

Melville's Marginalia in
Thomas Beale's *The Natural History of the Sperm Whale*
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*Herman Melville
New York, July 10th 1850.*

NATURAL HISTORY
OF
THE SPERM WHALE.



BOATS ATTACKING WHALES.

*Turner's pictures of Whalers
were suggested by this book.*

THE
NATURAL HISTORY
OF
THE SPERM WHALE :

ITS ANATOMY AND PHYSIOLOGY—FOOD—
SPERMACETI—AMBERGRIS—RISE AND PROGRESS OF THE FISHERY—
CHASE AND CAPTURE—" CUTTING IN" AND " TRYING OUT"—
DESCRIPTION OF THE SHIPS, BOATS, MEN, AND
INSTRUMENTS USED IN THE ATTACK;
WITH AN ACCOUNT OF ITS FAVOURITE PLACES OF RESORT.

TO WHICH IS ADDED, A SKETCH
OF A
SOUTH-SEA WHALING VOYAGE;

EMBRACING A DESCRIPTION OF THE EXTENT, AS WELL
AS THE ADVENTURES AND ACCIDENTS THAT OCCURRED DURING THE
VOYAGE IN WHICH THE AUTHOR WAS PERSONALLY ENGAGED.

By THOMAS BEALE, SURGEON,
DEMONSTRATOR OF ANATOMY TO THE ECLECTIC SOCIETY OF
LONDON, ETC., AND LATE SURGEON TO
THE " KENT" AND " SARAH AND ELIZABETH," SOUTH SEAMEN.

LONDON:
JOHN VAN VOORST, 1, PATERNOSTER ROW.

M.DCCC.XXXIX.

1839

little boy's affection for his sick Mother—a young man is bled—Mr. Platt, the moral Missionary—conduct of Missionaries—their tyranny, and its action upon the Natives—their conduct at the Sandwich Islands, and its effects—their meanness—Reflection—Mr. Williams—Mr. Smith—Thieving and Prostitution among the Natives—they form the plan of seizing our Ship—a new principle of action wanted among the Missionaries—their entire failure at Bolabola after forty years trouble and expense—The old King of Bolabola and the Native Pilot—the Father of two pretty Girls and the Bible—the Women of Bolabola—their Tattooing—their Hair—their Stature—a Bolabola Girl's Eyes—we are invaded by thirty Women—leave the Society Islands—our Passage towards Cape Horn—prodigious Seas—a Sailor aloft at Night—three Men washed from the Jib-boom—their Deaths—a Sailor's feelings—make Cape Horn—touch at Pernambuca—cross the Line the sixth time—encounter bad Weather in the Channel—make Beachy Head—Reflections on seeing our Native Land—stern Disease has been raging during our absence—we approach Home with faltering steps—the old House—my emotion and fate
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THE NATURAL HISTORY
 OF
 THE SPERM WHALE.

PART I.

INTRODUCTORY REMARKS.

It is the principal object of this work to describe, probably, the largest inhabitant of the globe, known commonly under the name of the spermaceti whale,—by the French, as the *cachalot*,—and by systematic naturalists, as the *Physeter macrocephalus*, and which as yet has not assumed the station to which it is entitled in the history of animated nature.

Since the earliest days of natural history down to the present time, the sperm whale has been subjected to constant misrepresentation, referable to the contracted information of those who have undertaken its description, and who have consequently been obliged to compile their accounts from sources inaccurate and false, on which they ought not to have depended, and they should rather have left a blank in the page, than to have filled it with the results, as Cuvier has observed,

“of that heated imagination which leads some enthusiasts to see nothing in nature, but miracles and monsters.

In fact, till the appearance of Mr. Huggins' admirable print, few, with the exception of those immediately engaged in the fishery, had the most distant idea even of the external form of this animal; and of its manners and habits, people in general seem to know as little as if its capture had never given employment to British capital, or encouragement to the daring courage of our hardy seamen. While the very term, whale-fishery, seems associated with the coast of Greenland or icebound Spitzbergen, and the stern magnificence of arctic scenery, few connect the pursuit of this “sea beast” with the smiling latitudes of the South Pacific, and the coral islands of the torrid zone; and fewer still have more distinct conception of the object of this pursuit, than that it is a whale, producing the substance called spermaceti, and the animal oil best adapted to the purpose of illumination.

The Greenland whale, or *Balæna mysticetus*, has so frequently been described in a popular manner, that the public voice has long enthroned him as monarch of the deep, and perhaps the dread of disturbing such weighty matters as a settled sovereignty and public opinion, may have deterred those best acquainted with the merits of the case from supporting the more legitimate claims of his southern rival to this pre-eminence.

Since the year 1775, in which we date the origin of the sperm-whale fishery from this country, although

many thousands of persons have been from time to time engaged in the pursuit, and must have possessed the best opportunities of observing the habits and manners of this immense animal, yet not one has stepped forward to vindicate its history from the absurd and fabulous accounts with which it has been loaded, and of which many instances will be found in the following pages.

For notwithstanding that the sperm whale is one of the most noiseless of marine animals, yet the Abbe Lecoq, in his account of it, gives it the power of emitting terrible groans when in distress, and which he states are so loud and deep, that it is possible to hear them from a great distance; and Anderson asserts, that a cachalot, which was frightened at the approach of his ship, uttered a cry so loud and violent, like the sound of a bell, that it caused even the vessel to shake; and yet all those which have been destroyed by the harpoon and lance, and which have been terribly frightened, and have made the most violent efforts to escape, never were heard to emit the slightest sound, and it is well known among the most experienced whalers, that they never produce any nasal or vocal sounds whatever, except a trifling hissing at the time of the expiration of the spout. But even the Baron Cuvier follows the account of these old historians, and asserts, that “in the combat, fear, fury, or pain draw from them such profound groans, or piercing cries, that their congeners are attracted in crowds from all sides, continue the fight with fresh ardour and audacity, and stain the water with blood to the distance of many leagues.”

From these accounts it is evident, that both Anderson and the Abbe Lecoq, have been mistaken in the kind of whale which they saw, and which they heard emit the sounds of which they have written. Having no doubt mistook the sperm whale for the *balæna mysticetus*, or common Greenland whale, which I have heard myself produce loud sounds, but which have more resembled the roaring of an enraged bull, than the vehement sound of a bell, as Anderson has asserted.

While the sperm whale has been quietly searching the ocean depths for his food, and avoiding with the greatest care and timidity the slightest danger or rencontre of any kind, he has been represented by Olassen and Povelsen as the most savage and ferocious of all marine animals; for not only, according to their accounts, does the cachalot constantly thirst for the blood of every fish in the sea, but actually possesses a relish for human flesh, which we are led to suppose they wished to satiate, when these historians assert that they seized, and upset with their jaws, a boat which contained some seamen, whom they speedily devoured.

If these huge but timid animals happen to see or hear the approach of a ship or boat, their fear in all cases is excessive, and they either dive into the depths of the ocean, or skim along its surface with the utmost precipitation, to avoid the danger of a concussion, or the blow of the harpoon, which, when inflicted, often paralyses the largest and strongest of them with affright, in which state they will often remain for a short period on the surface of the sea, lying as it were in a fainting con-

dition; from which however they recover (if the dexterous whaler profiting by the circumstance, has not mortally wounded his prey), and shew extreme activity in avoiding their foes; but they rarely turn upon their cruel adversaries, for although men and boats are frequently destroyed in these rencontres, they are more the effect of accident during violent contortions and struggles to escape, than from any wilful attack.

Yet the Baron Cuvier, in the compilation of its natural history, which he has obtained from many incorrect sources, states:—"the terrible arms, the powerful and numerous teeth with which nature has provided the cachalot, render it a terrific adversary to all the inhabitants of the deep, even to those which are most dangerous to others; such as the phocæ, the *balænoptera*, the dolphin, and the shark. So terrified are all these animals at the sight of the cachalot, that they hurry to conceal themselves from him in the sands or mud, and often in the precipitancy of their flight, dash themselves against the rocks with such violence as to cause instantaneous death. It is not therefore surprising," says Cuvier, "if the myriads of fishes on which this tyrant preys, are struck with the most lively terror at his presence. So powerful is this feeling, that the multitudes of fish which seek with avidity the dead carcasses of the other cetacea, dare not approach the body of the cachalot when he is floating lifeless on the surface of the ocean."

From such accounts as these, we might be led to believe that there is no animal in the creation more mon-

strosly ferocious than the sperm whale; not only is his true character of being a quiet and inoffensive animal taken from him, but he is represented on the same page, as the greedy and cruel pursuer of all kinds of marine animals, on which of course we are suppose that he feeds. "There are some, however," observes the Baron Cuvier, "among the cachalots that pursue seals, and some are sufficiently audacious to attack many species of the balænæ (whales), especially such individuals as are not adults;" which certainly represents him as a formidable opponent to all the marine tribes, and we infer, a voluptuous devourer of every animal which is so unfortunate as to wander within its reach.

But after all these relations, it requires but a little observation and reflection to convince ourselves, now that we are more acquainted with the real habits of the sperm whale, that the authorities of which previous writers have availed themselves in the compilation of their histories of it, have all either wilfully misrepresented the natural habits of this animal, or have mistaken the cachalot for some other whale which possesses these voracious and combative dispositions.

For not only does the sperm whale in reality happen to be a most timid and inoffensive animal as I have before stated, readily endeavouring to escape from the slightest thing which bears an unusual appearance, but he is also quite incapable of being guilty of the acts of which he is so strongly accused. The formation of his teeth, and size of his gullet are quite sufficient in themselves to prove that he is incapable of devouring

the balænopteræ (back-finned whales), and balænæ (common black whales); for it would be quite impossible for him to swallow such monstrous victims, as his throat is scarcely sufficiently capacious to admit the body of a man, and also from the fact of his teeth not possessing the power of separating, or of masticating his food, but merely possessing a prehensile or holding power; for being provided only with a row of widely separated, short-pointed, conical teeth in the lower jaw, and none in the upper, except in a few instances, in which they appear wholly rudimentary, scarcely projecting beyond the gums, he is totally unable to wound seriously, much more to tear to pieces and devour, the body of such an enormous animal as a balæna, even if it were not an adult, or one of the balænopteræ, in which is included the giant fin-back.

As for the dolphins, seals, and sharks which he is made to chase with ravenous voracity, until they hide themselves in mud, or dash themselves against rocks in attempting to escape; I can only observe with regard to such tales, that the sperm whale is never, or very rarely seen near sand, mud, or rocks, and therefore would not be likely to run his victim so hard; nor can I comprehend the latter's suicidal attempts to rid themselves of the constant harassing which they are represented as receiving from the cachalot. For although the sperm whale at times approaches the shores of islands and other places searching for their food, I never saw them nearer than a mile or two, and these were rare instances; and it is well known to whalers that they

are never seen on soundings, that is, where the bottom of the sea can be touched with the "lead," except they happen to be driven over a bank or shoal, as is sometimes the case in the "Seychelle" fishery, and when the boats are in hot pursuit, or by some uncommon occurrence, and where shoals and banks are divided by unfathomable depths of ocean. Besides it is not very probable that a sperm whale of eighty feet in length, and proportionable bulk could possess any chance of chasing and overtaking any of the dolphin tribe, seals, or sharks, which move with such dodging velocity as to place at utter defiance the movements of so immense an animal.

Moreover this whale has never been seen to eject from his stomach, when mortally wounded, any other animal but squid, which is known to naturalists as the "sepia octopus," which is its natural food; except when near the shore as in "Volcano Bay," on the coast of Japan, or in the "Straits of Corea," which join the north Pacific with the Japanese Sea, they are sometimes known to eject fish about the size of a small cod, which inhabit these localities in great plenty, and which, like the squid, in my opinion are attracted into the whale's mouth while he is lying still for the purpose, from the white and glistening appearance of it, rather than by any power which the spermaceti whale possesses of capturing such little nimble animals by the chase; but for further considerations on this subject, I beg leave to refer the reader to the article entitled "Feeding," which will be found in another part of this work.

And that part of Cuvier's history which states, "that the multitudes of fish which seek with avidity the dead carcasses of the other cetacea, dare not approach the body of the cachalot, when he is floating lifeless on the surface of the ocean," is just as incorrect as any of the foregoing; for sometimes whalers have experienced considerable losses in having had young sperm whales half eaten up in one night by large numbers of voracious sharks, as the whales have been lying secured by the ship's side, ready for cutting in on the morrow.

Great contradictions and dissensions have also at various times originated among naturalists, relative to the number of the species of this whale; yet notwithstanding the ingenious reasoning of some, and the bold and truthlike observations of others, with the close attention to the subject of such men as Green, Aldrovandus, Willoughby, Rondelet, Artedi, Ray, Sibbald, Linnæus, Brisson, Marten, and a crowd of other distinguished naturalists, from the impossibility of any of these great men making continuous observations upon this interesting animal, the subject was still doomed to remain an apparently impenetrable mystery.

And although Lacapedé appears to be the first naturalist who endeavoured to introduce order into this department of zoology, yet even he has entirely failed in giving a correct account of this cetacean, when he states that there are eight species of this whale, some of which, he states, may be known by their dorsal fins.

To convince the reader of the utter confusion which

exists among the historians of this animal, it will only be necessary to state here, a few of their published opinions, on the supposed different species of the spermaceti whale.

Brisson made no less than seven species of the cachalot, depending upon their dorsal fins, spout-holes, and form of their teeth.

Linnæus followed, and reduced them to four physeters, which he characterised by the form of the teeth of the lower jaw.

Bonnaterre increased them again to six species, depending upon the peculiar modifications of the dorsal fins, or protuberances, and some small modifications in the form of their teeth.

Lacapedé next came, increasing the number over all his predecessors, making eight species, which he divided into three groups; viz. the *cachalots proper*, which have one, or several dorsal eminences, and whose nostrils are placed at the extremity of the muzzle; the *physales*, which only differ from the cachalots, in having a *small*, dorsal hump, and having the nostril situated at a little distance from the end of the snout; and lastly, the *physeters*, which have a *dorsal fin*, and whose nostrils are placed at the end, or *near* the end of the muzzle. The first of these groups (the cachalots) are subdivided.

Desmarest, however thought proper to add another to those of *Lacapedé*, the characters of which he obtained from some Chinese drawing, upon the fidelity of which no dependence can of course be placed.

So that it is quite evident to my mind, that *Lacapedé*

must be in error, if he classes the spermaceti whale with those which have dorsal fins, without going into reflections upon the other species, which he causes to depend on differences which do not exist; because in the first place the sperm whale has no dorsal fin whatever, merely having in its place a hump, or rounded ridge of fat, in form not unlike that of a camel, and which is stripped off with the blubber, having in its structure no bones or cartilages, by which we might even suppose it to be the rudiment of a fin; while several other kinds of whales possess real dorsal fins, as the finback, which belongs to the *balænæ*, and is entirely different in its form and habits, having the head invested with the "baleen," or screening apparatus, by which it feeds, like the common black, or Greenland whale, on an entirely different food to that of the sperm whale, who has in place of the baleen, a jaw furnished with teeth, "the two branches of which, are joined in the greater part of its length in a cylindrical symphysis," and who spouts from the anterior angle of the head, while the finback, like the common whale of Greenland, spouts from the middle of the top of the same part. Others of the whale tribe have dorsal fins, while they possess the cylindrical jaw, as the black fish, but yet spout from the forehead, or top of the head, and do not produce spermaceti. While some, as the Greenland whale, spout from the middle of the top of the head, have their jaws furnished with baleen, but have neither dorsal fins nor hump. Another kind, which is well known to whalers, as the humpbacked whale, possesses, like the Greenland

whale, the baleen, and spouts from the top of the head, yet has a hump not very dissimilar to that of the sperm whale.

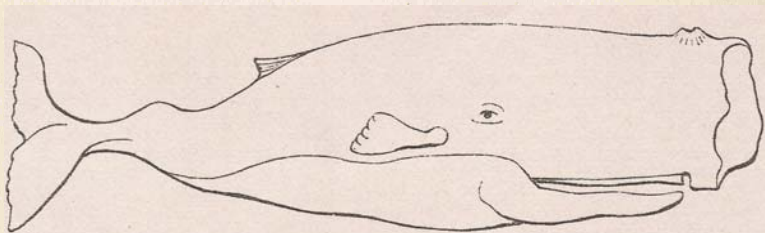
So that they resemble each other in some respects, and differ so widely in other parts of their formation, and also in their habits, that they each necessarily belong to distinct classes of beings, and convince me, that they cannot properly be arranged in families, from the form or situation of their fins, humps, teeth, or baleen. However, it is not my intention, were it in my power, to enter into the inquiry as to the true method of dividing the cetacea into groups, families, genera, or species; but this I can assert in contradiction to Lacapedé, and others of the foregoing authorities, that there is no more than one species of sperm whale, and this I say from having particularly noticed their external form, and also their manner and habits, in various parts of the world very distant from each other, yet I was never led to suppose for an instant, from their observance, that more than one species of this kind of whale exists.

The large full-grown male, appeared the same in every part, from New Guinea to Japan, from Japan to the coast of Peru, from Peru to our own island; while their females coincided in every particular, having their young ones among them in the same order, and appearing similar to all others which I had seen in every respect, merely differing a little in colour or fatness, according to the climate in which they were captured, as we had many opportunities of observing, as they were

lying dead by the side of the ship. Frederick Cuvier, the brother of the illustrious Baron, in the most interesting and learned work that ever appeared, on the history of whales in general, entitled "*de l'Histoire Naturelle des Cétaces*," and which was published so late as 1836, after stating the difficulty of procuring a correct drawing of the sperm whale, on account of those which have been stranded on various parts of Europe becoming so much misshapen from their own weight, while lying in the mud, and moreover from their being surrounded by great numbers of eager spectators, remarks, that "figures drawn from whales when floating freely, would be in a condition to inspire more confidence, but if such figures are possible, we believe that science, as yet, does not possess any." A paragraph, in the truth of which every person must agree, so far as its first part extends, but when the outline of the one given by Captain Colnett, which we suppose was taken from nature, with the faithful and excellent plate by Huggins, from a drawing made in the South Seas over the dead animal, and also the sketch, which was given in the former edition of this work, taken as it was, very carefully under the same circumstances, are considered, coinciding as they all do in every particular, the deficiency complained of by F. Cuvier would seem to have been amply supplied.

To prove the great discrepancy that exists between the imaginary figure of F. Cuvier, and that taken from actual observation, it will only be necessary for the satisfaction of those personally unacquainted with the

subject, to subjoin a comparative outline sketch of the two.



F. Cuvier.



Colnett, Huggins, and Beale.

Some of the errors with which naturalists have been involved, may have arisen from the great disproportion in size which exists between the male and female of these animals, and which is very great, the adult female bearing a proportion of only about one-fifth to the size of the large adult male; but this is not altogether to be understood in regard of length, but of their general bulk, for females are longer in proportion to their circumference than the males, being altogether more slenderly formed, which gives them that appearance of lightness and comparative weakness, which the females

of most animals possess; and on this account the female heretofore may have been taken for a different species of the cachalot, when her size has been compared with that of the large male, particularly when it is known that the female of the common Greenland whale is in most instances the larger.

The Baron Cuvier, in his remarks upon the sperm whale, states, "that he is another of those giants of the main, whose colossal structure and tyrannical dominion render them truly formidable; this cachalot is more lively and active than the generality of the cetacea, and is only less bulky than the common whale, of which he is a most dangerous rival, though less powerful than that first of the marine mammalia." This assertion is another instance, showing how correctness and its opposite may be placed together; for although some of these remarks are true, as far as relates to the superior activity of the sperm whale, yet, when it is observed that he is "less powerful" and "less bulky" than "his dangerous rival," we are led to suppose that the learned author has depended too much on the mistaken evidence of others; for Scoresby, in his account of the size and length of the Greenland whale, states that about seventy, or seventy-two feet, would measure the longest that he saw; while a male spermaceti whale, which we captured at the Japan fishery, measured the enormous length of eighty-four feet, and its circumference, in this instance, was not less than that of a Greenland whale of the largest size; so that, if size is to be taken into consideration to entitle either of them to claim the dominion

of the ocean, the sperm whale, at present, can certainly demand the place; and if his size is so superior, possessing also much greater activity, we can scarcely deem him the second of the marine mammalia, or "less powerful" than his northern rival.

But, if naturalists have erred respecting the disposition, the food, species, form, and size of this leviathan, they have not been less deceived in regard to his breathing, during which they have represented him as throwing up water with the spout; this has been reiterated, not only by naturalists, but also by poets and painters, from the earliest periods—from Pliny's down to the present time, the notion has existed that he constantly ejects water with his breath, which has caused F. Cuvier to indulge also in this belief, because, as he states, "so many persons have been witnesses of it, that he cannot for a moment doubt the recital."

I can only say, when I find myself again in opposition to those old and received notions, that, out of the thousands of sperm whales which I have seen during my wanderings in the south and north Pacific Oceans, I have never observed any of them to eject a column of water from the nostril. I have seen them at a distance, and I have been within a few yards of several hundreds of them, and I never saw water pass from the spout-hole. But the column of thick and dense vapour which is certainly ejected, is exceedingly likely to mislead the judgment of the casual observer in these matters; and this column does indeed appear very much like a jet of water, when seen at the distance of one or two miles on

a clear day, because of the condensation of the vapour, which takes place the moment it escapes from the nostril, and its consequent opacity, which makes it appear of a white colour, and which is not observed when the whale is close to the spectator, and it then appears only like a jet of white steam; the only water in addition is the small quantity that may be lodged in the external fissure of the spout-hole, when the animal raises it above the surface to breathe, and which is blown up into the air with the spout, and may probably assist in condensing the vapour of which it is formed.

