000) constitutes a reserve. The total of these amounts is $215,000 (£44,177). All further net profits accrue to the benefit of the common shareholders. The preferred shares were last marked on the Stock Exchange at £17⅞, and the common shares at 17s. 6d.

Romance of Whaling.

AEROPLANES TO SPOT WHALES.

IT is often suggested nowadays that all the romance has been taken from the whaling industry. This mistaken impression will be corrected by a perusal of Mr J. J. Bell's recently-published book, "The Whale Hunters" (Nelson: The "Teaching of English" Series), for in that odyssey of the Arctic seas are graphically described the difficulties and dangers, the suspense and glamour and grim adventure, which even to-day surround those who earn their livelihood by pursuing the whale.

The element of uncertainty has, of course, been very considerably eliminated from the chase. In the old days, before harpoon guns and steam-whalers working in connection with floating factories were in general use, whales had a reasonable chance of eluding their pursuers. Even then, however, though operations were confined to comparatively limited areas round certain land-stations, whales were driven from sea after sea, and nobody could tell whether they were being steadily exterminated or whether, having grown wary, they were seeking the security of more inaccessible parts of the ocean. Whichever it was, the number of whales killed in Northern waters gradually became less and less, until it was imperative to find new hunting grounds.

Thus it is that whaling is now almost completely confined to the Antarctic.

Antarctic Expeditions.

Since 1904, when Norwegian expeditions began to force their way into the Ross and Weddell Seas, the industry has developed enormously, so that now there is as big an outcry against the indiscriminate slaughter of Blue whales and Fin whales as there was last century against the wholesale massacre of the Greenland whale, now almost extinct. During the war, when there was a great demand for oil to be used in the making of glycerine, as many as 12,000 whales were killed in one season, and subsequently there have been few signs of any decrease in the numbers slaughtered.

In place of a few hundred thousand pounds, the finances of the whaling industry now run into millions of pounds annually. Every year the number of expeditions is increasing. In 1927 there were only 20; last year there were 30, and for the new season beginning in October there will be at least 40. Hardly a year passes, moreover, without the introduction of some new device for lessening the whale's ultimate chance of escape from those whose business it is to supply the market with the oil, which is chiefly employed in the manufacture of soap and margarine. During season 1929-30 aeroplanes are to be used for spotting whales round Bouvet Island, Norway's recently-acquired depot.

Danger of Extermination.

Can the annual slaughter of thousands of whales continue indefinitely? This is the question which the authorities must face and, if possible, answer. There are many who believe that the Antarctic grounds will be exhausted by over-fishing, just as was the Arctic a generation ago. Last year the Government of New Zealand called for an International agreement to safeguard the Southern whale-fisheries, and in particular to put an end to the excessive activities of unlicensed whale-catchers operating in the Ross Sea

Yet it is very probable that the danger of exterminating the Blue whale and Fin whale has been grossly exaggerated. In the old Iceland days a whaler could make a profit even if only one or two whales were killed on each trip. Nowadays the catch must run into hundreds before any profit can result. Thus companies will cease operating on economic grounds long before the whales are anything like exterminated. Even a scarcity will cause the industry to perish. But such a danger is not imminent. So far only the very fringe of the Antarctic field, which extends over an area of nearly four million square miles, has been tapped, and even there the whales are still as plentiful as they were twenty years ago.

Chalmers Anderson.

Mr. Leonard William Hamilton Young has been appointed a member of the Legislative Council of the FALKLAND ISLANDS.

WHALE FACTORY SHIPS.

Reported New Belfast Order.

(From Our Own Correspondent.)

BELFAST, September 22.—It was reported yesterday that an order for a large tanker for use in the Southern Seas as a whale factory had been placed here with Workman, Clark and Co. (1928), Ltd., by the Antarctic Whaling Co., Ltd., of London. The vessel would have a deadweight capacity of about 22,000 tons, and, it is stated, would be delivered next August.

The contract price was reported to be about £400,000.

Inquiries at the head office of Workman, Clark and Co. received the reply that they had no statement to make upon the subject, and they were unable to give any confirmation of the report.

It will be remembered that the firm delivered in July last the "Kosmos," a large whaling factory of 20,000 tons, which was built for Norwegian owners, and is now operating in the Southern Seas.

This was the first vessel of the kind built at Belfast, and a feature of its construction was the large opening in the stern of the vessel to enable captured whales to be hauled on board direct into the factory.

NEW OIL FOR OLD.

ANTI-ACCIDENT DEVICE.

"Daily Express" Science Correspondent

ALADDIN'S offer of new lamps for old has an interesting parallel in an apparatus just put on the market by a New York company. It actually produces new oil from old.

The apparatus, which is described as looking like an electric refrigerator, and is being used for converting dirty crank-case oil into clean oil ready for use again, owes its origin to the well-known fact that lubricating oil is not exhausted by use but merely undergoes certain changes and accumulates dirt and carbon.

The dirty oil is treated hot with a small quantity of a certain chemical. A like amount of concentrate of soda solution is added.

The resultant sludge sinks into water carrying all impurities with it. Diluents are removed by passing the clarified oil over electrically-heated plates.

The cleansing machine is automatic and continuous and can be operated at a cost of a few pence a day.

* * *

Airplanes To Catch Whales.

A Norwegian whaling fleet now at work off the ice banks of the Antarctic is accompanied by two airplanes which are being used to scout for schools of whales.

It has been found that in certain years the whales are much more difficult to find than in others; in fact, they seem practically to disappear, and it is hoped that the airplanes with their greater mobility and wide range of vision will be able to help in solving the problem.

The machines can be equipped with three sets of landing gear: wheels for landing on the deck of the "mother" vessel, pontoons for the water, and skis for the ice. A wireless "there she blows" will summon the fleet when the airplanes sight their quarry.

* * *

Combined Propeller And Rudder.

Accidents caused by speed boats running down slower-moving or stationary craft can be obviated by a device introduced in Germany.

This is a combined propeller and rudder. Four propeller blades are arranged on vertical axes on a motor fixed to a shaft projecting vertically below the boat. These propeller blades are mounted so as to swing and their pitch is controlled by an auxiliary motor inside the propeller itself.

When they swing they act as rudders. Recent tests have shown that a speed boat fitted with this device can make the sharpest turns and be stopped when going at full speed within less than its own length.

WHALING SHIP ORDERS FOR BRITAIN

OSLO, Oct. 8.

The Sydhav Whaling Company have placed a contract for a Diesel-engined tank-ship of 11,300 tons dead weight with Messrs. Swan, Hunter and Wigham Richardson, of Wallsend. The Vestfold Whaling Company have placed a contract for a similar ship of 9,400 tons dead weight with Messrs. Barclay Curle, of Glasgow. Both vessels are to be delivered in November, 1930.—Reuter.

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Cutting from Liverpool Journal of Commerce

Issue dated 3.10.29

WHALING REPORTS.

NORWEGIAN COMPANIES' DEVELOPMENT.

THE ACQUISTION OF FREIGHT SHIPS.

THE report of the Ross Sea Whaling Company (A.S. Rosshavet) for 1928-29 states that during the year the company acquired four new oil-fired whalers. With the change-over of the Sir James Clark Ross to oil fuel and with seven of the whalers similarly equipped, it is considered that it will be possible to carry on whaling for a longer time than hitherto, which is desirable, in view of the great competition which is expected in the coming season.

The expenses of the company last year increased, this being materially due to the higher insurance premiums and the greater cost of maintenance. The accounts show a surplus of 5,419,181 kr. After setting aside 319,046 kr. for State and municipal taxes, making provision for depreciation to the extent of 2,500,000 kr., and transferring 650,000 kr. to the survey and maintenance fund, the accounts exhibit a net surplus of 1,941,138 kr., and the rate of dividend is 25 per cent.

Concerning the impending season, the report states that the two ship refineries left Sandefjord in August, and passed through the Panama Canal on September 4th, and continued their voyage to San Pedro, California, to take in fuel oil. The four new whalers also departed from Sandefjord early in August and are expected to be at Stewart Island in good time for the coming season, the expedition being expected to be on the whaling field before November 1st.

The insurance premiums for the new season have again been raised by about 60 per cent. It is proposed only to insure the whalers against total loss, including salvage. The premiums for this method are 4 per cent., as compared with 10.5 per cent. on full conditions.

NEW ZEALAND EXPORT TAX.

The report states that negotiations have been entered into with the Government of New Zealand concerning the export tax on whale oil. The company has informed the Government that, having regard to the keen competition from pelagic companies, which pay no tax, the company is unwilling to pay the export tax on whale oil which is produced outside territorial limits when the whales are caught outside these boundaries. In the opinion of the company this is in agreement with the terms of the license.

With regard to the future, the directors propose an alteration in the statutes, so that the company will also include freight services. As the statutes are now framed it is impossible to place the whale refineries in freight service if this should prove to be desirable.

In the case of the A. S. Vestfold, the accounts for 1928-29, after having made provision for depreciation and other charges, show net profits of 1,983,196 kr., apart from 51 000 kr. brought forward, and the dividend is at the rate of 20 per cent. Concerning the season of 1929-30 the report states that whaling is expected to begin at the end of September. It has been possible for the company to get licenses for seven ships as compared with five whalers previously. The two additional ships were ordered from Smith's Dock Company, of Middlesbrough.

OIL-FIRING DEVELOPMENTS.

Excepting the station and reserve ship A. W. Sorlle the company's ships are oil-fired, and the question of oil-firing at the station is under consideration. The development in the past year has brought it about that the Peder Bogen is now only able to bring down to South Georgia the fuel oil which is needed, while about 8,000 tons of coal has to be freighted on other ships.

Having regard to this circumstance the directors intend to enter into a contract for a modern diesel-engined tanker of about 9,000 deadweight tons for delivery in 1930, which can be used partly as a transport ship and partly be placed in the general freight service in agreement with the company's powers. The expenditure is estimated at £145,000, and a large mortgage will be able to be arranged with the builders with deductions extending over five to six years.

The directors for a long time past have had under consideration the question of proposing the equipment of a floating refinery for whaling in the ice. But taking into account the great extension of the whaling fleet which has already taken place, it is considered better to await developments.

The firm of Johan Rasmussen is reported to have placed an order with the A. S. Frammes Mek. Verksted of Sandefjord for a floating dock which will be employed in South Georgia. It will have a lifting capacity of 700 tons and be somewhat larger than the dock delivered to the Argentina de Pesca. The order has been allotted in competition both with Norwegian and foreign shipyards. The new dock will be ready in the next spring, and the new floating dock now in the hands of the same firm, with a lifting capacity of 12,000 tons, is to be completed in the course of the coming winter.

(45)

WORLD.

SIR DOUGLAS MAWSON.

WHALES OR SCIENCE?

MAWSON'S SPECIAL CABLE TO 'DAILY NEWS.'

NORWEGIAN AIMS IN ANTARCTIC.

In a special cable to the "Daily News," Sir Douglas Mawson explains the objects of the Australian Antarctic expedition he is about to lead in the Discovery, and throws an interesting light on the aims of Norwegian ships which are hastening to get ahead of the Discovery.

The Norwegians, to extend their whaling industry, are anxious to hoist their country's flag in unknown parts of Antarctica, and this raises the whole question of sovereignty in South Polar regions.

BRITISH SPHERE.

"FULFILLING" OUR OBLIGATIONS.

From Sir DOUGLAS MAWSON.

DURBAN, Wednesday.

THE present voyage of the Discovery is for scientfic investigations in the Antarctic sector, which, by geographical location, is the heritage and concern of New Zealand, Australia and South Africa.

True to established principles, we are now fulfilling the obligation resting with the guardians of little-known territories — namely, the conduct of investigations therein for the benefit of the world at large.

Though Norway's geographical position secured for her the control of Spitzbergen, she in no way claims

NORWAY WANTS THE ANTARCTIC!

Sir Douglas Mawson makes in ur columns to-day a concise and ignified comment on the Norwegian attempt to anticipate the Discovery in the Antarctic. The story of how Amundsen deluded Scott into delaying his start in the belief that his rival was not intending to move for some time is one of the less pleasant stories of modern exploration. But this new Norwegian enterprise is inspired neither by a desire for glory nor by science. It is inspired by greed. An important part of the work of the Discovery in the exploration of still uncharted regions of the Antarctic is to make a close inspection of whale life with a view to its preservation. The confessed object of the Norwegians is to claim more Antarctic territory with a view to killing more whales and ultimately establishing a vast monopoly in whaling in the Antarctic seas. Frankly, we hope that the enterprise will be frustrated and the policy defeated once and for all.

In the first place, the Norwegians have no legal or moral right to appropriate further Antarctic territory south of the mid-Atlantic in the traditional British sphere; and in the second place, the unrestrained rapacity of their numerous whaling companies is fast exterminating the historic mammal from the southern seas. The Discovery expedition, as its leader points out, will not change its plans in order to prevent Norwegian whalers from augmenting their list of whaling bases. It is a scientific expedition in no way concerned with the feverish commercial stunt of a foreign nation. But it is a matter that very much concerns the British Government. If British interests are to be safeguarded and the whale is to be saved from extinction, the Norwegian right to extend operations without limit must be challenged firmly and all British bases must be closed to all whalers except those licensed by our Dominion Governments. That is the real answer to the audacious and unwarrantable instructions to Norwegian "mystery ships" to plant the Norwegian flag at all convenient points on the Antarctic coast.

WHAT NORWAY WANTS IN THE ANTARCTIC.

STATEMENT BY SIR KARL KNUDSEN.

TRADING RIGHTS.

We have received from Sir Karl F. Knudsen, on behalf of the Norwegian Chamber of Commerce in London, of which he is President, a protest against the "Daily News" editorial headed "Norway Wants the Antarctic."

Sir Karl says, with regard to the whaling industry: "It is ridiculous to talk about any 'monopoly' on the open seas. Since Antarctic whaling started one third of the catch is attributable to non-Norwegian expeditions. Even these expeditions have been dependent for their success on Norwegian officers, crews and experience.

"Certain events during the war led to a fear that this traditional Norwegian industry might be interfered with in favour of British enterprise, and this gave great impetus to experiments with open sea whaling which have met with such success that to-day it has been seriously discussed by some Norwegian holders of licences whether they can afford to maintain them.

"But why this endeavour to present greed, if greed it is, as a peculiarly Norwegian failing? It is a human quality, and I would hesitate to accuse, say, Canada of greed because some individuals are denuding the forests.

EXPEDITIONS MOSTLY BRITISH.

"Also, are you aware that among the new expeditions now on the way to the Antarctic half a dozen are exclusively British? Further, that fresh expeditions under Australian and New Zealand auspices are announced to join in the scramble? I may also point out that the expansion of various Norwegian companies would never have taken place but for the strong support of British capital.

"One word about Bouvet Island. The recognition of the Norwegian occupation was not the result of any friendship for Norway. I am not passing judgment on the advisability or otherwise of that occupation, but I am inclined to think that if you study the question you may find that if Great Britain has such claims as you indicate to the whole of the Antarctic Basin from South Shetland to the Ross Sea they would conflict with certain doctrines maintained by Great Britain with regard to territories in the Arctic."

In a concluding paragraph Sir Karl declares that the work he has always had most at heart is the removal of all causes of friction between his native country and that of which he now has the honour to be a citizen.

OFFICIAL STATEMENT.

From Our Own Correspondent.

OSLO, Thursday.—The "Daily News" reports about the Norwegian Antarctic expedition have created much interest here. The Secretary-General of the Foreign Office says it is the intention of the Norwegians to undertake scientific work in connection with whaling. A representative of the Norwegian expedition says that "no competition with the British expedition is intended."

Bounty Down Spectator
Bangor
12.10.29

PATRIOTIC FARMING

BY A. LANCASTER SMITH.
AUTHOR OF "FARMERS' PIE."

WHALING AND FARMING.

Whaling may not be as ancient as farming, but it is certainly to be reckoned as a very old industry. Most of us as schoolboys read with avidity stories of the hardy whalers chasing the mammoths of the deep. A well illustrated booklet just to hand entitled "Whales and Whaling" (published by Ocean Harvest, Lever House, E. C. 4.) provides a fascinating account of the whaling industry as carried on under present-day conditions, and its perusal affords a veritable romance of 20th century endeavour.

From the farmer's standpoint it may appear that the whaling industry carried on in the Polar regions may possess only a polite interest. The idea, however, is dispelled by a perusal of "Whales and Whaling." The author traces the developments of the whaling industry from the days of the sailing whaler and the hand-wielded lance, to that wonderful little vessel, the whale-chaser, capable of doing 14 knots an hour, of completely turning round in 75 seconds, and its gun firing an explosive-headed harpoon carrying a 120 lb. charge.

...PRE-HISTORIC AND MODERN MONSTERS.

We are inclined to lose our sense of proportion when speaking or thinking of pre-historic monsters. The brontasaurus was one of the most formidable monsters of bygone ages, yet this weird animal could not have exceeded 20 tons in weight. As a matter of fact the blue whale of the Pacific may reach a weight of 150 tons and the photographs published in the little booklet under review, give a striking idea of the huge size of these sea-monsters. The average size of whales caught by modern whalers is probably 75 tons. The baby whale when born actually measures 25 ft. in length and this little "calf" actually reaches maturity within three years of birth—what one might call "baby beef." ...e whale. It yielded then and yields to-day, a highly valuable whale oil, which is used in so many industries, but then much of the rest of the whale was wasted, particularly the rich red whale meat, for the .. simple reason there was no method for dealing with an enormous mass of such flesh by the primitive means available. Processes have now been devised, however, whereby the rich whale meat and the large bones of whales are preserved and shipped to these shores and manufactured, milled and blended into the finest whale meat meal for stock-feeding purposes. For years the crews of whaling stations have lived on whale meat as their only source of fresh meat, and have been able to withstand the most rigorous weather conditions in the world. This speaks volumes for its nourishing and sustaining value.

Close analysis of the make up of whale meat shows it to be definitely richer than either cod fish or chicken in that part of the essential protein which is invariably either absent from or only insufficiently present in the ordinary foods fed to stock, and a shortage of which undoubtedly affects growth and reproduction adversely.

...reason that is well-known in feeding circles, that cod liver oil and whale oil contain considerable quantities of vitamins which have their original source in the plankton. Another significant point from the feeding standpoint is that whale oil is a definite source of iodine and the amount present equals that in cod liver oil. In view of the recent research in the realm of animal nutrition, and the remarkable results obtained where minute quantities of iodine are added to the ration, it would appear that the presence of iodine in comparatively small proportions in the organism of the whale may possibly have some bearing upon the animal's enormous rate of growth.

COMPARATIVE VALUE OF WHALE MEAT PRODUCTS AND OTHER FOODS.

Striking evidence as to the value of whale meat products as food for pigs appeared in the Journal of the Ministry of Agriculture, August, 1926. This was in the form of a report by John Goulding, D.S.O., F.I.C., and W. B. Morris, B.Sc., of the National Institute for Research in Dairying, University of Reading. The report states:—

"During the past 18 months experiments have been conducted on whale products as food for pigs.

By arrangement with Ocean Harvest Limited, supplies of experimental material were made available from 1924 onwards.

The results have been compared with white fish meal of good quality, with bean meal and extracted decorticated ground nut meal. As judged by the live weight increase per pig per day, the whale meat flakes were throughout superior to the fish meal and bean meal and decorticated ground nut meal as used in rations containing approximately equivalent nutrients.

The pigs fed on whale flakes were ready for the butcher earlier than the others and also showed a finer bloom.

The resulting pork and bacon were subjected to tests for possible taint or flavour, but in no case was an adverse report received. Evidence obtained at present indicates that the whale oil does not produce any taint in the carcases, and so far from softening the resulting fat it rather seems to have the reverse effect." Dr. C. Crowther, the Principal of the Harper-Adams Agricultural College gives it as his opinion that "the difficulties of drying this material (i.e., whale meat) in sufficiently fresh condition appear to be largely surmounted and as now marketed it forms a wholesome meal with which very good feeding results have been obtained." The analysis of the whale meat product used at the National Institute for Research in Dairying ("Grumax"), showed approximately:—

Albuminoids (Protein), 60 per cent.; Oil, 9.5 per cent.; P205 (approx.), 8 per cent.

As one reads through "Whales and Whaling" a valuable object lesson is certainly given of the interdependence of agriculture and other industries. The frozen seas and the tropics combine in providing the farmer in temperate zones with concentrates without which he would find it difficult to make stock-feeding a success. ...chlorine and iodine, ...ded by the animal for bone-formation ...growth), for the production of eggs and ...k, and for the maintenance of con... and health, ...growth, and reduced constitutional strength.

Chlorine is the element essential to proper digestion. In 100 gallons of cow's milk there is approximately 1lb. of cow's milk there is approximately 1lb. of chlorine. Deficiency of chlorine means impaired digestion, loss of condition reduced milk yield, and general "bad doing."

Iodine is the "moving spirit" of the thyroid gland, which directs the forces of the body in the war against diseases in general. Iodine is the important factor ...the assimilation of lime, phosphorus ...d albuminoid. It promotes the growth ...wool, fur and hair. Stunted development (physical and mental) debility, and ...h severe cases, goitre and hairlessness ...sult from iodine deficiencies. Iodine ... an essential factor in the fight against ...eint-ill, scour, tuberculosis, foot and ...outh disease, and other infections. ...nterference with the normal supply of ...neral matter to the animal body will ...sult in malnutrition and, ultimately, in ...ease.

...practically all the commonly-used ...gions of the farm and thousands of ...res of grass-land are deficient in miner... matter, with consequent reduction of ...eir feeding value and detriment to the ...ock.

The feeding of suitable mineral supplement to the ration of pasture corrects ...ese deficiencies and is the best and ...eapest insurance policy against stock ...oubles.

