IX.—THE BOTTLE-NOSE WHALE FISHERY IN THE NORTH ATLANTIC OCEAN.*

By Thomas Southwell, F. Z. S.

In the early days of the whale fishery, when the Arctic right whales which frequented the seas off the coast of Spitzbergen, or Greenland, as it was then called, were so plentiful and easy of approach that they only required to be killed, there was very little skill in whaling, and the whalemen of those pleasant times doubtless regarded with contempt the smaller Cetaceans which so often now go to make up a cargo. In 1697, one hundred and eighty-eight vessels killed one thousand nine hundred and fifty-nine whales, and as the "fish" were at that time found close to the shore, the practice was to land the blubber and try it out on the island, carriers being employed to take home the oil that the vessels might not be delayed in their profitable occupation.

This happy state of things of course did not long continue; the whales were soon all killed or scared away, and had to be followed farther afield and more skillfully approached; a like process of exhaustion subsequently brought to a close the shore fishery from the west coast of Greenland, where the whales were killed from the shore as they passed the Danish settlements on their northward migration in the spring. There is no reason to believe that the Greenland right whale ever occurred much farther south than our early whalemen found it, and its disappearance from some of its former localities and greater scarcity in its present habitats is probably due to actual extermination, and perhaps in some degree to timidity induced by unremitted persecution, more particularly since the introduction of steam. In the palmy days of the fishery from Peterhead twenty or thirty whales was no uncommon result for one vessel, and in 1814 seven vessels brought home one hundred and sixty-three whales, Captain Suttart, of the Resolution, leading the list with forty-four fish. This, it must be remembered, was before the introduction of steam, the advantage of which in ice navigation is incalculable. The years 1830 and 1831 were exceedingly unproductive, so much so that in those two seasons sixteen vessels killed only forty-eight whales, yielding 548 tons of oil, notwithstanding which in the thirteen years, 1821 to 1833, inclusive, one hundred and fifteen voyages by sailing vessels from the port of Peterhead to Davis Straits, produced 12,862 tons of whale oil, equal to 112 tons per voyage, and

* The bottle-nose whale, *Hyperoödon rostratus*, having several times of late been captured on the Atlantic coast of the United States, the following observations by Mr. Southall are of much interest.

averaged eleven fish each; whereas in the thirteen years, 1870 to 1882, with all the advantages derived from the use of steam, one hundred and ninety-six voyages produced only 13,670 tons of oil, or an average of 69½ tons from seven and one-quarter fish per voyage. In 1880 the average was about eight whales per ship; in 1881, five whales; in 1882, it rose to nearly nine, and in 1883 it was not quite three fish per vessel.

The consequence of this falling off in the productiveness of the Right-Whale fishery is that the whalemen give their attention to much smaller game than formerly and do not disdain to capture White Whales to help to fill up; during the past season (1883) the Dundee vessels have brought home no less than 2,736 of these creatures, which are by no means to be despised as, in addition to their oil, the recent demand for "porpoise" hide makes these skins a valuable cargo.

Of late, however, quite a new feature has sprung up in the whale-fishery. I allude to the pursuit of the Bottle-nose Whale (*Hyperoödon rostratus*). The whalers have long been in the habit of taking an occasional Bottle-nose, and many years ago the Chieftain, of Kirkcaldy, caught 28 of them off Frobisher Strait, but it was not till the year 1877, when the Jan Mayem, then of Peterhead, having missed the seals, succeeded in taking 10 Bottle-noses, that their pursuit attracted much attention. Since that time, however, they have been more sought for, and most of the smaller vessels now hunt them every season, whilst some of the largest ships, in the interval between the finish of the seal-fishery and the commencement of the whaling, go south to the northeast coast of Iceland for the same purpose. In 1878 there were 9 killed; in 1879, 8; in 1880, Capt. D. Gray, of the Eclipse, commenced to give his attention to the pursuit and killed 32; in 1881, 111 were killed, of which 39 fell to Captain Gray, and but that his crew were new to the work he might have obtained a still larger number. This was proven in 1882, when out of 403 Bottle-noses killed by the Scotch fleet, Captain Gray secured 203. In the past season (1883), 535 have been killed by eleven vessels, Captain Gray again taking the lead with 157 fish.