It has, however, been stated by some naturalists that it is only at times that this whale projects water from the nostril, and that is at the time, they say, of his feeding. How far such an observation can apply to the Greenland whale, which feeds near the surface, will be noticed in the conclusion of these remarks; but I can state here, that such an observation cannot hold good with regard to the sperm whale, for that creature feeds far below the surface, and, in so doing, the large male continues in the depths of the ocean from an hour to an hour and twenty minutes, without once shewing himself above; so that, if he wishes to eject water from the mouth through the nostril, to avoid swallowing it (if, indeed, he has any anatomical arrangement for so doing), it must be performed in the depths of his native element, into which he descends to feed, and therefore the operation is remote from observation.

This general opinion, like that of the sperm whale's voice, is not only entertained by F. Cuvier, but among

✓ other recent writers on these subjects: Mr. T. Bell, in his valuable and beautiful work on British quadrupeds and marine mammalia, favours the opinions of the others who have preceded him. This misconception is also disseminated in the volume upon cetacea in the Naturalist's Library, conducted by Sir William Jardine, who has also fallen into great errors with regard to the sperm whale's feeding, and the size of the female. And although that gentleman has thought proper to fill his chapter on the natural history of the sperm whale entirely from the first little edition of this work, he does not appear to be convinced of its veracity, and at the same time (I am compelled to observe) to display a considerable want of accurate information on the subject, when he supposes that the food of the sperm whale is similar to that of the Greenland whale; a supposition manifestly untenable, when we regard the very different apparatus for the prehension and retention of food in the mouths of the two animals. The one provided with a complex and wonderfully arranged screen or sieve, for the purpose of separating minute animals from the water that passes through its mouth; and the other furnished with short but pointed teeth, evidently intended for the seizure of larger objects, and totally unfitted for the function performed by the former.

Moreover, the fact of the loligo affording the principal food of the sperm whale, is a well and long known fact, and an instance of this creature being found in the stomach of a sperm whale stranded on the coast of Nor-

folk, is recorded by Sir Thomas Brown, so long ago as 1686.

Mr. Bennett, in a paper which he read, not long since, before the Zoological Society, also stated that the sperm whale has the power of throwing up water with the expired air at particular times; but from what I have heard, I believe the observations which he made were not deemed conclusive of the fact, and I have not yet been able to peruse his paper myself.

In the conclusion of this subject I may be allowed to state:—that I have been also very close to the *balæna mysticetus* when it has been feeding and breathing, and yet I never saw even that animal differ in the latter respect from the sperm whale in the nature of the spout; and even in porpoises, which I have seen in hundreds of instances playing or gamboling about the bows of our ship as she has been sailing along, yet in not a solitary instance did I ever observe anything but vapour dart from their nostrils, and which is but the work of an instant, for they are not on the surface more than that time, when they not only perform their expiration but inspiration, and again disappear in the twinkling of an eye.

Again, it has been observed by the same naturalist, who has been so frequently noticed in these remarks because he has been the most prominent historian on the subject with which we are engaged, that the spring is the time when the intercourse of the sexes takes place, which if true would certainly lead us to expect only at particular seasons a certain increase of these valuable animals—but this is not the case, as we find young sperm

whales, at all seasons of the year, accompanying the groups, or "schools" of females, wherever or at whatever time they may be fallen in with: for an instance—if a ship on the Japan fishery or Bonin Islands, falls in with a "school" of female whales in May, which is the first commencement of the fishing season, they are sure to see young sucking whales among them; and if they also fall in with others of the same sex in the following August, September, or October, the young are also certainly met with—thus demonstrating, that there is no particular time set apart by nature for the sexual intercourse of these animals, but that they meet at all seasons of the year: the same observations hold good at the New Guinea fishery, and from all the information that I can obtain, also at the "Seychelle" and "Timor" fisheries.

The groups, herds, or "schools," which are formed by the sperm whale, are of two kinds:—firstly, by the females, which are accompanied by their young and one or two adult males; and secondly, by the young and half-grown males, but the large and fully grown males always go singly in search of food: but M. F. Cuvier has conjectured, that when they are seen alone, that it is "merely accidental, and not natural." His brother has also stated, that the left eye of the cachalot is much smaller than the other, so that fishermen attack him on that side, on which his vision is less perfect, in order to more readily elude his observation. Of the first of these remarks, I feel myself incompetent either to contradict, or confirm it positively; but I can assert that I never saw a whaler prefer either side of the whale, but that

which was nearest or most convenient to him at the moment of attack—neither have I ever heard them make use of a single observation to confirm such an assertion. But if the great Baron Cuvier and his no less learned brother, have both been so much misled in the histories which they have given of the manners and habits of the sperm whale, it has arisen from the many difficulties they have had to deal with, in endeavouring to unravel the inextricable veil in which the true history of this animal has been wrapped by a multitude of writers, who have themselves either wilfully misrepresented the nature of this creature, with which they have pretended to be acquainted or who have depended upon the accounts of old voyagers, who have delighted in mixing fiction with truth, that miracles and wonders of all kinds might appear to have been their constant companions. Yet long ago, the powerful and scrutinizing mind of the Baron began to perforate the mist which hung over this branch of natural history; for we find him throwing out the following suspicions, which serve to shew the nature of his real opinion, upon the various accounts which surrounded him on the number of species of the cachalot. "Are there," he inquires, "any cachalots with an elevated dorsal fin? Are there any with the spiracles pierced on the forehead, on the middle of the head? Are there any in which the branches of the lower jaw are not joined for most of their length in a cylindrical symphysis?"

We are proud in being enabled, thus far, to confirm the suspicions of Cuvier, and to finish these humble

remarks by observing, that as far as our own researches on this whale have extended, and we have visited him in his own unfathomable and vast domain, for the purpose of observing his habits and form, we have never had reason to suppose that more than once species of spermaceti whale exists. And not until the queries instituted by Cuvier are answered in the affirmative, and proved, "and to be proved otherwise than by figures drawn by common sailors—not until such beings have been carefully observed by enlightened men—not until their osseous parts have been deposited in collections, where they can be verified by naturalists, shall we be justified in admitting more than one kind of sperm whale into the catalogue of animals."

CHAPTER I.

EXTERNAL FORM AND PECULIARITIES OF THE SPERM WHALE.

BEFORE proceeding to the account of the habits of the sperm whale, I have thought that it might be interesting to prefix a short description of its external form, and some anatomical points in its conformation. By reference to the prefixed engravings, the following description will be much more readily understood:

Fig. I.

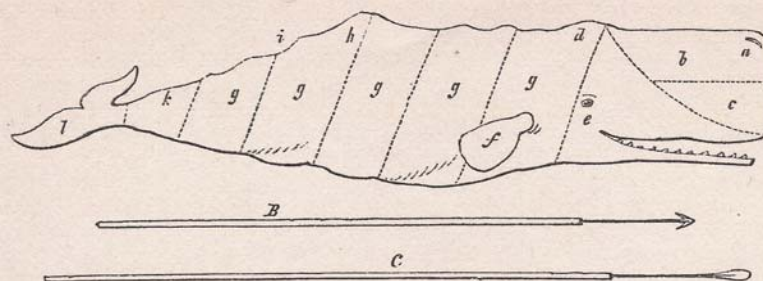


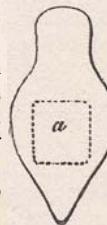
Fig. 1 represents the outline of the entire form.

Fig. 2, that of the anterior aspect of the head.

Fig. 2.

Fig. 1—*a*, the nostril or spout-hole; *b*, the situation of the case; *c*, the junk; *d*, the bunch of the neck; *e*, the eye; *f*, the fin; *g*, the spiral strips, or blanket pieces; *h*, the hump; *i*, the ridge; *k*, the small; *l*, the tail or flukes; *B*, a harpoon; *C*, a lance.

Fig. 2—*a*, the lines forming the square are intended to represent the flat anterior part of the head.



The head of the sperm whale presents in front a very thick blunt extremity, called the snout or nose, and constitutes about one-third of the whole length of the animal—at its junction with the body is a large protuberance on the back, called by the whalers the “bunch of the neck;” immediately behind this, or at what might be termed the shoulder, is the thickest part of the body, which from this point gradually tapers off to the tail, but it does not become much smaller for about another third of the whole length, when the “small,” as it is called, or tail, commences; and at this point also, on the back, is a large prominence of a pyramidal form, called the “hump,” from which a series of smaller processes run half way down the “small,” or tail, constituting what is called by whalers the “ridge.” The body then contracts so much, as to become finally not thicker than the body of a man, and terminates by becoming expanded on the sides into the “flukes,” or tail properly speaking. The two flukes constitute a large triangular fin, resembling in some respects the tail of fishes, but differing in being placed horizontally; there is a slight notch, or depression between the flukes, posteriorly—they are about six or eight feet in length, and from twelve to fourteen in breadth in the largest males. The chest and belly are narrower than the broadest part of the back, and taper off evenly and beautifully towards the tail, giving what by sailors is termed a “clear run,”—the depth of the head and body is in all parts except the tail greater than the width. The head viewed in front, as in fig. 2, presents a broad, somewhat flattened surface,

rounded, and contracted above, considerably expanded on the sides, and gradually contracted below, so as in some degree to attain a resemblance to the cutwater of a ship.

At the angle formed by the anterior and superior surfaces on the left side, is placed the single blowing-hole, or nostril, which in the dead animal presents the appearance of a slit or fissure, in form resembling an \angle , extending longitudinally, and about twelve inches in length.

This nostril, however, is surrounded by several muscles, which in the living state are for the purpose of modifying its shape and dimensions, according to the necessities of respiration, similar to those which act upon the nostrils of land animals.

In the right side of the nose, and upper surface of the head, is a large, almost triangular-shaped cavity, called by whalers the “case,” which is lined with a beautiful glistening membrane, and covered by a thick layer of muscular fibres and small tendons, running in various directions, and finally united by common integuments. This cavity is for the purpose of secreting and containing an oily fluid, which, after death, concretes into a granulated substance of a yellowish colour, the spermaceti. The size of the case may be estimated, when it is stated that in a large whale it not unfrequently contains a ton, or more than ten large barrels of spermaceti!

Beneath the case and nostril, and projecting beyond the lower jaw, is a thick mass of elastic substance called the “junk:” it is formed of a dense cellular tissue,

strengthened by numerous strong tendinous fibres, and infiltrated with very fine sperm oil and spermaceti.

The mouth extends nearly the whole length of the head. Both the jaws, but especially the lower, are in front contracted to a very narrow point, and when the mouth is closed, the lower jaw is received within a sort of cartilaginous lip, or projection of the upper one; but principally in front, for further back, at the sides, and towards the angle of the mouth, both jaws are furnished with tolerably well developed lips: in the lower jaw are forty-two teeth, of a formidable size, but conical shape; there are none, however, in the upper, which instead presents depressions corresponding to, and for the reception of, the points of those in the lower jaw,—sometimes, however, a few rudimentary teeth may be found situated in the upper jaw, but never projecting beyond the gums, and upon which those in the lower jaw strike when the mouth is closed.

The tongue is small, of a white colour, and does not appear to possess the power of very extended motion.

The throat is capacious enough to give passage to the body of a man; in this respect presenting a strong contrast with the contracted gullet of the Greenland whale.

The mouth is lined throughout with a pearly white membrane, which becomes continuous at the lips, and borders with the common integument, where it becomes of a dark-brown or black colour.

The eyes are small, in comparison with the size of the animal, and are furnished with eyelids, the lower of which is the more moveable: they are placed a little

above, and behind the angle of the mouth, at the widest part of the head. At a short distance behind the eyes, are the external openings of the ears, of size sufficient to admit a small quill, and unprovided with any external auricular appendage.

Behind, and not far from the posterior angle of the mouth, are placed the swimming paws, or fins, which are analogous in their formation to the anterior extremities of other animals, or the arms of man; they are not much used as instruments of progression, but probably in giving a direction to that motion in balancing the body in sinking suddenly, and occasionally in supporting their young.

In a full-grown male sperm whale, of the largest size, or about eighty-four feet in length, the dimensions may be given as follow:—depth of head from eight to nine feet,—breadth, from five to six feet,—depth of body seldom exceeds twelve or fourteen feet, so that the circumference of the largest sperm whale of eighty or eighty-four feet will seldom exceed thirty-six feet,—the swimming paws or fins, are about six feet long and three broad; the dimensions of the flukes or tail have been previously mentioned.

In reviewing this description of the external form, and some of the organs of the sperm whale, it will perhaps not be uninteresting if some comparison is instituted between them and the corresponding points of the Greenland whale. In doing this, the remarkable adaptation of form and parts to different habits, situation, and food, will not fail to strike every one with admiration.

One of the peculiarities of the sperm whale, which strikes at first sight every beholder, is the apparently disproportionate and unwieldy bulk of the head; but this peculiarity, instead of being, as might be supposed, an impediment to the freedom of the animal's motion in his native element, is in fact, on the contrary in some respects very conducive to his lightness and agility, if such a term can with propriety be applied to such an enormous creature; for a great part of the bulk of the head is made up of a large thin membranous case, containing, during life, a thin oil of much less specific gravity than water; below which again is the junk, which, although heavier than the spermaceti, is still lighter than the element in which the whale moves; consequently the head taken as a whole, is lighter specifically than any other part of the body and will always have a tendency to rise at least so far above the surface as to elevate the nostril or "blow-hole" sufficiently for all purposes of respiration, and more than this, a very slight effort on the part of the fish would only be necessary to raise the whole of the anterior flat surface of the nose out of the water; in case the animal should wish to increase his speed to the utmost, the narrow inferior surface, which has been before stated to bear some resemblance to the cutwater of a ship, and which would in fact answer the same purpose to the whale, would be the only part exposed to the pressure of the water in front, enabling him thus to pass with the greatest celerity and ease through the boundless track of his wide domain.

It is in this shape of the head that the sperm whale

differs in the most remarkable degree from the Greenland whale, the shape of whose head more resembles that of the porpoise, and in it the nostril is situated much farther back, rendering it seldom or ever necessary for the nose to be elevated above the surface of the water; and when swimming even at the greatest speed, the Greenland whale keeps nearly the whole of the head under it, but as his head tapers off evenly in front, this circumstance does not much impede his motion, the rate of which is, however, never equal to that of the greatest rate of the sperm whale.

It seems, indeed, in point of fact, that this purpose of rendering the head of light specific gravity, is the only use of this mass of oil and spermaceti, although some have supposed, and not without some degree of probability, that the "junk" especially may be serviceable in obviating the injurious effects of concussion, should the whale happen to meet with any obstacle when in full career. This supposition, however, would appear hardly tenable, when we consider the Greenland whale, although living among the rock-like icebergs of the arctic seas, has no such convenient provision, and with senses probably in all, and certainly in one respect less acute than those of the sperm whale, on which account it would seem requisite for him to possess this defence rather than the sperm whale, whose habitation is for the most part in the smiling latitudes of the southern seas. Considering the habits and mode of feeding, and the superior activity and apparent intelligence of the sperm whale, we shall be prepared to expect that he must possess a corresponding

superiority in his external senses; and we accordingly find, that he enjoys a more perfect organ of hearing, in having an external opening of considerable size for the purpose of conveying sounds to the internal ear more readily and acutely than could be done through the dense and thick integument, which is continued over the auricular opening in the northern whale.

Although the eyes in both animals are very small in comparison with their bulk, yet it is remarked that they are tolerably quick-sighted. I am not aware that the sperm whale possesses in this respect any superiority.

Passing to the mouth, we again observe a very remarkable difference in the conformation of the two animals; as in place of the enormous plates of whalebone which are found attached to the upper jaw of the Greenland whale, we in the sperm whale only find depressions for the reception of the teeth of the lower jaw; organs which again are totally wanting in the other. Corresponding with these distinctions, which plainly point out that the food of the two whales must be very different, we find a remarkable difference in the size of the gullet.

The several humps, or ridges, on the back of the sperm whale constitute another difference in their external aspect; these prominences are however not altogether peculiar to the sperm whale, as that which is called by whalers the "humpback" possesses a prominence on the back not very dissimilar to that of the sperm whale, which has been noticed before in the introductory remarks, and which induced Lacapedé to divide the genus *Balæna* into those with a hump, and those without;

employing the name *Balæna* for the latter, and styling the others *Balænoptera*.

I have before adverted to the sharp cutwater-like conformation of the under part of the head in the sperm whale, and it is worthy of remark that the same part of the Greenland whale is nearly, if not altogether, flat.

The skin of the sperm whale, as of all other cetaceous animals, is without scales, smooth, but occasionally, in old whales, wrinkled, and frequently marked on the sides by linear impressions, appearing as if rubbed against some angular body. The colour of the skin, over the greatest part of its extent, is very dark, most so on the upper part of the head, the back, and on the flukes, in which situation it is in fact sometimes black, on the sides it gradually assumes a lighter tint, till on the breast it becomes silvery grey.

In different individuals there is, however, considerable variety of shade, and some are even piebald. Old "bulls," as full-grown males are called by whalers, have generally a portion of grey on the nose immediately above the fore-part of the upper-jaw, and they are then said to be "grey-headed."

In young whales the "black skin," as it is called, is about three-eighths of an inch thick, but in old ones it is not more than one-eighth.

Immediately beneath the black-skin is the blubber or fat, which is contained in a cellular membrane, and which is much strengthened by numerous interlacements of ligamentous fibres, which has induced Professor Jacob to consider the whole thickness of blubber to be the *cutis*

vera, or true skin, infiltrated with oil, or fatty matters. Its thickness on the breast of a large whale is about fourteen inches, and on most other parts of the body it measures from eight to eleven inches. The head is not, however, supplied with this covering, having only the black skin, or cutis, which lies close to a layer of very dense cellular tissue, under which is seen a considerable thickness of numerous small tendons, intermixed with muscular fibres.

This is more especially observed on the top and upper third of the head, surrounding the case, as lower down we find the black skin lying close to the peculiar structure of the junk.

This thick covering of skin, blubber, or fat, is called by the South Sea whalers the "blanket." It is of a light yellowish colour, and, when melted down, furnishes the sperm oil. It also serves two excellent purposes to the whale, in rendering it buoyant, and in furnishing it with a warm protection from the coldness of the surrounding element; in this last respect answering well to the name bestowed upon it by the sailors.

CHAPTER II.

HABITS OF THE SPERM WHALE.

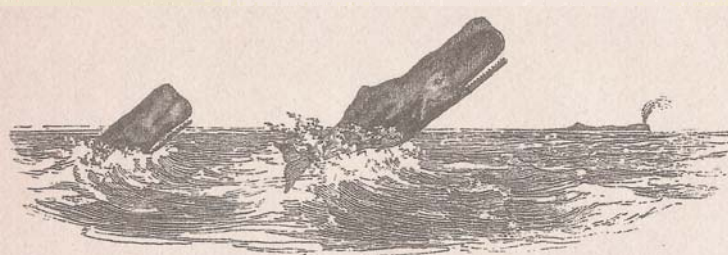


Fig. 1.

Fig. 2.

Fig. 3.

IT is a matter of great astonishment that the consideration of the habits of so interesting, and in a commercial point of view of so important an animal, should have been so entirely neglected, or should have excited so little curiosity among the numerous, and many of them competent observers, that of late years must have possessed the most abundant and the most convenient opportunities of witnessing their habitudes. I am not vain enough to pretend that the few following pages include a perfect sketch of this subject, as regards the sperm whale; but I flatter myself that somewhat of novelty and originality will be found justly ascribable to the observations I have put together; they are at all events the fruit of long and attentive consideration.—For convenience of description, the habits of this animal are given under the heads of feeding, swimming, breathing, etc.

c 2

× There is some sort of mistake in the drawing of Fig:2. The tail part is wretchedly crippled & dwarfed, & looks altogether unnatural. The head is good.

the tongue is suddenly drawn into the mouth, and the many little animals which crowded upon it are disposed of "in one fell swoop."

That the mode mentioned above, by which the sperm whale acquires and secures its prey, is correct, I am led to believe also, from the following considerations. The sperm whale is subject to several diseases, one of which is a perfect, or imperfect, loss of sight. A whale perfectly blind, was taken by Captain William Swain, of the Sarah and Elizabeth whaler of London, both eyes of which were completely disorganised, the orbits being occupied by fungous masses, protruding considerably, rendering it certain that the whale must have been deprived of vision for a long space of time; yet, notwithstanding this, the animal was quite as fat, and produced as much oil, as any other captured of the same size. Besides blindness, this whale is frequently subject to deformity of the lower jaw: two instances of which I have seen myself, in which the deformity was so great as to render it impossible for the animal to find the jaws useful in catching small fish, or even, one might have supposed, in deglutition; yet these whales possessed as much blubber and were as rich in oil as any of a similar size I have seen before or since.