Mineral bricks guaranteed to be suitable in every way for feeding, and to ...ntain well balanced amounts of the ...ssential mineral elements, are obtainable from British makers of unquestionable reputation. The mineral bricks, which can be hung in the cow shed or ...able, or placed in convenient position ...n pasture land, solve the difficulty, ...casionally encountered, of mixing with ...ncentrates, and of supply to hill sheep ...r other animals unused to hand feeding. ...It is more than an efficient substitute ...r the ordinary salt lick, containing the ...ements of common salt with additional ...ements of as great or greater import...ce.

FROM ICEBERG TO FARM.

It may seem a far cry from the iceberg to the farm, but the present day development of the whaling industry shows how practically every portion of the whale is now utilised in commerce. Whale meat is now treated scientifically and made into one of the richest protein foodstuffs available. In 1927–28 an iceberg reported to be over 100 miles in length and standing hundreds of feet high, was lying 200 miles south-east of South Georgia. Many of the Antarctic whaling stations operated for weeks under the lee of this berg. The waters around it were alive with whales and needless to say the catch was good. It certainly seems as if truth is stranger than fiction when one considers that from the huge catch of whales, which must have resulted large tonnages of whale meat products last year found their way on to the farms of the British Isles. Most people have a hazy idea that the whaling is only carried on in order to obtain blubber for oil, and whale bone for various purposes.

In bygone times it was the blubber which was the principal source of gain procured from the whale. It yielded then and yields to-day, a highly valuable whale oil, which is used in so many industries, but then much of the rest of the whale was wasted, particularly the rich red whale meat, for the simple reason there was no method for dealing with an enormous mass of such flesh by the primitive means available. Processes have now been devised, however, whereby the rich whale meat and the large bones of whales are preserved and shipped to these shores and manufactured, milled and blended into the finest whale meat meal for stock-feeding purposes. For years the crews of whaling stations have lived on whale meat as their only source of fresh meat, and have been able to withstand the most rigorous weather conditions in the world. This speaks volumes for its nourishing and sustaining value.

Close analysis of the make up of whale meat shows it to be definitely richer than either cod fish or chicken in that part of the essential protein which is invariably either absent from or only insufficiently present in the ordinary foods fed to stock, and a shortage of which undoubtedly affects growth and reproduction adversely. ... reason that is well-known in feeding circles, that cod liver oil and whale oil contain considerable quantities of vitamins which have their original source in the plankton. Another significant point from the feeding standpoint is that whale oil is a definite source of iodine and the amount present equals that in cod liver oil. In view of the recent research in the realm of animal nutrition, and the remarkable results obtained where minute quantities of iodine are added to the ration, it would appear that the presence of iodine in comparatively small proportions in the organism of the whale may possibly have some bearing upon the animal's enormous rate of growth.

MINERAL BRICKS.

The old-fashioned idea that any kind of farm food, supplemented with an occasional feed of oil-cake would do for stock, has, during the past few years, been rudely shaken by the researches in the realm of animal nutrition. Practically all the stock-feeders now realise that it is important to understand the value of minerals in the ration of farm stock. A feeding stuff may be excellent from the analytical standpoint so far as albuminoids, oil and carbo-hydrates are concerned, but the mineral needs of livestock may not be adequately met by the use of a feeding stuff which is apparently sufficient.

In addition to those constituents of food with which the farmer has long been familiar—the albuminoids (Protein) carbo-hydrates to promote heat, energy and flesh formation—there is a number of elements, known as the "mineral" or inorganic elements (non-energy yielding), which are essential to the animal and which must be obtained by it from the "ash" or "mineral" portion of the food. Of these the most important to the practical stock-feeder are calcium (lime), phosphoric acid, chlorine and iodine, needed by the animal for bone-formation (growth), for the production of eggs and milk, and for the maintenance of condition and health, growth, and reduced constitutional strength.

Chlorine is the element essential to proper digestion. In 100 gallons of cow's milk there is approximately 1lb. of cow's milk there is approximately 1lb. of chlorine. Deficiency of chlorine means impaired digestion, loss of condition reduced milk yield, and general "bad doing."

Iodine is the "moving spirit" of the thyroid gland, which directs the forces of the body in the war against diseases in general. Iodine is the important factor in the assimilation of lime, phosphorus and albuminoid. It promotes the growth of wool, fur and hair. Stunted development (physical and mental) debility, and in severe cases, goitre and hairlessness result from iodine deficiencies. Iodine is an essential factor in the fight against joint-ill, scour, tuberculosis, foot and mouth disease, and other infections. Any interference with the normal supply of mineral matter to the animal body will result in malnutrition and, ultimately, in disease.

Practically all the commonly-used rations of the farm and thousands of acres of grass-land are deficient in mineral matter, with consequent reduction of their feeding value and detriment to the stock.

The feeding of suitable mineral supplement to the ration of pasture corrects these deficiencies and is the best and cheapest insurance policy against stock troubles.

Mineral bricks, guaranteed to be suitable in every way for feeding, and to contain well balanced amounts of the essential mineral elements, are obtainable from British makers of unquestionable reputation. The mineral bricks, which can be hung in the cow shed or stable, or placed in convenient position on pasture land, solve the difficulty, occasionally encountered, of mixing with concentrates, and of supply to hill sheep or other animals unused to hand feeding. It is more than an efficient substitute for the ordinary salt lick, containing the elements of common salt with additional elements of as great or greater importance.

WHALE
... R FOODS.

... value of ... pigs ap... istry of ... was in ... ulding. ... B.Sc., ... ch in ... The ... experi... ... hale ... est ... a- ... n- ...

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... ference to the matter raised by him. "That is a matter," continued the ... man, "that you will have to settle ... Mr. Edgar when he is in the chair."

Mr. Cardy—But it came out i... meeting.

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The Chairman—A similar thing ha... ed with us not so long ago.

Mr. Lavery—Yes, I remember. ... had to pay more than we were fur... with.

GAS COMMITTEE'S REPOR...

The above committee met on 2nd ... There were present Councillors ... Beckett (convener), presiding; ... Baxter, James Freeland, Wm. M'A... S. H. Black, S. J. M'Watters, T. ... Brett, Thomas Sandford, David Car... J. Black, T. R. Lavery, J.P.; and ... Simms, J.P.

Manager's Report.—The manager... port dealt with coal, stock, the m... gas, which is showing satisfactor...

THE FOOD OF WHALES.

Those who study the reports of the Development Board will know that quite a fair amount of research has been given to the subject of plankton, the whale's food. Life-sized illustrations of plankton are shown. These minute forms of sea life have the appearance of immature shrimps. The marvellous thing is that a whale is able to grow to such an immense bulk and expend such tremendous energy on such a diet. It is explained that the whale, in feeding is able to pass huge quantities of sea water through its mouth and by the peculiar formation of the baleen or whale-bone, to sift or s...ve the plankton in its mouth and by pressin... its tongue upwards, to abstract it by th... simple, yet effective, method of screenin... The whale grows and fattens miraculously upon huge quantities of this very minute form of sea creature, and it is interesting in this connection to learn that the squid, another sea creature, which forms the food of the cod fish, also feeds upon plankton. The fact is significant for the reason that is well-known in feeding circles, that cod liver oil and whale oil contain considerable quantities of vitamins which have their original source in the plankton. Another significant point, from the feeding standpoint is that whale oil is a definite source of iodine and the amount present equals that in cod liver oil. In view of the recent research in the realm of animal nutrition, and the remarkable results obtained where minute quantities of iodine are added to the ration, it would appear that the presence of iodine in comparatively small proportions in the organism of the whale may possibly have some bearing upon the animal's enormous rate of growth.

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LIME AND PHOSPHORIC ACID.

More than 80 per cent. of the mineral matter of bone or about three-quarters of the entire "ash" of the body consists of phosphate of lime.

In 100 gallons of cow's milk there are roughly 1¼lbs. lime and 2lbs. phosphoric acid.

In 100 gallons of sow's milk there are 4lbs. each of lime and phosphoric acid.

Deficiency of these elements results in rickets and other diseases, stunted growth, and reduced constitutional strength.

Chlorine is the element essential to proper digestion. In 100 gallons of cow's milk there is approximately 1lb. of cow's milk there is approximately 1lb. of chlorine. Deficiency of chlorine means impaired digestion, loss of condition reduced milk yield, and general "bad doing."

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leave the matter to the discretion of M'Ilwaine.

Mr. Beckett—He will use the resolu... discreetly.

The Chairman—We are all quite sa... fied on that point.

PUBLIC HEALTH COMMITTEE' REPORT.

The above committee met on 1st i... There were present Councillors John ... comson (convener), presiding; also ... M'Alpine, James Freeland, S. J. M'W... ters, S. H. Black, Robert Edgar, T. A... Brett, W. H. Simms, J.P.; R. J. Bec... T. R. Lavery, J.P.; David Cardy, J... Black, Isaac Baxter, Thomas Sandfor...

Sanitary Sub-Officer's Report: Ins... tion.—145 houses inspected; all cowsh... dairies and butchers' shops.

Attended Petty Sessions on Thurs... 26th September, and gave evidence nuisances existing in four cases. ... case was adjourned for four weeks on defendant undertaking to have the w... completed within four weeks. An o... was granted in each of the other t... cases.

Sanitary Improvements.—Sanitary ... provements on the Council's notices h... been carried out at Nos. 11-13 Lo... Mary Street, 46 James Street, 61 and Frances Street, 199, 201 and 243 ... Street, and all houses in Circular R...

During the past six months 37 hou...

The Chairman—It is not in the...

Regarding the request in the asking the Ministry of Home Affai... leave to pay the late Mr. John M'... final account without incurring the of taxation, Mr. Brett said he notic... the Press recently where a municipa... by reason of having counsel's costs had to pay a sum extra of £86 which considered was a great hardship.

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Manager's Report.—The manage... port dealt with coal, stock, the m... gas, which is showing satisfactor...

WHALING INDUSTRY'S EXPANSION.

Suggested Limit to Number Captured.

When the International Council for the Exploration of the Sea met in London last April they had before them an important report from their Whaling Committee. Referring to this, the report of the British delegates to the Council, which was issued on Saturday, states that the Whaling Committee was constituted to act as a link between those who were conducting investigations in the Antarctic under the direction of the Discovery Committee and Dr. Hjort and his colleagues, who have been investigating whales in the Arctic zone.

The committee suggest that the various Governments should seriously consider the possibility of limiting the rate of destruction of whales while scientific investigation was in progress. "The committee feels strongly that the enormous expansion of the whaling industry in recent years constitutes a real menace to the maintenance of the stocks of whales, and that if the expansion continues at the present rate there is a real risk of those stocks being so reduced as to cause serious detriment to the industry."

They suggest various restrictions, including the prohibition or restriction of the capture of certain species of whales in the tropics and the restriction of the capture of all species in the Antarctic.

The need for the passing of uniform legislation to bring their various proposals into force is pointed out by the committee.

THE PROTECTION OF WHALES

INTERNATIONAL COMMITTEE'S RECOMMENDATIONS

The British delegates who attended the meetings of the International Council for the Exploration of the Sea which were held in London last April have published their report. It shows that the discussions ranged over a variety of practical and scientific problems connected with fishery, but perhaps those most generally interesting concerned the protection of whales.

The Whaling Committee of the council, says the report, had the advantage of having as chairman Dr. Hjort, who has wide knowledge of Arctic whaling and is well informed on the economic aspects of Antarctic whaling. The committee had also the assistance of Dr. Kemp, director of the Discovery investigations, who gave information on the relative numbers of mature and immature whales killed at certain tropical stations on the African coast, besides facts revealed by the work of the Discovery expedition.

The general feeling of the committee was that, although it is not at present possible to put forward recommendations which can be said to have a strictly scientific foundation, nevertheless it "feels strongly that the enormous expansion of the whaling industry in recent years constitutes a real menace to the maintenance of the stocks of whales, and that if the expansion continues at the present rate there is a real risk of those stocks being so reduced as to cause serious detriment to the industry." The report admits that until scientific researches have reached a definite conclusion it is impossible to devise permanent measures of protection, but the committee thinks that the Governments of the countries interested should, as a matter of urgency, seriously consider taking immediate temporary measures to deal with the menace. Among the measures suggested is the prohibition of killing certain species of whales, principally right whales, the protection of cows with calves and immature whales, and the prohibition or restriction of the capture of whales in certain regions, notably in the tropics.

MENACE TO WHALING.

Less Destruction Urged.

When the International Council for the Exploration of the Sea met in London last April they had before them a report from their Whaling Committee. Referring to this, the report of the British delegates to the Council, which was issued during the week-end, states that the Whaling Committee was constituted to act as a link between those who were conducting investigations in the Antarctic under the direction of the "Discovery" Committee, and Dr. Hjor and his colleagues, who have been investigating whales in the Arctic zone.

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They suggest various restrictions, including the prohibition or restriction of the capture of certain species of whales in the tropics and the restriction of the capture of all species in the Antarctic. The need for the passing of uniform legislation to bring their various proposals into force is pointed out by the Committee.

PRESERVING WHALES.

The Whaling Committee constituted by the International Council for the Exploration of the Sea to act as a link between the "Discovery" explorers in the Antarctic, and Dr. Hjort and his colleagues, who have been investigating whales in the Arctic zone, suggests, in a report issued yesterday, that the various Governments should seriously consider the limitation of the rate of destruction of whales while scientific investigations are in progress.

Various reforms are suggested, including the prohibition or restriction of the capture of certain species of whales in the tropics and the restriction of the capture of all species in the Antarctic.

SHORTAGE OF WHALES

International Action for the Preservation of Species

That the recent enormous extension of the whaling industry constitutes a real menace to the maintenance of the stock of whales, is the report of the Whaling Committee of the International Council for the Exploration of the Sea.

The Committee suggest that the various Governments should seriously consider the possibility of limiting the rate of destruction of whales by prohibition or restricting the capture of certain species of tropical whales, and restricting the capture of all species in the Antarctic.

THE EXPLORATION OF THE SEA.

Report of British Delegates to the Meeting of the International Council.

FOR "Notes on Fish and Fisheries" this week, I can deal with no better subject than the British Delegates' Report. It is a long report and, in the main, highly interesting. I must, on account of limitation of space, omit the Delegates' reference to the meeting in London, which took place from April 8 to 15, and with which my readers are already familiar. That part of the Report dealing with whales I will refer to next week.

The Delegates say:—

"The instructions we received as Delegates were as follow:—

"1. The Delegates should continue to exercise their influence to secure the adoption and execution of definite programmes of work directed to the solution of practical fishery problems.

"2. The Delegates should continue to impress upon the Council the importance of experiments with fishing gears designed to save undersized fish, bearing in mind always the practicability of using such gears for commercial fishing.

"3. The Delegates should impress upon the Council the importance of uniformity in the collection and presentation of statistics.

"4. The Delegates should invite the Whaling Committee of the Council to consider whether any deductions can now be drawn from the information available as to the desirability of:—

"(*a*) Protecting whales generally at any particular seasons or in any particular localities, or in any specified circumstances; and

"(*b*) Whether any particular species of whales need protection either generally or at particular times and in particular localities.

"They should also invite the Committee to consider the possibility of:—

"(i) Collecting and reviewing all available statistics for the past 10 years, or other longer period of the past; and

"(ii) Organising an international service for the collection and tabulation of statistics of whaling from year to year."

Practical Programmes.

"With reference to Instruction (1): The Council continues in the main to work according to fixed programmes, which may be modified from year to year in the light of experience. We are satisfied as to the practical nature of the investigations as a whole. They are not spectacular, being designed, as we have had occasion to point out before, with a view to the acquisition by continuous and, on the whole, laborious study of the principal food fishes and of their habitat, of such complete information as to their life history as will help us to understand the fluctuations of the fisheries, and perhaps to foresee them and to estimate the effect of fishing operations on the stock. In particular, plaice, cod, haddock, herrings and hake are still the subject of continuous concerted investigation, and our knowledge of their life histories is steadily increasing.

"But the Council is not content merely to feel that it is promoting the acquisition of knowledge, it is alive to the fact that the value of its work will be judged ultimately by economic standards, and it came to a decision at this meeting that it was time to undertake what may be described as a stocktaking of the progress made since its foundation, and, because the fisheries of the North Sea are those which have been longest and most intensively investigated, it decided that the first stocktaking should have reference to that area. For this purpose the experts chiefly responsible for investigations in the North Sea—one for each of the countries fishing North Sea waters—were invited to prepare brief papers in which they should endeavour to answer the following questions:—

"1. In what respects can we show definite progress in our knowledge and understanding of the great fishery problems in the North Sea?

"2. In what respects is there lack of progress and gaps in our information which are an obstacle to the formulation of conclusions?

"3. Have you arrived at any definite conclusions as to what would be the best method of approaching the question of protection of fisheries where necessary?

"The replies of the experts are to be sent to Dr. Hjort, Chairman of the Consultative Committee of the Council, who, if he thinks fit, will call the experts together to discuss them, and will subsequently himself draw up a comprehensive memorandum based upon the papers and the joint discussion. This memorandum will be discussed by the Council at its next meeting, and in the light of it the question will be considered whether, either in general or in particular details, the present methods and subjects of investigation should be modified, and whether any measures for the protection of fisheries can now be usefully discussed.

"It is intended that similar stocktaking should be undertaken subsequently in the other regions covered by the investigations of the participating countries."

Experiments with Fishing Gears.

"Experiments with fishing gears designed to save undersized fish, to which paragraph 2 of our Instructions relates, are making progress. At the meeting of the special sub-Committee, to the appointment of which we referred in our last Report, reports were received from representatives of Denmark, Germany, Holland, Poland, Spain and Sweden, as well as Great Britain, of experiments carried out with different types of gear during the past year. The work done is not, however, conclusive as yet, and the Council decided to make financial provision to assist the prosecution of further experiments, and, in particular, to enable the experts of different countries to take part in experiments carried out by countries other than their own. We hope that these combined investigations may lead to some satisfactory conclusion, but though, as regards round fish, the solution of the problem appears to be in sight, it will certainly prove difficult to devise modifications of existing methods of fishing which will serve the end in view without interference with the efficiency of a fishing instrument in its application to a mixed fishery which includes flat fish. There is as yet no reason to be discouraged, but it would be foolish to under-rate the difficulty."

Statistics.

"We referred in our last Report to the arrangement made for the collection from all countries fishing the North Sea of the fullest possible information as to their catches of each species of fish in that area in relation to the number of days' absence from port, and the types of vessel employed. In accordance with the agreement reached at the meeting of the Statistical Committee in 1928, the new table embodying this information was circulated, and at the meeting of the Statistical Committee of this year it was decided that a table showing for the North Sea the catch by each of the main methods of fishing per day's absence from port should be included in the 'Bulletin Statistique.' Although the necessary information may not be available from all countries fishing in the North Sea, we believe that sufficient information will be available on the whole to make the table fairly representative of the total North Sea catch, in relation to the intensity of fishing in that area."

Reports of Committees.

"We have referred to the reports of the Statistical Committee, the Whaling Committee and to the special Sub-Committee on Fishing Gears, which touch closely upon specific subjects referred to in our instructions. It is not, in our view, necessary to refer in detail to all the reports of other Committees. An opportunity for their consideration will arise when the Council's report of its proceedings is published, as we expect that it will be in the near future. We propose, therefore, merely to review briefly the main features of the reports."

Consultative Committee.

"We desire to refer particularly to the work of the Consultative Committee, which, since its constitution in 1925, has more than justified our hopes as to its practical utility. It will be remembered that the Consultative Committee, as originally constituted, was to consist of the Chairman of five Area Committees and of the Statistical and Limnological Committees, with the Editor of the Journal; and that the purpose of it was that it should be available for consultation by the Bureau as necessity arose, and should have the right in regard to all matters regarding the scientific work of the Council to be consulted by the Bureau and of its own motion to advise it and lay before it the views of the scientific workers. It

(*Continued in page* 21.)

FURTHER OUTLETS FOR FISH OFFAL.

By E. T. ELLIS, F.J.I., Author of "Fish Waste and Its Uses," etc., etc.

(*Continued from the issue of October* 12.)

Chloroform Extraction of Oily Fish Offals.

WHILE in many parts of Europe and elsewhere benzene is undoubtedly the premier and most important solvent for the extraction of oily fish offals, in certain countries, *e.g.*, Germany and Italy, considerable use has been made of chloroform as an extraction agent, and a word of two will, therefore, be useful to fish traders, as sometimes fish-curing establishments are situated in the vicinity of chloroform works, and hence this liquor can be obtained easily and cheaply.

Chloroform is a much heavier liquid than benzene, but this is an advantage rather than otherwise, in fat extraction from fish offal. The sweetish taste of chloroform is sometimes said to be an objection to its use in obtaining fish oils from offal, but fish traders should remember that the solvent is entirely eliminated from the oil, and hence there is no possible danger of any sweetness being detectable therein.

For very large scale work elaborate plant must be installed. On a moderate scale, however, large metallic vats will prove sufficient, but fish traders should see to it that each is provided with a metallic lid which can be screwed on so as to seal the contents during digestion. As chloroform boils at 62 degrees Centigrade fish traders should keep the temperature of their extraction works below this by use of suitable cooling plant. The offal is introduced into the vats in much the same way as described under benzene, and is covered with chloroform by instalments, the idea being to leave a little chloroform above, but to ensure the grease solvent permeating right through the entire consignment.

After digestion in the cold for about a day the vats are opened, and any surface chloroform is run off straight to the stills, and a thick oily liquor is pressed out of the offal itself, this being filtered before being distilled. The remaining offal is then lightly heated to volatilise the chloroform, the vapour of which is condensed and used again. The first and second oily liquors above referred to are distilled, the chloroform coming over into the condensers and being used again, while the oil remains in the retorts.