Soon after leaving the Shetland Isles, early in the month of March, northward bound sealers meet with the first Bottle-nose Whales, and as the season advances they extend their range northward to the coast of Greenland, ascending in a westerly direction Davis Straits as far as 70 north latitude wherever there is open water, and to the eastward of Greenland from Cape Farewell round Iceland and Jan Mayen northward to 77° and eastward to Bear Island, and probably to Novaya Zemlya. They appear, however, most to abound between the 68th and 71st parallels of north latitude (gradually approaching the higher latitude as the season advances) and from 15 degrees west to 5 degrees east longitude.

Here they frequent the open water near the margin of the ice, swimming in small "schools" of from 4 to 10, numerous schools often swimming in close proximity, but apparently never mingling. The females and

young males are generally associated, with often an old "bull" as a leader, but as a rule the latter generally keep apart. In this respect, as in many others, their habits greatly resemble those of the Sperm Whale of the South Pacific. When swimming undisturbed along the surface of the sea the body is at first submerged with the exception of the anterior portion of the head. Gradually, however, the body emerges as far as the dorsal fin, and after swimming thus for a short distance the speed slackens and the creature prepares to descend by allowing ing the head to sink, the back is elevated, displaying above water an exact segment of a circle. It then deliberately descends, seldom showing its tail unless excited. When alarmed or angry, however, it thrashes the sea violently with its tail and sometimes leaps bodily out of the water. On one of their number being harpooned the remaining members of the school refuse to desert it whilst it is alive and thus frequently fall victims to their solicitude; this is occasionally not confined to the herd of which the struck whale is a member, for Captain Gray tells me they will come from every point of the compass towards the fast whale in the most mysterious manner. They are very difficult to kill, and when wounded dangerous to approach. Captain Gray has known them to run out 700 fathoms of line and to remain under water for two hours. The food of this species appears to consist almost entirely of squids (*loligo*).

All the above might with very slight modification have been written of the southern Sperm Whale, but the curious similarity does not cease here, for the commercial products of the Bottle-nose Whales are almost identical with those of the former; its head contains similar "matter" and the oil, of which the full-grown animal yields about a ton, is little, if any inferior, to true sperm oil, its market value being about £60 per ton of 252 gallons. The following table gives the results yielded by the analysis of a sample of Bottle-nose oil compared with those of a similar sample of Pacific sperm oil.

PUBLIC ANALYST'S LABORATORY, No. 1,
Surry Street, Sheffield, August, 1882.

Report on a sample of oil from the blubber of the Bottle-nosed Whale received from William Baxter, esq., 20 Harbour street, Peterhead, N. B., on August 11, 1882.

The following are the results yielded by the sample and by a specimen of genuine sperm oil analyzed for comparison:

	Bottled-nosed Whale oil.	Sperm Whale oil.
Specific gravity at 15.5° C	.8763	.8778
Flashing point ° C	264	260
Viscosity (seconds)	141	137
Unsaponifiable matter (spermyl alcohol)	39 76	40 50
Specific gravity of unsaponifiable matter	.8363	.8307
Rise of temperature with sulphuric acid ° C	41	45
Color reaction with sulphuric acid	Pale brown, changing on stirring to light violet, and again to brown.	Dark brown, becoming some darker, with tinge of violet on stirring.

These results show that the closest similarity exists between genuine sperm-oil and the oil from the Bottle-nosed Whale. They are peculiar among fish oils for their low density and viscosity, and are distinguished from all other oils by their chemical composition, which is more allied to that of spermaceti and the waxes than to ordinary oils.