In both these instances of crooked jaws, the nutrition of the animal appeared to be equally perfect; but the deformities were different in one case, the jaw being bent to the right side and rolled as it were like a scroll, in the other it was bent downwards, but also curved upon itself. It would be interesting here to inquire into the

causes of this deformity, but whether it is the effect of disease, or the consequences of accident, I am unable to determine. Old whalers affirm that it is caused by fighting; they state that the sperm whale fights by rushing head first, one upon the other, their mouths at the same time wide open, their object appearing to be the seizing of their opponent by the lower jaw, for which purpose they frequently turn themselves on the side; in this manner they become as it were locked together, their jaws crossing each other, and in this manner they strive vehemently for the mastery. I have never had the good fortune to witness one of these combats; but if it be the fact that such take place, we need not wonder at seeing so many deformed jaws in this kind of whale, for we can easily suppose the enormous force exerted on these occasions, taking into consideration at the same time the comparative slenderness of the jaw-bone in this animal. Some corroboration of the above statements arises from the fact as far as my knowledge extends, that the female is never seen affected with this deformity.

From these facts it may almost be deduced, or at least surmised with a great degree of probability, that the mode of procuring food as above stated, as that pursued by the sperm whale, is the true one, for without eyes, and with a jaw (his only instrument of prehension) so much deformed, the animal would seem incapable of pursuing his prey, and would consequently gain but a very precarious subsistence, if its food did not actually throng about the mouth and throat, invited by their appearance, and attracted also in some degree as I suppose,

by the peculiar and very strong odour of the sperm whale. Besides, it is well known, that many kinds of fish are attracted by substances possessing a white dazzling appearance, for not only the hungry shark, but the cautious and active dolphin both occasionally fall victims to this partiality, as I have had many opportunities of observing. When the Kent, south-seaman, was fishing on the "off-shore ground" of Peru, the crew caught a great number of the *sepia* octopus, or squid (the peculiar food of the sperm whale), in one night, by merely lowering a piece of polished lead armed with fish-hooks a certain depth into the sea; the *sepia* gathered around it instantly, so that by giving a slight jerk to the line, the hooks were easily driven into their bodies.

The teeth of the sperm whale are merely organs of prehension, they can be of no use for mastication, and consequently the fish, etc. which he occasionally vomits, present no marks of having undergone that process.

The manner of the young ones sucking is a matter involved in some obscurity. It is impossible from the curious conformation of the mouth, that the young one could seize the nipple of the mother with the fore-part of it, for there are no soft lips at this part, but instead, the jaws are edged with a smooth and very hard cartilaginous substance, but about two feet from the angle of the mouth, they begin to be furnished with something like lips, which form at the angle some loose folds, soft and elastic; and it is commonly believed by the most experienced whalers, that it is by this part the young whale seizes the nipple and performs the act of sucking, and which is doubtless the mode of its doing so.

CHAPTER III.

SWIMMING.

NOTWITHSTANDING his enormous size, we find that the sperm whale has the power of moving through the water with the greatest ease, and with considerable velocity. When undisturbed, he passes tranquilly along just below the surface of the water, at the rate of about three or four miles an hour, which progress he effects by a gentle oblique motion from side to side of the "flukes," precisely in the same manner as a boat is skulled by means of an oar over the stern. When proceeding at this his common rate, his body lies horizontally, his "hump" projecting above the surface (see cut, p. 33, fig. 3), with the water a little disturbed around it, and more or less according to his velocity. This disturbed water is called by whalers "white water," and from the greater or less quantity of it, an experienced whaler can judge very accurately of the rate at which the whale is going, from a distance even of four or five miles.

In this mode of swimming, the whale is able to attain a velocity of about seven miles an hour; but when desirous of proceeding at a greater rate, the action of the tail is materially altered,—instead of being moved

laterally and obliquely, it strikes the water with the broad flat surface of the flukes in a direct manner, upwards and downwards, and each time the blow is made with the inferior surface, the head of the whale sinks down to the depth of eight or ten feet, but when the blow is reversed, it rises out of the water, presenting then to it only the sharp cutwater-like inferior portion.

The blow with the upper surface of the flukes appears to be by far the most powerful, and as at the same time the resistance of the broad anterior surface of the head is removed, appears to be the principal means of progression. This mode of swimming, with the head alternately in and out of the water, is called by whalers "going head out," (see cut, p. 33, fig. 1). And in this way the whale can attain a speed of ten or twelve miles an hour, and this latter, I believe to be his greatest velocity.

The tail is thus seen to be the great means of progression, and the fins are not much used for that purpose; but occasionally when suddenly disturbed, the whale has the power of sinking quickly and directly downwards in the horizontal position, which he effects by striking upwards with the fins and tail.

CHAPTER IV.

BREATHING.

ALL the cetacea, as is well known, are warm-blooded animals, and possess lungs, and a corresponding respiratory apparatus resembling those of terrestrial animals, and require consequently a frequent intercourse with atmospheric air, and for this purpose it is of course necessary that they should rise to the surface of the water at certain intervals.

The majority of this class of animals do not appear to perform this function with any regularity, and it is in this respect that the sperm whale is remarkably distinguished among his congeners, and it is from his peculiar mode of "blowing" that he is recognised even from a great distance by the most inexperienced whaler. When at the surface for the purpose of respiration, the whale generally remains still, but occasionally continues making a gentle progress during the whole of his breathing time. If the water is moderately smooth, the first part of the whale observable is a dark-coloured pyramidal mass, projecting about two or three feet out of the water, which is the "hump."

At very regular intervals of time, the nose, or snout, emerges at a distance of from forty to fifty feet from the hump, in the full-grown male. From the extremity of

the nose the spout is thrown up, which, when seen from a distance, appears thick, low, and bushy (see cut, p. 33, fig. 3), and of a white colour: it is formed of the expired air, which is forcibly ejected by the animal through the blow-hole, acquiring its white colour from minute particles of water, previously lodged in the chink, or fissure of the nostril, and also from the condensation of the aqueous vapour thrown off by the lungs. The spout is projected from the blow-hole, at an angle of 135 degrees in a slow and continuous manner, for the space of about three seconds of time;—if the weather is fine and clear, and there is a gentle breeze at the time, it may be seen from the mast-head of a moderate-sized vessel, at the distance of four or five miles. The spout of the sperm whale differs much from that of other large cetacea, in which it is mostly double, and projected thin, and like a sudden jet, and as in these animals the blow-holes are situated nearly on the top of the head, it is thrown up to a considerable height, in almost a perpendicular direction. When, however, a sperm whale is alarmed or “gallied,” the spout is thrown up much higher and with great rapidity, and consequently differs much from its usual appearance. The regularity with which every action connected with its breathing is performed by the sperm whale, is very remarkable. The length of time he remains at the surface, the number of spouts or expirations made at one time, the intervals between the spouts, the time he remains invisible in the “depths of the ocean buried,” are all, when the animal is undisturbed, as regular in succession and duration as it is possible to imagine.

In different individuals, the times consumed in performing these several acts vary, but in each they are minutely regular; and this well-known regularity is of considerable use to the fishers—for when a whaler has once noticed the periods of any particular sperm whale, which is not alarmed, he knows to a minute when to expect it again at the surface, and how long it will remain there.

Immediately after each spout, the nose sinks beneath the water, scarcely a second intervening for the act of inspiration, which must consequently be performed very quickly, the air rushing into the chest with an astonishing velocity; there is however no sound caused by the inspiration, and very little by the expiration, or spout; in this respect also differing from other whales, for the “finback” whale, and some others, have their inspirations accompanied by a loud sound, as of air forcibly drawn into a small orifice,—this sound is called by whalers, the “drawback,” and when heard at night near the ship, convinces the listening watch of the species to which it belongs. In a large “bull” sperm whale, the time consumed in making one inspiration and one expiration, or the space from the termination of one spout to that of another, is ten seconds; during six of which, the nostril is beneath the surface of the water, the inspiration occupying one, and the expiration three seconds, and at each breathing time the whale makes from sixty to seventy expirations, and remains, therefore, at the surface ten or eleven minutes. At the termination of this breathing time, or as whalers say,

when he has had his "spoutings out," the head sinks slowly, the "small," or the part between the "hump" and "flukes," appears above the water, curved, with the convexity upwards, the flukes are then lifted high into the air, and the animal, having assumed a straight position, descends perpendicularly to an unknown depth,—this act is performed with regularity and slowness, and is called by whalers, "peaking the flukes," an act too, which is always noticed by those who are employed in the look-out, who call loudly, when they disappear below the surface, "there goes flukes."

The whale continues thus hidden beneath the surface for an hour and ten minutes; some will remain an hour and ten minutes; and others for only one hour, but these are rare exceptions. If we then take into consideration the quantity of time that the full-grown sperm whale consumes in respiration, and also the time he takes in searching for food, and performing other acts, below the surface of the ocean, we shall find, by a trifling calculation, that the former bears proportion to the latter, as one to seven, or in other words, that a seventh of the time of this huge animal is consumed in the function of respiration.

The females being found generally in large numbers and in close company, it is difficult to fix the attention upon one individual, so as to ascertain precisely the time consumed below the surface; however, as all in one flock generally rise at the same time, it may be observed, that they remain below the water about twenty minutes, they make about thirty-five or forty

expirations during the period they are at the surface, which is about four minutes, and they thus consume about a fifth of their time in respiration, a proportion considerably greater than that of the adult males.

The same circumstances of accelerated respiration are observable also in "young bulls," and the acceleration seems to bear a certain definite proportion to their respective ages and size.

When disturbed or alarmed, this regularity in breathing appears to be no longer observed; for instance, when a "bull," which when undisturbed remains at the surface until he has made sixty expirations, is alarmed by the approach of a boat, he immediately plunges beneath the waves, although it may probably have performed half its usual number, but will soon rise again not far distant, and finish his full number of respirations; and in this case, generally also, he sinks without having assumed the perpendicular position before described, on the contrary, he sinks suddenly in the horizontal position, and with remarkable rapidity, leaving a sort of vortex, or whirlpool, in the place where his huge body lately floated,—this curious movement is effected, as has been before stated, by some powerful upward strokes of the swimming paws and flukes.

When urging his rapid course through the ocean, in that mode of swimming which is called "going head out," the spout is thrown up every time the head is raised above the surface, and under these circumstances of violent muscular exertion, as would be expected, the respiration is altogether much more hurried than usual.

× *White and green vortex in the blue—as when a ship sinks.*

CHAPTER V.

OTHER ACTIONS OF THE SPERM WHALE.

WHEN in a state of alarm, or gambolling in sport on the surface of the ocean, the sperm whale has many curious modes of acting; with the reason of some, I am at present unacquainted.

It is difficult to conceive any object in nature calculated to cause alarm to this leviathan; he appears however to be remarkably timid, and is readily alarmed by the approach of a whale boat.

When seriously alarmed, the whale is said by sailors to be "gallied," or probably more properly, galled, and in this state he performs many actions very differently from his usual mode, as has been mentioned in speaking of his swimming and breathing, and many also which he is never observed to perform under any other circumstances. One of them is what is called "sweeping," which consists in moving the tail slowly from side to side on the surface of the water, as if feeling for the boat or any other object that may be in the neighbourhood. The whale has also an extraordinary manner of rolling over and over on the surface, and this he does when "fastened to," which means, when a harpoon with a line attached is fixed in his body; and in this case

they will sometimes coil an amazing length of line around them. They sometimes also place themselves in a perpendicular posture, with the head only above the water, presenting in this position a most extraordinary appearance when seen from a distance, resembling large black rocks in the midst of the ocean; this posture they seem to assume for the purpose of surveying more perfectly, or more easily, the surrounding expanse. A species of whale called by whalers "black fish," is most frequently in the habit of assuming this position.

The eyes of the sperm whale being placed in the widest part of the head, of course afford the animal an extensive field of vision, and he appears to view objects very readily that are placed laterally in a direct line with the eye, and when they are placed at some distance before him. His common manner of looking at a boat or ship is to turn over on his side, so as to cause the rays from the object to strike directly upon the retina.

Now when alarmed, and consequently anxious to take as rapid a glance as possible on all sides, he can much more readily do so when in the above-described perpendicular posture, and this consequently appears to be the reason of his assuming it.

Occasionally, when lying at the surface, the whale appears to amuse itself by violently beating the water with its tail; this act is called "lob-tailing," and the water lashed in this way into foam, is termed "white water" by the whaler, and by it the whale is recognized from a great distance.

But one of the most curious and surprising of the actions of the sperm whale, is that of leaping completely out of the water, or of "breaching," as it is called by whalers (see cut, p.33, fig.2). The way in which he performs this extraordinary motion, appears to be by descending to a certain depth below the surface, and then making some powerful strokes with his tail, which are frequently and rapidly repeated, and thus convey a great degree of velocity to his body before it reaches the surface, when he darts completely out. When just emerged and at its greatest elevation, his body forms with the surface of the water an angle of about 45 degrees, the flukes lying parallel with the surface; in falling, the animal rolls his body slightly, so that he always falls on his side: he seldom breaches more than twice or thrice at a time, or in quick succession. The breach of a whale may be seen from the mast-head on a clear day at a distance of six miles.

It is probable that the sperm whale often resorts to this action of breaching for the purpose of ridding itself of various animals which infest its skin, such as large "sucking fish," and other animals which resemble small crabs. Of the former of these parasites, some fix themselves so closely to their convenient carrier, that they sometimes adhere to the skin of the whale for several hours after its death, and then suffer themselves to be forced off by the hands of the whaler. It is not improbable also, that some of these actions may be resorted to in the whale endeavouring to avoid the assaults of the sword-fish, by which they are not un-

× *It may also be it is his act of defiance, as a h[orse shak]ing his mane,—for the waves then seem like the mane of the monster.*

frequently attacked, and this is supported by the fact of a portion of the sword of one of these animals having been found imbedded in the side of a whale stranded on the coast of Yorkshire, and which was probably broken off by the violent struggles between them.

There is also an animal called a "thresher," which is described by whalers, but which I have never seen, although I have observed hundreds of sword-fish while off the coast of Peru, and also in other parts of the world.

It is said by whalers, that the "thresher" and the sword-fish attack the whale in conjunction, the latter of which goad him from below, while the first leaps out of the water, and falls upon him from above—the attack thus intimidating the whale, and giving an opportunity to the sword-fish to inflict his wounds; but for what purpose I am at a loss to conjecture, for I am not aware that the latter has any power of devouring the whale after his death, were he even able to cause it. Nevertheless, a gentleman in whose veracity I have great confidence, informed me that he once witnessed an attack of this kind, which took place while he was sailing along the coast of Peru.

He stated, that he had been observing a sperm whale during the time it had remained at the surface to breathe, which after it had performed went through the evolution of "peaking" its flukes in the usual manner and disappeared. As it was a large whale, and as he knew it was likely to remain under water for a considerable time, he scarcely expected to see it again. However, in this he was mistaken; for after it had disappeared only for a few

Thresher here

minutes it again rose, apparently in great trepidation, and as it reared with great velocity, half of its huge body projected out of the water. Gaining, however, in a few seconds the horizontal position, it went off at its utmost speed, "going head out"—the moment after which he saw a fish, somewhat resembling a conger-eel in figure but rather more bulky, and to all appearance about six or eight feet in length, fling itself high out of the water after the whale, and fall clumsily on its back, which caused still more alarm to the immense but timid animal, so that it beat the water with its tail, and reared its enormous head so violently, that sounds from the former could be heard at a great distance: it still however continued its rapid career, receiving every few minutes the unwelcome visits of its galling adversary. My informant also stated, that he had good reason to believe that some other animal was at the same time attacking it from below; for he, on more than one occasion, saw some animal dart at times to the surface with amazing quickness, as if engaged with great fury in the contest; and which, he supposed, prevented the whale from descending, in which he had the power no doubt, if he had not been thus prevented, of leaving his antagonists far behind. The attack was continued for a considerable time, during which the whale had got a great distance from the ship, when it twice threw itself completely out of its native element, no doubt endeavouring to escape from its tormenting adversaries by this act of "breaching," and which I have myself seen him do, after having been unsuccessfully chased by the boats.

CHAPTER VI.

HERDING, AND OTHER PARTICULARS, OF THE SPERM WHALE.

THE sperm whale is a gregarious animal, and the herds formed by it are of two kinds—the one consisting of females, the other of young males not fully grown.

These herds are called by whalers "schools," and occasionally consist of great numbers: I have seen in one school as many as five or six hundred. With each herd or school of females are always from one to three large "bulls"—the lords of the herd, or as they are called, the "schoolmasters." The males are said to be extremely jealous of intrusion by strangers, and to fight fiercely to maintain their rights. The full-grown males, or "large whales," almost always go alone in search of food; and when they are seen in company they are supposed to be making passages, or migrating from one "feeding ground" to another. The large whale is generally very incautious, and if alone he is without difficulty attacked, and by expert whalers generally very easily killed; as he frequently, after receiving the first blow or plunge of the harpoon, appears hardly to feel it, but continues lying like a "log of wood" in the water, before he rallies or makes any attempt to escape from his enemies.

"Large whales" are however sometimes, but rarely,

× *The [—?—][—?—]es what Vidocq in his "Memoirs" calls w[andering friar]s*

met with remarkably cunning and full of courage, when they will commit dreadful havoc with their jaws and tail; the jaw and head however appear to be their principal offensive weapons.

The female breeds at all seasons, producing but one at a time, except in a few instances, in which two are produced, as the case of the one stranded on the coast of D'Audierne fully proves: her time of gestation is unknown; F. Cuvier supposes it to be about ten months. Their young, when first born, are according to Mr. Bennett, about fourteen feet in length and six feet in girth—he also states that they lie in the uterus in the form of a bow. M. F. Cuvier states that those which were brought forth at D'Audierne were ten or eleven feet in length; while Captain Colnett observes, that the young sperm whales, which he saw in great numbers off the Galapago's Islands, were not larger than a "small porpoise." Of these authorities I am inclined to depend most upon the accounts given by Mr. Bennett, because they coincide with instances which have come under my own observation.

The female is much smaller than the male; her size, when generally considered, being not more than one-fifth that of the adult "large whale."* The females

* This fact has been much doubted by Sir William Jardine, on whales, in vol. iii. of the "Naturalist's Library," p.167, where, in using the information contained in the first edition of this work, he states, "according to Beale she is much smaller than the male, in the proportion of nearly one to four or five. This appears a novel and, we presume to think, a somewhat doubtful assertion;" yet I can still assure Sir William that it is not far from the truth!

are very remarkable for attachment to their young, which they may be frequently seen urging and assisting to escape from danger with the most unceasing care and fondness. They are also not less remarkable for their strong feeling of sociality or attachment to one another; and this is carried to so great an extent, as that one female of a herd being attacked and wounded, her faithful companions will remain around her to the last moment, or until they are wounded themselves. This act of remaining by a wounded companion is called by whalers "heaving-to," and whole "schools" have been destroyed by dexterous management, when several ships have been in company, wholly from these whales possessing this remarkable disposition. The attachment appears to be reciprocal on the part of the young whales, which have been seen about the ship for hours after their parents have been killed.

The young males, or "young bulls," go in large schools, but differ remarkably from the females in disposition, inasmuch as they make an immediate and rapid retreat upon one of their number being struck, who is left to take the best care he can of himself. I never but once saw them "heave-to," and in that case it was only for a short time, and which seemed rather to arise from their confusion than affection for their wounded companion. They are also very cunning and cautious, keeping at all times a good look-out for danger; it is consequently necessary for the whaler to be extremely cautious in his mode of approaching them, so as, if possible, to escape being heard or seen, for they have some mode of com-

munication one to another, through a whole school, in an incredibly short space of time.

“Young bulls” are consequently much more troublesome to attack, and more difficult and dangerous to kill, great dexterity and despatch being necessary to give them no time to recover from the pain and fright caused by the first blow. When about three-fourths grown, or sometimes only half, they separate from each other, and go singly in search of food.

All sperm whales, both large and small, have some method of communicating by signals to each other, by which they become apprised of the approach of danger, and this they do, although the distance may be very considerable between them, sometimes amounting to four, five, or even seven miles. The mode by which this is effected, remains a curious secret.

until they attain their [—?—] [—?—] like old Ixion's [—?—] & his sins & punishment.

CHAPTER VII.

NATURE OF THE SPERM WHALE'S FOOD.

It has been stated before (see Chapter ii.) that the food of the sperm whale consists almost wholly of an animal of the cuttle-fish kind, called by whalers “squid,” and by naturalists, “sepia octopus,” and at times, when he is near the shore, as in Volcano Bay, or on the straits of Corea, it also consists of small fish which are denominated “rock cod” by sailors, and which sometimes, however, approach the size of a moderate salmon.

But the instances in which fish of this description have been ejected from the stomach of the sperm whale are but rare, while every day's experience proves that its common food consists of that division of molluscous animals which naturalists have denominated *cephalopoda*, and of which the “sepia octopus,” or “sea squid,” appears to be the most common.

A few words on the natural history of this highly organized and remarkable animal, cannot fail to be interesting to the reader, as it has excited the attention of the naturalist for many ages, from the remarkable nature of its formation and very peculiar habits.