Some fish traders will probably wish to make mixtures of chloroform and water for use as extraction agents in the above described way. I do not recommend the practice on account of the fact that chloroform is scarcely soluble in water, and hence all such liquors have to be constantly agitated to prevent the two from separating. German and Italian ichthyological experts sometimes use, however, mixtures of chloroform and alcohol or chloroform and ether for extraction purposes, and find them pretty suitable. In these instances there is no difficulty about getting the chloroform to dissolve in the other reagents.

Fish traders should specially note in using chloroform that free ventilation is a matter of the primest importance on account of the anæsthetic effects of its vapour. When using it in conjunction with alcohol or ether special precautions must be taken against fire.

Fish Offal with Poulterers' Offal.

Many retail fish traders in addition to having a big quantity of fish offal to dispose of also have quantities of poultry offal on hand. One fish trader asked me specially the other day as to whether the two could not be mixed together, since it seemed to him that this was the ideal method of dealing with them, provided that such products had a manurial value.

This assumption is correct. Retail fish offal is undoubtedly best mixed with poulterers' offal if a supply of both is at hand. Equal bulks of the two may be mixed, excluding, however, poultry feathers.

Usually, however, it will pay fish traders to throw out fish bones from their offal, and throw out poultry bones from the other refuse. The mixture of fish bones and poultry bones can then be treated with sulphuric acid in an ash-covered pile outside, to obtain a fish and poultry superphosphate, which if kept dry will be preservable in a good condition for a long period.

The softer mixture of fish offal and poulterers' offal cannot usually be dried satisfactorily with the limited means of retail fish and poultry shops. It should, therefore, be sold off as soon as possible to any customers who will take it for digging into their gardens, or those fish traders who have gardens should dig a pit and throw it into this, mixing in plenty of soil, charcoal, gypsum, kainit, and similar ammonia-absorbing materials at the same time. If this pit is left alone for six months the combination of fish offal and poulterers' offal rots down into a very fine humus, which is practically without smell, and which although not recommended for top-dressing purposes, can be dug into the surface soil of any villa garden without creating a nuisance.

Mackerel Offal as Organic Manure.

A few notes were given a long time ago in this series on mackerel offal, but I would like to supply additional particulars now, as from chats I have had with fish traders it appears that many are interested in economical outlets for it.

Owing to the fact that mackerel putrefies almost more readily than any other fish we have to deal with, fish traders will find it extremely difficult to obtain the inner portions of mackerel in a fit enough state to dry them and grind them up for use as poultry and pig-feeding meals. Whole fish or damaged fish can sometimes be so treated, but in nearly every instance critical examination shows that they are tainted, and this rules them out of court as a farm-feeding stuff right away.

A very valuable organic manure can, however, be made of mackerel offal, and this outlet is as a rule the most profitable. To produce this fish traders should press out as much moisture as they possibly can at the earliest convenient moment, and should pass the mackerel offal, including damaged fish and not excluding the fins, tails, etc., on to drying pans or trays forthwith. Drying is the first step here on account of the stop that it puts to putrefactive processes.

The second step consists of degreasing the dried mackerel refuse including the bones, by means of benzene, chloroform, ether, or any of the other recognised fat solvents. Steam treatment is sometimes recommended, but this is quite unsuitable in the case of mackerel offal, as it gives rise to putrefactive and strictly chemical changes which we do not wish to effect. Following the use of a fat solvent the mackerel offal can be pressed and warmed, and should then be examined on an endless band arrangement. If very bony, fish traders should reduce the content of bone by about one-third, and should digest this quantity with sulphuric acid, returning the mackerel superphosphate, as it may be termed, to the rest a few days later.

(*To be continued.*)

THE EXPLORATION OF THE SEA.—(*Continued from page* 19.)

was intended from the beginning that the Consultative Committee should take under review and correlate the programmes of work of all the other Committees. It followed, almost as a matter of course, that the Consultative Committee was expanded so as to include the Chairman of all Committees, and that the Council came to rely upon the Consultative Committee for advice as to the Committee programmes, so that a programme of a committee endorsed by the Consultative Committee would be adopted by the Council in all its scientific aspects without further discussion.

"It is beyond question that as what may be called a scientific bureau, the Consultative Committee has proved a great success. At the same time, it has performed invaluable services in defining and directing the attention of the Council to the most important general scientific problems arising out of and bearing upon the Council's work, which at the last two meetings of the Council have formed the subject of special sessions devoted to papers and discussions of selected scientific problems. . . ."

The Delegates go on to say: "The point which we wish to emphasise for the moment is that the constitution of the Consultative Committee and experience of its work may be claimed to have removed the last shade of reproach that the experts attached to the Council might be over ridden by non-expert delegates who were influenced by political and administrative considerations."

Hydrographical Committee.

"A great part of the deliberations of the Hydrographical Committee was devoted to the question of how best to turn to practical use the observations of the surface temperature of the Atlantic. Emphasis was laid upon the importance of securing, if possible, decade and monthly charts of deviations from the mean temperature of previous years for which records existed. No cut and dried decision was taken on this subject, which it was agreed should be further discussed with the Danish Meteorological Institute.

"Other subjects discussed by the Committee were the speeding up of the work set on foot last year with a view to providing charts of the normal surface salinity of the North Sea and deviations therefrom, and the provision of means for the rapid dissemination of information on the hydrography of the North Sea. This second point was referred by the committee to the consideration of the North Sea Committee, which recommended that particulars of hydrographic data for the North Sea should be sent to workers on request in the form of proof prints of the Hydrographic Bulletin, instead of being shown on special charts, a recommendation which has already been put into practice. The Committee also submitted to the Council—which approved the proposal—the constitution of a special Sub-Committee to study the exchange of water between the North Sea and the Baltic Sea."

Plankton Committee.

"The discussions and recommendations of the Plankton Committee were chiefly concerned with methods of investigation of different kinds of plankton and, in particular, the comparative catching power of various types of plankton nets. Certain reports which were laid before them bearing on these questions are to be published by the Council, and financial assistance is to be given by the Council to Professor Mielck, of Germany, for carrying out investigations in the catching power of plankton nets, in continuation of a similar provision made last year."

Regional Committees: North-Eastern Area Committee.

"The Reports of the Regional Committees, which will shortly be published in the Report of the Proceedings of the Meeting, do not as a whole call for any special comment from us. The North-Eastern Area Committee has recently tended to expand its programme so as to include investigations bearing upon whaling problems. The best idea of its activities in this field can be drawn from the report published last May under the title: 'Whales and Plankton in the North Atlantic.' This report is, in fact, one volume containing six separate reports.

"At the same time, investigations, which will be the subject of report in due course, of the cod fisheries of Lofoten, East Finmark and the Barentz Sea, and the herring and sprat fisheries of the West Coast of Norway, and of the haddock of the Barentz Sea are in progress."

North-Western Area Committee.

"The North-Western Area Committee published last May a report for the period 1926-27, including the following papers:—

"General Features in the Biology of the Haddock in Icelandic Waters in the period 1903-1926, by Harold Thompson.

"Preliminary Survey of the Results of quantitative Bottom Investigations in Iceland and Faroe Waters, 1926-27, by R. Sparck.

"Age Composition of the Stock of Cod in East Iceland Fjords during the years 1925-27, by Arni Fridriksson.

"Plaice Investigations in Icelandic Waters, by A. Vedel Taning."

Atlantic Slope Committee.

"An interesting discussion took place in the Committee of the Atlantic Slope regarding the interchange of Atlantic and Mediterranean waters. Investigations in the Straits of Gibraltar have for some time past formed a regular part of the programme of this Committee, and arrangements have been made so that those investigations shall be carried out as to fit in with corresponding investigations of the International Commission for the Exploration of the Mediterranean Sea.

"Investigations of the hake, which are also a regular feature of the Committee's programme, will be supplemented this year, as last, by means of a cruise of the research vessel 'George Bligh.'

"The Report of the Committee for the year 1927 was published in February last, while the report for the year 1928 is in preparation."

Other Regional Committees.

"The proceedings of the other Regional Committees—that is to say, the three North Sea Committees and the two Committees which are charged between them with the Baltic Sea and the approaches to it—do not call for any special comment. We think it desirable, however, to mention that in the Combined North Sea Committee Professor Hardy, of the University of Hull, described and demonstrated a new instrument, which he has devised for the continuous collection of plankton. This instrument, which has been used in the 'Discovery' expedition, enables continuous collections of plankton to be made for many miles at a stretch from a ship under way, the plankton being strained out on a moving band of silk gauze. We hope to enlist the co-operation of the fishing industry in testing this device under ordinary fishing conditions."

Editorial Committee.

"The Editorial Committee, whose function is to scrutinise the publications of the Council and to consider what reports are suitable for publication by the Council as distinct from publication by the Governments of the participating countries themselves, was largely occupied on this occasion with the consideration of suggestions advanced by the Bureau with the view mainly of securing economy of the costs of publication without sacrificing any opportunity of issuing reports of value. . . .

"In connection with the Report of the Editorial Committee, it is of interest to mention that provision has been made by the Council for the publication of a set of illustrations of the Atlantic fauna, edited by Professor Joubin, Part 1 of which has already been published. Other parts will be published as they become available. It is not yet possible to forecast the full extent of this publication."

Meeting at Plymouth.

"The meeting at Plymouth was one of the most successful features of the Council's programme. The general purpose of it was to enable Members of the Council to visit the Laboratory and study its equipment, and to make the acquaintance of the staff of the Marine Biological Association and of other marine biologists not attached officially to the Council. It was accordingly arranged that one of the special meetings of the Challenger Society should be held at Plymouth to synchronise with the visit of the Council.

"The members and experts of the Council arrived in the early afternoon of April 16, and proceeded without delay to the Laboratory. Here scientific exhibits had been arranged by the staff, and the afternoon was spent by the visitors in circulating at will through the Laboratory, discussing the exhibits with those responsible for them and exchanging ideas with their fellow-workers in the same field. On the following morning a joint meeting of the Challenger Society and the Council was held, at which a discussion took place on the subjects considered at the special scientific meetings of last year, namely, 'The Estimation of Phosphates and Nitrogenous Compounds in Sea Water' and 'Racial Investigations of Fish.' . . .

"In the evening of the 16th the members of the Council were hospitably entertained to dinner by the Mayor and Corporation of Plymouth, and after dinner Mr. F. S. Russell showed a very interesting series of lantern slides from photographs taken on the Great Barrier Reef.

"We wish in this, our report, to record our warm appreciation of the admirable arrangements made by Dr. Allen and the staff of the Marine Biological Association for the reception and entertainment of the Council. We know that they caused the liveliest satisfaction to all our visitors, and we believe that the meeting, not only on account of the formal discussions, but on account of the opportunity it gave to workers in marine biological science in this country and to those working in a similar field abroad to become better acquainted, must have valuable results."

The Report, which is dated September 6, is signed by Messrs. Henry G. Maurice and David T. Jones.

QUIBBON.

THE TIMES, MONDAY, NOVEMBER 4, 1929

DISCOVERY II.

WHALE RESEARCH SHIP LAUNCHED

(FROM OUR CORRESPONDENT)

GLASGOW, Nov. 3

In the presence of a distinguished company of scientists and others, the Royal Research Ship Discovery II. was launched, yesterday, from the yard of her builders, Messrs. Ferguson Bros., at Port Glasgow. The vessel, which was built to the order of the Crown Agents for the Colonies for the Discovery Committee, was named by Mrs. Borley, the wife of Mr. J. O. Borley, of that committee.

At the ceremony which followed, Mr. LOUIS FERGUSON proposed "Success to the ship," and presented Mrs. Borley with a silver fruit dish as a memento of the occasion.

SIR FORTESCUE FLANNERY said the new ship was to be the vehicle of a continuation of the research work on the habits of whales in the North seas. In the regions of the North Pole whale fishing had been so extensively and so excessively carried out that whales in those regions had been practically exterminated. So far as commercial possibilities were concerned, whales had become so few that it was no longer worth while sending out to catch them. It would be a world calamity if the same process were allowed to continue in the case of whales in the Southern seas, where they still existed in considerable numbers. It would only be by international agreement that the number of whales to be killed would be restricted. He pointed out that while the Discovery was a wooden sailing ship with steam auxiliaries, the present ship was a steamship with sail auxiliaries. The first vessel under favourable conditions attained a speed of eight knots, but the new Discovery was designed for a speed of 13 knots.

Mr. PETER FERGUSON, for the builders, pointed out that the amount of work in a special ship of that type was much greater than the dimensions of the vessel indicated. Speaking on behalf of the Crown Agents for the Colonies, Mr. H. HORSBURGH said they regarded the new vessel as the last word in vessels of that type. It was stated that seven of the members of the crew of 50 were with Captain Scott in the Terra Nova, when that explorer lost his life in the expedition of 1910-13.

Discovery II. is 232ft. in length overall, and has a breadth of 36ft. and draught of 16ft. when fully loaded. Her stem is cut away at the fore foot, and is rabbeted so that the forward edge of the plate ends are protected in ice navigation, while the shell plating is doubled in the bow and throughout a belt at the water line. Special strengthening for resisting ice pressure is given to the hull. She is driven by a single propeller actuated by reciprocating engines designed to give a speed of 13 knots. Her furnaces burn oil fuel and her bunkers carry sufficient oil to enable her to steam 6,000 miles at full speed, and at economic speed 9,000 miles. Her decks are of steel sheathed with wood.

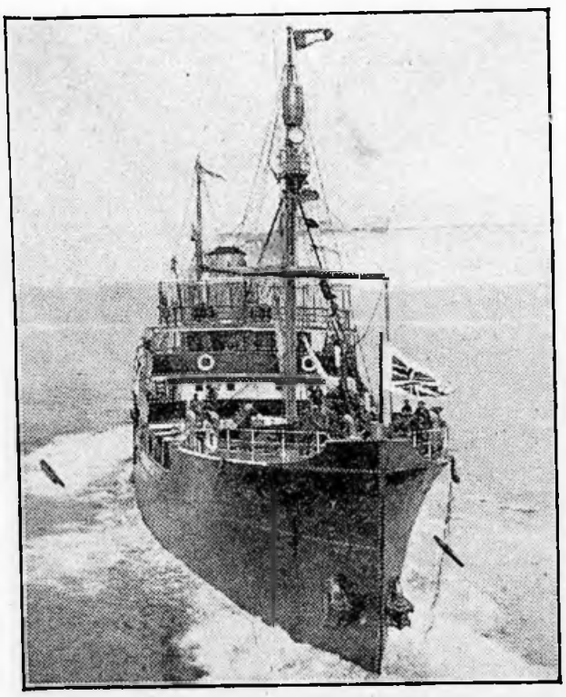
Biological and chemical laboratories with instrument and other store rooms are provided on the upper deck. On the lower deck are a dark room and a laboratory.

PROGRAMME OF INVESTIGATION

The ship will be employed on an extensive programme of marine investigations, in which a marine biological station at South Georgia and the R.R.S. William Scoresby, a vessel of the whale-catcher type, also built and equipped for scientific observations, co-operate. At the biological station whales brought in by one of the whaling companies are subject to scientific examination, and this work, which has now been proceeding for nearly six years, has resulted in notable additions to our knowledge of the biology of whales.

The ultimate object of the work is to discover the reasons of the great seasonal concentrations of whales in certain parts of the Antarctic, to trace whale migrations, to find out the causes of the marked annual fluctuations in abundance, to determine the effects of man's operations on the stock of whales, and to apply this knowledge for the benefit of the whaling industry. To carry out this programme Discovery II. carries a very full equipment of the latest pattern of gear and apparatus.

The ship will carry a scientific staff of six, eight executive officers, and a surgeon. She is expected to sail from London on December 7 and will be under the scientific leadership of Dr. S. W. Kemp, with Commander W. M. Carey, R.N. (retired), in executive command.



DISCOVERY II.—The Royal Research ship, Discovery II., constructed to the order of the Crown Agents for the Colonies for exploration work in the Antarctic, after the launch on Saturday at the yard of Messrs. Ferguson Bros., Port Glasgow.

Imperial and Foreign News

SECRETS OF THE ANTARCTIC

EXPEDITION'S TASK

(By Sir Douglas Mawson)

Our Expedition is a scientific one; our object is to gain as much knowledge as we can of a large stretch of hypothetical Antarctic coastline and of a wide spread of coastal waters south of the Indian Ocean.

The mainland itself, the great Antarctic continent, in the form of an ice-cap rising out of high plateaux of ice-covered land, must contain fabulous stores of mineral wealth. But so securely are those treasures now sealed under the mantle of ice that the prospect of violating these last resources of man must remain in the distances of glacial and geological time. The only economic aspect of Antarctica that concerns our present adventure is that of fisheries. The ocean encircling the Antarctic shores is as well stocked with life as the seas of lower latitudes. This article gives some account of the preparations that have been made in the last four months to perfect our equipment for investigating this marine life. Other branches of scientific inquiry have not been neglected, for we intend to wrest from the Antarctic facts of first-rate importance to meteorology, terrestrial magnetism, solar radiation, and geology.

For no department of inquiry is the Discovery better fitted out than for oceanographic observations; she has on board apparatus for studying the depths, temperature, composition, current movements, and life of the seas she will cross. The Discovery has three different devices for estimating the first and most obvious characteristic of the ocean—its depth.

First, there is a Kelvin sounding machine driven by electro-motor. This is for use in shallow water and is particularly valuable for navigation when steaming close to land. It can be operated while the ship is in motion. A glass tube sealed at the upper end and attached to a strong multiple-strand wire is carried to the bottom by a heavy weight. The depth reached is calculated from the degree of compression to which the air in the tube has been subjected by the pressure of the superincumbent waters.

LIFE ON THE SEA BOTTOM

Few men have any idea that under the surface the sea in its successive levels is as varied in composition as the earth in its strata. The body of the ocean is composed of many superimposed layers of water, each quite distinct in temperature and salinity. These separate water strata have each their own independent movement, just as have the various layers of the atmosphere. The current movement in each of these layers is a further subject for our study, as well as the temperature of the waters and its degrees of saltiness.

The temperature of the surface will be recorded continuously as a graph, drawn on a chart by an electrically operated distance thermometer set in the hull of the ship. For the deeper waters we shall take as many stations as possible, making observations at frequent intervals from the surface to the bottom. In shallow waters, down to depths of 300 fathoms, determinations will be made by thermometers of the normal type inserted in the top of the water chamber of a Nansen-Petterson waterbottle.

When dealing with water from greater depths, insulation cannot be relied upon, and for such work the Eckman reversing waterbottle is used. In the southern ocean it is usual to find warm equatorial waters in the middle depths, between a surface layer of cold polar waters of low salinity and a bottom layer of denser cold water also of polar origin.

The water samples from various depths will be examined quantitatively for their more important constituents. An estimate of the chlorine content will give a measure of the total salinity of the water. The amount of carbon dioxide, of oxygen, of nitrogen, and of phosphorus in the water will also be determined, and finally the value of the hydrogen-iron concentration will be calculated. The purpose of calculating the concentration in the sea water of these constituents is by no means purely scientific. Dr. Stanley Kemp's observations in the neighbourhood of South Georgia have shown that where nitrogen and phosphorus are abundant in the surface waters these fertilizing constituents are just as stimulating to plant life in the sea as they are valuable to farmers' crops on the land. With the increase of microscopic plant forms in sea waters, the small free-swimming crustacean life increases; this small life is the principal food of the southern whales. Therefore, waters abnormally rich in nitrogen and phosphorus are potential whaling grounds.

The most interesting department of oceanography is that which deals with the living contents of the waters. This is usually considered in two main groups—the life on the sea bottom and the life of the surface and intermediate waters. The former is referred to as the benthos, the latter is divided into the drifting life of small or microscopic individuals known as plankton, and the larger swimming life known as nekton. The plankton is the main food of Antarctic whales.

Life on the sea bottom, as well as samples of the sea floor, will be brought up to the deck of the Discovery by trawls worked by a specially constructed winch built into an iron deck-house abaft the main mast. The biological material captured is dealt with in the deck laboratory, which forms the after-part of the main deck house on the upper deck.

While the marine biologists are poring over these minute forms of abstruse life, the zoologists will have a busy time collecting and recording the abundant seal and bird life of the Far South.

THE DISCOVERY RIDING A GALE

(From Sir Douglas Mawson)

ON BOARD THE DISCOVERY,
Oct. 30

The Discovery's position at 6 p.m. to-day was about 44deg. South, 42deg. East. There is a westerly gale with a high sea. The vessel is riding well but rolling heavily. The barometer has just dropped 1in., so I expect no improvement in the weather, and the air temperature is dropping. All the coal is below decks, the ship is snug, and everybody is well.

There are always several hundred birds, representing about ten species, around the vessel. We passed whales and a school of 50 blackfish to-day. Wireless reception is improving with the increased southern latitude, but the sending range is handicapped owing to the fact that the vessel is a wooden one. Wireless officer Williams is hoping soon to pick up America and Australia.

DEEP-WATER APPARATUS

For deeper water a machine of the Lucas type is installed on the forecastle head. The drum carries 5,000 fathoms of wire of 0.028in. diameter, with a breaking strain of 240lb. This wire is taken to the bottom by heavy cast-iron weights which are automatically released on touching bottom. The wire is then wound back by a three-cylinder reversing steam engine. By attaching driver-tubes or other devices to the end of the wire, both in this apparatus and in the Kelvin machine, useful samples of the sea floor can be obtained. The much more convenient scheme of echo-sounding does not give this additional advantage. However, echo-sounding apparatus is much more uncertain and difficult to instal in a wooden vessel like the Discovery than in the usual steel vessel. Also, some peculiar features of the hull of the Discovery add to the usual difficulties. The echo-sounding installation fitted to the Discovery several years ago proved of only limited value. For the present voyage the whole matter has been dealt with afresh under direction of the Research Department of the Admiralty. As a result, Messrs. Hughes, of London, who carried out the work, have furnished an equipment which promises to be entirely satisfactory.