When properly refined, I have no doubt the oil from the Bottled-nosed Whale will be found suitable for all the applications of sperm oil, and for some purposes it could be used in the raw state. I see no reason why it should be considered in any way inferior to sperm oil.

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In form this species is even more singular than the Sperm Whale. Until described by Capt. David Gray, the adult male was absolutely unknown in the flesh and so different in form and proportion was its skull from that of the well-known female and young male of the same species that from the evidence of the skull alone Dr. J. E. Gray was led to establish not only a new species, but also a distinct genus, (*Lagenocetus laterostris*). In the flesh the head is abruptly truncated and almost quadrangular in shape, having been not inaptly likened to the end of a portmanteau with rounded angles. By the whalers they are appropriately known as "Flat-heads." From the head to the dorsal fin, which is situated about two-thirds of the distance from the head, the body decreases very little in diameter, but the remaining third, rapidly diminishes in size until the tail is reached. The flukes of the caudal fin, instead of having a medial notch, are entirely along the margin and nearly straight. The front of the inferior surface of the head extends beyond the junction of the the upper surface of the "beak" so as to produce a hollow notch, like what is known as a "beetling" brow; the flippers are small and placed just behind the eye. In the females and young males the form is more slender and the head rounded; the latter, however, gradually assume the flattened form of head as they approach maturity, but in the female no such change takes place. The females as well as the young males are black, but with age the hue of the males become lighter until in very old individuals it assumes a yellowish tinge, the back and front of the head and neighborhood of the eye being quite white. The belly is always grayish white.

They are usually greatly infested with parasite, a sessile-eyed crustacean belonging to the order *Amphipoda*, known as *Cyamus Thompsoni*. Of 203 of these Cetaceans killed by Captain Gray in 1882 the proportions of ages and sexes were as follows: old males, "flat-heads," 96; "cows," 56; and young males, 51.

At the approach of winter the Bottle-noses retire from the Arctic seas, and passing south resume their solitary wanderings. From the fact of those which have occurred on the British coast having been invariably females and young males, it seems probable that the old males adopt a different line of migration.

For the following description of the mode of capture and subsequent disposal of the Bottle-nose Whale I am indebted to Capt. David Gray, of the S. S. Eclipse, of Peterhead, by whom this new industry has been mainly developed and most successfully prosecuted:

In fishing for Bottle-nose Whales the arrangements are much the same as those adopted for the pursuit of the Greenland Whale; the crew are divided into three watches, each watch mans two boats, and if necessity requires it a seventh boat is manned by the odd hands of the different watches. It requires one harpooner, one boat-steerer, and four oarsmen to man each boat, and the custom is when a whale is seen, for the watch on deck to man two boats and lower away; if either of them should get fast a "fall" is called and all hands immediately turn out and are ready to man the other boats if required. When a boat gets fast the nearest boat to the fast one at once pulls up and bends the end of his whale line on to the end of the fast boat's lines, the other boats pull ahead of the fast boat and await the whale coming up to breathe, and it is then the duty of the nearest boat to pull up and strike in a hand harpoon and kill the whale; the other boats then are free to get fast in a loose whale should opportunity offer.

Each boat carries three whale-lines, each 120 fathoms long, and they are carefully coiled into the stern, about 8 fathoms of the lower end being left out, which is called the "stray-line," and is required for another boat to bend on to. The upper end of the whale-line is brought forward along the center of the boat and is passed through a notch in the boat's bow called a "sheer-cleat." This is required to prevent the lines from running over the boat's side and thereby endangering a capsize. The whale-line is then bent on to a rope about 10 fathoms long called the "fore-goer," which is coiled into a tub in the boat's bow, and when the harpoon is attached to the fore-goer and rammed home in the gun the whole apparatus is ready for use.