Endowed with hearing, seeing, touch, smell, and taste, it is second to no inhabitant of the waters in the

The internal shell of the common sepia is large and broad, and composed wholly of the carbonate of lime, it is well known by the name of cuttle-fish bone. Its structure is extremely curious, and deserves particular attention, as establishing the universality of the principle which regulates the formation of shells, whether external or internal, and from which structures differing much in their outward appearance may result. It is composed of an immense number of thin calcareous plates, arranged parallel to one another, and connected by thousands of minute hollow pillars of the same calcareous material, passing perpendicularly between the adjacent surfaces. This shell is not adherent to any internal part of the animal which has produced it, but is enclosed in a capsule, and appears like a foreign body impacted in the midst of organs with which at first sight it appears to have no relation. It no doubt is of use in giving mechanical support to the soft substance of the body, and especially to the surrounding muscular flesh, and thus probably contributes to the high energy which the animal displays in all its movements. It has been regarded as an internal skeleton, but it certainly has no pretensions to such a designation, for, although enveloped by the mantle, it is still formed by that organ, and the material of which it is composed, still carbonate of lime. On both these accounts it must be considered as a true shell, and classed among the productions of the integuments. It differs indeed altogether from bony structures, which are composed of a different kind of material, and formed on principles of growth

totally dissimilar. Besides tentacula, the sepia is also provided with a pair of fleshy fins extending along the two sides of the body. The loligo has similar organs of a smaller size, and situated only at the extremity of the body which is opposite to the head. They have been regarded as the rudiments of *true fins*, which are organs developed in fishes, and which are supported by slender bones called rays, but no structure of this kind exists in the fins of the cephalopoda. In swimming, the organs principally employed by cuttle-fish for giving an effective impulse to the water are the tentacula. These they employ as oars, striking with them from behind forwards, so that their effort is to propel the hinder part of the body, which is thus made to advance foremost, the head following in the rear. They also use these organs as feet for moving along the bottom of the sea. In their progress under these circumstances, the head is always turned downwards, and the body upwards, so that the animal may be considered as literally walking on its head!

“The necessity of this position for the feet arises probably from the close investment of the mantle over the body; for although the mantle leaves an aperture in the neck for the entrance of water to the respiratory organs, yet in other respects it forms a sack, closed in every part, except where the head, neck and accompanying tentacula protude.

“In the calamary, as well as in the common sepia, two of the arms are much longer than the rest, and terminate in a thick cylindrical portion, covered with

⊗ *The p[aper] [nautilus] [—?—] like so
many s [—?—] [—?—] [—?—].*

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NATURE OF THE

numerous suckers, which may not unaptly be compared to a hand.

⊗ "These processes are employed by cuttle-fish as anchors, for the purpose of fixing themselves firmly to rocks during violent agitations of the sea; and accordingly we find, that it is only the extremities of these long tentacula that are provided with suckers, while the short ones have them also along their whole length. The other genera of cephalopodous mollusca are like the sepia, provided with tentacula attached to the head. They comprehend animals differing exceedingly in size, some being very large, but a great number very minute and even microscopic."—See M. D'Orbigny, in the 'Annales des Sciences Naturelles,' vii. 96.

⊗ "Other animals of this kind inhabit shells, one of which is the argonaut, or paper-nautilus, which possesses a shell, says Roget, "exceedingly thin, and almost pellucid, probably for the sake of lightness, for it is intended to be used as a boat. For the purpose of enabling the animal to avail itself of the impulses of the air while it is thus floating on the water, nature has furnished it with a thin membrane, which she has attached to two of the tentacula, so that it can be spread out like a sail, to catch the light winds which waft the animal forward on its course. While its diminutive bark is thus scudding over the surface of the deep, the assiduous navigator does not neglect to apply its tentacula as oars on either side, to direct as well as to accelerate its motion. No sooner does the breeze freshen, and the sea become ruffled, than the animal hastens to take down its sail,

⊗ *[—?—][—?—][—?—] as many anchors as
Sinbad's ship did in the gale.*

SPERM WHALE'S FOOD.

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and quickly withdrawing its tentacula within its shell, renders itself specifically heavier than the water, and sinks immediately into more tranquil regions beneath the surface."

Sir William Jardine on whales, in the 'Naturalist's Library,' vol. vi. p.162, regarding the food of the spermaceti whale, "ventures to suggest to those who may have frequent opportunities of observing, whether this whale may not also frequently resort to the medusæ and minute fish, which in so remarkable a manner supply food to some of the smaller as well as the other genera of the gigantic whales. That there is an abundant supply of this sustenance, both in the antarctic ocean, and the more smiling latitudes of the southern seas, can easily be proved by a reference to 'Lesson's Statements,' and also to those of Captain Colnett, who, when near the southern point of America observes, 'during this forenoon we passed several fields of spawn, which caused the water to bear the appearance of barley covering the surface of a bank.' " Orbigny also remarks, that there are immense tracts off the coast of Brazil, filled with small creatures so numerous as to impart a red colour to the sea; large portions are thus highly coloured, and receive from the whalers the name of Banc du Bresil. He also states that another similar bank occurs near Cape Horn, in 57° south latitude. "Statements of this sort," observes Sir William, "could easily be multiplied, and hence we cannot but suppose that this kind of food, which is ascertained to afford such rich nourishment to the other great cetacea, may, *very pos-*

sibly be appropriated by the sperm whale to the same purpose."

This is an unaccountable error on the part of the compiler of the Naturalist's Library. The apparent banks above mentioned, and which I have myself frequently seen in various parts of the ocean, are certainly formed by myriads of medusæ; and other small animals which form the sustenance of the *balæna mysticetus*' or Greenland whale's food; which consists of animals of the shrimp tribe, and other minute creatures which are closely congregated, and swarm in those animated 'banks,' but of which the sperm whale never partakes, as it is not "very possible," but quite impossible that he could do so, however inclined he might be, on account of the organization of his feeding apparatus, which may be readily seen when its form is referred to.

By what means could the sperm whale separate the minute animals which he might enclose within his jaws from the sea water in which they are contained? If the sperm whale had the means of doing so, of what use is the baleen plates or screens to the *balænæ*, or black whales, which are known to feed in the banks before adverted to?

The *sepia* octopus, or "sea squid," as it is termed by whalers, sometimes reaches an enormous size. Mr. Henry Baker, F.R.S., in the Philosophical Transactions for 1758, p.777, after having given an interesting description of a specimen, sent to him for examination by the Earl of Macclesfield, states that "it can, by spreading its arms abroad like a net, so fetter and entangle the

prey they enclose when they are drawn together, as to render it incapable of exerting its strength; for, however feeble these branches or arms may be singly, their power united becomes surprising; and, we are assured, nature is so kind to these animals, that if in their struggles any of their arms are broken off, after some time they will grow again, of which a specimen at the British Museum is an undoubted proof, for a little new arm is there seen sprouting forth in the room of a large one which had been lost. "It is evident," he continues, "from what has been said, that the sea polypus, or octopus, must be terrible to the inhabitants of the waters in proportion to its size (and Pliny mentions one whose arms were thirty feet in length), for the close embraces of its arms and adhesion of its suckers must render the efforts of its prey ineffectual, either for resistance or escape, unless it be endowed with an extraordinary degree of strength."

Of the smaller genera of these animals the reader will find some interesting details, by referring to the appendix to Tuckey's Voyage to the Congo, vol.iii. There is also an account of a newly-discovered Cephalopod in the appendix to Sir J. Ross' Voyage to the Antarctic Regions.

A gigantic cephalopod was discovered by Drs. Bank and Solander, in Captain Cook's first voyage, floating dead upon the sea, surrounded by birds, who were feeding on its remains. From the parts of this specimen which are still preserved in the Hunterian Collection, and which have always strongly excited the attention of naturalists, it must have measured at least six feet from the end of the tail to the end of the tentacles.

But this last we must imagine a mere pigmy, when we consider the enormous dimensions of the one spoken of by Dr. Schewediawer, in the Phil. Trans. vol. lxxiii. p.226, whose tentaculum or limb measured twenty-seven feet in length; but let the Doctor speak for himself. "One of the gentlemen," says he, "who was so kind as to communicate to me his observations on this subject (ambergris) also, ten years ago, hooked a spermaceti whale that had in its mouth a tentaculum of the sepia octopodia nearly twenty-seven feet long! This did not appear its whole length, for one end was corroded by digestion, so that, in its natural state, it must have been a great deal longer. When we consider," says the Doctor, "the enormous bulk of the tentaculum here spoken of, we shall cease to wonder at the common saying of the fishermen, that the cuttle-fish is the largest fish of the ocean."

In Todd's Cyclopædia of Anatomy, p.529, treating of cephalopoda, in an admirable paper by Mr. Owen, it states, that "the natives of the Polynesian Islands, who dive for shell-fish, have a well-founded dread and abhorrence of these formidable cephalopods, and one cannot feel surprised that their fears should have perhaps exaggerated their dimensions and destructive attributes."

The same learned writer, after having beautifully described another animal of this order, observes—"Let the reader picture to himself the projecting margin of the horny hook developed into a long-curved, sharp-pointed claw, and these weapons clustered at the expanded terminations of the tentacles and arranged in a double

Squid

alternate series, along the whole internal surface of the eight muscular feet, and he will have some idea of the formidable nature of the carnivorous onychoteuthis."

This species of cephalopod is thus armed with those kind of teeth at the termination of the tentacles, in order to secure the "agile, slippery, and mucous-clad fishes" on which it preys. And there is an instance recorded in Sir Grenville Temple's Excursions in the Mediterranean by which we perceive that these terrible creatures sometimes prey upon men! "In those shallow waters," says Sir Grenville, "are caught great quantities of fish, by forming curved lines or palisades some way out to sea, with palm branches, by which the fish that come up with the high water are retained when it recedes. The *horrid polypus*, which is, however, greedily eaten, abounds, and some are of *enormous size*. They prove at times highly dangerous to bathers.

"An instance of this occurred two years since: a Sardinian captain, bathing at Jerbeh, felt one of his feet in the grasp of one of these animals; on this, with his other foot he tried to disengage himself, but this limb was immediately seized by another of the monster's arms; he then, with his hands, endeavoured to free himself, but these also, in succession, were firmly grasped by the polypus, and the poor man was shortly after found drowned, with all his limbs strongly bound together by the arms and legs of the fish; and it is extraordinary, that where this happened, the water was scarcely four feet in depth."

Other species of these surprising animals, as the

× *Squid a [—?—]ing fish.*

calamaries, or "flying squid," as they are termed by whalers, have the power of propelling themselves through the atmosphere. "There is good reason for believing," says Mr. Owen, "that some of the small, slender-bodied subulate species of this genus are enabled to strike the water with such force as to raise themselves above the surface, and dart, like the flying fish, for a short distance through the air." I have myself seen, very frequently, while in the north and south Pacific, tens of thousands of these animals dart simultaneously out of the water when pursued by albacore, or dolphins, and propel themselves *head first*, in a horizontal direction, for eighty or a hundred yards, assisting their progression, probably, by a rotary or *screwing* motion of their arms or tentacles, and which they have the power of thus moving with singular velocity. This species also, as well as the large onychoteuthis, I am led to believe, often serves the sperm whale for food. I have seen, on several occasions, very large limbs of the latter species of squid floating on the surface of the ocean, appearing as if bitten off by some animal, most probably by the sperm whale, for when these remains have been seen, I have always looked most anxiously for those animals, and have never been disappointed in seeing them within a few hours afterwards.

One day, being on the coast of Peru, off Paita-Head as it is called, which lies in about the latitude of five degrees south, I was startled at seeing a remarkable looking animal raising itself quickly to the surface of the sea by means of a number of very long flexible

arms, which it threw about with great precision, in a rotatory or screwing-like motion, so that it appeared to move itself through the water with the same kind of action than an eight-pronged corkscrew would maintain in passing through any penetrable substance. This curious animal, however, quickly disappeared; and it was not until I had explained its appearance to the captain, that I knew it to be a squid.

On another occasion, and while upon the Bonin Islands, searching for shells on the rocks, which had just been left by the receding sea-tide, I was much astonished at seeing at my feet a most extraordinary looking animal, crawling towards the surf, which had only just left it. I had never seen one like it under such circumstances before; it therefore appeared the more remarkable. It was creeping on its eight legs, which, from their soft and flexible nature, bent considerably under the weight of its body, so that it was lifted by the efforts of its tentacula only, a small distance from the rocks. It appeared much alarmed at seeing me, and made every effort to escape, while I was not much in the humour to endeavour to capture so ugly a customer, whose appearance excited a feeling of disgust, not unmixed with fear. I however endeavoured to prevent its career, by pressing on one of its legs with my foot, but although I made use of considerable force for that purpose, its strength was so great that it several times quickly liberated its member, in spite of all the efforts I could employ in this way on wet slippery rocks. I now laid hold of one of the

tentacles with my hand, and held it firmly, so that the limb appeared as if it would be torn asunder by our united strength. I soon gave it a powerful jerk, wishing to disengage it from the rocks to which it clung so forcibly by its suckers, which it effectually resisted; but the moment after, the apparently enraged animal lifted its head with its large eyes projecting from the middle of its body, and letting go its hold of the rocks, suddenly sprang upon my arm, which I had previously bared to my shoulder, for the purpose of thrusting it into holes in the rocks to discover shells, and clung with its suckers to it with great power, endeavouring to get its beak, which I could now see, between the roots of its arms, in a position to bite!

A sensation of horror pervaded my whole frame when I found this monstrous animal had affixed itself so firmly upon my arm. Its cold slimy grasp was extremely sickening, and I immediately called aloud to the captain, who was also searching for shells at some distance, to come and release me from my disgusting assailant—he quickly arrived, and taking me down to the boat, during which time I was employed in keeping the beak away from my hand, quickly released me by destroying the tormentor with the boat knife, when I disengaged it by portions at a time. This animal must have measured across its expanded arms, about four feet, while its body was not larger than a large clenched hand. It was that species of sepia, which is called by whalers “rock-squid.” Thus are these remarkable creatures, from the different adaptation of their tentacles,

and slight modifications of their bodies, capable of sailing, flying, swimming, and creeping on the shore, while their senses, if we may judge from the elaborate mechanism of their organs, must possess corresponding acuteness and perfection. But for the description of the anatomy of these animals, I must refer the reader to Mr. Owen's masterly paper on that subject, in Todd's Cyclopædia of Anatomy, above quoted.

CHAPTER VIII.

ANATOMY AND PHYSIOLOGY OF THE SPERM WHALE.

IT will be seen, in the following compilation of the anatomy and physiology of the sperm whale, which I have gleaned from the various naturalists who have from time to time written upon these interesting subjects, that I have largely availed myself of the inimitable paper, originally presented to the Royal Society by the great John Hunter, which treats of the structure and economy of whales.

I have thought proper to reprint nearly the whole of this paper, because of the exceedingly interesting nature of its contents,—not because it does not treat solely of the anatomy of the sperm whale, but because it contains passages so highly original and profound, not only of whales in general, and of the sperm whale in particular, that to have left this article without it, a mere barren chapter would have presented itself, wholly without interest.

For although the structural and functional developments of several kinds of whales are considered in that learned papers, the peculiarities of which are exposed with amazing judgment by our great naturalist, still

the reader will observe that there is a strong analogy among them in the internal arrangement of their organs; as in the stomach, liver, parts of generation in both sexes, and also in the kidney, lungs, and brain; and where they differ in organic development, the gifted author beautifully describes the alteration and its object. In fact, as far as I have examined, and I believe that I have perused every writer of note on these subjects, there is not a paper, or any work on record, equal in any degree to that which was produced by Hunter; for although much, very much, remains to be known of the structure and economy of the sperm and other whales, yet Hunter threw more light upon those difficult subjects during the few years of his observation, than all his predecessors or followers, (notwithstanding that a host of naturalists have exerted themselves to increase the quantity which he left behind him), which will prove a never failing monument to his fame, and which some of his continental neighbours have found too magnificent to publicly perceive.

I have also availed myself of an original paper by Dr. Alderson, read in April 1825, before the Cambridge Philosophical Society, on the external form of a sperm whale which was thrown ashore at Turnstall in Yorkshire, in the same year, and which also contains descriptions of some of the internal organs, which I shall insert under their proper heads; and I have added a few observations made by Mr. Bennett, before the Zoological Society of London, as late as 1837, relative to the eye, and some of the teeth of this interesting cetacean.

✓ ○ This part of the book will likewise contain a short description of the skeleton of the sperm whale preserved at Burton-Constable, which I have been enabled to give through the kind permission of Sir Clifford Constable, Bart. to whom the skeleton belongs. I have also availed myself of an extract from Professor Jacobs, on the structure of the skin. These, I believe, will pretty nearly comprise all that is at present known on these subjects; but I have good reason to hope, that before long I shall be enabled, with the assistance of a celebrated naturalist, to produce from this interesting animal its entire and minute anatomy.

OF THE SKELETON.

○ ○ "THE bones alone (says Hunter) in many animals, when properly articulated into what is called the skeleton, give the general shape and character of the animal. Thus a quadruped is distinguished from a bird, and even one quadruped from another, it only requiring a skin to be thrown over the skeleton to make the species known; but this is not so decidedly the case with this order of animals, for the skeleton in them does not give us the true shape. An immense head, a small neck, few ribs, and in many a short sternum, and no pelvis, with a long spine terminating in a point, require more than a skin to be laid over them to give the regular and characteristic form of the animal. The bones of the anterior extremity give no idea of the shape of a fin, the form of which wholly depends upon its covering. The different

○ parts of the skeleton are so enclosed, and the spaces between the projecting parts are so filled up as to be altogether concealed, giving the animal externally a uniform and elegant form, resembling an insect enveloped in its chrysalis coat. The bones of the head are in general so large as to render the cavity which contains the brain but a small part of the whole, while in the human species and in birds this cavity constitutes the principle bulk of the head. This is perhaps most remarkable in the spermaceti whale, for on a general view of the bones of the head it is impossible to determine where the cavity of the skull lies, till led to it by the foramen magnum occipitale.

"Some of the bones in one genus differ from those of another; the lower jaw is an instance of this. In the spermaceti and bottle-nose whales, the grampus and the porpoise, the lower jaws, especially at the posterior ends, resemble each other, but in the large and small whalebone whales the shape differs considerably. The number of some particular bones varies likewise very much. The structure of the bones is similar to that of quadrupeds; they are composed of an animal substance and an earth which is not animal. These seem only to be mechanically mixed, or rather the earth thrown into the interstices of the animal part. In the bones of fishes this does not seem to be the case, the earth in many fish being so united with the animal part as to render them transparent; which is not the case when the animal part is removed by steeping the bones in caustic

alkali; nor is the animal part so transparent when deprived of the earth.

"The bones are less compact than those of quadrupeds that are similar to them. Their form somewhat resembles what takes place in the quadruped, at least in those whose uses are similar; as the vertebræ, ribs, and bones of the anterior extremities, have their articulation alike, though not in all of them. The articulations of the lower jaw of the carpus, metacarpus, and fingers, are exceptions. The articulation of the lower jaw is not by simple contact, either single or double, joined by a capsular ligament, as in the quadruped, but by a very thick intermediate substance of the ligamentous kind, so interwoven that its parts move on each other, in the interstices of which is an oil. This thick matted substance may answer the same purpose as the double joint in the quadruped.

"The two fins are analogous to the anterior extremities of the quadruped, and are also similar in construction. A fin is composed of a scapula, os humeri, ulna, radius, carpus and metacarpus, in which last may be included the fingers, because the number of bones are those which might be called fingers, although they are not separated, but included in one general covering with the metacarpus. They have nothing analogous to the thumb, and the number of bones in each is different; in the forefinger there are five bones, in the middle and ring fingers seven, and in the little finger four.

"The articulations of the carpus, metacarpus, and fingers, are different to those of the quadruped, not

[—?—][—?—][—?—][—?—][—?—].

being by capsular ligament, but by intermediate cartilages connected to each bone. These cartilages between the different bones of the fingers are of considerable length, being nearly equal to one half of that of the bone, and this construction of the parts gives firmness, with some degree of pliability to the whole. As this order of animals cannot be said to have a pelvis, they of course have no os sacrum, and therefore the vertebræ are continued on to the end of the tail, but with no distinction between those of the loins and tail. But, as these vertebræ alone would not have had sufficient surface to give rise to the muscles requisite to give motion to the tail, there are bones added to the fore part of some of the first vertebræ of the tail, similar to the spinal processes on the posterior surface."

Having discovered, through the kindness of Mr. Pearsall, of Hull, that the skeleton of an adult male sperm whale had been preserved at the seat of Sir Clifford Constable, Bart., at Burton-Constable in Yorkshire, about nine miles north of Hull, I embraced an opportunity which offered itself to visit it, for the purpose of gaining permission of Sir Clifford to inspect this enormous and magnificent specimen of osseous framework which adorns his domain. The whale to which this skeleton belonged was cast on the coast of Yorkshire, at a place called Turnstall, in the Holderness, in 1825, and which was claimed by Sir Clifford, he being lord of the seigniories of Holderness. Its skeleton was preserved, and was articulated only about two years since, I believe principally under the superintendence of Mr. Wallis, of

Hull, surgeon, who was singularly capable of undertaking its erection, from the great attention he had paid to the anatomy of some other whales, especially to that of the finner and *balæna mysticetus*. This gentleman also possesses much valuable information on the anatomy of the junction of the upper part of the trachea with the lower portion of the blow-hole in these latter creatures, which I was much gratified to find fully confirms the statements I have made relative to the non-ejection of water from the blow-hole, and with which Mr. Wallis fully coincides. I cannot close these few observations without embracing the opportunity, now presenting itself, of thanking Sir Clifford and Lady Constable for the kind assistance which they rendered me, in procuring the information I required; indeed a pleasant rivalry was manifested among the scientific gentlemen of Hull, in showing and explaining to me all that they knew respecting the leviathans of the deep, of which the Museum of Natural History at Hull can boast of several fine skeletons, particularly of that of a finback of gigantic dimensions, and which was prepared by Mr. Wallis. They have also the skeletons of a bottle-nosed whale, and that of a porpoise, besides one of the *two-toothed* whale, and the stuffed integuments of the fœtus of a *balæna mysticetus*, or Greenland whale.