By use of this instrument the depth of the ocean, even when it amounts to several thousand fathoms, can at any time be ascertained in a few seconds. In fact, the depth is measured by the time interval taken for a sound to travel to the bottom of the sea and back again. The sound waves that go down through the water are made by an hydraulic hammer in a sealed metal tank set forward in the bottom of the vessel. The returning sound waves, echoed from the floor of the sea, are recorded electrically by a delicately tuned receiver synchronized with the dispatch mechanism and set aft in the hull. These instruments may also give indications of the contour and nature of the sea floor.

EXPORT OF PEDIGREE LIVESTOCK

GRANTS BY EMPIRE MARKETING BOARD

The Empire Marketing Board have approved three grants to assist the export of British pedigree livestock to Australia, British Columbia, and the Falkland Islands.

This action follows the success of similar schemes, which came into force last year, under which the Board paid half the freight and other costs of transport on registered pedigree stock exported to Kenya Colony, Southern Rhodesia, and Northern Rhodesia, the Governments concerned contributing the other half. The objects of the scheme were to assist oversea farmers to improve their stock in order to stimulate an export trade with the United Kingdom in hides, meat, wool, and dairy produce. At the same time, home trade in pedigree stock was considerably encouraged.

The new scheme estimates for the export from the United Kingdom to Australia of 180 head of cattle, 250 sheep, and 100 swine during the coming year. The Board will contribute a maximum of £5,000 for the year towards the cost of transport, and the Commonwealth and State Governments and the purchaser will supply the rest of the money. The shipping companies have agreed to carry such stock freight free.

The British Columbian scheme provides for equal contributions from the Government of the Province and the Empire Marketing Board. In the case of the Falkland Islands only, sheep will be included, since wool accounts for over 90 per cent. of the colony's exports.

IES, WEDNESDAY, OCTOBER 16,

Imperial and Fore News

IN ANTARCTI SEAS

II.—A FAMOUS SH

The following is the second of series of articles by Sir Dougl Mawson, who arrived in Cape Tow on Sunday to take command of th new Australian Antarctic Exped tion. The article describes the Di covery, the vessel to be used by th expedition.

The first article, in which Sir Douglas Mawson stated the objec of the expedition, appeared in "Th Times" of October 12.

(By Sir Douglas Mawson)

There have been no fewer than vessels named Discovery connected wi British exploration in the Polar regio The first was that of the famous navigat William Baffin, who in 1602 sailed in waters of Hudson Bay and Baffin B. The latest Discovery now embark upon a voyage of scientific investigati in Antarctic seas is a wooden vessel, bu on lines of the Arctic whaler de veloped during the first three quarte of last century to meet the requireme of adventurous sealers and whalers, w combed the northern seas with mu profit. Such vessels were designed to ne the high seas and to push forcefu through the loose pack-ice. The Di covery represents an extreme type of th class of vessel, for the hull is unusua solidly built to withstand heavy ic pressure. Her length over all is 19 extreme breadth 34ft., designed displa ment at 16ft. water-line about 1,600 t

The design of the Discovery is disti from that of the Fram, whose hull wa constructed with a semi-circular or bas like cross-section, calculated to cause h to rise up out of danger of being crushe by ice-pressure. The hull of the Di covery is "U" shaped in cross-sectio and though unusually strong to with stand ice-pressure, would not, under suf conditions, have the same tendency t the Fram to rise above the ice. On the other hand, a vessel of the build of the Discovery would give a better account of itself in loose pack-ice and the open seas. In sheer strength of hull there has been nothing in this class of vessel more strongly built than the Discovery. The bows have been constructed very solidly and of such bluff design that her speed is greatly reduced thereby. With the same object in view, the stern and the massive stern-post are not exactly "stream-lined." Further, the effectiveness of the propeller is diminished by reason of the very massive rudder-post immediately behind it.

SAIL AND STEAM

The engines, however, are auxiliary to sail, upon which mo dependence is placed. Economy in fuel consumption is always a matter of serious consideration for vessels engaged in ice-laden seas, for the possibilities of navigation within such waters are measured in terms of steaming hours available; sail has little power or value in the pack-ice. Consequently, the Discovery is furnished with three good masts, square rigged on the fore and main. This provision of sail gives her considerable sailing powers, so that under favourable conditions and with the help of her engines she recently ran down the English Channel at a speed of 12 knots. The great expanse of yards and rigging aloft offers so much resistance to the wind that her behaviour in the teeth of an Antarctic hurricane is a matter of very serious consideration. The thick snow-laden atmosphere that sweeps off Antarctica in times of gales so obscures the view of all objects however close, whether icebergs or coastline, that the navigator has to steam into the wind hoping to maintain position until the atmosphere clears. The small engine power of the vessel would be ineffective in hurricanes against the resistance offered to the wind by the top-hamper. Accordingly, the wind resistance is being reduced by abolishing the yards and square rigging on the main mast. Henceforth she will be barquantine rigged.

The Discovery is a historic craft. She was originally expressly designed and built for the British National Antarctic Expedition of 1901-1904. This was a voyage of discovery to the Antarctic regions planned and organized by the Royal Geographical Society in association with the Admiralty and Royal Society. Young Lieutenant Robert Falcon Scott was chosen from among the young naval officers of the day as leader of that very successful adventure. The exploits of that expedition during two years wintering in the Ross Sea are classic in the annals of Antarctic discovery. The Discovery won her spurs under Scott and became a world-famous vessel. After that expedition she was sold to the Hudson's Bay Company for trading purposes. On his last adventure, when he sacrificed his life in the successful attainment of the South Geographic Pole, Scott used the Terra Nova as expedition vessel. This ship, which is much older than the Discovery, still survives as one of the Newfoundland sealing fleet.

EARLIER RESEARCH WORK

For many years the Discovery remained in the hands of the Hudson's Bay Company, but in 1922 she was bought through the British Inter-Departmental Committee of Research and Development to undertake research in Antarctic waters of the Dependencies of the Falkland Islands. The vessel was largely rebuilt, the work occupying several years and costing a large sum of money. As a result she was practically a new ship in 1925 when she made scientific cruises in the South Atlantic seas with Dr. Stanley Kemp. Lately, the Discovery has been engaged in the investigation of whales and all matters relating to their life history and development.

The money spent by the Falkland Islands Government in reconditioning the Discovery left her a sounder and better equipped vessel than as originally built. The framing of the vessel is of English oak beams, 11in. thick, grown to form wherever practicable. These are covered by two skins of timber and lined with a third. This last is Riga fir, some 4in. thick. The main outer planking, some 6in. thick, is pitch pine or Canadian elm according to its position, and is covered by an outside sheathing of greenheart about 4in. thick. The spaces between the frames, and contained between the inner lining and the outer skins, are packed with rock salt, which needs renewing about every three years. This pickles the wood and prevents dry rot, or other form of decay in the timbers. The hull is heavily stayed at close intervals by strong beams, and divided by bulk-heads of solid construction. The bows are still stronger, a network of timber girders and struts bolted together. Some of these bolts running entirely through the wood are as much as 8ft. 6in. long. The bows, therefore, represent a solid mass of timber many feet in thickness. Further protection is afforded by an outer armour of steel plates extending several feet on either side of the stem.

The stem is designed with much overhang so that when charging an ice-floe the bow glides upwards for several feet, then the weight of the vessel crunches the ice-floe beneath it. The engine-room, well aft, houses triple-expansion engines capable of developing 450 h.p. Steam is supplied by two coal-burning marine boilers of 150lb. maximum working pressure. There is also a steam-driven electric generator of about 15kw. at full power. A paraffin-driven emergency generating set is also installed for operation when steam is not available. Either set is capable of lighting the whole vessel as well as supplying power for the searchlight and wireless installations.

All the structures on both the upper and main decks are very solid. The main deckhouse below the bridge, which contains the chart and wireless rooms and the navigating captain's cabin, and a large deck laboratory, is built of massive teak. A large part of the room aft below the upper deck is stowage for sails and scientific equipment. The wardroom and living quarters for officers and scientific staff are forward on the main deck, beyond the upper part of the engine and boiler rooms. Further forward are the men's quarters and the galley.

The main bulk of the expedition's stores are packed in hold spaces forward under the main deck divided up by watertight bulkheads. Additional space for stowage of coal is provided under the wardroom. Together with the bunkers, there is space for not more than 200 tons of coal. This quantity is inadequate for operations far from any coaling base, and odd areas are being filled up all over the ship, and a certain amount of coal will be carried as deck cargo. To facilitate stowage the coal used is a high-grade briquette coal from Cardiff, which is in solid rectangular blocks of 25lb. each. It also affords a high mileage per ton.

The navigating captain is J. K. Davis, second in command of the expedition. The ship's officers and crew comprise 26 men; three navigating officers, three engineers, boatswain, leading seaman, sailmaker, carpenter, six ablebodied seamen and six ordinary seamen, cook, assistant cook, and two stewards. However, the ship carries 40 souls all told, for, in addition to the above, there is, besides myself, a scientific staff of 12.

ANTARCTIC WHALING REGULATIONS.

WELLINGTON, N.Z., Thursday.

Now regulations affecting whaling in Ross Sea Dependency, which have just been issued by the Government, provide for a fine of not exceeding £1,000 for each day on which whaling is conducted without licence. The Southern Whaling Company, of Liverpool, whose factory ship, the Southern Princess, and five chasers have just departed for Ross Sea, has been granted a licence under the new regulations. The only other concern operating under a licence is the Ross Hanet Company. No other factory ships and chaser fleets are operating in these waters without licence.

ington message, the New have gazetted new regu- ing in the Ross Depen- ' licence under the new anted to the Southern pool, whose factory ship edin last week for the

FOR ANTARCTIC.

Discovery II.'s Explorations in Whaling Grounds.

The last few years have witnessed a great revival of exploratory and other scientific work in the Antarctic owing, in part, to the increasing realisation of the importance of the economic resources of the region.

The Discovery Committee, which is carrying out investigations of a thorough character in the interests of southern whaling, having lost the services of R.R.S. Discovery, which has been lent on charter by the Falkland Islands Government for service in Sir Douglas Mawson's expedition, have had a larger vessel constructed for the execution of their work.

This vessel, which iss called Discovery II., is, by the King's permission, styled a Royal research ship. She was launched at Port-Glasgow on Saturday by Mrs J. O. Borley.

Extensive Programme.

Discovery II. is designed to attain a speed of thirteen knots, and can steam 6000 miles at full speed, and at economic speed 9000 miles.

She will carry out an extensive programme of marine investigations, assisted by a smaller vessel, the R.R.S. William Scoresby, and a marine biological station at South Georgia, at which observations are made on the whales brought in by one of the whaling companies.

The object of the investigations is to determine the effect of man's operations on the stock of whales and to account for the great natural fluctuations in abundance. In order to do this it is necessary to study all conditions on the whaling grounds and in adjacent waters which affect the life history of the whales, their migration, and distribution.

The ship will carry a scientific staff of six, eight executive officers, and a surgeon. Her full complement is fifty. She is expected to sail from London on December 7, and will be under the scientific leadership of Dr S. W. Kemp, with Commander W. M. Carey, R.N. (retired), in executive command.

WHALING BY 'PLANE

Race to the Antarctic

PRIZE OF £6,500,000 A YEAR

British and Norwegian Research Ships

From Our Own Correspondent

JOHANNESBURG.

An international race to the Antarctic, with fortunes in whale oil as the stake, is now in progress. Norwegian and British expeditions are on their way to the southern whaling waters; both are equipped with aeroplanes, and in both cases they are sailing partly under sealed orders.

The British expedition consists of Captain Scott's old ship, the Discovery, under the command of Sir Douglas Mawson, while the Thoroy, a Norwegian steamer also carrying two aeroplanes, has just sailed south from Table Bay.

"The whaling industry has become of great importance," said Mr T. M. Hansson, Vice-Consul for Norway in Capetown, in an interview, "and it is necessary that new areas for whaling should be discovered.

"I talked over the matter with Captain Lutzow Holm, one of the most brilliant Norwegian airmen, who sailed in the Thoroy, and he sees no reason why aeroplanes should not be used in the Antarctic for spotting whales.

"The captain of the Thoroy told me that during previous voyages to the Antarctic he encountered vast lakes in the ice pack surrounding the continent. In these calm waters the seaplanes would find ideal conditions. As an alternative, they might be able to alight on the flat-topped icebergs that sometimes stretch in an unbroken line for more than 100 miles.

"Captain Riiser Larsen, another well-known Norwegian airmen, is already in the Antarctic on the factory ship Thorshammer. A search for suitable whaling bases along the Antarctic coast may be included in the work of the airmen. Their main task, however, will be to find more whales."

AUSTRALIA'S CLAIM

Though no official statement has been made, it is now widely known that the present Discovery expedition is largely concerned with new whaling areas, and it is for this purpose that the Discovery is taking two aeroplanes with her.

Sir Douglas Mawson has declared that the control of the Antarctic should be by one nation. The French claim to part of Adelie Land was bitterly contested by Australia. Both Australia and New Zealand wish to share in the revenue of the Antarctic whaling industry, which is spreading into new areas year after year.

The payment of a royalty for whales taken in territorial waters is the reason for much of the present activity. New Zealand receives a royalty from the whalers operating in the Ross Sea, and if Australia can claim possession of the Antarctic coast to the South, she will benefit from future extensions of the industry.

That the prizes are worth while may be gauged from the fact that last year the value of whale oil won in the Antarctic was about £6,500,000

Meanwhile, mystery surrounds the movements of the little Norwegian research ship Norwegia, which paid a brief visit to Cape Town on her way South. She is a wooden ship, which suggests that she is to be employed in the pack-ice, but she sailed under sealed orders, and it may be some time before the results of her voyage are announced.

Hector Whaling

The net profit for 1928-9 amounted to 2,200,000 Norwegian kroner, and it is proposed to pay a final dividend of 25 per cent., making 40 per cent. for the year.

The shares, which are of £1 denomination, were introduced to the markets in May, and have been as high as 61s 3d, against a present figure of 37s 6d.

WHO OWNS THE ANTARCTIC?—11.

(*Continued from p.* 302)

where he was to look for them. Incidentally Byrd is encamped, not on *terra firma* at all, but on the great floating Ice Barrier, and it is a moot point whether floating ice can be claimed as "territory" by any nation. Nevertheless the assurance of courtesy to the self-invited visitor was valuable if not indispensable, for without it he might have been denied the amenities and facilities of his base port in New Zealand—though such a drastic step was scarcely probable.

The receipt of this friendly communication from Britain, added to the claims put forward by her at the Imperial Conference in 1926, were not altogether pleasing to the United States.

With Byrd on the spot, America feels she can no longer remain indifferent to what is going on down there. New and rapid developments are taking place. The Mawson Expedition, the Wilkins projects, the growth in the whaling industry, and the movements of the Norwegian vessel *Norvegia*, all betoken renewed activity. Commander Byrd has already sent to Washington details of his first discovery and "annexation" (Marie Byrd Land) which he has found in the course of a preliminary flight.

Moreover Britain's claims put forward at the 1926 Conference, plus her two large cuts out of the Antarctic cake, appear to assert a claim over the entire continent, less the small French sector of Adelie Land, and even this is not officially recognised by Britain.

Now comes the Mawson Expedition, the aims and scope of which will now be considered.

The Mawson Expedition, officially known as the British-Australian-New Zealand-Antarctic Expedition (Banzae), is unique in one respect—that it is the first British or Dominion Government Expedition ever to be despatched to the Antarctic.

It has been made possible primarily by the loan of the Royal Research ship, *Discovery*, by Britain to Australia, and the leader (Sir D. Mawson) is fortunate in being entirely freed from any financial difficulties. His predecessors—Scott, Shackleton, Amundsen, and others—were worried to distraction by lack of funds, but the Banzae Expedition is not only well equipped in this respect but will probably show a handsome profit—the first Antarctic expedition ever to do so. The loan of the ship saved an outlay of some £70,000; the sale of newspaper rights, the publication and sale of the official "story" of the expedition, the film rights, the generous donations of private individuals, the contribution by the New Zealand Government, and gifts of equipment, food, clothing, and other stores makes this—after the Byrd Expedition—one of the most influential and powerful expeditions that has ever sailed for the Antarctic. The personal element is entirely lacking. There is no thought of private exploitation; this is a Government undertaking in which each member of the expedition is a paid employee of the Government, and therein lies the significance.

It has been pointed out that in International law it is necessary for a servant of the Crown to be charged specifically with the duty of annexing new lands, which "must be an undoubted act of the central Government acting on behalf of the State." Whether Australia, as a self-governing Dominion, is competent in International law to exercise such an act has yet to be settled, but the *Discovery* sails under Australian colours and the leader takes orders from the Commonwealth Government.

The Banzae Expedition differs from Byrd's in another important respect. No long journeys or flights into the interior are contemplated. Scott, Shackleton, Amundsen, Byrd, and Wilkins all travelled, or proposed to fly far into the interior. Thus while Byrd and Wilkins are carrying out their spectacular flights far inland, the *Discovery* will be slowly forcing her way through the ice along an unknown coastline while her aeroplane makes short reconnaissance flights into the interior. This coast-line which is to be found and explored lies roughly between the meridians of Greenwich and 90 deg. east, forming a complete quadrant of the Antarctic Circle, 2,000 miles long. The existence of such a coast-line is still questionable; its extent and configuration are quite unknown; upon it—if it exists—the foot of man has never trod.

The leader, Sir Douglas Mawson, is ranked as one of the greatest explorers of the Antarctic—perhaps the greatest of all, not excepting Scott, Shackleton, and Amundsen. Unlike them, he has the advantage of being not only a great leader but a man of science. Mawson's Antarctic record is brilliant and unblemished; his organisation was far superior to Scott's or to Shackleton's; the extent of his discoveries, the important scientific data, and the flawless organisation of his expedition has no parallel in the annals of Antarctic exploration.

Mawson is a Professor of Geology at the Adelaide University; he is one of the handful of Australians to be a Fellow of the Royal Society; his immense strength and great frame combine to make him a most imposing figure: he is the idol of Australia, and his two previous visits to the South have furnished him with ample experience for this last of his expeditions.

* * *

Britain and her Dominions have ever been foremost in the exploration of the Antarctic. It was a British admiral, Sir James Clark Ross, who first revealed to the world the existence of this great continent, and he has been followed by a long line of successors. The coming season promises to be one of the most fruitful in extending the world's knowledge of this great unknown land. Byrd, Wilkins, and Mawson will all be at work down there searching out the secrets of these

Dawn Lands where Youth may reap;
Dim Lands where Empires sleep.

A COMPREHENSIVE GUIDE

The winter sports booklet issued by Messrs. Thos. Cook and Son comprises a very general and comprehensive guide to resorts in Switzerland and elsewhere. Quite logically it makes a special feature of the arrangements made by this world-famous agency, but the advantages (financial and otherwise) of joining up with an organisation of this kind are too well appreciated to require emphasis in this day and generation. Cook's booklet is replete with information about resorts, hotels, travelling facilities and expenses, and must therefore prove invaluable to those contemplating a winter sports holiday.

WINTER SPORTS IN FRANCE AND AUSTRIA

While Switzerland remains the most popular resort, winter sportsmen in search of new fields to conquer are now frequenting other countries in increasing number. France and Austria also have their winter sports centres, and articles dealing with their attractions will appear in our issue of next week.

ANTARCTIC WHALING CONUNDRUM.

MYSTIFICATION ABOUT RIGHTS IN ROSS SEA.

WELLINGTON (N.Z.), Wednesday.

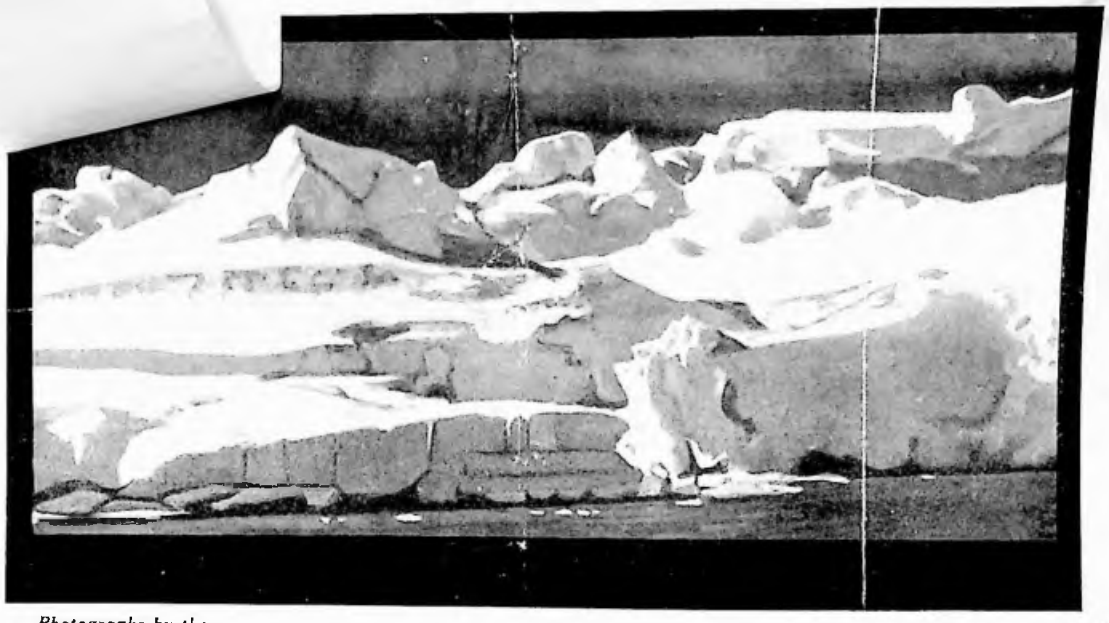
Mystification appears to have been caused by the new regulations, issued at the end of October, affecting whaling in the Ross Sea Dependency.