Immediately upon getting fast in a whale the harpooner holding the whale-line in his hand takes three or more turns with it round a strong piece of wood in the boat's bow called the "billet-head" and allows it to run through his hands. The boat-steerer and line manager are at the same time employed in watching the lines and seeing that they do not foul. If the lines should happen to foul the boat-steerer at once calls out to the harpooner "foul lines," and he immediately takes the turns of the whale-line off the billet-head and lifting the line out of the sheer-clete allows the lines to run over the bow till they are clear. If the harpooner should hesitate in taking off his turns from the billet-head and in lifting the lines out of the sheer-clete there is great danger of their becoming jammed and the whale taking the boat down.

A whale-boat also carries one hand harpoon and two lances, the hand harpoon is on the American principle, a "toggle-iron," and the lances are about 6 feet long, of which the stock is 2 feet and the spear is 4 feet.

When the whale is exhausted the boat endeavors to come to close quarters for the purpose of administering the *coup de grâce* with the lance, for which purpose the harpooner endeavors to haul the boat right over the whale's back. A Bottle-nose Whale cannot go away without making "aback," that is, by lowering his head and arching his back, bringing the leverage of his tail to bear; so long therefore as the boat is able to keep the whale's head up, his tail, the organ of locomotion, hangs powerless, or almost so, beneath the boat's bottom and the animal, in spite of its violent efforts to free itself, is soon dispatched.

When the dead whale is brought alongside the operation of flensing commences. This is performed as follows: A rope is thrown from the ship and a running loop put over the whale's tail. Four harpooners then enter a boat and one of them cuts a hole in the head and a rope is run through, by means of which the steam winch heaves the whale up and down. The harpooners then cut the head half off, and after cutting another hole in the blubber behind the shoulder and reeving a rope through, the head is cut off altogether and hoisted on board. After the head is on board the tail is hauled up to the surface, bringing the whale into a horizontal position, and the main-speck is hooked on to the hole cut behind the shoulder. The harpooners then make a cut along the body to within 4 feet of the tail, where a cross cut is made through the blubber. At the end of the fore-and-aft cut a second hole is made and a rope is hove through it to which the fore-speck is attached. The harpooners then commence to separate the blubber from the body, the steam winch at the same time heaving on the main, and the capstan on the fore-speck. The body-slip is thus gradually separated from the body, being half torn by the steady strain of the two specks, the harpooners at the same time cutting with their spades the sinues and muscles which bind the blubber to the body. The "body-slip," when clear off the carcass, is hoisted on board and spread out on the deck with the skin side up. The tail and rump are then separated from the body and also hoisted on board. The body itself thus turned out of the blanket of fat, with which it was invested, is allowed to sink into the sea. The crew then scrape the skin off the body-slip and cut the blubber into square pieces which are put below for the present to be "made off" in the usual manner when opportunity offers. The head is also scraped and the blubber cut off. The oil, too, is extracted from the jaws, after which it is thrown overboard. The tail is reserved to serve as chopping blocks in the subsequent process of "making off," which need not be described here. Last of all the hose is rigged, and when the highly necessary operation of deck washing is concluded, the crew are again ready to man their boats for a fresh capture. When the crew are in working order and every man has come to know his place, the whole process of flensing, from the time the whale is brought alongside until the decks are washed down and the ship clear, does not occupy more than fifteen minutes.

It remains to be seen whether this new industry will be judiciously followed or whether so profitable a field of enterprise will be speedily ruined by overfishing. From the number of vessels which are reported to be equipping for next season's voyage, it is to be feared that the latter will be the case; or, that the whales, rendered timid by constant persecution, will learn to take care of themselves, of which, even now, there are indications. One indirect benefit which may possibly arise from this diversion of the whaling energy into a new channel is that the Davis Straits fishery for Right Whales, which has of late years been sadly overdone, may be allowed a short respite. Otherwise it seems likely that the present excessively high price of whalebone might lead to so eager a pursuit of these valuable Cetaceans that their extermination would be speedily accomplished.

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