The description of the skeleton of the sperm whale at Burton-Constable, which I shall presently give, interests me exceedingly, principally on account of its being the only specimen of the kind in Europe or in the world, and also because it will tend to set at rest the various

opinions which have been hazarded upon the number of bones which the skeleton of this kind of whale possesses. It will be seen, if M. F. Cuvier's account be referred to, published in his work on whales in 1836, that we are again destined to differ very much, particularly with respect to the number of the cervical and dorsal vertebræ, and consequently in the number of the ribs also.

It is proper to mention here, that although the whale from which this skeleton has been procured was a fine full-grown male, and somewhat aged, as the ossified parts of its fins and general appearance of the bones indicate, still it was not one of the largest of this kind of whale, as the author had an opportunity of measuring one which was captured at the Japan fishery, that measured eighty-four feet in length! while the individual to which the skeleton under consideration belonged, measured, shortly after death, only fifty-eight feet six inches, according to Dr. Alderson.

General Description of the Skeleton of an adult male Sperm Whale in the possession of Sir Clifford Constable, Bart., at Burton-Constable, near Hull.

GENERAL CHARACTERS.

CHEST somewhat circular in form; neck very short; the cranium forming rather more than a third of the whole length of the skeleton; great length of the terminal vertebræ.

Extreme length of the skeleton, 49 feet 7 inches; extreme breadth of the chest, 8 feet 8½ inches; extreme

height of the chest, from the spinous processes of the dorsal vertebræ to the lower portion of the sternum, 8 feet 2 inches; extreme length of the chest from the first to the last rib, 7 feet 4 inches; depth of the interior of the chest, posteriorly from the inferior portion of the body of the last dorsal vertebra to the posterior and superior portion of the sternum, 5 feet 8 inches; depth of chest, anteriorly from the inferior portion of the atlas to the superior and anterior portion of the sternum, 2 feet 9 inches.

OF THE CRANIUM.

✓ THE gigantic skull of this animal forms more than a third of the whole length of the skeleton; it is wedge-shaped, and begins with a very thin edge anteriorly, and rises gradually in height, forming an angle on its upper surface, until it arrives at the posterior fourth; it then rises suddenly and forms a thin outward wall, which encloses a large crater-looking cavity, fitted for the reception of an immense mass of the junk, which, with the case, forms the whole upper portion of the head in the living animal.

✓ The extreme length of the cranium in this specimen is 18 feet and $\frac{1}{2}$ an inch, and its extreme breadth at its mala portions, 8 feet 4 inches; extreme width at the centre of its wedge-shaped portion, 5 feet 10 inches; extreme height at its occipital portion, 5 feet $6\frac{1}{2}$ inches; the width of its condyloid occipital process is 2 feet $1\frac{1}{2}$ inches; depth of the same, 1 foot $3\frac{1}{4}$ inches.

Under the floor of the crater-like cavity, the thin walls

of which form the large posterior portion of the skull, is situated the cavity in which the brain is lodged in the living animal: it is continuous with the spinal canal of the vertebræ, and measures only in width about 14 inches, in length 10 inches, and in depth 9 inches.

On the left side of the base of the skull, near the root of what may be termed the vomer, there is a foramen for the transmission of the blowing-tube. It perforates the floor of the crater-like cavity, which is only about three inches in thickness, and in the recent animal the spiracle passes through the soft parts of the junk and case, and terminates at the anterior upper angle of the head. This foramen is nearly round, and is $8\frac{1}{4}$ inches in diameter. The bones of the cranium, although very strong, are still porous and light.

OF THE LOWER JAW.

THE lower jaw is 16 feet 10 inches long, and forms, in its whole length, a slight arch, with the convexity downwards; it is armed with forty-eight formidable teeth, twenty-four on each side. The lower jaw is formed of two lateral pieces, which form a cylindrical symphysis anteriorly, for 10 feet 5 inches of its whole length, which is at its posterior junction $11\frac{1}{2}$ inches in diameter, and at its anterior and smallest end $7\frac{1}{4}$ inches in diameter, the whole of which is formed of a dense and very small kind of osseous structure. At 10 feet 5 inches from its anterior extremity, it divides and forms two lateral branches, which rapidly expand in width, and go

to form its articulating portions with the base of the cranium. These branches become thin, but broad; they are rounded on their outsides, but are hollowed like a shell on their internal aspects, like the same parts in the porpoise. These branches are 1 foot 11 inches in their widest or perpendicular parts, and are 6 feet 5 inches in length from the posterior formation of the symphysis. Their articulating surfaces, or condyles, stand in a perpendicular direction, and are 11 inches long and $7\frac{1}{2}$ inches wide.

OF THE SPINAL COLUMN.

THE spinal column, consisting of forty-four vertebræ, forms nearly a straight line throughout the whole of its extent, except a slight concavity in the dorsal region for the reception of the viscera of the chest. The bones are articulated by their bodies only; they have no posterior articulating surfaces,—in this specimen they are separate, and not anchylosed.

OF THE CERVICAL VERTEBRÆ.

THESE are only two in number, the atlas and dentata: they resemble the human very much in form, except that the second has no odontoid process. The atlas is in width 3 feet 4 inches; in depth, 1 foot $7\frac{1}{2}$ inches; in thickness, $6\frac{1}{2}$ inches. The dentata is in width 2 feet $10\frac{1}{2}$ inches; in height, 1 foot $11\frac{1}{2}$ inches; in thickness, $9\frac{1}{2}$ inches. This bone has a thick but short spinous process.

OF THE DORSAL VERTEBRÆ.

THESE are ten in number, whose bodies gradually increase in thickness and size generally as they become posterior; the first being only $4\frac{1}{2}$ inches in thickness between the articulating surfaces of the body; 1 foot $7\frac{3}{4}$ inches in width, including lateral spines, and 1 foot $11\frac{1}{2}$ inches in depth, that is, from the superior part of the spinous process to the inferior portion of its body, the body of the first dorsal vertebra itself being $12\frac{1}{2}$ inches in depth, namely, from the floor of the spinal canal to the inferior portion of its body, while the tenth, or last, is in thickness, between the articulating surfaces of its body, $8\frac{1}{2}$ inches; in its width 2 feet 4 inches, including lateral spines, and in its depth, including spinous process, 2 feet $7\frac{1}{2}$ inches; the depth of its body, from the floor of the spinal canal to the lower surface, is the same as the first, $12\frac{1}{2}$ inches, being an exception to its general increase of size over the first.

OF THE TERMINAL VERTEBRÆ.

THESE are in number thirty-two: the first of which is in height, 2 feet 8 inches; in width, 2 feet 7 inches, including spinous processes; and in thickness, between intervertebral substance, $8\frac{1}{4}$ inches. The height of the body of this vertebra alone is 1 foot $1\frac{1}{2}$ inches, and the width of the same, without lateral spines, 1 foot 3 inches. The bodies of these terminal vertebræ gradually increase from the first in height, width, and thickness, until the

OF THE PELVIS.

THE rudimentary pelvis is merely formed of two broad flat bones, which in this specimen are ossified at their symphysis; they are wholly supported by the soft parts in the living animal, and appear like the os pubis of a gigantic pelvis, being rounded anteriorly and hollowed posteriorly; standing in an oblique position, on a line with the abdomen, each bone forms an irregular quadrilateral piece, about 1 foot 5 inches broad, each way, and is in thickness 3 inches.

OF THE RIBS.

THESE are ten in number, which with the spine and sternum form a somewhat circular looking chest—which on account of the shortness of the neck, is situated close to the posterior part of the head. The ribs are in structure exceedingly hard and compact, and appear of small diameter when the size of the animal is compared,—they are nearly circular in form, having no hollow for the intercostal vessels,—they are slightly flattened at their sternal extremities.

The first has but one articulating surface, that is to the transverse process of the first dorsal vertebra,—the *second*, *third*, and *fourth* have two; that is, the posterior articulating surface of the *second* rib is articulated to the transverse process of the second dorsal vertebra, while its anterior articulating surface is articulated to the body of the first vertebra, and this same kind of articulation follows to the *third* and *fourth* ribs; but

the *fifth* rib is articulated by its posterior articulating surface to the transverse process of the fifth vertebra, and by its *two* anterior articulating surfaces between and to the bodies of the fourth and fifth dorsal vertebra;—the same kind of articulation is followed to the eighth rib, the ninth being merely attached to one surface on the transverse process of the ninth dorsal vertebra; the tenth and last is articulated also by one surface to the transverse process of the tenth dorsal vertebra. The *first* rib is in span 4 feet 4½ inches, and forms an arch of 1 foot 8½ inches in height,—the *second* rib is in span 5 feet 6½ inches, and forms an arch of 2 feet 4½ inches in height,—the *third* rib is in span 6 feet, and forms an arch of 2 feet 9¼ inches,—the *fourth* rib is in span 6 feet 4¼ inches, and forms an arch of 2 feet 9¾ inches in height,—the *fifth* rib is in span 6 feet ½ inch, and forms an arch of 2 feet 10½ inches,—the *sixth* rib is in span 5 feet 11 inches, and forms an arch of 2 feet 8 inches in height. The rest of the ribs become rapidly shorter and straighter, until we find the *tenth* and last having a span of 4 feet 3 inches, and forming an arch of 1 foot and ½ an inch only in height. The *first* rib is an exception to the general form of the others, it being flat and broad like the human, the rest of the ribs being nearly round; it is in width 6½ inches, and in thickness 3 inches, the *fourth* measures 3½ inches by 4 in diameter. The length of the cartilage of the fifth rib must have been about three feet.

There is a long cylindrical bone that is not articulated, which is slightly curved, and is in length 2 feet 3 inches, and $5\frac{1}{4}$ inches in diameter; it appears to have been tipped with cartilage at both ends, and has probably belonged to the root of the genital organ.

OF THE MUSCLES.

✓ "THE flesh or muscles of this order of animals," says Hunter, "is red, resembling that of most quadrupeds, perhaps more like that of the bull, or horse, than any other animal; some of it is very firm, and about the breast and belly it is mixed with tendon. Two portions of muscles of the same shape, one from the psoas muscle of the whale, the other of an ox, when weighed in air, were both exactly five hundred and two grains, but weighed in water, the portion of the whale was four grains heavier than the other. It is probable therefore that the necessary equilibrium between the water and the animal is produced by the oil.

Although the body and tail are composed of a series of bones connected together, and moved as in fish, yet their movements are produced by long muscles, with long tendons, which render the body thicker, while the tail at its stem is smaller than that of any other swimmer whose principal motion is the same. Why this mode of applying the moving powers should not have been used in fish, is probably not so easily answered; but in fish the muscles of the body are of nearly the same length as the vertebræ. The depressor muscles of

the tail, which are similar in situation to the psoæ, make two very large ridges on the lower part of the cavity of the belly, rising much higher than the spine, and the lower part of the aorta passes between them. These two large muscles, instead of being inserted into two extremities, as in quadrupeds, go to the tail, which may be considered in this order of animals as the two posterior extremities united into one.

Their muscles a very short time after death lose their fibrous structure, become as uniform in texture as clay or dough, and even softer! This change is not from putrefaction, as they continue to be free from any unpleasant smell, and is most remarkable in the psoæ muscles and those of the back.

OF THE CONSTRUCTION OF THE TAIL.

THE mode in which the tail is constructed is perhaps as beautiful, as to the mechanism, as any part of the animal. It is wholly composed of three layers of tendinous fibres, covered by the common cutis and cuticle; two of these layers are external, the other internal. The direction of the fibres of the external layers is the same as in the tail, forming a stratum about one-third of an inch thick, but varying in this respect as the tail is thicker or thinner.

The middle layer is composed entirely of tendinous fibres passing directly across between the two external ones above described, their length being in proportion to the thickness of the tail; a structure which gives

✓ deposited, denominated blubber, is the true skin of the animal, modified certainly for the purpose of holding this fluid oil, but still being the true skin. Upon close examination it is found to consist of an interlacement of fibres crossing each other in every direction, as in common skin, but more open in texture, to make room for the oil. Taking the hog as an example of an animal covered with an external layer of fat, we find that we can raise the true skin without any difficulty, leaving a thick layer of cellular membrane loaded with fat of the same nature as that in the other parts of the body; on the contrary, in the whale it is altogether impossible to raise any layer of skin distinct from the rest of the blubber, however thick it may be; and in flensing a whale the operator removes this blubber, or skin, from the muscular parts beneath, merely dividing with his spade the connecting cellular membrane."—*Dublin Phil. Journal*, vol. i. p. 356.

This construction of the skin appears to be useful in obviating the effects of pressure when the animal is situated in the depths of the ocean, and which "operates," says Sir William Jardine, "like so much caoutchouc, possessing a density and resistance which the more it is pressed it resists the more."

OF THE TEETH.

"There is a very great variety," says Hunter, "in the formation of the mouths of this tribe of animals. Some catch their food by means of teeth, which are in both

jaws, as the porpoise and grampus; in others they are only in one jaw, as the spermaceti whale; and in the large bottle-nose, described by Dale, there are only two small teeth in the anterior part of the lower jaw. In the nar-whale only two tusks in the forepart of the upper jaw, while in some others there are none at all. The teeth are not divisible into different classes, as in quadrupeds, but are all pointed teeth, and are commonly a good deal similar. Each tooth is a double cone, one point being fastened in the gum, the other projecting; they are, however, not all exactly of this shape. In some species of porpoise the fang is flattened, and thin at its extremity. In the spermaceti whale, the body of the tooth is a little curved towards the back part of the mouth—this is also the case with some others. The teeth are composed of animal substance and earth, similar to the bony part of the teeth in quadrupeds. The upper teeth are commonly worn down upon the inside—the lower, on the outside; this arises from the upper jaw being in general the largest. The situation of the teeth when first formed, and their progress afterwards, as far as I have been able to observe, is very different in common from those of the quadruped. In the quadruped the teeth are formed in the jaw, almost surrounded by the alveoli or sockets, and rise in the jaw as they increase in length, the covering of the alveoli being absorbed,—they afterwards rise with the teeth, covering the whole fang; but in this tribe the teeth appear to form in the gum upon the edge of the jaw, and they either sink in the jaw as they lengthen, or the alveoli rise to enclose them; this last

quadruped, and therefore probably amounts to more than that of any known animal." The temperature of the blood in this order of animals, according to M. Desmoulins, rises as high as 104°.—*Dict. Class. d'Hist. Nat.*

OF THE HEART AND ARTERIES.

“IN our examination of particular parts, the size of which is generally regulated by that of the whole animal, if we have only been accustomed to see them in those which are small or middle-sized, we behold them with astonishment in animals so far exceeding the common bulk as the whale. Thus the heart and aorta of the spermaceti whale appeared prodigious, being too large to be contained in a wide tub, the aorta measuring a foot in diameter. When we consider these as applied to the circulation, and figure to ourselves that probably *ten* or *fifteen gallons* of blood are thrown out at one stroke, and moved with an immense velocity through a tube of a foot in diameter, the whole idea fills the mind with wonder.”

“The diameter of the aorta” of the sperm whale, that was thrown on the coast of Yorkshire, says Alderson, “was 12 1/6 inches; thickness of the coat of the artery 7/16 of an inch. In the sinus behind the valves the thickness was not greater than that of the pulmonary artery. Length of the heart, from the apex to the valves of the aorta, 3 feet 10 inches. The columnæ carneæ were very large, and one of the cordæ tendinæ, in the tricuspid valve, measured 7 inches in length. Near the middle of

the left ventricle the wall of the ventricle measured about 5 inches. The diameter of the coronary artery was 1 2/3 inches. On the left ventricle being laid open, its capacity was guessed by some farming gentleman present to contain from eight to ten gallons! The heart was destitute of fat.”—*Camb. Philosoph. Trans.*

“The general structure of the *arteries*,” says Hunter, “resembles that of other animals—and where parts are nearly similar, the distribution is likewise similar. The aorta forms its usual curve, and sends off the carotid and subclavian arteries,—animals of this tribe, as has been observed, have a greater proportion of blood than any other known, and there are many arteries apparently intended as reservoirs, where a larger quantity of arterial blood seemed to be required in a part, and vascularity could not be the only object. Thus we find that the intercostal arteries divide into a vast number of branches, which run in a serpentine course between the pleuræ ribs and their muscles, making a thick substance somewhat similar to that formed by the spermatic artery in the bull.

These vessels, everywhere lining the sides of the thorax, pass in between the ribs near their articulation, and also behind the ligamentous attachments of the ribs, and anastomose with each other. The medulla spinalis is surrounded with a net-work of arteries in the same manner, more especially where it comes out from the brain, where a thick substance is formed by their ramifications and convolutions, and these vessels most probably anastomose with those of the thorax.”

attachment (in which there are some lymphatic glands) to the posterior mediastinum. The lungs are extremely elastic in their substance, even so much as to squeeze out any air that may be thrown into them, and to become almost at once a solid mass, having a good deal the appearance, consistence, and feel of an ox's spleen. The branches of the bronchiæ, which ramify into the lungs, have not the cartilages flat, but rather rounded; a construction which admits of greater motion between them. The pulmonary cells are smaller than in quadrupeds, which make less air necessary, and they communicate with each other, which those of the quadruped do not, for by blowing into one branch of the trachea, not only the part to which it immediately goes but the whole lungs are filled. As the ribs in this tribe do not completely make the cavity of the thorax, the diaphragm has not the same attachments as in the quadruped; but is connected forwards to the abdominal muscles, which are very strong, being a mixture of muscular and tendinous fibres. The position of the diaphragm is less transverse than in the quadruped, passing more obliquely backwards, and coming very low on the spine, and higher up before, which makes the chest largest in the direction of the animal at the back, and gives room for the lungs to be continued along the spine. The parts immediately concerned in inspiration are extremely strong, the diaphragm remarkably so. The reason of this must at once appear, it necessarily requiring great force to expand the chest in a dense medium like water, especially too when the vacuity is to be filled up with

one that is rarer, and is to water a species of vacuum, the pressure being much greater on the external surface than the counter pressure from within. But expiration on the other hand must be much more easily performed."

OF THE BLOW-HOLE OR PASSAGE FOR THE AIR.

"As the nose in every animal that breathes air is a common passage for the air, and is also the organ of smelling, I shall describe it in this tribe as instrumental to these purposes. The membranous portion of the posterior nostril is one canal, but when in the bony part, in most of them it is divided into two. The spermaceti whale, however, is an exception. At its beginning in the fauces it is a roundish hole, surrounded by a strong sphincter muscle, for grasping the epiglottis. In the spermaceti whale, which has a single canal, it is thrown a little to the left side. This opening forms a passage for the air to and from the lungs, for it would be impossible for these animals to breathe through the mouth; indeed, I believe the human species alone breathe by the mouth, and in them it appears mostly from habit, for in quadrupeds the epiglottis conducts the air through the nose.

In the whole of this tribe the situation of the opening on the upper surface of the head is well adapted for this purpose, being the first part that comes to the surface of the water; in the natural progressive motion of the animal, therefore, it is to be considered principally as

✓ a respiratory organ, and when it contains the organ of smell (as in the whalebone whales), that is only secondary. As the animals of this order do not live in the medium which they inspire, the organs conducting the air to the lungs are, in some sort, particularly constructed, that the water in which they live may not interfere with the air they breathe. The beginning of the posterior nostril, which answers to the palatum molle in the quadruped, having a sphincter, the glottis is grasped by it, which renders its situation still more secure, and *the passages through the head, across the fauces, and along the trachea, are rendered one continued canal.*

This union of glottis and epiglottis with the posterior nostril, making only a kind of *joint*, admits of motion and of dilatation and contraction of the fauces in deglutition, from the epiglottis moving in or out of the posterior nostril. This construction of parts answers a purpose similar to that of the epiglottis in the quadruped; it may be considered as the epiglottis and the arytaenoid cartilages joining to make a tubular or cylindrical epiglottis, instead of a valvular one. The reason why there should be so peculiar a construction of parts does not at first appear, but we certainly see by it an absolute guard placed upon the lungs, *that no water should get into them.*"

OF THE BRAIN.

"THE size of the brain differs much in different genera of this tribe, and likewise in the proportion it bears to

the bulk of the animal. In the porpoise I believe it is the largest, and, perhaps, in that respect comes nearer to the human. The size of the cerebellum in proportion to that of the cerebrum, is smaller in the human subject than in any animal with which I am acquainted. In many quadrupeds, as the horse, cow, etc., the disproportion in size between the cerebellum and cerebrum is not great, and in this tribe it is still less, yet not so small as in the bird, etc. The whole brain in this tribe is compact, the anterior part of the cerebrum not projecting so far forward as in either the quadruped or human subject, neither is the medulla oblongata so prominent, but flat, lying in a kind of hollow, made by the two lobes of the cerebellum. The brain is composed of cortical and medullary substances very distinctly marked, the cortical being in colour like the tabular substance of a kidney, the medullary very white. These substances are nearly in the same proportion as in the human brain. The two lateral ventricles are large, and in those that have olfactory nerves are not continued into them as in many quadrupeds, nor do they wind so much outwards as in the human subject, but pass close round the posterior ends of the thalami nervorum opticorum. The thalami themselves are large. The corpora striata small, the crurae of the fornix are continued along the winding of the ventricles much as in the human subject. The plexus choroides is attached to a strong membrane, which covers the thalami nervorum opticorum, and passes through the whole course of the ventricle, much as in the human subject.