These regulations provided for a fine not exceeding £1,000 each day on which whaling is conducted without license.

There are now two unlicensed whaling fleets on the Ross Sea; and they claim the right to operate anywhere in the Ross Sea and adjacent waters, provided they keep outside the territorial limit of three miles from any land in the Ross Dependency.

They are understood to be within their rights.—Reuter.

[The Imperial Order-in-Council in 1923, assigning the Ross Dependency to New Zealand, defines it "all the islands and territories between long. 160 E. and long. 150 W., and south of lat. 60 S." This, of course, lays no undue claim with regard to the seas outside of territorial limits.]



Photographs by the Byrd Expedition, 1928-9

A CONTINENT OF ICE: A series of gigantic ice masses in the Antarctic

WHO OWNS THE ANTARCTIC?—II.

The Second Instalment of "The Sphere's" Special Article on the Unusual International Situation C the Presence of the Byrd Expedition in the Ross Dependency. Many Nations are at Loggerhea over the Barren and Apparently Useless Tracts of Ice Fringing the South Pole

By LIEUT.-COMMANDER GEOFFREY RAWSON

One more argument in favour of Antarctic exploitation remains to be mentioned—the whaling industry. The Norwegians have for many years past proved this to be a most profitable trade, and there is no doubt that the whaling grounds down south are rich and deserve careful preservation and exploitation.

But whaling grounds are on the high seas: pelagic fisheries are free to all; no whaling or sealing-grounds can be appropriated beyond territorial limits, and any sea boundaries claimed by Governments can have no effect in International Law.

The Behring Sea case finally settled all such questions. Since the generally recognised territorial limit extends to but three miles from the shore, it seems clear that the great pelagic fisheries in the Southern Ocean cannot be affected in any way by any claims to *terra firma* in the Antarctic, unless, of course, an occasional whale were caught by poachers within the three-mile limit.

One other aspect of this question may be briefly touched upon.

Hitherto, in virtue of its "title" to the Ross Dependency, which includes the Ross Sea, the New Zealand Government has extracted a royalty on all whale oil won by the whalers operating in that area. The right to impose this tax may be questioned on legal grounds, but hitherto the whalers have paid it under protest. One reason is this. New Zealand ports offer the only near-by base from which these ships can operate, and it is possible, though not probable, that in the event of its "claims" being actively contested by the whalers, the New Zealand Government might close its ports to the whalers, thus placing the latter in a quandary.

* * *

Now that these territorial claims to certain sectors of the Antarctic continent have been made, it is interesting to note what steps have been, or can be made, to substantiate these claims.

Territory, even in the Antarctic, cannot be acquired solely by right of discovery. If it could, more than half of the Antarctic coastal territory would to-day legally belong to the United States, to France, to Russia, to Norway, and to Germany, whose nationals have in the past discovered large areas.

In his *Treatise on Antarctica*, Hayes states:

> Discovery is recognised in International law as valid title to territory only if followed by occupation, though it strengthens a title based on occupancy. Occupation consists in formal annexation and settlement. The hoisting of a national flag and the reading of a declaration are not sufficient to annex land.

But settlement, meaning "a permanent community of civilised inhabitants," is scarcely possible on the Antarctic mainland, as has already been shown. It is true that various exploring parties have wintered on the continent, but they have done so as an adventure and in preparation for the forthcoming season's operations; they have been dependent on relief ships for their ultimate safety; they have lived artificial lives buried beneath the winter ice and snow; they have been entirely dependent on their own resources, and save for wireless, they have been entirely cut off from civilisation.

The climate is so severe, the frozen land so hostile, the risks and dangers so great, that even a short sojourn is regarded as an adventure, and is recognised on the heroes' return by the award of the Polar medal to those gallant adventurers who are sufficiently intrepid to make the experiment.

What mysterious and profound reasons are urging the various Governments to take such an active and intelligent interest in such a Frozen Hell?

* * *

One may visualise the Antarctic continent as a vast iced cake with the South Pole somewhere near the geographical centre. From this cake two great slices have already been cut by Britain and a smaller one by France. It is the acquisition of these "slices" and other claims that have been made, added to the fact that Commander Byrd has settled himself down in the middle of the Ross Dependency, which has brought the future of Antarctica into the f of international politics.

The first slice cut by Britai Falkland Islands Dependency, w "cut" twenty-one years ago. official publication, *The Domini* states: "The territory extend Pole and this area contains square miles, or 1½ per cent surface of the globe." Whe slice included portions of the mainland belonging to Chili a ine, doubtless a blunder by officer in the British Colonial a well defined geographical fea rectified some years later by an Letters Patent which omitte question but retained the p south of the 50th parallel of thus including the Pole itself.

The second slice was cut Ross Dependency was proc extends to the South Pol the land discovered b Amundsen, but exclude covered by the British

Thus Britain has claims to the South sides of the continen doubly sure. The third s... Antarctic cake is the Adelie La... the French Government annex and the extent of which is rough the map.

These are not the only territor for as noted earlier in this ar Imperial Conference in 1926 Bri her claims to many other vast

The reaction on other Gover not been altogether favourable. It i ing to note, for exa when Commander south he chose as his expedition a the very middle o proclaimed as t "Ross Dependen was opposed to al of diplomatic cou ticularly as the ga mander omitted to British Government intention, Britain c this bold stroke w usual diplomatic tac Byrd was setting United States received a "fri munication" fro giving an ass every courte extended to the if he should de on British territ note omitted to Byrd's hosts wo

(Continu

THE CALL OF THE WILD: Shackleton, one of the sled dogs of the Byrd Antarctic Expedition, points his nose to the Pole and gives tongue to his comrades

UNKNOWN HEROINES OF THE FALKLAND ISLES.

Women Who Can Live Without Shops Or Sales.

This is the fourth of a series of travel articles by Jane Starr, who has just returned from a voyage to South America and the Falkland Isles.

BY JANE STARR.

THERE is no happy medium about a visit to the Falkland Islands. Either you call there in a ship and remain a bare twenty-four hours in the harbour, or else you get off the ship, in which case you'll have to remain on the island for three or four months before there is another ship to take you away again.

From a little distance the islands are rather beautiful, with the quiet beauty of low-swelling hills covered with short turf like green velvet.

Port Stanley, the capital and only town, is tucked snugly away in a land-locked harbour. It has an uninspiring Government House, an artistic town hall, a Scotch-looking cathedral, and a number of whitewashed wooden cottages with cheerful red roofs of painted corrugated iron.

The Main Road.

Nearly all these cottages have little greenhouses fastened on to their fronts, full of flowers, and their little gardens are gay with daphne and broom. Among other items of interest there is the main road.

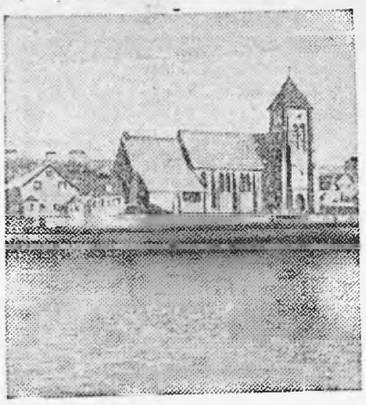
It leads on one side to an open grassy space with seats on it, called—in memory of the naval battle—Victory Green; while at the other it ends at a windswept graveyard where the familiar Cross of Remembrance marks the resting place of some of the men who gained the victory.

The chief import of the islands is Scotsmen. The chief export sheep. I don't know which I admire the more, but I do know which I would rather be. I would rather leave the islands as frozen mutton than remain there as a frozen human being. And I say this after experiencing nothing of their climate except the height of mid-summer.

Furs On The Warmest Day.

I arrived there and left on the warmest and finest day they had for a twelvemonth, and yet I wanted every fur I had. The Falkland Islanders, on the other hand, were enjoying their summer—which sometimes lasts four days—while they could.

The children were out playing on the green in white cotton frocks and with bare red legs, and an old Scotsman with a complexion like a well-kept hunting boot remarked that it was



PORT STANLEY.

"verra warrm the day" as I went shivering by.

And I shivered not only on account of the icy wind, but also on account of the looks of contempt that I received for wearing a fur coat. They expect people to be hardy there, and their women are certainly nothing short of heroic.

What Every Woman Wants.

Most of them have, I suppose, the three primary things that every woman wants—a husband, a home, and children. But they have no theatres, no concerts, no new books, no dress shows: not a single one of the frills of life.

It is amusing for us to go into a village shop once in a while and buy stamps and sticky sweets and shoe laces all at the same counter. But I doubt if it is as amusing for the women of Port Stanley, who have no other kind of shop; though to the women who live out on the lonely sheep farms it is probably heaven to come in to Port Stanley and find a shop at all.

As an illustration of the way these women are starved in this respect, they all flocked on board our ship—and what do you think it was for? To shop at the barber's! To buy those accumulated horrors which only a ship's barber knows how to collect. And they shopped all day long—shopped as women ought to shop, lingeringly and with rapture.

Richest Man On Board.

They turned over the shapeless jumpers, the badly-cut stockings, the terrible, comic matchboxes and the ornate ashtrays. And by night-time the shop was cleaned out and the barber the richest man on board.

All the same, I am sure the Falkland Islands women do not regard themselves as the least tragic. They ransacked the barber's shop with the same joie de vivre as if it were in London at the July sales, and they are much too busy running their homes to worry about vain things.

But I do recommend every woman who thinks of settling down there to be perfectly honest with herself, and not to do it unless she likes elemental things in their most elemental state.

At any rate, I'm honest with myself, I would not attempt it, for if there's one elemental thing I can't stand it's flannel next the skin. And I know I should come to that.

Electric Whaling.

A whaling company has been formed in Hamburg which proposes to kill whales by means of electricity. Experiments have already been carried out in the neighbourhood of the Faroes, and the promoters claim that their method will render whaling less expensive, less dangerous and more remunerative. An electric generator is carried on board the whaler, and is connected by a cable running in the harpoon line to the harpoon head. On the whale being struck an electric circuit is completed by way of the animal's body and the salt water back to the ship, which causes the death of the whale by electrocution. Mr. B. Holm-Nansen, the inventor, has stated that by this method air is prevented from escaping from the lungs, with the result that the whale remains floating on the surface. In addition, the number of vessels necessary can be considerably reduced, as the long pursuit of whales that have been struck, a pursuit often lasting for hours, is rendered unnecessary. The long and costly whale lines will be superfluous, nor will whalers have to carry large quantities of explosives on board as hitherto. Pieces of the exploded shells were often found in the blubber and damaged the presses.

Whaling Companies' First Reports

Hector Whaling, Limited, which was formed last year, has issued a first report that makes favourable comparison with the statement published when the company's shares were issued here in May last. The profit, before meeting taxation, amounted in the year ended July 31 to £173,624; this compares with a prospectus estimate of "over £150,000." After providing for taxation, there is a net profit of £138,624, and the directors are able to pay a dividend of 25 per cent. upon the 285,000 original shares. This requires £57,000, leaving a surplus of £81,624. A start is made with the creation of a general reserve account by the allocation of £50,000, the balance of £31,624 being carried forward. All preliminary and formation expenses, together with the expenses involved in the increase of capital, and other charges of a relative nature, have been written off against the balance standing to the credit of the share premium account. This account is consequently reduced from £67,950 to £15,680. The company now has an issued share capital of £327,950, in addition to which there were outstanding on July 31 £300,000 of Seven per Cent. Convertible notes, the whole of which was on that date represented by cash. Another company engaged in the whaling business—the Viking Whaling Company—has just issued a first report, but as trading activities began only a week before the close of the company's financial year this company has yet to prove itself as a commercial enterprise. At the annual meeting yesterday the chairman (Lord Churston) gave details of the position of the company's investments in Norwegian whaling companies, as well as an interesting description of the "Vikingen," the new floating factory which has been built for the company by Messrs. Swan, Hunter and Wigham Richardson. Besides being a whale oil factory, this vessel has been built as an oil tank ship, so that if not employed in the Antarctic on a whaling expedition she could be employed as an ordinary oil tanker. She also serves as a mother ship to the company's flotilla of five whale catchers.

WHALES ON MIGRATION

The Autumn Passage of the Sound of Mull

EACH RECURRENT AUTUMN there is a distinct migration of whales southward through the Sound of Mull. The animals seem to use the coastline as a guide, and forging ahead at a speed equal to that of a fast steamer, emerge with a "blow" which sounds like an immense sigh, and rolling over like a huge wheel, disappear, to emerge again only a couple of hundred yards away for their next inhalation of air.

I do not know how many breaths a person takes per minute, but I am sure that a whale which is merely travelling, and so is breathing regularly, does not take more than one breath a minute, in which time it has travelled under water a distance of 200 yards.

An alarmed whale, or one which is feeding, may travel a mile or more under the water before it shows and blows again, but a migrating whale breathes regularly at intervals of a minute, or a minute and a half at longest.

One whale which was making too close inshore for safety actually struck bottom when rounding Calve Island near Tobermory, and for a time there was a tremendous upheaval of water. When the animal at last got off the rocks it sounded, and was next seen in the open sea at a mile's distance.

It is hardly possible to tell the species of whales which pass through the Sound, but one seen at thirty yards' distance on October 21st last had an absolutely black hide, and was well over thirty feet in length.

Killer whales, sometimes called grampuses, occasionally make the passage of the Sound. These are easy of recognition, for they have a playful habit of leaping clean out of the water at times.

Seals are very much afraid of the grampuses, and when they are about the seals crowd into the shallow ends of the sea-lochs and go through a queer performance of splashing.

DUGALD MACINTYRE.

HECTOR WHALING.

SEASON'S CATCH.

Hector Whaling, Ltd., issues the following catch report to November 24:—

Number of expeditions reporting: Four this season against three last season.

Catch for week ended November 24, in barrels of oil, 6,100, against 3,700 last season.

Total catch to date in barrels of oil, 25,300 this season, against 14,900 last season.

HECTOR WHALING COMPANY.—The catch for the week ended November 24 out of four expeditions reporting amounted to 6,100 barrels of oil, compared with 3,700 barrels in the same period of 1928-29, when three expeditions were reporting. The total catch for the season 1929-30 to date amounts to 25,300 barrels of oil, compared with 14,900 barrels.

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Cutting from Times

Issue dated 19 11 29

MAWSON EXPEDITION

THE DISCOVERY AT KERGUELEN

(From Sir Douglas Mawson)

ON BOARD THE DISCOVERY,
Nov. 14

The Discovery beat back to the north-east coast of Kerguelen Island [from which she had been driven 100 miles to the north by a strong gale] by daylight on November 12, when the wind rose and changed direction, with heavy snow

squalls obscuring the view, conditions which caused a few anxious hours for a vessel of such very low power. By the afternoon the danger cleared, and Captain Davis set his course up the Royal Sound, arriving in the evening at the coal depôt left for us, by arrangement, by Messrs. Irvin and Johnson, the South African whaling company.

The journey of 30 miles up the Sound was of remarkable interest. The scenery revealed as we steamed along the winding waterways between innumerable islets was entrancing. The lower country has been carved by an extensive ice sheet, which also is responsible for the labyrinth of fiord channels, so prominent a feature of the coastal region. Dominating all are volcanic peaks without number, carrying the picture into the clouds themselves. Whales and seabirds of every description sporting themselves in the landlocked waters took little notice of the intrusion of our vessel.

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Cutting from Glasgow Bulletin

Issue dated 25 / 11 29

IN QUEST OF WHALES

Discovery II. Leaves Clyde for Antarctic Voyage

WONDER SHIP

The royal research vessel, Discovery II., which left the Clyde after completion on Saturday, is proceeding to Antarctic waters in quest of the whale, not, however, for the purpose of slaughter, but to find out all about its habits, its breeding places, its feeding places, and its wanderings over the ocean.

In the Arctic seas the killing of whales has been carried on so ruthlessly that they have been practically exterminated. Naturalists want to prevent a similar state of affairs in the Antarctic, and it is expected that, as a result of the investigations of the Discovery II., it may be possible to place the exploitation of the whale on a rational basis.

Marking Whales

One method by which information as to the life history of the whale is obtained is by "marking" it. When opportunity offers what may be described as identification discs are shot into the blubber of whales, and when these marked whales are killed, perhaps thousands of miles away, information is sent by the whalers to the Discovery Committee.

For Research Work

The Discovery II. is something of a wonder ship by reason of the modern scientific apparatus with which she is equipped for carrying out research work—not confined, of course, to the whale.

To the layman one of the most remarkable instruments fitted on board is that for taking soundings by means of an echo. There is also apparatus by which the density and temperature of the sea can be taken at any depth down to something like five miles. Another feature is a specially prepared winch carrying 30,000 feet of wire rope for working large nets at great depths.

Farthest South "International"

The Discovery II. will take stores on board in London, and will then proceed to Monte Video, whence she will sail to South Georgia, which will be the base of her expeditions in the Antarctic.

The Norwegian whalers have their headquarters at South Georgia, and they have a football pitch there. "All work and no play makes Jack a dull boy, and, if possible, a football match will be arranged between the crew of the Discovery II. and the Norwegians. If it comes off it will be the farthest south "international" ever played.

The research ship and her crew will be away from this country for two and a half years. The Discovery II. was built at Port-Glasgow for the Discovery Committee, to the order of the Crown Agents for the Colonies.

WHALING PROFITS.

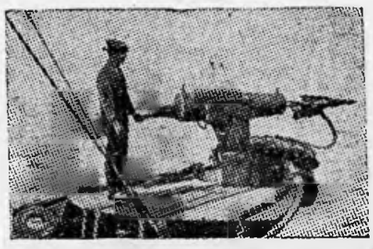
HARPOONERS' £4,000 IN SIX MONTHS.

From Our Own Correspondent.

CAPETOWN, Friday.

The Norwegian whaling factory ship Thoroy arrived at Table Bay last night, bringing the first oil of the Antarctic season, valued at more than £100,000. This season's catch of whales will, it is predicted, be worth £10,000,000. Harpoon gunners in the steamers operating with the Thoroy have earned £4,000 each in bonuses during six months' work near Bouvet Island.

The "Daily News" Nautical Correspondent writes: The modern whaling industry, in which Norway takes the leading part, dates its revival from the first Antarctic expedition of Captain Scott, who, early this century, reported the presence of innumerable whales in the Ross Sea. Several of the largest whaling concerns are under British control, but practically all rely for their results on the services of Norwegian harpooners. For a harpooner to net £4,000 in a long season is exceptional, but by no means incredible, when it is borne in mind that many Norwegian whaling concerns have repaid their original capital many times over in dividends.



A Harpoon Gun.

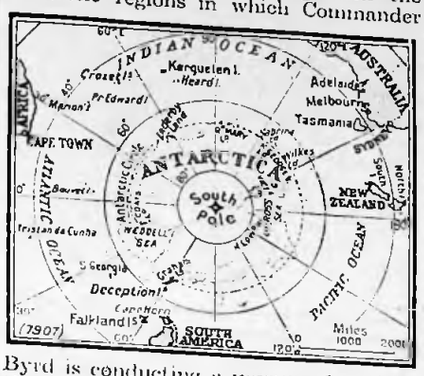
SOVEREIGNTY IN THE ANTARCTIC

U.S. AND BRITISH CLAIM

(FROM OUR OWN CORRESPONDENT)

WASHINGTON, Nov. 27

The nature of the United States Government's reply to the British Note of November 17, 1928, dealing with the Antarctic regions in which Commander



Byrd is conducting a voyage of exploration, was made known here to-day, and proves to be no more than a courteous acknowledgment.

It will be remembered that the British communication a year ago indicated that his Majesty's Governments in various parts of the Empire had learnt of the Byrd Expedition and had watched its progress with special interest, because of their own concern with the regions in which, they understood, Commander Byrd would be chiefly active. There followed a reference to the Imperial Conference of 1926, the official summary of whose proceedings included the assertion of British title, "by virtue of discovery" to: (1) The outlying part of Coats Land—namely, the portion not comprised within the Falkland Islands Dependencies; (2) Enderby Land; (3) Kemp Land; (4) Queen Mary Land; (5) the area which lies to the west of Adelie Land and which, on its discovery by the Australian Antarctic Expedition in 1912, was denominated Wilkes Land; (6) King George the Fifth Land; and (7) Oates Land. Finally, the British Government offered to issue instructions to the appropriate authorities to afford every assistance to Commander Byrd while the Expedition was in the Ross Dependency and the Falkland Islands Dependencies.

Some stir was caused in the Press of the United States, and the prediction was made that a reply would in due course go forward contesting the wide claim of sovereignty made by the British Commonwealth. It was not until November 15 of this year, however, that Mr. Joseph Cotton, the Under-Secretary of State, sent a reply, in the course of which he regretted that the British Note had not been acknowledged earlier, expressed appreciation of the interest taken in Commander Byrd's Expedition, and, so far as the summary of the Imperial Conference proceedings was concerned with its assertion of title, assumed that this was merely brought to the Department's attention for its information, and, thus, that "no comment by the Department seemed to be called for at this time."

It remains to be seen whether the question will be revived at some later date. If it is not, the conclusion is imposed that the United States Government rests upon the statement made in 1924 by the then Secretary of State, Mr. Charles Evans Hughes, who said that, "in the absence of an Act of Congress assertive, in the domestic sense, of dominion over Wilkes Land, this Department would be reluctant to declare that the United States possessed a right of sovereignty over that territory."

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Cutting from Times

Issue dated 2-12-29

LARGE SALES OF WHALE OIL PRODUCTS

OSLO, Dec. 1.—It is reported here that the selling group of the Norwegian Whaling Association has sold whale oil products on behalf of the companies of the affiliated group at £25 net cash. All the Norwegian whaling companies are involved, with the exception of four. The purchasers are stated to be the Margarine Union, Messrs. Lever Brothers, and the Denofa Company. The quantity sold is estimated at 1,600,000 barrels, representing a total value of 120,000,000 kroner.—*Reuter.*

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Cutting from Liverpool Journal of Commerce

Issue dated 3.12.29

LEVER BROS. AND WHALE OIL DEAL.

It is reported here, states an Oslo Reuter message, that the selling group of the Norwegian Whaling Association has sold whale oil products on behalf of the companies of the Affiliated Group at £25 sterling net cash. All the Norwegian whaling companies are involved with the exception of four.

The purchasers are stated to be the Margarine Union, Messrs. Lever Bros., and the Denofa Co. The quantity sold is estimated at 1,600,000 barrels, representing a total value of 120,000,000 kroner (roughly £6,650,000).

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Cutting from TIMES 4 DEC. 1929

Issue dated

VIKING WHALING.—The manager on board the ss. Vikingen (the company's floating factory) reports the production of 18,500 barrels of whale oil to November ...

HVALFANGER WHALING.—The catch for the week ended December 1, out of four expeditions reporting, amounted to 10,500 barrels of oil (compared with 4,000 barrels for the corresponding period of 1928-29, when three expeditions were reporting). Total catch to date for season 1929-30 now amounts to 35,800 barrels of oil (against 18,000 barrels).

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Issue dated

WHALING SEASON.

ANGLO-NORWEGIAN RESULTS.

Anglo-Norwegian Holdings, Ltd., announces the following results for the three operating companies (Tonsbergs Hvalfangeri Co., Anglo-Norse Co., and Falkland Whaling Co.) which it controls. For the first six weeks of the whaling season ended December 1, the total combined catch amounted to 77,800 barrels, as against 50,300 barrels in the same period last year. The total combined catch for the week ended December 1 amounted to 15,000 barrels, as against 7,000 barrels in the same week in 1928. Total shipments of guano for the six weeks from the Tonsbergs Company's land station at South Georgia amounted to 10,000 bags, valued at £12,500.

Anglo-Norwegian Holdings, Ltd., of which Major-General Guy Dawnay is president, is the largest British unit in the whaling industry.

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Cutting from Liverpool Journal of Commerce

Issue dated 5.12.29

ANGLO-NORWEGIAN WHALING CATCHES.

Anglo-Norwegian Holdings, Ltd., which was formed early this year under the auspices of Dawnay, Day and Co., the merchant bankers, to acquire extensive interests in the Antarctic whaling industry, announces the following results for the three operating companies (Tonsbergs Hvalfangeri Co., Anglo-Norse Co., and Falkland Whaling Co.) which it controls.

For the first six weeks of the whaling season ended December 1st, the total combined catch amounted to 77,800 barrels, as against 50,300 barrels in the same period last year. The total combined catch for the week ending December 1st amounted to 15,000 barrels, as against 7,000 barrels in the same week in 1928. Total shipments of guano for the six weeks from the Tonsbergs Company's land station at South Georgia amounted to 10,000 bags, valued at £12,500.

Four expeditions have been operating this year as against three last, the new expedition consisting of the floating factory Polar Chief (with four whale catchers), of the Falkland Whaling Co., which commenced operations this season for the first time. The average catch per expedition at 19,450 barrels this year is higher than the average of 16,760 barrels for the same period last year.

The Extinction of the Whale.

WITH the launch of the largest whaling factory ship *Kosmos*, on July 30 last, at Belfast, we are reminded once again of the possible extinction of the whale under present conditions. The intensive methods of whale hunting are now so efficient as to make the danger of extinction of some members of the species a very real one.

Whale oil, the principal product of the industry, has been increasingly used by European and American nations, and undoubtedly its chief application is in the margarine industry. Formerly, whale oil was regarded as a dark, evil-smelling product identified with train oil. But with the introduction of scientific methods of dealing with the carcase, it is now produced as a pleasant pale oil resembling a vegetable oil of good quality.

Since as early as the 10th century the whale has been hunted. But the enormous increase in the production of whale oil since the war would have been impossible with the old methods of catching. The invention of the shell harpoon gun by Svend Foyn, "the Father of Norwegian whaling," in 1868, revolutionised the whole industry. With the shell harpoon, which is timed to explode in the body of the whale, the catching possibilities have increased almost without limit. Armed with this weapon, the modern whale hunter can safely tackle any species. Moreover, the large blue whale and the dangerous fin whale can be killed and the bodies immediately inflated in order to prevent their sinking, a disadvantage which precluded these animals from attack by the older methods.

Messrs. Workman, Clark (1928), Limited, of Belfast, on Saturday issued their output figures for the year. These showed a total of seven vessels launched of 53,900 tons, which included the whaling factory, Kosmos, of 17,800 tons, for Norwegian owners. The next largest vessel was the City of Sydney, a cargo and passenger boat of 8,000 tons.

THIRTY THOUSAND WHALES ARE KILLED EVERY YEAR

And the World's Demand Is Growing

By LARS BJOERNSON

The whale that caught Jonah was no benefactor to his descendants! It was not long after the story got abroad that man first set out to catch the whale, and he has continued to do so ever since.

More whales are caught each season in these days than were caught in fifty years a few centuries ago.

This is rather hard luck on the whale. Scientists tell us that he is a fond parent and altogether a law-abiding citizen.

Many Attractions.

His great mistake, however, is to contain within his massive being hundreds of gallons of oil that can be converted into foods, soaps and vanity preparations; flesh and bone that make excellent cattle fodder and fertilisers, and ambergris, a precious substance that forms the basis of my lady's most delicate perfumes.

Norwegian whalers alone earn nearly £7,000,000 annually from Antarctic catches.

Something Like a Bait.

How man has contrived to capture the whale through the ages deserves a special place in history. In the 4th century B.C., one Chaung Tzu, a Chinese sage, recommended 50 live oxen as a bait!

The success of his plan is to be doubted, since most whales find it difficult to swallow an adult herring, so small are their throats.

How the Indians Did.

Even more fantastic were the recorded methods of the American Indians in the 16th century A.D. An ancient document states quite seriously that they "leap nimbly on her (the whale's) neck . . . the boldest of them putteth a staff . . . into the gap of the whale's nostril. In the meantime the whale beateth the sea, not knowing what to do through very rage." (And who could blame her annoyance?)

But the Indian sat tight "and fixeth yet another staff in the other nostril . . . in such wise that it taketh away her breath."

Hand-to-Hand Fight.

Whaling proper was first started by the Basques, who lived round the Bay of Biscay. With great courage they would leave their ship and track down a whale in rowing boats, throwing the harpoon by hand. Once hooked, the whale was killed by lances thrust into vital parts.

The catch was almost a hand-to-hand fight, and often, in its fury, the whale would lash out with its tail and smash the boats to smithereens.

Steam and Bombs.

This rather crude but daring method persisted with few improvements down to 1864, when a Norwegian sailor, Svend Foyn, decided to chase the whale in a steam boat, and kill it by means of a harpoon which was fired from a gun and which contained a small bomb.

So successful was he that between 1871 and 1880 he captured 506 whales. His methods were generally adopted. Whales were killed, inflated with air to keep them afloat, then towed to land, where the body was treated.

30,000 Whales a Year.

Whaling was never more prosperous than it is to-day. Fully 30,000 whales are caught a year, producing 1,500,000 barrels of oil, and this figure is steadily rising.

But methods have changed. The very factory for treating the whale's body is a large ship. The largest British whaling unit, the Anglo-Norwegian Holdings fleet, in addition to a land station, possesses three such floating factories, each of which is kept supplied by four or five speedy steam-driven whale catchers.

Doubled Output.

It alone produces 165,000 barrels of oil a year, which is more than the whole world's output not so many years ago.

The future holds promise of even more spectacular methods. Aeroplanes have already been used to sight whales, and the modern harpoon will be charged with a strong electric current, electrocuting the beast on contact.

A GREAT NAVAL BATTLE

Falkland Islands Epic

THE FIFTEENTH ANNIVERSARY

A Lesson for British Empire

By Our Naval Correspondent

To-morrow, December 8th, is the fifteenth anniversary of the Battle of the Falkland Islands—that action which, after four months of war, removed the power of the German Flag from the surface of the oceans and rendered free the paths of British and Allied trade, on the outer seas and outside the submarine zones, for the remainder of the war. It is true that several gallant attempts were made by German surface commerce raiders in the years that followed, but they were too well watched to allow them to become a menace comparable with the submarine.

It will be recalled that, soon after the outbreak of war, Admiral von Spee was forced to leave Chinese waters by the entry of Japan on the side of the Allies. He despatched the Emden upon her memorable cruise in the Indian Ocean and disappeared into the vast Pacific. For some time his whereabouts and his objectives were unknown; gradually it became evident that he was moving towards South America. Admiral Craddock, with a much weaker force, rounded the Horn and sailed north in search of the German Squadron.

The squadrons met on the evening of November 1st. Craddock, in spite of his very inferior force, did not hesitate to accept action; he was overwhelmed by the greater gunpower of the German Squadron and went down in his flagship the Good Hope, which with the cruiser Monmouth were sunk with all hands; of the four British ships present only the Glasgow and the armed merchantman Otranto escaped.

STURDEE IN COMMAND

News of the disaster reached England on November 4th, and immediate steps were taken to redress the position. Vice-Admiral Sturdee was placed in command of the "Atlantic and Pacific" with orders to seek out and destroy von Spee's Squadron. On November 11th Sturdee left England, on his wide commission, with the Invincible and Inflexible; with great secrecy and speed he met a concentration of five other cruisers off the Brazilian coast and sailed for the Falkland Islands to search for von Spee, who had last been heard of as making his way south along the coast of Chile. Sturdee arrived at Port Stanley, Falkland Island, on the evening of December 7th.

What followed is best described in the terse words of Admiral Sturdee's despatch. "At 8.0 a.m. on 8th December an attack on Port Stanley was attempted by a German Squadron consisting of two cruisers and three light cruisers, accompanied by two colliers. The squadron I have the honour to command was coaling at the time. The squadron weighed. A general chase ensued, followed by an action, with the result that the ships named in the margin were sunk—only the Dresden escaping."

The ships "named in the margin" were the large cruisers Scharnhorst and Gneisenau, the light cruisers Leipzig and Nurnberg and the two colliers. The Dresden, powerless to do any harm without supplies and coal, was found and sunk some three months later by a squadron under the Glasgow.

GERMANS CRUSHED

Thus was the German power on the oceans crushed; but it is as well to consider what might have happened if Sturdee had not been sent with ships powerful enough to destroy the enemy. Here were five potential "Emdens"; two of them individually more powerful than any cruiser we had on the outer seas; if these five ships had been as successful in the South Atlantic as the Emden was in the Indian Ocean, our vital food lanes would have been so disturbed at an early and critical stage of the war that there might have been a very different tale to tell.

The Falkland Islands campaign is the outstanding lesson of the need of the British Empire for numbers in cruisers; and not only numbers, but for a sufficiency of power ships, so that a superior force may be concentrated rapidly at a danger spot anywhere in the world—as was done at the Falkland Islands. This lesson must be borne in mind during the next few months, when for purely political reasons attempts will be made to reduce our already dangerously low number of cruisers. Such attempts must be resisted, for any reduction of cruiser strength below that now stated by the Admiralty as necessary, will be fraught with grave danger to the safety of the Empire.

ANNIVERSARY DINNER IN HOUSE OF COMMONS

A dinner of officers (writes our Political Correspondent) who took part in the action is to be held on Monday in the Harcourt Room, House of Commons, where more than twenty of them are expected to attend. Of these no fewer than four will be flag officers out of the eight now living who fought in the engagement. Rear-Admiral Beamish, who has taken the leading part in organising the dinner—at very short notice—had difficulties to contend with. In the first place, the Navy Lists fifteen years ago were necessarily incomplete; in the second, officers concerned were scattered over many stations. However, a letter in the "Morning Post" on Saturday last brought within a few days many inquiries; and Commanders-in-Chief readily acceded to a request to let the officers in their respective commands know what was afoot. Among the diners will be Sir William Allardyce, who was Governor of the Falkland Islands at the time.

Efforts were made to get into touch with the lady who, from Fitzroy Inlet, first sighted the enemy fleet and telephoned immediately to the Governor. She is, however, on the Continent, and cannot attend Monday's gathering.

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Cutting from Daily Telegraph

Issue dated 11.12.29

WHALING INDUSTRY RESEARCH.

DISCOVERY II. READY FOR ANTARCTIC.

DUKE OF GLOUCESTER'S "GOD-SPEED."

Preparatory to her departure on Saturday for the Southern Seas to investigate the whaling industry, with a view to safeguarding its future, the Royal research ship Discovery II. was inspected by the Duke of Gloucester, as she lay moored in St. Katherine's Dock yesterday.

The Duke was shown over the vessel by Dr. Stanley W. Kemp, the director of research, and Commander W. M. Carey, R.N., master of the ship. The naval and scientific personnel of the expedition afterwards assembled on the foredeck, where the Duke bid them farewell.

"What I have seen," said his Royal Highness, "has been very interesting, and, judging also by what I have been told of the results of her trials and her behaviour during her stormy passage from Glasgow to London, we may confidently expect Discovery II. to reflect credit on all concerned in her design, construction, and equipment, and to prove admirably fitted for whaling research in Antarctic waters.

THE DUKE OF GLOUCESTER.

"I wish Dr. Kemp, Commander Carey, and all of you 'God-speed,' a successful voyage, and a safe return; and ask you to carry my greetings to your colleagues now working in the South in the William Scoresby and at the station at South Georgia."

Among those presented to the Duke of Gloucester at yesterday's inspection were:

Dr. Drummond Shields, M.P. (Parliamentary Under-Secretary for the Colonies), Brigadier-General Sir Samuel Wilson, G.C.M.G. (Permanent Under-Secretary for the Colonies), Dr. Kemp, Mr. E. R. Darnley (chairman, Discovery Committee), Lord Ritchie (chairman, Port of London Authority), Mr. F. H. Harper, M.B.E. (secretary, Discovery Committee), Sir Sidney Harmer, K.B.E., Sir Fortescue Flannery, Bt. (Consulting Naval Architect), Rear-Admiral H. P. Douglas (Hydrographer of the Navy), Sir Gilbert Grindle, K.C.M.G., Mr. Robert Ferguson; Mr. W. J. Owen and Mr. G. S. Maskell (Port of London Authority); Sir Henry Lambert, K.C.M.G., Mr. A. Harker; Mr. H. Horsburgh and Mr. E. A. Nattriss (Discovery Committee).

The naval officers and scientific staff were also presented.

Cutting from Yorks

Issue dated 11.12.29

DISCOVERY II.

ROYAL INSPECTION AND GOOD-BYE

The Duke of Gloucester yesterday inspected the Royal Research Ship, Discovery II., and wished good-bye to officers, scientists, and men who will leave St. Catherine's Dock on Saturday for a three-year voyage of research in the Antarctic. The purpose of the expedition is to investigate whales with the object of safeguarding the future of the industry. After he had inspected the ship, the Duke made a short speech to the crew.

"What I have seen," he said, "has been very interesting, and judging by what I have been told of the results of her trials and her behaviour during a very stormy voyage from Glasgow to London, we may confidently expect Discovery II. to reflect credit on all concerned in her design, construction, and equipment. Discovery II. should prove admirably fitted for whaling research in Antarctic waters. I wish Dr. Kemp, Captain Carey, and all of you God-speed, a successful voyage, and a safe return. I ask you to carry my greetings to your colleagues now working in the William Scoresby and at the station in South Georgia."

The Duke of Gloucester made a minute inspection of the ship with the assistance of Commander W. M. Carey and Dr. Stanley W. Kemp, who is the chief of a staff of six scientists. He was shown the elaborately equipped biological laboratory where experiments on a wide scale will be carried out to trace the migrations of whales, to find the cause of their fluctuations in abundance, and to determine the effects of intensive whale-fishing upon the stock. Dr. Kemp explained to the Duke how whales will be marked by distinctive darts fired into them at recorded times and places. The Duke commented with warm approval upon the comfort of the crew's quarters and the measures that have been taken to secure their warmth in frozen seas.

Discovery II. has been built by Messrs. Ferguson Brothers, of Port Glasgow, for the work of the Discovery Committee. She is of steel, specially constructed to resist ice pressure, and is capable of steaming 10,000 miles at cruising speed. She is the property of the Falkland Islands Government, and the cost of building her and of the expedition is being met from revenues raised from the whaling industry in the Dependencies of the Falkland Islands.

The following presentations were made to the Duke of Gloucester:—

Dr. T. Drummond Shiels, M.P., Parliamentary Under-Secretary of State for the Colonies; Brigadier-General Sir Samuel Wilson, Permanent Under-Secretary of State for the Colonies; Dr. Stanley W. Kemp, Director of Research; Mr. E. R. Darnley, chairman Discovery Committee; Lord Ritchie of Dundee, chairman Port of London Authority; Mr. F. H. Harper, secretary Discovery Committee; Sir Sidney Harmer, vice-chairman Discovery Committee; Sir Fortescue Flannery, consulting naval architect and member of Discovery Committee; Rear-Admiral H. P. Douglas, hydrographer of the Navy and member of Discovery Committee; Sir Gilbert Grindle, Deputy Permanent Under-Secretary of State for the Colonies; Mr. Robert Ferguson, director of Messrs. Ferguson Brothers (Port Glasgow), Limited, builders of the Discovery II.; Mr. D. J. Owen, general manager Port of London Authority; Mr. G. S. Maskell, dock and warehouse manager Port of London Authority; Sir Henry Lambert, Senior Crown Agent for the Colonies; Mr. W. Eraut, chief engineer Crown Agents for the Colonies; Mr. A. Harker, consulting naval architect; Mr. H. Horsburgh, technical officer Discovery Committee; Mr. E. A. Nattriss, shipping officer Discovery Committee.

SCIENTIFIC OFFICERS.—Mr. N. A. Mackintosh, chief scientific officer; Mr. D. D. John, senior zoologist; Mr. E. R. Gunther, senior zoologist; Mr. H. F. P. Herdman, senior hydrologist; Mr. A. J. Clowes, senior hydrologist; Mr. F. C. Fraser, zoologist; Mr. G. E. A. Deacon, hydrologist; and Mr. T. J. Hart, zoologist.

SHIP'S OFFICERS.—Commander W. M. Carey, R.N. (Ret.), master; Lieutenant-Commander J. J. C. Irving, R.N. (Ret.), chief officer; Sub-Lieutenant A. L. Nelson, R.N.R., second officer; Sub-Lieutenant R. A. B. Ardley, R.N.R., third officer; Dr. E. H. Marshall, D.S.O., surgeon; Engineer Lieutenant-Commander W. A. Horton, R.N. (Ret.), chief engineer; Mr. A. N. Porteous, second engineer; Mr. R. Gourlay, third engineer.

Cutting from Liverpool Post

Dated 11.12.29

Her Baptism Of Storm.

Discovery II. stood up splendidly to a severe buffeting on her maiden passage from the Clyde round Ireland to the Thames, and when the Duke of Gloucester inspected her in St. Katherine's Dock to-day she looked fit for the worst blow the South Atlantic has in store for her. The new research ship, which is going out to continue the investigations in the whaling grounds between the Horn and the Cape of Good Hope, is quite a different type of vessel from the more famous Discovery now carrying the Mawson expedition to the Antarctic. Captain Scott's old ship is of the wooden whaler class. Discovery II. is a shapely steamer built of steel, doubly plated at the bow and along the water line, and can steam 13½ knots at full speed.

Science And The Whale.

I have never seen a research vessel so finely equipped for her task. The biological and chemical laboratories are models of their kind, spacious and abundantly lighted, and fitted with everything that the scientific heart could desire, including a well-stocked library on the subjects under investigation. There will be busy scenes in the laboratories when Discovery II. is at work in the far South Seas. Six scientists under the experienced leadership of Dr. S. Kemp are on board, and they are looking forward to a rich harvest—not of oil or bone but of data—when they get down to the whaling grounds for their two years' cruise.

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Liverpool Evg Express.

10.12.29

Whaling Industry's Prosperity.

THE new scientific ship, Discovery II., sets sail on Saturday for South Georgia, in the Antarctic, to complete the world's most important investigation into the whaling industry.

The whaling industry has entered upon a period of unequalled prosperity, and the aim of the Discovery expedition, which has already published a series of reports, is to study the habits, breeding and feeding places of whales.

* * *

Cutting from Manchester Guardian

Issue dated 10.12.29

RESEARCH IN THE ANTARCTIC.

Visit to Discovery Number Two.

SHIP BUILT FOR THE TASK.

(From our London Staff.)

FLEET STREET, TUESDAY.

The Duke of Gloucester went down to St. Katharine's Dock this morning ton inspect the interesting research ship, Discovery II. She will sail on Saturday for a three-year voyage in the whaling grounds in the Antartic, carying out research and collecting information which will be of use to the whaling industry.

Discovery II is the successor in this work to the old Discovery, Captain Scott's ship. She is fresh from the Glasgow builder's yard, and on her trip to London was well tried out in bad weather off the West Coast of Ireland. Her master, Commander W. M. Carey, is well satisfied with her behaviour.