The substance of the brain is *more visibly fibrous* than I ever saw it in any other animal, the fibres passing from the ventricles as from a centre to the circumference, which fibrous texture is also continued through the cortical substance. The nerves going out from the brain I believe are similar to those of the quadruped, except in those which want the olfactory nerves. The medulla spinalis is much smaller in proportion to the size of the body than in the human species, but still bears some proportion to the quantity of brain, for in the porpoise where the brain is largest, the medulla spinalis is largest, yet this did not hold good in the *spermaceti whale*, the size of the medulla spinalis appearing to be proportionally larger than the brain, which was small when compared to the size of the animal. It has a cortical part in the centre, and terminates about the twenty-fifth vertebra, beyond which is the cauda equina, the dura-mater going no lower. The nerves which go off from the medulla spinalis, are more uniform in size than in the quadruped, there being no such inequality of parts, nor any extremities to be supplied except the fins. The medulla spinalis is more fibrous in its structure than in any other animal, and when an attempt is made to break it longitudinally, it tears with a fibrous appearance, but transversely it breaks irregularly. The dura-mater lines the skull, and forms in some the three processes, answerable to the division of the brain as in the human subject, but in others this is bone. Where it covers the medulla spinalis, it differs from all the quadrupeds I am acquainted with, enclosing

the medulla closely, and the nerves immediately passing out through it at the lower part as they do at the upper, so that the cauda equina as it forms is on the outside of the dura-mater."

"It would appear," says Sir W. Jardine, "that the larger varieties have very small brains in proportion to the size of their bodies, whilst the smaller kinds again have very large and well-developed brains."

This observation, strengthened as it is by the statements of many celebrated naturalists, merely serves to corroborate the faithful and original descriptions of Hunter. Mr. Scoresby states that in a young specimen of the Greenland whale which measured eighteen feet in length, and weighed 11,200 pounds, the brain weighed only three pounds twelve ounces, which is only a three-thousandth part of the weight of the animal, whilst in man it weighs a thirty-fifth part. In a young *rostrata* seventeen feet long, Mr. Hunter found that the brain weighed only four pounds eight ounces. And Delalande states that in a *rorqual* eighty feet in length, the cranial cavity only measured thirteen inches by nine; whilst Cuvier, in five examinations of the smaller genera of this order of animals, states that in the dolphin and porpoise, the brain weighed one thirty-sixth of the whole.

The cranial cavity for the brain in the large male spermaceti whale which I examined myself at Burton-Constable, only measured in width about fourteen inches, in length ten inches, and in depth nine inches.

The spinal canal for the reception of the medulla spinalis was, however, very large in proportion to the

Brain

× G[? I ? I ? I ? I ?]vertebra. &c

brain, the particulars of which are given with the description of *the skeleton*.

OF THE SENSE OF TOUCH.

"The cutis in this tribe," says Hunter, "appears in general particularly well calculated for sensation, the whole surface being covered with villi, which are so many vessels, and we must suppose nerves. Whether this structure is only necessary for acute sensation, or whether it is necessary for common sensation where the cuticle is thick and consisting of many layers, I do not know. We may observe that where it is necessary the sense of touch should be accurate, the villi are usually thick and long, which probably is necessary, because in most parts of the body where the more acute sensations of touch are required, such parts are covered by a thick cuticle, of this the ends of our fingers, toes, and the foot of the hoofed animals are remarkable examples. Whether this sense is more acute in water, I am not certain, but should imagine it is."

OF THE EAR.

"THIS organ consists of the same parts as in the quadruped, an external opening, with membrani tympani, an Eustachian tube, a tympanum with its processes, and the small bones. There is no external projection forming a funnel; we can easily assign a reason why there should be no projecting ear, as it would interfere with progressive motion, but the reason why it is not formed as in birds is not so evident. The external opening

begins by a small hole scarcely perceptible, situated on the side of the head a little behind the eye; it is much longer than in other animals, in consequence of the size of the head being so much increased beyond the cavity which contains the brain. The Eustachian tube opens on the outside of the upper part of the fauces. The bony part of the organ is very hard and brittle, rendering it difficult to be cut with a saw without its chipping into pieces, and there is on the whole more solid bone than in the corresponding parts in quadrupeds, it being thick and massy."

"I am not aware, however, that any other beside the sperm whale has any external auricular opening. For in the beluga, examined by Dr. Barclay (according to the Naturalist's Library, vol. vi. p. 71), no external opening could be discovered, nor was any discovered by Blainville in the *toothless* whale of Havre, nor in any of the seventy globiceps which were stranded in Brittany in 1812, nor in a *rorqual*, fifty-eight feet long, examined by M. Souty; and the same may be said of a narwhal and dolphin we have had an opportunity of examining."

Dr. Alderson has remarked of the sperm whale, that "there was no external ear, but simply a small circular opening, about nine inches, posteriorly to the posterior canthus of the eye, which just admitted the finger."
—*Camb. Philos. Trans.*

OF THE EYE.

"THE eye in this tribe of animals is constructed upon nearly the same principle as that of quadrupeds, differing

however in some circumstances, by which it is probably better adapted to see in the medium through which the light is to pass. It is upon the whole small for the size of the animal, which would lead to the supposition that their locomotion is not great; for I believe animals that swim are in this respect similar to those that fly; and as this tribe come to the surface of the medium in which they live, they may be considered in the same view with birds which soar, and we find birds that fly to great heights and move through a considerable space in search of food, have their eyes larger in proportion to their size.

The eyelids have but little motion, and do not consist of loose cellular membrane as in quadrupeds, but rather of the common adipose membrane of the body. The tunica conjunctiva, where it is reflected from the eyelid to the eyeball, is perforated all round by small orifices of the ducts of a circle of glandular bodies lying behind it, and the secretion from them all I believe to be a mucus similar to what is found in the turtle and crocodile: there are neither puncta nor lachrymal ducts, so that the secretion, whatever it be, is washed off in the water. The muscles which open the eyelids are very strong; they take their origin from the head, round the optic nerve, which in some requires their being very long, and are so broad as almost to make a circular mass round the whole of the interior straight muscle of the eye itself. They may be divided into four: a superior, an inferior, and one at each angle; as they pass outwards to the eyelids they diverge and become broader, and are inserted into the inside of the eyelids almost equally all

A whale then a species of large condor.

round. They may be termed the dilatores of the eyelids, and before they reach their insertion give off the external straight muscles, which are small and inserted into the sclerotic coat before the transverse axis of the eye; these may be named the elevator, depressor, adductor, and abductor, and they may be dissected away from the others as distinct muscles. Besides these four, going from the muscles of the eyelids to the eye itself, there are two which are larger and enclose the optic nerve with the plexus. As these pass outwards they become broad—may in some be divided into four—and are inserted into the sclerotic coat almost all round the eye, rather behind its transverse axis. The two oblique muscles are very long; they pass through the muscles of the eyelids, are continued on to the globe of the eye between the two sets of straight muscles, and at their insertion are very broad, a circumstance which gives great variation to the motion of the eye. The sclerotic coat gives shape to the eye both externally and internally as in other animals; but the external shape and that of the internal cavity are very dissimilar, arising from the great difference in the thickness of this coat in different parts. The external figure is round, except that it is a little flattened forwards; but that of the cavity is far otherwise, being made up of sections of various circles, being a little lengthened from the inner side to the outer—a transverse section making a short ellipsis. In the piked whale the long axis is two inches and three quarters—the short axis is two inches and one eighth. The sclerotic coat becomes thinner as it approaches to

into the two horns, one on each side of the loins, these afterwards terminating in the fallopian tubes to which the ovaria are attached. From each ovarium there is a small fold of the peritoneum, which passes up towards the kidney of the same side, as in most quadrupeds. The inside of the vagina is smooth for about one half of its length, and then begins to form something like valves projecting towards the mouth of the vagina, each like an *os tincæ*; these are about seven, eight, or nine in number. Where they begin to form they hardly go quite round, but the last are complete circles. At this part too, the vagina becomes smaller, and gradually decreases in width to its termination. From the last projecting part the passage is continued up to the opening of the two horns, and the inner surface of this last part is thrown into longitudinal rugæ, which are continued into the horns. Whether this last part is to be reckoned common uterus or vagina, and that the last valvular part is to be considered as *os tincæ*, I do not know; but, from its having the longitudinal rugæ, I am inclined to think it is uterus; this structure appearing to be intended for distinction. The horns are an equal division of this part; they make a gentle turn outwards, and are of considerable length; their inner surface is thrown into longitudinal rugæ without any small protuberances for the colytodons to form upon, as in those of ruminating animals, and where they terminate the fallopian tubes begin.

The fallopian tubes, at their termination in the uterus, are remarkably small, and then begin to dilate rather

suddenly; and the nearer to the mouth the more this dilation increases, like the mouth of a French horn, the termination of which is five or six inches in diameter. They are very full of longitudinal rugæ through their whole length. The ovaria are oblong bodies, about five inches in length, one end attached to the mouth of the fallopian tube, and the other to the horn of the uterus. They are irregular in their external surface, resembling a *capsula renalis*, or pancreas. They have no *capsulæ* but what is formed by the long fallopian tube. How the male and female copulate I do not know, but it is alleged that their position in the water at that time is erect, which I can readily suppose to be true. As in the sexual formation they most resemble those of the ruminating kind, it is possible they may likewise resemble them in the duration of the act, for I believe all the ruminants are quick. Of their uterine gestation I as yet know nothing; but it is very probable that they have only a single young one at a time. The glands for the secretion of milk are two, one on each side of the middle line of the belly at its lower part. The posterior ends from which go out the nipples, are on each side of the opening of the vagina in small sulci. They are flat bodies, lying between the external layer of fat and abdominal muscles, and are of considerable length, but only one-fourth of that in breadth. They are thin, that they may not vary the external shape of the animal, and have a principal duct running in the middle through the whole length of the gland, and collecting the smaller lateral ducts, which are made up of those still smaller.

Some of these lateral branches enter the common trunk in the direction of the milk passage—others in the contrary direction, especially those nearest to the termination of the trunk, in the middle. The trunk is large, and appears to serve as a reservoir for the milk, and terminates externally in a projection, which is the nipple.

The lateral portion of the sulcus which encloses the nipple is composed of parts looser in texture than the common adipose membranes, which is probably to admit of the elongation or projection of the nipple. On the outside of this there is another small fissure, which I imagine is likewise intended to give greater facilities to the movements of all these parts. The milk is probably very rich, for in that caught near Berkley, with its young one, the milk, which was tasted by Messrs. Jenner and Ludlow, surgeons at Sudbury, was rich like cow's milk to which cream had been added."

The whales which Mr. J. Hunter had opportunities of examining, were of seven kinds, viz.:

The spermaceti whale,	The piked whale,
The Greenland whale,	The nar-whale,
The bottle-nosed whale,	Two grampuses,
and several male and female porpoises.	

CHAPTER IX.

SPERMACETI.

"WHAT spermaceti is," (says Sir Thomas Brown, in his work published in 1686, third book, chap. xxv. p. 139,) "men might justly doubt, since the learned Hofmannus, in his work of thirty years, saith plainly *nescio quid sit*, and therefore need not wonder at the variety of opinions, while some conceived it to be *flos maries*, and many a 'bituminous substance floating upon the sea.' That it was not the spawn of the whale, according to vulgar conceit or nominal appellation, philosophers have always doubted, not easily conceiving the seminal humour of animals should be inflammable, or of a floating nature. That it proceedeth from the whale, besides the relation of Clusius, and other learned observers, was *indubitably determined*, not many years since, by a spermaceti whale cast on our coast of Norfolk;"—which plainly informs us that the source of spermaceti was not commonly known in the year 1686, nor was its use in medicine much better understood, although Dr. Thomas Brown informs us that the "combers of wool made use hereof, and *country people, for cuts, aches, and hard tumours. It may prove of good medical use,*" says he, "and serve for a ground in compounded oyls and balsams." How-

they and other such fishermen became very curious in searching all such whales they killed, and it has been since found in lesser quantities in several male whales of that kind, and in no other, and that scarcely in one of a hundred of them. They add further, that it is contained in a cyst or bag, without any inlet or outlet to it, and that they have sometimes found the bag empty and yet entire; the bag is nowhere to be found but near the *genital parts* of the fish. The ambergris is when first taken out moist, and of an exceedingly strong and offensive smell." This letter was written to the Royal Society in 1724.—*Phil. Trans.* vol. xxxiii. p. 193.

In the same year, however, we have another letter from America, written to the Royal Society by the Hon. Paul Dudley, F.R.S., who, after telling us that the old sperm whales carry their young ones "on the flukes of their tails, who with their fins clasp about the small, and hold themselves on," also says "one of our country doctors tells me that the tooth of this fish (sperm whale) shaved or powdered, and so infused in liquor, equals the hartshorn, and has been used in the small-pox, and given to lying-in women in case of sickness, with success!—the quantity is a much as will lie upon an English shilling." Further on in the same letter he states, "I meddle not here with the *precious* ambergris found in this whale, because I design to close the whole with that discovery." And here is his conclusion: "But truth," says he, "is the daughter of time; it is now at length found out, that *occultum naturæ* is an animal production, and bred in the body of the sperma-

ceti whale. I doubt not," he continue, "but in process of time some further particulars may be procured with respect to ambergris, and I shall be proud to transmit them; in the mean time I hope the Society will accept of this first essay, and allow *my poor country* the honour of *discovering*, or at least ascertaining, the *origin* and *nature* of ambergris."—*Phil. Trans.* vol. xxxiii.

In a paper which was read before the Royal Society by Dr. Schwediawer, in 1783, respecting the medical properties of ambergris, he remarks, that "if we wish to see any medicinal effects from this substance, we must certainly not expect them from two or three grains, but give rather as many scruples of it for a dose; though even then I should not expect much from it, as I have taken of pure unadulterated ambergris in powder thirty grains at once, without observing the *least* sensible effect from it. A sailor, however, who had the curiosity to try the effects of some recent ambergris upon himself, took half an ounce of it melted upon the fire, and found it a good purgative, which proves that it is not quite inert."—*Phil. Trans.* vol. lxxiii. p. 226.

In 1791, the attention of government was drawn to this subject, in order to discover if it could be more frequently found. When Captain Coffin was examined at the bar of the House of Commons on the subject, and stated that he had lately brought home 362 ounces, troy, of this costly substance, which he had found in the anus of a *female* sperm whale that he had captured off the coast of Guinea, and which he stated was very bony and sickly. At the time he brought this quantity to

England, the ambergris was selling for 25s. an ounce, but he stated that he had sold his for 19s. 6d. per ounce, to a broker who exported it to Turkey, Germany, and France, among the natives of which it appears to have been long celebrated for its aphrodisiacal properties.

✓ "The use of ambergris," says Brande, "in Europe is now nearly confined to perfumery, though it has formerly been used in medicine by many eminent physicians. In Asia and parts of Africa, ambergris is not only used as a medicine and perfume, but considerable use is also made of it in cooking, by adding it to several dishes as a spice. A great quantity of it is also constantly bought by the pilgrims who travel to Mecca, probably to offer it there, and make use of it in fumigations, in the same manner as frankincense is used in Catholic countries. The Turks make use of it as an aphrodisiac. Our perfumers add it to scented pastiles, candles, balls, bottles, gloves, and hair powder; and its essence is mixed with pomatum for the face and hands, either alone or united with musk, though its smell is to some persons extremely offensive. Ambergris may be known to be genuine by its fragrant scent when a hot needle or pin is thrust into it, and it melting like fat of a uniform consistence, whereas the counterfeit will not yield such a smell, nor prove of such a fat texture. One thing, however, is very remarkable, that a resemblance to the smell of this drug, which is the most agreeable of all the perfumes, should be produced by a preparation of one of the most odious of all substances. Mr. Homberg found that a vessel in which he had made a long diges-

tion of human fæces, acquired a very strong and perfect smell of ambergris, inasmuch that any one would have thought that a great quantity of essence of ambergris had been made in it, the perfume was so strong and offensive that the vessel had to be removed from the laboratory! ✓
Brande's Manual of Chemistry, p. 594.

Ambergris appears to be nothing but the hardened fæces of the spermaceti whale, which is pretty well proved ✓ from its being mixed so intimately with the refuse of its food (the squids' beaks). Mr. Enderby has in his possession a fine specimen of this substance, about six or seven inches long, and which bears very evident marks of having been moulded by the lower portion of the ✓ rectum of the whale.

On one occasion, while in the North Pacific, I had the curiosity to collect some of the semi-fluid fæces which floated from the carcass of a whale while our men were cutting it in, and which on being dried in the sun bore all the properties of ambergris.

be worth many hundred pounds!" A weighty reason for the establishment of the fishery no doubt. The same writer in another part of his letter states, "there is one island among the Bahamas, which some of our people are settled upon, and more are going thither. It is called *New Providence*, where many rare things might be discovered, if the people were but encouraged." This same *New Providence* afterwards became so famous as a whale fishing station, by the exertions of our American descendants. But even before these needy adventurers commenced their career of spermaceti hunting, we have had it proved to us that the Indians who inhabited the shores of America used to voyage out to sea and attack this animal from their canoes, and pierce him with their lances of wood, or other instruments of the same material, which were barbed, and which before they were plunged into his flesh were fastened by a short warp, or pieces of rope, to a large block of light wood, which was thrown overboard the moment the barbed instrument was thrust into its body, which—being repeated at every rising of the whale, or when they were so fortunate as to get near enough to do so—in a few instances, by a sort of worrying-to-death system, rewarded the enterprising savage with the lifeless body of his victim, but which in most cases was that of a very young one; and even this, when towed to the shore, it was impossible for them to turn over, so that they were obliged to content themselves with flinching the fat from one side of the body only. Few, indeed, must these instances have been, when we consider the means that

were employed in the capture of so immense an animal, possessing such enormous strength, by which their barbed spears or lances of wood must have been frequently shivered to atoms, or drawn from the flesh of the whale by the resistance the blocks of wood to which they were attached must have occasioned, when the animal became frightened into its utmost speed; and when we know at the present time, that by their powerful actions and convulsive movements the best-tempered iron, of which our harpoons and lances are made, frequently becomes twisted to pieces, while the boats which are used in the chase are often thrown high into the air with the head, or broken to fragments by one blow of the tail, of this enormous creature.

But although, as has been before stated, Mr. Richard Stafford had threatened to commence the sperm whale fishery at the Bahama islands, it appears rather doubtful whether he did so or not, when we come to peruse the letter of the Hon. Paul Dudley, F.R.S., published in 1724, *Phil. Trans.* vol. xxxiii., an extract of which states, "I very lately received from one Mr. Atkins, an inhabitant of *Boston*, in *New England*, who used the whale fishery for ten or twelve years (black whales), and was *one of the first* that went out a-fishing for the *spermaceti whales* about the year 1720." It also appears in this account, that the fishery even then was very little understood, for Mr. Atkins himself says, "he never saw, nor certainly heard of a spermaceti female taken in his life," for he states, "the cows of that species of whale, being much more timorous than the males, and almost impos-

sible to come at, unless when haply found asleep upon the water, or detained by their calves."

In another part of his letter, the Hon. Paul Dudley states, "Our people formerly used to kill the whale near the shore, but now they go off to sea in *sloops* and *whale-boats*." "Sometimes," he says, "the whale is killed by a single stroke, and yet at other times she will hold the whalers in play *near half a day together* with their lances, and sometimes they will get away after they have been lanced, and spouted thick blood, with irons in them, and drugs (drouges) fastened to them, which are thick boards about fourteen inches square."

But, even after the capture of the sperm whale had occasionally been carried on in ships by the descendants of the European settlers upon the American shores, who struck the whales with the harpoon, having a log of wood attached after the Indian fashion, it was a considerable time before any great improvement manifested itself in their mode of fishing. Presumptuous indeed was he deemed who first proposed to chase and capture such huge beings in small boats, and by the aid of lines at the end of which was attached the harpoon, by which they could draw themselves to the harpooned whale whenever they wished to destroy it with the lance.

An American whaler, who had been bred from his boyhood in the service, informed me that his grandfather had been employed on a whaling expedition in a small vessel off the coast of America, and that, having experienced a great deal of ill success in consequence of their being unable to capture any whales by means of the log-

harpoon, the captain of their little bark wished them to make trial of the method of which they had just heard, by the boat and line; but to his irresolute seamen the idea appeared monstrous,—the mere thought of having the boat they were in attached to an infuriated leviathan by a strong rope, struck terror among the whole crew. "What," said they, "shall we be dragged to the bottom of the sea? shall we be towed with the velocity of lightning to the other side of the world? shall we be torn to pieces by the jaws of the monstrous fish that we may be fastened to?" In vain did their captain explain to them the various means they could employ to avoid those anticipated dangers; he urged their reason to note the excellence of the plan, but his eloquence proved of no avail; so fearful were they of this dangerous innovation on their old method, that the very rope which the captain had prepared for the service was pointed through the ship's stern, during the night, and allowed to run overboard. But nevertheless, others more daring undertook the trial soon afterwards, in which they frequently came off victorious, so that the new method was established among them, and has since been much improved.— (See Chapters xi. and xii.)