The Duke of Gloucester made a thorough examination of the ship as she lay in the dock all spick and span in the sunshine. He commented with warm approval upon the comfort of the crew's quarters and the measures that have been taken to keep them warm in frozen seas. Afterwards he addressed the assembled officers and crew from the upper deck. "From what I have seen," he said, "I am confident that you will all have a very comfortable voyage, and that this ship will stand all that is expected of her and prove admirably fitted for whaling research in Antarctic waters." He wished them all god-speed, a successful voyage, and a safe return, and asked them to take his greetings to their colleagues now working in the William Scoresby (the other research ship) and at the station in South Georgia.

An interesting thing about Discovery II. is that she is one of the first, if not the first of the vessels intended for deep-sea research that have been specially designed for her scientific mission. Nearly all research ships in the past have been taken over and adapted for their work. As she is to work not only in the South Atlantic she has been specially constructed to resist ice pressure, though it is no part of the programme that she should become ice-locked. She is built of steel, the shell plating being doubled in the bow and also at the water-line throughout her length, and the fore part is strengthened by strong beams. The furnaces burn oil fuel, and she is capable of steaming 7,800 miles at the full speed of 13½ knots, or 10,000 miles at "economic" speed.

Biological Laboratory.

The vessel is small and compact, and full of interesting scientific equipment. There is a biological laboratory fitted with hundreds of bottles for specimens, and an ingenious swing table which keeps steady in rough weather. There is a large scientific library. The chemical laboratory is specially equipped for the analysis of water samples, and includes a distance thermograph which gives a continuous record of sea temperature. The laboratory workroom contains a large vertical camera with special lighting for the photography of marine organism. There is elaborate sounding equipment with shallow and deep water "echo" sounding gear of the latest Admiralty pattern.

On the lower deck are large drums on which are wound wire 5,000 fathoms long for use with the deep-water nets. The nets are of all sizes, and some of them can be closed at any depth. She carries wireless equipment with both long and short-wave sets. The sick bay is fitted with an X-ray and violet-ray apparatus. The Discovery II. is a floating miniature laboratory, and it is doubtful if any research ship has ever put to sea with a finer equipment.

How Expenses are Met.

The ship is the property of the Government of the Falkland Islands, and the cost of these investigations, which have been proceeding for about six years, is defrayed by the money obtained from the whaling industry there, through the payment of licences and taxation of the profits made by the whalers, British and Norwegian. The chief of the staff of six scientists is Dr. Stanley W. Kemp.

Discussing the objects of the expedition with a "Manchester Guardian" representative this morning, Dr. Kemp said that it was hoped to collect knowledge which would ensure the permanence and prosperity of the whaling industry in the South. One aim was to discover the reasons for the concentration of whales in certain parts of the Antarctic and to trace their migrations. Very little was known at present of the reasons for the great annual fluctuations in the number of whales in different parts of southern waters or why, for instance "blue" whales were sometimes predominant and sometimes "fin" whales. The temperature and salinity of the water in which whales congregate and all the other factors of their environment, such as the currents and nature of the sea bed, will be examined, and it is hoped to find out by comparison of northern and southern whales whether they are of the same species.

The headquarters of the expedition would be the Marine Biological Station at South Georgia, where whales would be examined. Discovery II. was the senior research ship, and would be chiefly engaged in studying the conditions which affect whales in the South, their feeding, and so on. Dr. Kemp was asked whether the work would be concerned with the causes of the serious diminution in the number of whales in some waters, of which much has been heard of late, and he replied that as the expedition had in view the prosperity of the industry it would be closely concerned with that matter. Dr. Kemp spoke of the great value of having a ship which has been fitted out from the beginning specially for the task in hand.

THE TIMES,

DECEMBER 11, 1929

THE VIKING WHALING COMPANY

A SATISFACTORY RECORD

SPECIAL FEATURES OF THE FLOATING FACTORY

INVESTMENTS IN NORWEGIAN COMPANIES

LORD CHURSTON'S REVIEW OF OPERATIONS

The FIRST ANNUAL GENERAL MEETING of the shareholders of the Viking Whaling Company, Limited, was held yesterday at Winchester House, Old Broad-street, London, E.C.

The RIGHT HON. LORD CHURSTON, M.V.O., presided.

The SECRETARY (Mr. S. Cartwright) read the notice convening the meeting and the auditors' report.

The CHAIRMAN said:—Gentlemen,—You have all received the directors' report and accounts for the period December 14, 1928, to October 31, 1929. These are our first accounts, and as they have been in your hands for the prescribed period may we therefore, take them as read? (Agreed.)

You will have gathered from the directors' report that our floating factory commenced operations in the Antarctic on October 23. We thus entered upon our trading activities only a week before the close of the company's first financial year. It will therefore be quite clear to you that during the period covered by the accounts no trading revenue can be looked for. The balance-sheet might be regarded therefore as being somewhat in the nature of a progress report. Our profit and loss account, however, shows a total credit on revenue account of £17,476 7s. 11d. This is mainly due to the excellent returns from our investments in Norwegian whaling companies, and you will have observed that after charging mortgage interest appropriate to the period and certain items of insurance relating to the vessels, London office expenses, directors' fees and income-tax there remained sufficient to provide for the payment of the Preference dividend to October 31 and to leave £30 4s. 1d. to be carried forward to next year.

THE BALANCE-SHEET FIGURES

Turning now to the balance-sheet: with regard to the item £234,300 included in "bills payable," I should explain that this sum represents the unpaid balance of the purchase price of the floating factory (£180,300) and also £51,000 in respect of the five whaling vessels. These amounts are repayable, as regards the factory by half-yearly instalments of £15,725 each up to September, 1935, and as regards the whaling vessels by two annual instalments of £25,500 each to August, 1931. The balance of the item "bills payable," namely, £15,942 15s. 7d., is the amount of acceptances given in connexion with the purchase of supplies for the expedition. "Sundry creditors" amount to £31,524 7s. 2d. The item "Profit and loss account £9,264 9s. 1d." has since been reduced by the payment of the Preference dividend to £30 4s. 1d. I think I have said all that need be mentioned with regard to the liabilities side of the balance-sheet. Turning now to the assets side, the first item, "Floating factory and whaling vessels at cost £389,171 16s.," does not need further explanation.

INVESTMENTS IN NORWEGIAN WHALING COMPANIES

The next item is "Investments in Norwegian whaling companies at cost £83,544 11s. 10d. This comprises our holdings in the Vestfold Whaling Company, the Sydhavet Whaling Company, and the Rosshavet Whaling Company, and you may have observed that the income received from them, after payment of Norwegian income-tax, represents a yield of nearly 13 per cent. on their cost value. The approximate market value at October 31 was £75,090 19s. 3d. The following summarized particulars, which have been taken from the published balance-sheets of these companies dated July 31, 1929, will show that the slight depreciation on book value need not cause shareholders any anxiety, being due to the present dull conditions general to all stock exchanges.

Taking, first, the Vestfold Company, the liabilities are:—

Capital	£329,190
Reserves	142,263
Creditors	41,655
Profit and loss account	111,902
Total	625,010

These liabilities are represented by:—

Fixed assets	£297,090
Cash	261,395
Investments, debtors, and stock on hand	66,525
Total	625,010

It will be observed that reserves amount to £142,263 and the credits to profit and loss account £111,902, a total of £254,165, against which the cash resources are £261,395.

With regard to the Rosshavet Company, the liabilities are:—

Capital	£385,000
Reserves	99,000
Creditors	171,602
Profit and loss account	108,355
	£763,957

These liabilities are represented by:—

Fixed assets	£359,800
Cash	304,317
Debtors and stock on hand	99,840
	£763,957

The reserves amount to £99,000 and the credits to profit and loss account £108,355, making together £207,355, against which the cash resources are £304,317.

Now the Sydhavet Company. The liabilities are:—

Capital	£156,781
Reserves	61,606
Creditors	25,949
Profit and loss account	55,445
	£299,781

These liabilities are represented by:—

Fixed assets	£107,048
Cash	179,140
Debtors and stock on hand	13,593
	£299,781

The reserves in this case amount to £61,606 and the credits to profit and loss account £55,445, a total of £117,051, against which the cash resources are £179,140.

The strong financial position of these companies cannot, I think, be questioned.

PROFIT AND LOSS ACCOUNTS

I might also mention that their profit and loss accounts for the period 1928-29 disclose, in the case of the Vestfold Company: Catch, 75,825 barrels; profit available for dividend, directors' remuneration, and reserves, £109,087; dividend paid, 20 per cent.

The Rosshavet Company:—Catch, 123,720 barrels; profit available for dividend, directors' remuneration, and reserves, £106,774; dividend paid, 25 per cent.

The Sydhavet Company:—Catch, 41,600 barrels; profit available for dividend, directors' remuneration, and reserves, £55,419; dividend paid, 25 per cent.

The next item on the balance-sheet, "Cash at bank and in hand £55,712 13s. 3d.," does not need comment.

"Expenditure in connexion with fitting out the whaling expedition, 1929-30, £92,023 4s. 9d." This sum is directly chargeable to trading, but for the reasons I have already explained the amount has been carried forward to be dealt with in next year's accounts, when the result of the expedition has been ascertained.

The last item, "Preliminary expenses and underwriting commission, £18,579 4s." This amount has been reduced by premiums received on shares, namely, £16,499 18s., leaving £2,079 6s. still to be written off.

THE VIKINGEN

Before concluding I think a few observations on the special features of the floating factory will not be uninteresting. The vessel was built by Messrs. Swan, Hunter and Wigham Richardson, of Wallsend-on-Tyne. On August 31 she ran most successful trials at sea and at full power obtained an average speed of 12.4 knots during a series of double runs on the measured mile.

The Vikingen is no ordinary vessel, for besides being a whale oil factory she is built as an oil tank ship, so that if not employed in the Antarctic on a whaling expedition she could be employed as an ordinary oil tanker. She also serves as a mother ship to our flotilla of five whale catchers, Vikingen I., II., III., IV., and V. There are commodious quarters for the manager, the captain, his officers, and crew, and also for the factory workmen and stokers. In addition there are mess rooms for the gunners, officers, and engineers of the whale catchers. In the 'tween decks, which are about 17ft. in height, there is installed a very complete oil refining factory. There are in all some 40 steam-heated boilers. In these the oil is extracted and then run into receiving tanks, from which the oil is pumped into the numerous settling tanks. On the weather deck amidships there is an oil-separating room, in which are a number of turbine-driven machines which separate the water from the oil. The former is ejected overboard and the pure oil is run into the main tanks of the ship. The latter run for nearly the whole length of the ship underneath the factory deck, and can contain about 13,000 tons of oil.

The elaborate factory equipment, however, would not of itself ensure success without the able direction of Messrs. Johan Rasmussen and Co., who have applied their wide knowledge and experience to the supervision of the many preliminary details.

The active operations are directed by Mr. Skedsmo, the factory manager, assisted by officers and crews of wide experience in this specialized industry, and to whose combined efforts the success of the expedition will largely be due.

OIL PRODUCTION SOLD FORWARD

With reference to our current operations, our total oil production has been sold forward at a price of £25 per ton for grade No. 1. I have already mentioned that our floating factory commenced operations in the Antarctic for the first time at the end of October. The manager reports that for the six weeks to December 7 the whale oil production amounted to 24,100 barrels, or 30 per cent. of the total capacity of the Vikingen. The directors consider the results up to date quite satisfactory, and there are prospects that the season will be quite good, with favourable chances of securing a good catch.

I now propose that the accounts and report as submitted to this meeting be adopted.

Mr. L. K. LUND seconded the motion, and the report and accounts were unanimously adopted.

The CHAIRMAN then proposed the re-election of Mr. M. Konow as a director of the company. He stated that Mr. Konow was appointed a director under Article 81, following the death of Captain Olaf Hanssen. Mr. Konow was associated with Mr. Rasmussen in the management of the Rosshavet Whaling Company, and his services on the board would be welcomed by the directors.

Mr. E. D. NAESS seconded, and the resolution was carried unanimously.

The auditors (Messrs. Brown, Fleming and Murray) having been reappointed, the proceedings terminated.

FALKLAND ISLANDS POLICE CHIEF.

INTERESTING CAREER OF FORMER PLYMOTHIAN.

Starting as a boy in the Defiance at Devonport, Mr. D. G. O'Sullivan, who has arrived at Plymouth after an absence from England of 28½ years, progressed through an interesting and uncommon career to the position of chief constable of the Falkland Islands.

In a talk with a representative of "The Naval and Military Record," Mr. O'Sullivan related his unusual experiences, which included a close connection with the events leading up to the battle of the Falkland Islands during the Great War.

Mr. O'Sullivan is staying with his brother, Commissioned Boatswain G. O'Sullivan (retired), at 59, Peverell Park-road. With him are Mrs. Sullivan and two daughters, Misses Laura and Mary O'Sullivan, who were born in the islands, and are seeing England for the first time.

12,000 MILES JOURNEY.

Mr. O'Sullivan and his family were something like eight weeks on the return voyage to England. They sailed 12,000 miles from the Falkland Islands, through the Straits of Magellan, up the West Coast of America, through the Panama Canal, the Carribean Sea, Gulf of Mexico, and across the Atlantic to Liverpool. Thence they travelled to London, and finally to Plymouth; and when they arrived at North-road Miss Laura O'Sullivan was still carrying a hockey stick, which she fondly described as "my best friend—I have brought it 12,000 miles."

As a boy Mr. O'Sullivan was in the Defiance at Devonport, under Admi. Jackson, who first introduced a system of wireless at Plymouth. Later he worked in the gunboat Scourge on experimental trials between the Breakwater and Mount Wise, in Admi. Fremantle's time. In 1898 he commissioned in the Flora at Devonport for the South-East Coast of America, and in 1900 left the Flora for the Admiralty coaling station in the Falkland Islands.

Within 12 months the station was closed down, and Mr. O'Sullivan then joined the police there, serving in both police and prison departments. In succession he was gaoler, police-constable, sergeant, superintendent, and eventually chief constable, which rank he held for 16 years. He has now retired on pension, and hopes to settle down in Devonshire.

"During the Great War," Mr. O'Sullivan told a representative of "The Western Morning News," "I was in charge of our post in the Falklands, and had the honour of providing Admi. Craddock with his last guard of honour when he left the Falklands on his last commission before meeting von Spee's squadron in the battle of Coronel. I was also on duty during the great naval battle that followed.

"Mrs. O'Sullivan was at the exchange, and plugged all the messages from the various outposts of the appearance of the German squadron, when von Spee thought he was going to occupy the Falklands, but caught a tartar instead.

ADMI. STURDEE'S ARRIVAL.

"I have vivid recollections of the arrival of Admi. Sturdee's squadron. It was on the jetty when he landed to see the Governor, and being Scoutmaster, and no service men being available, I detailed a troop of Scouts to escort him to the Governor's house. Falkland Islanders have vivid recollections of the morning of December 7, 1914, when Admi. Sturdee arrived and anchored in the outer harbour, and remember even more vividly the morning of December 8, when he broke his flag in that harbour and sailing out sent von Spee steaming due east. The Falkland Islanders always keep December 8 as a holiday in commemoration of Admi. Sturdee's brilliant victory.

"The Falkland Islands are the most southerly Colony of the British Empire, with a population of 3,000. They are divided into east and west islands, and the population is all British, and of the white race. They are well governed, and of special interest is their education system, which for so small a community is magnificent. The superintendent of education is Mr. A. R. Hore, who is assisted by Mrs. Hore.

"The Governor, Mr. Arnold Hodson, is a first-class administrator and a popular head of the islands. The principal industries are wool and whale oil. There are both shore and floating factories in the whaling industry, the principal interests being Norwegian, though there are also large British interests. It is a very profitable enterprise. Last year whales were in abundance and new factories are being started, which will be a boon to the Colony.

SCOPE FOR AMUSEMENT.

"The schools, under the management of Father Migoni and the sisters, are doing a great work. In addition to receiving a good general education, the children are taught handicrafts and the needlework and fancy work are special features. I am sure the average Britisher would have the surprise of his life if he could see the school exhibition in the Falklands at the end of each year.

"There is plenty of scope for amusement in the Falklands—golf, cricket, hockey, football, bathing, and so on for those who like an outdoor life. The winters are very severe, but the summers are genial. All sorts of vegetables can be grown, and though it may seem to people who know knowing of the islands that they are almost at the bottom of the world, they nevertheless have many attractions."

VIKING WHALING.

Lord Churston's Interesting Address.

CURRENT YEAR'S FAVOURABLE OUTLOOK.

The ordinary general meeting of the Viking Whaling Co., Ltd., was held yesterday at Winchester House, E.C. The Right Hon. Lord Churston, M.V.O., presided.

The Secretary (Mr. S. Cartwright) read the notice calling the meeting and the report of the auditors,

The Chairman said: Gentlemen, you have all received the directors' report and accounts for the period 14th December, 1928, to 31st October, 1929. These are our first accounts, and as they have been in your hands for the prescribed period, may we therefore take them as read? (Agreed.)

You will have gathered from the directors' report that our floating factory commenced operations in the Antarctic on 23rd October. We thus entered upon our trading activities only a week before the close of the company's first financial year.

It will therefore be quite clear to you that during the period covered by the accounts no trading revenue can be looked for. The balance-sheet might be regarded therefore as being somewhat in the nature of a progress report.

"EXCELLENT RETURNS."

Our profit and loss account, however, shows a total credit on revenue account of £17,476 7s. 11d. This is mainly due to the excellent returns from our investments in Norwegian whaling companies, and you will have observed that after charging mortgage interest appropriate to the period and certain items of insurance relating to the vessels, London office expenses, directors' fees, and income-tax, there remained sufficient to provide for the payment of the Preference dividend to 31st October, and to leave £30 4s. 1d. to be carried forward to next year.

Turning now to the balance-sheet: with regard to the item £234,300 included in "Bills Payable" I should explain that this sum represents the unpaid balance of the purchase price of the floating factory (£180,300) and also £51,000 in respect of the five whaling vessels. These amounts are repayable: As regards the factory by half-yearly instalments of £15,725 each up to September, 1935; and as regards the whaling vessels by two annual instalments of £25,500 each to August, 1931.

The balance of the item "Bills Payable," viz., £15,942 15s. 7d. is the amount of acceptances given in connection with the purchase of supplies for the expedition. "Sundry Creditors" amount to £31,524 7s. 2d. The item "Profit and Loss Account £9,264 9s. 1d." has since been reduced by the payment of the Preference dividend to £30 4s. 1d.

I think I have said all that need be mentioned with regard to the liabilities side of the balance-sheet.

Turning now to the assets side, the first item "Floating Factory and Whaling Vessels at cost £389,171 16s." does not need further explanation.

The next item is "Investments in Norwegian Whaling Companies at cost £83,544 11s. 10d." This comprises our holdings in the Vestfold Whaling Company, the Sydhavet Whaling Company and the Rosshavet Whaling Company, and you may have observed that the income received from them, after payment of Norwegian income-tax, represents a yield of nearly 13 per cent. on their cost value.

The approximate market value at 31st October was £75,090 19s. 3d. The following summarised particulars, which have been taken from the published balance-sheets of these companies dated 31st July, 1929, will show that the slight depreciation on book value need not cause shareholders any anxiety, being due to the present dull conditions general to all Stock Exchanges.

THE VESTFOLD COMPANY.

Taking first the Vestfold Company, the liabilities are:—

	£
Capital	329,190
Reserves	142,263
Creditors	41,655
Profit and Loss A/c.	111,902
Total	625,010

These liabilities are represented by:—

	£
Fixed Assets	297,090
Cash	261,395
Investments, Debtors and Stock on hand	66,525
	625,010

It will be observed that Reserves amount to £142,263 and the credits to Profit and Loss Account £111,902, a total of £254,165, against which the cash resources are £261,395. (Applause.)

THE ROSSHAVET COMPANY.

With regard to the Rosshavet Company, the liabilities are:—

	£
Capital	385,000
Reserves	99,000
Creditors	171,602
Profit and Loss A/c.	108,355
Total	763,957

These liabilities are represented by:—

	£
Fixed Assets	359,800
Cash	304,317
Debtors and Stock on hand	99,840
	763,957

The reserves amount to £99,000 and the credits to profit and loss account £108,355, making together £207,355, against which the cash resources are £304,317.

THE SYDHAVET COMPANY.

Now the Sydhavet Company—the liabilities are:—

Capital	£156,781
Reserves	61,606
Creditors	25,949
Profit and loss account	55,445
Total	£299,781

These liabilities are represented by:—

Fixed assets	£107,048
Cash	179,140
Debtors and stock on hand	13,593
	£299,781

The reserves in this case amount to £61,606, and the credits to profit and loss account £55,445, a total of £117,051, against which the cash resources are £179,140.

The strong financial position of these companies cannot, I think, be questioned. (Hear, hear.)

FIGURES OF THE ACCOUNTS.

I might also mention that their profit and loss accounts for the period 1928-29 disclose in the case of the Vestfold Company:—

Catch	75,825 barrels
Profit available for dividend, Directors' remunerations and reserves	£109,087
Dividend paid	20 per cent.

The Rosshavet Company:—

Catch	123,720 barrels
Profit available for dividend, Directors' remunerations and reserves	£106,774
Dividend paid	25 per cent.

The Sydhavet Company:—

Catch	41,600 barrels
Profit available for dividend, Directors' remunerations and reserves	£55,419
Dividend paid	25 per cent.