The fishery was thus carried on a first by a few individuals in America from their own shore, but as their numbers increased the quantity of whales diminished, so that, in a few years, they had not only destroyed great numbers of these useful animals, but had driven the remainder to find more secure retreats, in which they could follow their natural inclinations, without being harassed by the chase or wounded by the harpoon.

But, about the year 1771, we find that the American navigators were engaged with extraordinary ardour in the whale fisheries which were carried on in the north and south Atlantic oceans. From the year 1771 to 1775 Massachusetts alone employed annually 183 vessels, carrying 13,820 tons in the former, and 121 vessels carrying 14,026 tons in the latter.

Mr. Burke, in his famous speech on American affairs in 1774, adverted to this wonderful display of daring enterprise in the following eloquent words: "As to the wealth," said he, "which the colonists have drawn from the sea by their fisheries, you had all that matter fully opened at your bar. You surely thought these acquisitions of value, for they seemed to excite your envy, and yet the spirit by which that enterprising employment has been exercised ought rather, in my opinion, to have raised your esteem and admiration. And pray, sir, what in the world is equal to it? Pass by the other parts, and look at the manner in which the New England people carry on the whale fishery. While we follow them among the trembling mountains of ice, and behold them penetrating into the deepest frozen recesses of Hudson's and Davis's Straits, while we are looking for them beneath the arctic circle, we hear that they have pierced into the opposite region of polar cold—that they are at the antipodes, and engaged under the frozen serpent of the south. Falkland Island, which seems too remote for the grasp of national ambition, is but a stage and resting place for their victorious industry. Nor is the equinoctial heat more discouraging to them than the

accumulated winter of both poles. We learn, that while some of them draw the line or strike the harpoon on the coast of Africa, others run the longitude, and pursue their gigantic game along the coast of Brazil. No sea, but what is vexed with their fisheries—no climate that is not witness of their toils. Neither the perseverance of Holland, nor the activity of France, nor the dexterous and firm sagacity of English enterprise, ever carried this most perilous mode of hardy industry to the extent to which it has been pursued by this recent people,—a people who are still in the gristle, and not hardened into manhood."

Whether this eloquent address had any effect nor not upon the minds of our own merchants and ship-owners in stimulating them to fit out ships for the sperm and other whale fisheries, I am not aware, but it is certain that in the following year (1775) the first attempt was made to establish the sperm whale fishery from Britain; and we accordingly find, from private statements on which I can securely rely, that ships of from 100 to 109 tons burthen were sent to South Greenland, coast of Brazil, Falkland Islands, and the Gulf of Guinea, for the purpose of procuring sperm and other oils. The names of the ships which were thus employed in these distinct expeditions were the "Union," "Neptune," "Rockingham," "America," "Abigail," "Hanover," "Industry," "Dennis," "Beaver," and "Sparrow;" but the principal places of resort of the spermaceti whale not having been yet discovered, these vessels met with very trifling success.

North and South *Atlantic* oceans, it was the destiny of the mother country to enjoy the honour of opening the invaluable sperm fisheries of the *two Pacifics*, the discovery of which formed an era in the commercial history of this country. For not only was the sperm whale fishery by this discovery prodigiously increased, but other commercial advantages rapidly accrued from the whalers who resorted to these seas opening a trade with the people who inhabited the extensive shores which bound the enormous ocean.

*Dignity
of whaling*

“The importance of the southern whale fishery,” says a gentleman who is deeply conversant with the whole subject, “has never been duly appreciated; it is not generally known,” says he, “that it is to this important branch of trade, and nursery for seamen, that we owe the opening of commerce with South America, and which even caused the separation of the Spanish colonies in the Pacific Ocean from the parent state. So meanly jealous was Spain of the interference of foreigners with the trade of her American colonies, that it was with the greatest difficulty, on the opening of the sperm whale fishery in the Pacific, that we could obtain permission for our ships to cruise within a hundred Italian miles of their coasts—and it was only through a few of our ships at first claiming the right of wooding and watering in a friendly port that a trade was first established, which spread in all directions the moment the great mutual advantages were felt. The enterprise of the ship-owners,” he continues, “engaged in the whale fishery knew no bounds. They sent ships to all parts of the world—to places at

which no merchant vessel would have had cause to venture, so that lands were visited upon which important colonies have been formed:—what merchant vessel would have visited Van Diemen’s Land, or even Australia? Having no object or prospect of gain, and lying as they both did, out of the track of our merchantmen, it is not to be believed that they could have been much visited by them. But our whaling vessels, cruising for whales, examined their shores and brought home information respecting their value, and what was still more important, they carried out people to reside upon them, and established a regular communication between them and our own country—by which the wants of the primitive settlers could be supplied and their persons protected, and which could not have been done by other ships except at a frightful expense—at a time too, when the settlement of the above now valuable and flourishing colonies was a mere experiment, with many sneering at the project as an *ignis fatuus*;—*evidence* inclines us to believe that these colonies would never have existed had it not been for whaling vessels approaching their shores. It is a fact, that the original settlers at Botany Bay were more than once saved from *starvation* by the timely arrival of some whaling vessels.

“But if our commerce has received benefit from our southern whaling expeditions, our intimate knowledge of the Polynesian islanders has also arisen from the same means; and if missionaries have gone to reside among these people with the view of spreading among them a belief in the Christian faith, these messengers

1793 in the expense of fitting out a ship, commanded by Captain James Colnett, to undertake a voyage to the South Seas, with a view to extend the sperm whale fishery there; but in this year, 1819, formed the scheme, and actually fitted out at his own expense a large ship of 500 tons burthen, called the "Syren," commanded by Captain Coffin, with a crew of thirty-six seamen, for the purpose of sending her on an experimental voyage to the far distant sea of Japan, to prosecute the sperm whale fishery in that remote part of the world.

Syren

The "Syren" sailed from England on the 3d of August 1819, and arrived off the coast of Japan on the 5th of April 1820, where she fell in with immense numbers of the spermaceti whale, which her crew gave chase to with excellent success; for they returned to their native land, on the 21st of April 1822, after an absence of about two years and eight months, during which time they had by their industry, courage, and perseverance gathered from the confines of the North Pacific Ocean no less than the enormous quantity of *three hundred and forty-six tons* of sperm oil, which was brought into the port of London in safety and triumph, shewing a success unprecedented in the annals of whaling, and which astonished and stimulated to exertion all those engaged in the trade throughout Europe and America. The success which attended this expedition not only rewarded the seamen and others who composed her crew, but the spirited owner who had sent them out also must have felt the solid and weighty considerations which he no doubt received in return, for the great and successful enterprise to which he had given origin.

After the return of the "Syren" the Japan fishery was speedily established, and remains to this day the principal one of both Pacifics; and although it has been so much resorted to by ships of different nations ever since, which have carried off immense quantities of sperm oil, yet such is the boundless space of ocean throughout which it exists, that the whales scarcely appear to be reduced in number. But they are much more difficult to get near than they were some years back, on account of the frequent harassing they have met with from boats and ships; so that they have now become well aware of the reckless nature of their pursuers, and they evince great caution and instinctive cunning in avoiding them.

Notwithstanding the great success which had attended the single-handed yet important efforts of Mr. Enderby, in having been the means of establishing two great fisheries, by which numbers of persons were employed on shore, as well as those who were engaged on ship-board, his enterprising mind still continued to be prompted by the laudable ambition of discovering others in a far different portion of the globe to either of the preceding. With this view he fitted out the "Swan," of 150 tons burthen, commanded by Captain M'Clain, which sailed on the 3d of June, 1823, to undertake a voyage to the "Seychelle Islands," for the purpose of searching for the sperm whale; directing the captain at the same time to prosecute the fishery if possible at the entrance of the "Red Sea" and "Persian Gulf;" but although this third experimental expedition did not prove so beneficial to the crew and owner as the

two former had done, still the voyage of the "Swan" to those places had the effect of opening the new fishery of the "Seychelles" to the great advantage of the commercial interests of this country, which was manifested by the number of ships which soon resorted to it for the purpose of whaling. For although the "Swan" did not return until the 27th of April 1825, and had only procured forty tons of sperm oil during all the time of her absence, yet her want of entire success was not owing to the absence of whales at the places to which they were sent, for the crew saw immense numbers, but from a series of misfortunes which befel them, and which rendered them incapable of prosecuting the fishery with all the energy and entire devotion which it requires to bring about a successful termination. The ship which resorted to the "Seychelles" after the return of the "Swan," had good reason to be well satisfied with the success which attended their efforts, not only from the number of whales which they found there, but from its being so much nearer home than the Japan fishery, by which much time was saved in the outward and homeward passages.

*Bounty
discontinued*

During the year 1821, the government finding that the sperm whale fishery was fully established, thought proper to discontinue the system of the bounties—so that the crews of the various ships which resorted to the fisheries were made to depend altogether upon the success of their own exertions.

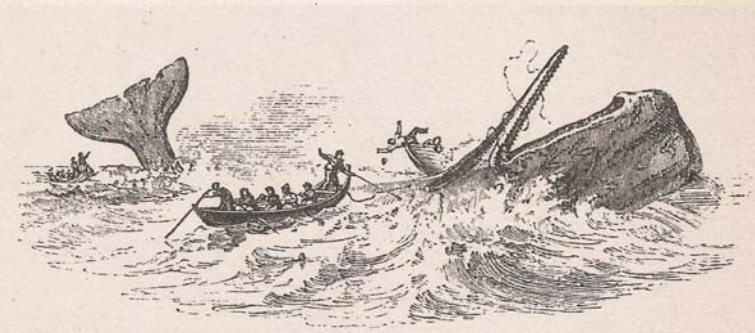
In 1823, the first introduction of sperm oil from the colonies took place, the principal part of which was

brought from Sidney; and when in 1836 the imperial measure was introduced, we find the enormous quantity of sperm oil altogether imported into London during that year, amounted to 6083 tons! while the ships that were employed in the fishery were of from 300 to 400 tons.

In 1827, 5552 tons were imported; in 1828 there was a great decrease in the supply, as only 3731 tons arrived; but in 1829 the importation again increased to 5558 tons.

In the year 1830, from some cause the supply was again greatly reduced, as only 4792 tons were imported; but in the following year of 1831, the importation arose suddenly to its maximum height, as the enormous quantity of 7605 imperial tons were introduced. In 1832 a slight decrease to 7165 tons took place, and in 1833 a still further reduction to 6057 tons; but in 1834 it rallied again slightly, and 6731 tons was the importation. The ships engaged at this time in the fishery from this country, were about ninety in number, and from 300 to 400 tons burthen, the average duration of their voyages being three years and three months.

In the year 1836, 7001 tons were imported, by which we perceive scarcely any or no diminution in the proceeds of the fishery, although it was not so great as in the successful maximum year of 1831, when the importation amounted to 7601 imperial tons,—a success which still stimulates the adventurer in this "most perilous mode of hardy industry."



CHAPTER XII.

DESCRIPTION OF THE BOATS, WITH THE VARIOUS INSTRUMENTS, EMPLOYED IN THE CAPTURE OF THE SPERM WHALE.

THE ships which are employed in the sperm whale fishery, are generally from 300 to 400 tons burthen, having crews to the number of from twenty-eight to thirty-three men and officers, and in which the surgeon is included. They sail on their voyage from London at all times of the year, fully provisioned for three years. Each vessel carries six whale boats, which, being the principal means used in the pursuit and capture, it will be necessary to describe fully. They are of a construction admirably adapted to the purposes for which they are intended, combining great sharpness

of form for swiftness of motion, and at the same time considerable buoyancy and stability, to enable them to resist the effects of a sometimes rough and boisterous sea. They are about twenty-seven feet long, by four in breadth; sharp at both ends for motion in either direction without the necessity of turning; near that end which is considered the stern of the boat, is placed a strong upright rounded piece of wood, not exactly in the centre, called the "loggerhead," at the other end which is called the head, is a groove exactly in the centre, through which the harpoon line runs out. To each boat are allotted two lines of apeculiar construction, of 200 fathoms in length, with their tubs, into which they are carefully coiled ready for use,—three or four harpoons, two or three lances, a keg containing a lantern, tinder-box, and other small articles, to procure light in case of being benighted,—two or three small flags, called "whifts," which are inserted in the dead whale, in case the boats should leave it in chase of others, so that they may be afterwards more readily found; and one or two "drougues," which are quadrilateral pieces of board, with a central handle or upright, by which they are attached occasionally to the harpoon line, for the purpose of checking in some degree the speed of the whale in sounding, or running.

Each boat has a crew of six men, two of whom are called the "headsman" and "boatsteerer," (see cut, p. 154). Four of these boats are generally used in the chase, and are under the command of the captain and the mates respectively. From the commencement of

CHAPTER XIII.

CHASE AND CAPTURE OF THE SPERM WHALE.

More exciting and magnificent enterprise cannot be conceived than South-Sea fishing.—*Monthly Review on the first Edition.*

✓ ALTHOUGH ancient and modern histories may abound in descriptions of man's daring by "flood and field," and of the accidents and escapes which accompany his voluntary exposure to a multitude of dangers, surely the recital of his doings in the chase and capture of the leviathan of the deep—the great sperm whale—can be second to none in the interest it must excite in every contemplative mind. It is not in the field, jungle, or thick forest, that these hardy adventurers seek their prey, upon man's natural element,—and where, should any untoward accident occur, assistance of some kind can be readily obtained,—but on the vast ocean, at times thousands of miles distant from any habitable land, where he is not only exposed to the dangers which beset him in his adventures with the monster of the deep, but to others still more terrible, in which the ruthless tempest of the China and Japanese seas form no inconsiderable share; or when near lands, distant and barbarous, as far as the antipodes, dangerous reefs, sunken

rocks, and relentless savages may beset him on every side, requiring all the moral and physical energy of which our nature is possessed, to escape the manifold dangers which surround them, but which the whale fisherman looks upon without dread, passing among them in his gallant bark, and carrying off in triumph the rich giant of the ocean.

When in pursuit of the whale with the boats, it occasionally happens that just at the moment the harpoon is about to be plunged into its body, the whale suddenly descends, leaving nothing but a vortex to mark the spot where but a moment before it was seen floating; but its course, however, has been observed, and the boats are placed in a position to be as near as possible to it when it again rises to breathe; the time, as has been before stated, when he will do this is known to a minute. If they should be more fortunate in the next rising of the whale, and they succeed in darting the harpoon into its body, then immediately after the first struggles of the wounded animal and when he is lying exhausted from his enormous exertions to escape, or free himself from the harpoon, the boat's head is placed close to its side, and the headsman begins to destroy it by thrusting his lance into its most vital parts, which lie near the fin, or darting at it from a distance; at the moment of lancing, he cries "stern all;" the oars are then immediately backed and the boat's stern becoming its cutwater, it is thus removed from danger without the loss of time and trouble in turning. Again, when feeling the lance, the whale plunges and throws itself in all directions, lashing the water with

its tail, or rearing its enormous head, and threatening destruction with its formidable jaw, (see cut, p. 154).

After being struck with the harpoon or lance, females and young bulls make the most violent efforts to escape, and being remarkably quick in their actions they frequently afford considerable danger and trouble. Those young bulls which yield about forty barrels of oil, and are consequently called forty-barrel bulls, are perhaps the most difficult to destroy, and sometimes make great havoc among the men and boats.

The large whales, such as make eighty or more barrels, not being nearly so active, and probably not feeling so acutely, are generally, by expert whalers, easily killed, and with less damage to those employed than the smaller ones. But these enormous creatures are sometimes known to turn upon their persecutors with unbounded fury, destroying everything that meets them in their course—sometimes by the powerful blows of their flukes, and sometimes attacking with the jaw and head. Accidents frequently occur from the violent convulsive movements of a wounded whale, when suffering the last pangs of his numerous and deep wounds. When the lance has been used effectively, so as to wound some important vital organ, the unfortunate animal frequently throws up blood in large quantities from the blow-hole—becomes convulsed—lashing the waves violently with its tail—passing very rapidly along—tinging the water with his blood as he swims; and it is a curious fact, that under these circumstances he always describes the segment of a circle: in this state the whale

is said to be in his flurry, and some whalers state that he always dies with his head towards the sun, but of this I have never been convinced. When dead, the body always turns on its side, probably from the greater weight of the spine and dorsal muscles.

In calm weather, great difficulty is sometimes experienced in approaching the whale, on account of the quickness of his sight and hearing—under these circumstances the fishers have recourse to paddles instead of oars, and by this means they with great caution sometimes get near enough to dart the harpoon with success. When first struck, the whale frequently "sounds," or descends to an amazing depth, taking out perhaps the lines belonging to the four boats, 800 fathoms! but afterwards, when weakened by loss of blood and fatigue, he becomes unable to sound to any great depth, and he then passes rapidly along the surface of the ocean, towing after him perhaps three or four boats. If he does not turn, the people in the boats draw in the line, by which they are attached to the whale, and thus easily come up with him even when going with great velocity, they then make use of the lance either by darting or thrusting, and so destroying their unoffending victim.

o ✓
Sounding

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The scenes which sometimes occur during the chase and capture of this whale defy description. Let the reader suppose himself on the deck of a South-seaman, cruising in the North Pacific Ocean at its Japanese confine—he may be musing over some past event, the

ship may be sailing gently along over the smooth ocean, every thing around solemnly still, with the sun pouring its intense rays with dazzling brightness; suddenly, the monotonous quietude is broken by an animated voice from the mast-head, exclaiming "there she spouts." The captain starts on deck in an instant, and inquires "where away?" but perhaps the next moment every one aloft and on deck can perceive an enormous whale lying about a quarter of a mile from the ship, on the surface of the sea, having just come up to breathe—his large "hump" projecting three feet out of the water, when at the end of every ten seconds the spout is seen rushing from the fore-part of his enormous head, followed by the cry of every one on board, who join heart and soul in the chorus of "there again!" keeping time with the duration of the spout. But while they have been looking, a few seconds have expired—they rush into the boats, which are directly lowered to receive them—and in two minutes from the time of first observing the whale, three or four boats are down, and are darting through the water with their utmost speed towards their intended victim, perhaps accompanied with a song from the headsman, who urges the quick and powerful plying of the oar, with the common whaling chant, of

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"Away my boys, away my boys, 't is time for us to go."

But while they are rushing along, the whale is breathing, they have yet perhaps some distance to pull before they can get a chance of striking him with the harpoon. His "spoutings are nearly out," he is about

to descend, or he hears the boats approaching. The few people left on board, and who are anxiously watching the whale and the gradual approach of the boats, exclaim, "ah, he is going down!" yet he spouts again, but slowly, the water is again seen agitated around him, the spectators on board with breathless anxiety think they perceive his "small" rising in preparation for his descent; "he will be lost," they exclaim, for the boats are not yet near enough to strike him—and the men are still bending their oars in each boat with all their strength, to claim the honour of the first blow with the harpoon. The bow-boat has the advantage of being the nearest to the whale; the others, for fear of disturbing the unconscious monster, are now doomed to drop astern. One more spout is seen slowly curling forth,—it is his last, this rising,—his "small" is bent, his enormous tail is expected to appear every instant, but the boat shoots rapidly alongside of the gigantic creature. "Peak your oars," exclaims the mate, and directly they flourish in the air; the glistening harpoon is seen above the head of the harpooneer, in an instant it is darted with unerring force and aim, and is buried deeply in the side of the huge animal. It is "socket up;" that is, it is buried in his flesh up to the socket which admits the handle or "pole" of the harpoon. A cheer from those in the boats, and from the seamen on board, reverberates along the still deep at the same moment. The sea, which a moment before was unruffled, now becomes lashed into foam by the immense strength of the wounded whale, who with his vast tail strikes in

all directions at his enemies. Now his enormous head rises high into the air, then his flukes are seen lashing everywhere, his huge body writes in violent contortions from the agony the "iron" has inflicted. The water all around him is a mass of foam, some of it darts to a considerable height—the sounds of the blows from his tail on the surface of the sea, can be heard for miles! (see *frontispiece*).

"Stern all," cries the headsman; but the whale suddenly disappears; he has "sounded;" the line is running through the groove at the head of the boat, with lightning-like velocity; it smokes—it ignites, from the heat produced by the friction, but the headsman, cool and collected, pours water upon it as it passes. But an oar is now held up in their boat; it signifies that their line is rapidly running out; two hundred fathoms are nearly exhausted; up flies one of the other boats, and "bends on" another line, just in time to save that which was nearly lost. But still the monster descends; he is seeking to rid himself of his enemies by descending deeply into the dark and unknown depths of the vast ocean. They next bend on the "drougues," to retard his career,—but he does not turn; another and another have but slight influence in checking the force of his descent; two more lines are exhausted,—he is six hundred fathoms deep! "Stand ready to bend on," cries the mate to the fourth boat (for sometimes, though not often, they take the whole four lines away with them—800 fathoms!!); but it is not required, he is rising, "Haul in the slack," observes the headsman, while the boatsteerer coils it

again carefully into the tubs as it is drawn up. The whale is now seen approaching the surface; the gurgling and bubbling water which rises before also proclaims that he is near; his nose starts from the sea; the rushing spout is projected high and suddenly, from his agitation. The "slack" of the line is now coiled in the tubs, and those in the "fast" boat haul themselves gently towards the whale; the boatsteerer places the headsman close to the fin of the trembling animal, who immediately buries his long lance in the vitals of the leviathan, while, at the same moment, those in one of the other boats dart another harpoon into his opposite side, when "stern all" is again vociferated, and the boats shoot rapidly away from the danger, (see *frontispiece*).