The next item on the balance-sheet, "Cash at bank and in hand £35.71 13s. 3d.," does not need comment. "Expenditure in connection with fitting out the whaling expedition 1929-30, £92,023 4s. 9d." This sum is directly chargeable to trading, but for the reasons I have already explained the amount has been carried forward to be dealt with in next year's accounts when the result of the expedition has been ascertained.

The last item, "Preliminary expenses and underwriting commission, £18,579 4s." This amount has been reduced by premiums received on shares, viz., £16,499 18s., leaving £2,079 6s. still to be written off.

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The active operations are directed by Mr. Skedsmo, the factory manager, assisted by officers and crews of wide experience in this specialised industry, and to whose combined efforts the success of the expedition will largely be due.

[illegible] ness is to elect a director... appointed under Article 81 following the death of Captain Olaf Hanssen. Mr. Konow is associated with Mr. Rasmussen in the management of the Rosshavet Whaling Co., and his services on the board will be welcomed by the directors. (Applause.) I therefore propose the re-election of Mr. Konow.

This was seconded by Mr. E. D. Naess and carried unanimously.

The reappointment of the auditors, Messrs. Brown, Fleming, and Murray at a fee to be arranged by the directors was unanimously approved.

The proceedings then terminated.

HECTOR WHALING.

First annual report to July 31, 1929, states that after making necessary provision for taxation, profit amounts to £138,624, out of which directors have allocated to general reserve £50,000, and paid an interim dividend on 285,000 shares at rate of 12½ per cent., less income-tax, taking £28,500, leaving £60,124. Directors recommend a final dividend on 285,000 Original shares at rate of 12½ per cent., less income-tax (making a total of 25 per cent. for the year), absorbing £28,500, carrying forward £31,624.

Meeting, Winchester House, E.C., Dec. 18, at 3 p.m.

NEW HUDSON

VIKING WHALING.

SUCCESSFUL INITIAL OPERATIONS.

FEATURES OF THE FLOATING FACTORY.

LORD CHURSTON'S SPEECH.

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ANALYSIS OF BALANCE-SHEET.

Turning now to the balance-sheet, with regard to the item £234,300 included in "Bills payable," I should explain that this sum represents the unpaid balance of the purchase price of the floating factory (£180,300) and also £51,000 in respect of the five whaling vessels. These amounts are repayable:—

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and as regards the whaling vessels by two annual instalments of £25,500 each to August, 1931.

The balance of the item "Bills payable"—namely, £15,942 15s 7d—is the amount of acceptances given in connection with the purchase of supplies for the expedition.

"Sundry creditors" amount to £31,524 7s 2d.

The item "Profit and loss account £9,264 9s 1d" has since been reduced by the payment of the Preference dividend to £30 4s 1d.

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INVESTMENTS IN NORWEGIAN WHALING ENTERPRISES.

The next item is "Investments in Norwegian Whaling Companies at cost £83,544 11s 10d." This comprises our holdings in the Vestfold Whaling Company, the Sydhavet Whaling Company and the Rosshavet Whaling Company, and you may have observed that the income received from them, after payment of Norwegian income-tax, represents a yield of nearly 13 per cent. on their cost value.

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Fixed Assets	£297,090
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Investments, Debtors and Stock on hand	66,525
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Capital	£385,000
Reserves	99,000
Creditors	171,602
Profit and loss account	108,355
Total	£763,957
These liabilities are represented by:—	
Fixed assets	£359,800
Cash	304,317
Debtors and stock on hand	99,840
	£763,957

The reserves amount to £99,000 and the credits to profit and loss account £108,355, making together £207,355, against which the cash resources are £304,317.

Now the Sydhavet Company—the liabilities are:—

Capital	£156,781
Reserves	61,606
Creditors	25,949
Profit and loss account	55,445
Total	£299,781
These liabilities are represented by:—	
Fixed assets	£107,048
Cash	179,140
Debtors and stock on hand	13,593
	£299,781

The reserves in this case amount to £61,606 and the credits to profit and loss account £55,445, a total of £117,051, against which the cash resources are £179,140.

STRONG POSITION OF THE COMPANIES.

The strong financial position of these companies cannot, I think, be questioned.

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OTHER BALANCE-SHEET ITEMS.

The next item on the balance-sheet, "Cash at bank and in hand, £55,712 13s 3d," does not need comment.

"Expenditure in connection with fitting out the whaling expedition, 1929-30, £92,023 4s 9d." This sum is directly chargeable to trading, but, for the reasons I have already explained, the amount has been carried forward to be dealt with in next year's accounts, when the result of the expedition has been ascertained.

The last item, "Preliminary expenses and underwriting commission, £18,579 4s." This amount has been reduced by premiums received on shares—namely, £16,499 18s, leaving £2,079 6s still to be written off.

Before concluding, I think a few observations on the special features of the floating factory will not be uninteresting. The vessel was built by Messrs. Swan Hunter and Wigham Richardson, of Wallsend-on-Tyne. On 31st August she ran most successful trials at sea, and at full power obtained an average speed of 12.4 knots during a series of double runs on the measured mile.

[illegible] quarters for the manager, the captain, his officers and crew, and also for the factory workmen and stokers. In addition, there are mess rooms for the gunners, officers and engineers of the whale catchers. In the 'tween decks, which are about 17 ft in height, there is installed a very complete oil refining factory. There are in all some 40 steam-heated boilers. In these the oil is extracted and then run into receiving tanks, from which the oil is pumped into the numerous settling tanks.

On the weather deck amidships there is an oil separating room, in which are a number of turbine-driven machines which separate the water from the oil. The former is ejected overboard and the pure oil is run into the main tanks of the ship. The latter run for nearly the whole length of the ship underneath the factory deck, and can contain about 13,000 tons of oil.

The elaborate factory equipment, however, would not of itself ensure success without the able direction of Messrs. Johan Rasmussen and Co., who have applied their wide knowledge and experience to the supervision of [illegible] with favourable [illegible] catch.

I now propose that the accounts and report as submitted to this meeting be adopted.

Mr. N. K. Lund seconded the motion, which was carried unanimously.

The Chairman: The next business is to elect a director. Mr. Konow was appointed under Article 81 following the death of Captain Olaf Hanssen. Mr. Konow is associated with Mr. Rasmussen in the management of the Rosshavet Whaling Company, and his services on the Board will be welcomed by the directors. I therefore propose the re-election of Mr. Konow.

Mr. Erling D. Naess seconded the resolution, which was adopted.

The auditors (Messrs. Brown Fleming and Murray) were reappointed, and the meeting terminated. [illegible] The Board has throughout made praiseworthy endeavours to give shareholders the fullest information.

The initial results to 31st July last appear to have been very satisfactory, for the profit of £138,600 (after providing for taxation) is in excess of the amount anticipated in the statement which gave particulars of the company. The dividend, as announced earlier, has been limited to 25 per cent. on the original capital, but present progress permits a hope that this rate will be maintained for the current year on the larger capital now outstanding. These results will, no doubt, incline the shareholders to favourable consideration of the proposal that, owing to the unexpectedly heavy calls made by the business on the directors, their remuneration should be commensurately increased.

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The SECRETARY (Mr. Stanley Cartwright) having read the notice convening the meeting and the report of the auditors,

The CHAIRMAN said: Gentlemen,—You have all received the directors' report and accounts for the period 14th December, 1928, to 31st October, 1929. These are our first accounts, and as they have been in your hands for the prescribed period, may we therefore take them as read.

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The balance of the item "Bills payable"—namely, £15,942 15s 7d—is the amount of acceptances given in connection with the purchase of supplies for the expedition.

"Sundry creditors" amount to £31,524 7s 2d.

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Reserves	142,263
Creditors	41,655
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These liabilities are represented by:—

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It will be observed that reserves amount to £142,263 and the credits to profit and loss account £111,902, a total of £254,165, against which the cash resources are £261,395.

With regard to the Rosshavet Company, the liabilities are:—

Capital	£385,000
Reserves	99,000
Creditors	171,602
Profit and loss account	108,355
Total	£763,957

These liabilities are represented by:—

Fixed assets	£359,800
Cash	304,317
Debtors and stock on hand	99,840
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The reserves amount to £99,000 and the credits to profit and loss account £108,355, making together £207,355, against which the cash resources are £304,317.

Now the Sydhavet Company—the liabilities are:—

Capital	£156,781
Reserves	61,606
Creditors	25,949
Profit and loss account	55,445
Total	£299,781

These liabilities are represented by:—

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The reserves in this case amount to £61,606 and the credits to profit and loss account £55,445, a total of £117,051, against which the cash resources are £179,140.

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The CHAIRMAN: The next business is to elect a director. Mr. Konow was appointed under Article 81 following the death of Captain Olaf Hanssen. Mr. Konow is associated with Mr. Rasmussen in the management of the Rosshavet Whaling Company, and his services on the Board will be welcomed by the directors. I therefore propose the re-election of Mr. Konow.

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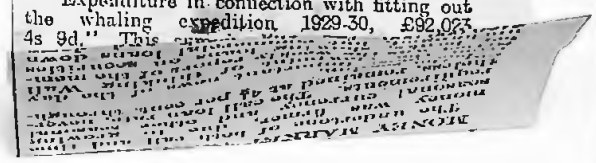

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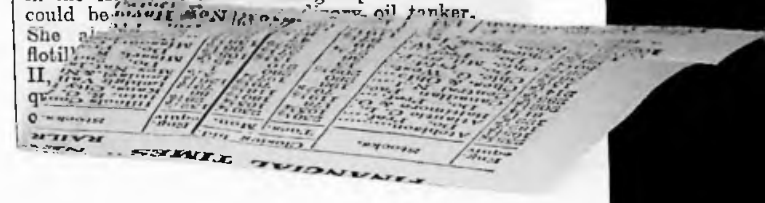

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Colonial Secretary
Telephone: Holborn 4343. Telegrams: Bookstalls, Estrand, London.

W. H. SMITH & SON,
Strand House, London, W.C.2.

PRESS-CUTTING DEPARTMENT.

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Cutting from West Sussex Gazette
Issue dated 12.12.29

THE BATTLE OF FALKLAND ISLANDS.

A VALUABLE RETROSPECT.

Sunday was the anniversary of the Battle of Falkland Islands: one of the minor decisive successes at sea of the war, and certainly one of the most important, for it put an end to a grave German offensive against our food routes in the South Atlantic and Pacific. Some details are of the first moment to politicians. When Von Spee, the German admiral of their China squadron, sunk the Good Hope and Monmouth at Coronel, under Cradock, in a little over two hours by easily out-ranging them, Lord Fisher sent Admiral Sturdee out post-haste with the Inflexible and Invincible to strengthen the British squadron on the threatened stations, and saw they left on November 11. Sturdee arrived at his destination on the morning of December 7, and, though he could not know this, in the nick of time. The German squadron visited the station on December 8, and nearly caught our ships napping. In the usual routine they would have been at coaling and repairs, requiring hours to get on the move. Sturdee had insisted on everything being ready at a two-hours' call. He was surprised as it was, and had Von Spee made for the harbour and attacked as Sturdee left the anchorage, a very difficult tactical situation might have arisen. But the German admiral made off at high speed as soon as he knew the tripod masts of the big cruisers had been observed. Frantic efforts to get up steam succeeded, and Sturdee went out to overtake his foe. Herein lies the tactical interest of the battle, and why it is recalled, so that politicians may realise where essential difficulty begins and learn better to help the Navy. With everything in our favour—visibility, time, and ships superior in speed and gun-range—mark the course of events. It took Sturdee from 10.30 to 1.30 to get within range of his flying enemy. Then, when he had brought them within his range, but had not got within their range, he began to fight. From 1.30 to 6 that fight went on. Sturdee, with plenty of time, forebore to close the range; our shooting was much hampered by funnel smoke; and the German ships were toughly built. So long was the agony, in fact, and so difficult was it to hit them and to sink them, that at one time it appeared possible that our battle-cruisers would run out of ammunition before the enemy could be destroyed. At 4.15 the Scharnhorst heeled over and at last went down; at 6 p.m. the Gneisenau slowly sank stern first. It had taken four and a half hours to sink the two, with everything in the British favour—a notable story on both sides. Now look on this different picture. In the battle-cruiser action prior to the Jutland Battle, Admiral Beatty, who, with neither time nor visibility working for him, deliberately closed the range, saw two of his battle-cruisers blown up in less than a minute, each by German gunfire alone. That marks one difference between the German battle-cruiser construction and ours: it reads like egg-shells against ironclads, does it not?

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Issue dated 12.12.29

DISCOVERY II.

ITS ROMANTIC QUEST IN ANTARCTIC.

WHERE DO WHALES GO?

Discovery II., the world's most elaborate scientific ship, will set sail from London on Saturday for the Antarctic to complete investigations into the whaling industry. The main objects of the expedition are to solve a number of problems that surround the whaling industry, which has now entered upon a period of unequalled prosperity. The scientific staff will attempt to discover why whales congregate in huge numbers in certain parts of the Antarctic and where they go at certain periods of the year. Efforts will also be made to find out if whales in the Arctic are of the same species as those found in the Antarctic, and, if so, when they cross tropical seas from north to south. Other subjects of study will be the feeding and breeding places and the type of food consumed by the whale.

INGENIOUS INSTALLATIONS.

Built of steel, and specially constructed to resist ice pressure, the Discovery II. is equipped with biological and chemical laboratories, photographic dark-rooms, and fishing nets that can drag the ocean bed to a depth of 5000 fathoms. Ingenious apparatus for analysing samples of water, making a continuous record of sea temperatures, and photographing marine organisms, is installed. The chart room contains a wireless direction-finder and an indicating anemometer giving the speed of the wind. The vessel, which is oil-driven, is capable of steaming 7800 miles at full speed (13½ knots). Special provision has been made for the welfare of the scientific staff and crew, who number 57. The sick-bay contains X-ray and violet-ray, and all accommodation is steam-heated.

BUILT ON THE CLYDE.

Special importance is attached to the expedition in view of Britain's increasing activity in the whaling industry, which, this year, has sold oil to the value of nearly £9,000,000. One British unit, the Anglo-Norwegian Holdings fleet, in addition to a land station, possesses three floating factories, each of which is supplied by four or five speedy whale-catchers. It alone produces 165,000 barrels of oil a year, valued at more than £324,150, a figure that is steadily rising.

Discovery II., which was inspected earlier in the week by the Duke of Gloucester, has just been built in Glasgow, and replaces Shackleton's famous ship, also called the Discovery. The ship is the property of the Falkland Islands Government, and the cost of the expedition will be defrayed by revenues raised from the whaling industry in the Dependencies of the Falkland Islands.

NEW ANTARCTIC SCIENTIFIC EXHIBITION.

THE QUEST OF DISCOVERY II.

Discovery II., the world's most elaborate scientific ship, will set sail from London on Saturday for the Antarctic to complete investigations into the whaling industry.

The main objects of the expedition are to solve a number of intriguing problems that surround the whaling industry, which has now entered upon a period of unequalled prosperity. The scientific staff will attempt to discover why whales congregate in huge numbers in certain parts of the Antarctic, and where they go at certain periods in the year. Efforts will also be made to find out if whales in the Arctic are of the same species as those found in the Antarctic, and, if so, when they cross tropical seas from north to south. Other subjects of study will be the feeding and breeding places and the type of food consumed by the whale.

Built of steel, and specially constructed to resist ice pressure, the Discovery II. is equipped with biological and chemical laboratories, photographic dark-rooms, and fishing nets that can drag the ocean bed to a depth of 5,000 fathoms. Ingenious apparatus for analysing samples of water, making a continuous record of sea temperatures, and photographic marine organisms, is installed. The chart-room contains a wireless direction-finder and an indicating anometer giving the speed of the wind. The vessel, which is oil-driven, is capable of steaming 7,800 miles at full speed (13½ knots). Special provision has been made for the welfare of the scientific staff and crew who number 57. The sick-bay contains X-ray and violet-ray and all accommodation is steam-heated.

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Hector Whaling. — It is pleasant to find the first balance-sheet of a company so cleaned up as is that of this company, which was incorporated Aug. 1, 1928, and now reports on the year to July 31, 1929. Formation and preliminary expenses, expenses of issue of shares and 7 per cent. notes, commission on shares, and discount on notes, are all extinguished from share premium account, which still has a credit of £15,680, while the amount of premium still to be received after the end of the year was £99,549. The net profit for the year was £138,624, after taxation, which compares with £149,788 in 1928 before taxation by the old Norwegian company, and a six years' average of £90,041. A dividend of 25 per cent. is to be paid, and the undivided net profit is £81,624. Of the £427,500 issued capital in £1 shares of the one class, the paid-up amount at the end of the year was £327,950. The surplus would suffice to pay a further 23.9 per cent. on the whole amount issued. The sum of £50,000 is carried to a general reserve, and the carry forward is £31,624. It is surprising to find the price of the shares as low as 40s., the price at which the new shares were issued last June. Meeting, Dec. 18.

Illingworth Carbonization Company.—The whole of the authorised capital, £150,000 in 5s. shares, has been issued, and the first report to Oct. 31 shows among the principal assets patents £73,999, cash investments in operating companies £13,743, and cash £29,835. Money spent in development and research amounted to £23,049, and preliminary expenses stand at £4,043. Plant, &c., is entered at £4,967. The company has been engaged in constructing a demonstration plant at Pontypridd, and this plant has been visited by many overseas Government officials and by experts of large coal users. The company has formed or taken part in the formation of six subsidiaries, and the amount of capital provided for plants operating the Illingworth process is over £1,000,000, practically the whole of which has been provided without recourse to the public. The company holds shares to the nominal amount of £13,900 in companies operating the Illingworth patents. Several plants are under construction or arranged for in Great Britain and other countries, and the company will receive a considerable sum in construction rights. From the investor's standpoint the company is still not far out of the experimental stage, but the 5s. shares stand at 7s. 6d. Meeting, Dec. 11.

HECTOR WHALING.

INCREASED CATCH.

The catch report of Hector Whaling, Ltd., to December 15, is as follows:—

	Season 1929-30.	Season 1928-29.
Number of expeditions reporting	Four	Three
Catch for week ended December 15, 1929, in barrels of oil	14,400	9,200
Total catch to date in barrels of oil	55,800	35,900

THE MYSTERY OF THE WHALE.

Romantic Quest of Discovery II. in New Antarctic Scientific Expedition.

Discovery II., the world's most elaborate scientific ship, will set sail from London, to-morrow (Saturday), for the Antarctic to complete investigations into the whaling industry.

The main objects of the expedition are to solve a number of intriguing problems that surround the whaling industry, which has now entered upon a period of unequalled prosperity. The scientific staff will attempt to discover why whales congregate in huge numbers in certain parts of the Antarctic and where they go at certain periods in the year. Efforts will also be made to find out if whales in the Arctic are of the same species as those found in the Antarctic, and, if so, when they cross tropical seas from north to south. Other subjects of study will be the feeding and breeding places and the type of food consumed by the whale.

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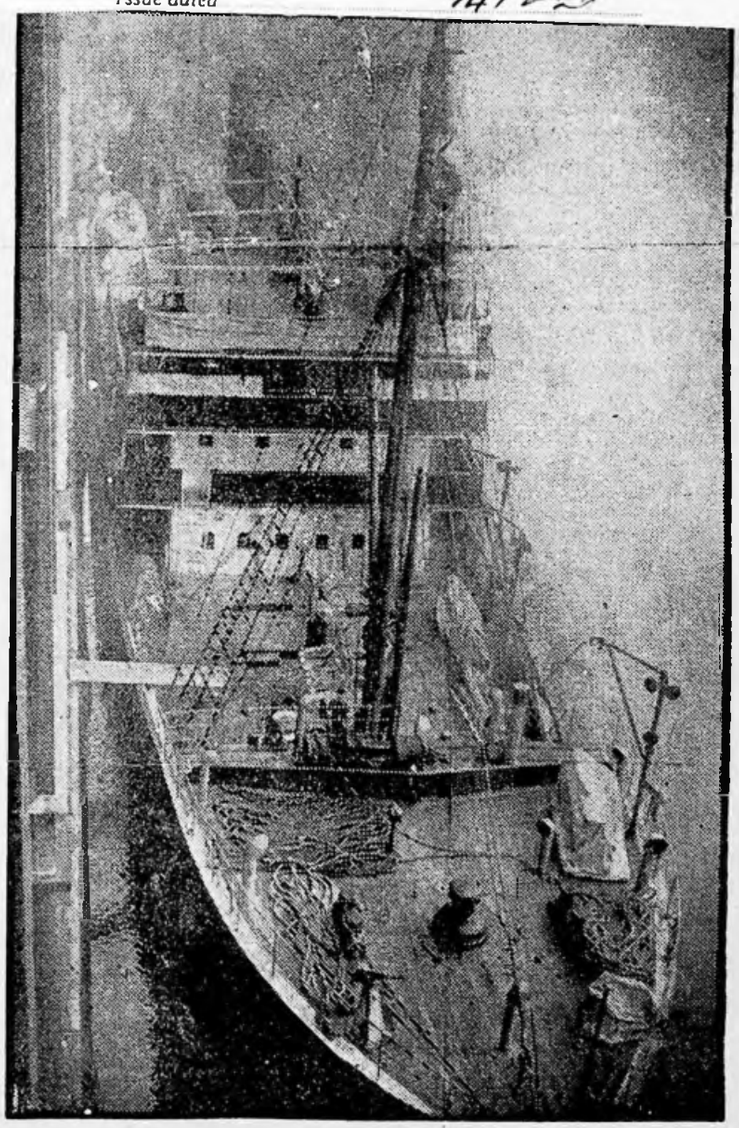

Discovery II., which leaves to-day with a Research Expedition to safeguard the future of the whaling industry in the Southern Seas. A Swansea man, Mr. S. R. Bellinger, is a member of the crew.
(Central Press).