Mad with the agony which he endures from these fresh attacks, the infuriated "sea beast" rolls over and over, and coils an amazing length of line around him; he rears his enormous head, and, with wide expanded jaw, snaps at everything around; he rushes at the boats with his head,—they are propelled before him with vast swiftness, and sometimes utterly destroyed.

He is lanced again, when his pain appears more than he can bear; he throws himself, in his agony, completely out of his element; the boats are violently jerked, by which one of the lines is snapped asunder; at the same time the other boat is upset, and its crew are swimming for their lives. The whale is now free! he passes along the surface with remarkable swiftness, "going head out;" but the two boats that have not yet "fastened," and are fresh and free, now give chase; the whale becomes ex-

hausted, from the blood which flows from his deep and dangerous wounds, and the 200 fathoms of line belonging to the overturned boat, which he is dragging after him through the water, checks him in his course; his pursuers again overtake him, and another harpoon is darted and buried deeply in his flesh.

The men who were upset, now right their own boat without assistance from the others, by merely clinging on one side of her, by which she is turned over, while one of them gets inside and bales out the water rapidly with his hat, by which their boat is freed, and she is soon again seen in the chase.

The fatal lance is at length given,—the blood gushes from the nostril of the unfortunate animal in a thick black stream, which stains the clear blue water of the ocean to a considerable distance around the scene of the affray. In its struggles the blood from the nostril is frequently thrown upon the men in the boats, who glory in its show!

The immense creature may now again endeavour to “sound” to escape from his unrelenting pursuers; but it is powerless,—it soon rises to the surface, and passes slowly along until the death pang seizes it, when its appearance is awful in the extreme.

Suffering from suffocation, or some other stoppage of some important organ, the whole strength of its enormous frame is set in motion for a few seconds, when his convulsions throw him into a hundred different contortions of the most violent description, by which the sea is beaten into foam, and boats are sometimes crushed to atoms, with their crews, (see *frontispiece*).

But this violent action being soon over, the now unconscious animal passes rapidly along, describing in his rapid course a segment of a circle, this is his “flurry,” which ends in his sudden dissolution. And the mighty rencontre is finished by the gigantic animal rolling over on its side, and floating an inanimate mass on the surface of the crystal deep,—a victim to the tyranny and selfishness, as well as a wonderful proof of the great power of the *mind* of man.

In the afternoon of a day which had been rather stormy, while we were fishing in the North Pacific, a “school” of young bull-whales made their appearance close to the ship, and as the weather had cleared up a little, the captain immediately ordered the mate to lower his boat, while he did the same with his own, in order to go in pursuit of them.

The two boats were instantly lowered, for we were unable to send more, having had two others “stove” the day before; they soon got near the whales, but were unfortunately seen by them before they could get near enough to dart the harpoon with any chance of success, and the consequence was that the “pod” of whales separated, and went off with great swiftness in different directions. One however, after making several turns, came at length right towards the captain’s boat, which he observing, waited in silence for his approach without moving an oar, so that the “young bull” came close by the boat, and received the blow of the harpoon some distance behind his “hump,” which I saw enter

his flesh myself, as it occurred close to the ship. The whale appeared quite terror-struck for a few seconds, and then suddenly recovering itself, darted off like the wind, and spun the boat so quickly round when the tug came upon the line, that she was within a miracle of being upset. But away they went, "dead to windward," at the rate of twelve or fifteen miles an hour, right against a "head sea," which flew against and over the bows of the boat with uncommon force, so that she at times appeared ploughing through it, making a high bank of surf on each side.

The second mate, having observed the course of the whale and boat, managed to waylay them, and when they came near to him, which they speedily did, a "short warp" was thrown, and both boats were soon towed at nearly the same rate as the captain's boat had been before.

I now saw the captain darting the lance at the whale as it almost flew along, but he did not seem to do so with any kind of effect, as the speed of the whale did not appear in the least diminished, and in a very short time they all disappeared together, being at too great a distance to be seen with the naked eye from the deck. I now ran aloft, and with the aid of a telescope could just discern from the mast-head the three objects, like specks upon the surface of the ocean, at an alarming distance. I could just observe the two boats, with the whale's head occasionally darting out before them, with a good deal of "white water" or foam about them, which convinced me that the whale was still running.

I watched them with the glass until I could no longer trace them, even in the most indistinct manner, and I then called to those on deck, that they might take the bearing by compass, of the direction in which I had lost sight of them, that we might continue to "beat" the ship up to that quarter.

It was now within half-an-hour of sunset, and there was every appearance of the coming on of an "ugly night," as a seaman would say; indeed the wind began to freshen every moment, and an "awkward bubble" of a sea soon began to make. I remained aloft until I saw the sun dip, angry and red, below the troubled horizon, and was just about to descend when I was dreadfully shocked at hearing the loud cry of "a man overboard" from all upon deck. I immediately looked astern, and saw one of our men, of the name of Berry, grappling with the waves and calling loudly for help. The ship was soon brought round; but in doing so she unavoidably passed a long way from the poor fellow, who still supported himself by beating the water with his hands, although he was quite unacquainted with the proper art of swimming. Several oars were thrown overboard the moment after he fell, but he could not reach them, though they were near to him; and directly the ship was brought up, a Sandwich islander, who formed one of the crew, leaped overboard and swam towards him, while at the same time the people on the deck were lowering a spare boat, which is always kept for such emergencies. I could be of no service, except to urge their expedition by my calls, for it was all only the work of a few

minutes. The good Sandwich islander struck out most bravely at first; but in a short time, finding that he was some distance from the ship, and being unable to see Berry, on account of the agitated surface of the sea, actually turned back through fear—finding, as he said, that the “sea caps” went over his head. The men in the boat now plied their oars with all their strength, and were making rapidly towards the drowning young man, who now and then disappeared entirely from view under the heavy seas which were beginning to roll; a sickening anxiety pervaded me, as my thoughts appeared to press the boat onwards to the spot where the poor fellow still grappled, but convulsively, with the yielding waters. The boat, urged by man’s utmost strength, sprang over the boisterous waves with considerable speed; but they arrived half a minute too late to save our poor shipmate from his watery grave. I saw him struggle with the waves until the last, when the foam of a broken sea roared over him, and caused him to disappear for ever! The boat was rowed round and round the fatal spot, again and again, until night fell, and then she was slowly and reluctantly pulled to the ship by her melancholy crew. As they returned, the turbulent waves tossed them about, as if in sport, dashing its spray at times completely over them, making the boat resound from the beating of the dashing waters which flew against her bow.

The moment the unfortunate seaman disappeared, a large bird of the albatros kind came careering along, and alighted on the water at the very spot in which the

*did not want
to [—?—] vis
[—?—] of
[—?—]*

poor fellow was last seen. It was a curious circumstance, and only served to heighten our horror, when we saw this carnivorous bird seat itself proudly over the head of our companion, and which also served to remind us of the number of sharks that we had so frequently seen of late, of the horrible propensities of which we could not dare to think.

By the time we had hoisted in the boat it was quite dark; the winds too had increased to half a gale, with heavy squalls at times, so that we were obliged to double-reef our topsails. Our painful situation now bore most heavily upon us. We had lost one of our men, who had sailed with us from England—the bare thought of which in our circumstances aroused a crowd of heart-rendering ideas. Our captain and second mate, with ten of the crew, had also disappeared, and were by this time all lost, or were likely to be so in the stormy night which had now set in; being too several hundred miles away from any land. We however, kept beating the ship to windward constantly, carrying all the sail that she could bear, making “short boards” or putting the ship about every twenty minutes. We had also, since nightfall, continued to burn blue lights, and we had likewise a large vessel containing oil and unravelled rope, burning over the sternrail of the ship as a beacon for them, which threw out a great light. But although all eyes were employed in every direction searching for the boats, no vestige of them could be seen; and therefore when half-past nine P.M. came, we made up our minds that they were all lost; and as the wind howled hoarsely through the rigging, and the waves beat

savagely against our ship, some of us thought we could hear the shrieks of poor Berry above the roaring of the storm; others imagined in their melancholy, that they could occasionally hear the captain's voice, ordering the ship to "bear up," while the boats had been seen more than fifty times by anxious spirits, who had strained their eyes through the gloom until fancy robbed them of their true speculation and left her phantasmagoria in exchange. There were not many on board who did not think of home on that dreadful night—there were not many among us who did not curse the sea, and all sea-going avocations; while, with the same breath, they blessed the safe and cheerful fireside of their parents and friends who resided at home, and which at that moment they would have given all they possessed but to see. But at the moment despair was firmly settling upon us, a man from aloft called out that he could see a light right a head of the ship, just as we were "going about," by which we should have gone from it. We all looked in that direction, and in a few minutes we could plainly perceive it; in a short time we were close up with it, when, to our great joy, we found the captain and all the men in the boats, lying to leeward of the dead whale, which had in some measure saved them from the violence of the sea. They had only just been able to procure a light, having unfortunately upset all their tinder through the violent motion of the boats, by which it became wet—but which they succeeded in igniting after immense application of the flint and steel—or their lantern would have been suspended from an oar directly

after sunset, which is the usual practice when boats are placed under such circumstances.

After having secured the whale alongside, and which we expected to lose during the night from the roughness of the weather, they all came on board, when the misfortune of poor Berry was spoken of with sorrow from all hands, while the joy of their own deliverance served to throw a ray of light amidst the gloom.



On the morning of the 18th June, 1832, while we were still fishing in the "off-shore ground" of Japan, we fell in with an immense sperm whale, which happened to be just the sort of one we required to complete our cargo. Three boats were immediately lowered to give him chase; but the whale, from some cause or other, appeared wild in its actions long before it had seen any of our boats, although it might have been chased the

tance before them, now appeared rather "gallied," or frightened, having probably seen or heard the boats, and as he puffed up his spout to a great height, and reared his enormous head, he increased his speed, and went along quite as fast as the boats,—but for only two or three minutes, when he appeared to get perfectly quiet again, while the boats gained rapidly upon him, and were soon close in his "wake." "Stand up," cried young Clark to the harpooneer, who is also the bow-oarsman, while the same order was instantly given by his opponent, whose boat was abreast of our mate's, with the rest close to their sterns. The orders were instantly obeyed, for in a second of time both boatsteerers stood in the bows of their respective boats, with their harpoons held above their heads ready for the dart; but they both panted to be a few yards nearer to the whale, to do so with success. The monster ploughed through the main quickly, but the boats gained upon him every moment, when the agitation of all parties became intense, and a general cry of "dart! dart!" broke from the hindermost boats, who each urged their friends, fearful of delay. The uproar became excessive, and while the tumult of voices, and the working and splashing of the oars, rolled along the surface of the deep, both the harpooneers darted their weapons together, which, if they had both struck the whale, would have originated a contention between them regarding their claims, But, as it happened, neither of them had that good fortune; for at the moment of their darting the harpoons, the whale descended like a shot, and avoided their infliction, leaving nothing but a white-

and-green-looking vortex in the disturbed blue ocean, to mark the spot where his monstrous form so lately floated. A general huzza burst from the sternmost boats when they saw the issue of this chase, thinking now that another chance awaited them on the next rising of the whale, and they soon began to separate themselves a little, and to row onwards again in the course which they thought he had taken. Our captain, feeling irritated at the ill-success of the mate, now ordered his own boat to be lowered, intending to make one in the chase himself; but, just as he had parted from the ship, going down a little to leeward, a tremendous shout arose from the people in our own boats, joined with a loud murmuring from the rest of the boats' crews; for the whale, not having had all its "spoutings out," had now risen again to finish them, and was coming to windward at a quick rate, right towards our ship. The captain saw his favourable situation in a moment, and passing quickly to the bows of the boat, he stood to waylay him as he came careering along, throwing his enormous head completely out of the water, for he was not quite "gallied." He soon came, and caught a sight of the boat just as he got within dart; the vast animal rolled itself over in an agony of fear, to alter its course; but it was too late, the harpoon was hurled with excellent aim, and was plunged deeply into his side near the fin.

As the immense creature almost flew out of the water from the blow, throwing tons of spray high into the air, shewing that he was "fast," a triumphant cheering arose from those in our own boats, as well as from those

in the ship, accompanied by exclamations loud and deep, and not of the most favourable kind to us, from all the rest. But onwards they all came, and soon cheerfully rendered assistance to complete its destruction; but which was not done, however, without considerable difficulty, the whale continuing to descend the moment either of the boats got nearly within dart of him. But after an hour's exertion in this way, six out of the ten boats which were now engaged got fast to him by their harpoons, but not one of them could get near enough to give him a fatal lance; he towed them all in various directions for some time, taking care to descend below the surface the moment a boat drew up over his flukes, or otherwise drew near, which rendered it almost impossible to strike him in the body, even when the lance was darted, although the after part of his "small" was perforated in a hundred places: from these wounds the blood gushed in considerable quantities, and as the poor animal moved along, towing the boats, he left a long ensanguined stain in the ocean. At last, becoming weak from his numerous and deep wounds, he became less capable of avoiding his foes, which gave an opportunity for one of them to pierce him to the life!—dreadful was that moment the acute pain which the leviathan experienced, and which roused the dormant energies of his gigantic frame. As the life's blood gurgled thick through the nostril, the immense creature went into his "flurry" with excessive fury, the boats were speedily sterned off, while he beat the water in his dying convulsions with a force that appeared to shake the firm foundation of the ocean!

× *As when the water issuing [—?—] off from a fountain [—?—] & slowly lowers—so the dying spout of the whale.*

Numberless stories are told of fighting whales, many of which however, are probably much exaggerated accounts of the real occurrences. A large whale, called "Timor Jack" is the hero of many strange stories, such as of his destroying every boat which was sent out against him, until a contrivance was made by lashing a barrel to the end of the harpoon with which he was struck, and whilst his attention was directed and divided amongst several boats, means were found of giving him his death wound.

In the year 1804, the ship "Adonis," being in company with several others, struck a large whale off the coast of New Zealand, which "stove" or destroyed nine boats before breakfast, and the chase consequently was necessarily given up. After destroying boats belonging to many ships, this whale was at last captured, and many harpoons of the various ships that had from time to time been sent out against him were found sticking in his body. This whale was called 'New Zealand Tom,' and the tradition is carefully preserved by whalers.

Accidents of the most fearful nature have frequently occurred in this hazardous pursuit, which to enumerate would fill the space of volumes;—for not only boats, but sometimes even ships have been destroyed by these powerful creatures. It is a well authenticated fact, that an American whale-ship called the "Essex" was destroyed in the South Pacific Ocean by an enormous sperm whale. While the greater part of the crew were away in the boats, pursuing whales, the few people remaining on board saw an immense sperm whale come

✓ up close to the ship, and when very near he appeared to go down for the purpose of avoiding the vessel, and in doing so he struck his body against some part of the keel, which was broken off by the force of the blow and floated to the surface; the whale was then observed to rise a short distance from the ship, and come with apparently great fury towards it, striking against one of the bows with his head, and completely "staving" it in. The ship of course immediately filled, and fell over on her side, in which dreadful position the poor fellows in the boats soon espied their only home, being distant from the nearest land many hundred miles; on returning to the wreck they found the few who had been left on board hastily congregated in a remaining whale boat, into which they had scarcely time to take refuge before the vessel capsized. They with much difficulty obtained a scanty supply of provisions from the wreck, their only support on the long and dreary passage before them to the coast of Peru, to which they endeavored to make the best of their way. One boat was fortunately found by a vessel not far from the coast; in it were the only survivors of the unfortunate crew, three in number, the remainder having perished under unheard-of suffering and privation. These three men were in a state of stupefaction, allowing their boat to drift about where the winds and waves listed; one of the survivors was the master; by kind and careful attention on the part of their deliverers, they were eventually rescued from the jaws of death to relate the melancholy tale.

*"Killers" dragging the whale away
from the vortex (Ex [—?—])
"Old Thunder" / Peleg /*

CHAPTER XIV.

OF THE "CUTTING IN" AND "TRYING OUT."

AFTER the death of the whale, the next steps are to remove the fat and spermaceti, and to extract the oil, the reward of so much exertion and dangerous enterprise. This process, which is called "cutting in," is divided into two stages, the cutting in and trying out—in these operations the utmost cleanliness is observed. As soon as possible after the whale has been killed, it is brought alongside the ship to be cut in, by means of instruments which are called "spades." A man descends upon the floating carcass, after a hole has been cut near the junction of the body with the head by a person stationed on a stage by the side of the ship, into which a large blunt hook is inserted by the man who descends upon the body of the whale for that purpose, and which is called "hooking on;" a troublesome and even dangerous operation in a turbulent sea, from which I have often seen men drawn up by the rope which is always fixed around them, in a completely exhausted state, from having been frequently submersed by the waves as they have rolled over the body of the whale during the time they have been endeavouring to "hook on." After the

X
hook is inserted it is drawn upon by the pullies to which it is attached, and a tension being exerted upon the fat, or blubber as it is termed, it is then cut by the spade in a strip about two or three feet broad, in a spiral direction around the body of the whale, which being drawn up by means of the windlass acting upon pullies which are fixed to the "main-top," it is removed much in the same way that a spiral roller or bandage might be; of course as the "blanket pieces" ascend, the body of the whale performs a rotatory motion, until the whole is stripped off to the tail or flukes. The head is cut off in the beginning of the process, and is allowed to float astern of the ship, but strongly secured, until the body has undergone its flaying process, when it is hoisted upon end by the pullies, and the end of the case being opened, the fluid spermaceti is drawn from it by means of a bucket and pole, which is used to force the bucket down into the "case," so as to become filled with its valuable contents. The "junk," which forms, when it is cut from the head, a large wedge-shaped mass of cellular substance, having strong ligamentous bands intersecting and strengthening its structure, is hoisted on board, and quickly cut up into square oblong pieces, while the head—after the case has been emptied—is let go, and allowed to sink, which it does rapidly when its buoyant property, the spermaceti is removed. The lean and shapeless trunk, after the fat has been taken from it, is allowed to float away just before the operations on the head commence.

O
The "blanket pieces" which are cut from the long

strips of fat or blubber, as it is drawn up, with the junk and spermaceti from the case, then pass through different processes in the "trying out;" the two former, being cut up into thin pieces upon blocks called "horses," are thrown into the "try-pots," into which the oil is extracted from them by heat. The crisp membranous parts after the oil is extracted, and which are called by whalers "scraps," serving for fuel; while the spermaceti from the case is carefully boiled alone, and placed in separate casks, when it is called "head-matter." These operations are not attended with any unpleasant smell, and are very quickly performed, as eighty barrels of oil may be stowed away in the hold of the ship in less than three days after the destruction of the animal.

CHAPTER XV.

OF THE FAVOURITE PLACES OF RESORT OF THE
SPERM WHALE.

ALTHOUGH the spermaceti whale has been seen, and even captured, in almost every part of the ocean between the latitude of 60° south and 60° north, I am not aware that it has ever been seen in the Mediterranean sea, and seldom, or never, at Greenland by modern navigators; although several ancient authors agree in stating that it has been frequently seen there; for Cuvier has stated from some authority, that the Greenlanders are remarkably fond of its flesh, which they consider a delicate viand, when it is dried in smoke; they "also feed," says Cuvier, "upon the fat, entrails, and skin." And Sir Thomas Brown, in his work published in 1686, after stating that "many conceive the sperm whale to have been the fish which swallowed Jonas," also says, that "Greenland inquirers seldom meet with a whale of this kind."

Whether this has been the case in former times, or not, I will not presume to determine; I can only say, that I have now made many inquiries among several captains of ships who have been engaged in the Greenland fisheries, and not one of them ever saw a sperm

whale so far north as Greenland. They are also seldom or never seen on "soundings," that is where the bottom of the sea can be touched by the deepest sea-line, or in the "banks," as they are termed by whalers, that exist in various parts of the ocean, as the "Brazil banks," which are only discolorations of the water caused by myriads of animalculæ which perhaps form the sustenance of the common black whale's food, that consists of "squillæ" and other small animals. But the sperm whale has been sometimes taken near the borders of these "submarine pastures," particularly near those of Brazil. The favourite places of his resort at the present day appear in the following list:—

NEW GUINEA AND PARTS ADJACENT.—On the north coast of New Guinea, from 140° to 146°, east longitude. New Ireland, from Cape St. George to Cape St. Mary; from Squally Island to the northward; from St. George's Channel to the southward; on the east coast of New Britain; about the islands of Bougainville and Bouka Bay, particularly off the northern shore of Bougainville, as far as the Green, or Bentley's Islands; Solomon's Archipelago, as far to the northward as Howe's Group; Malanta, along the north-east and south-west parts, and in the straits, as far to the north as Gower's Island; and off the west points of New Hanover.

King's Mill Group.—Off any part of these islands, but more particularly off the south-west parts of Roach's Island, distant from the land thirty or forty miles; and off the south-west portion of Byron's Island.

*Barley
Banks*

we felt a motion of the ground that I shall never be able accurately to describe. It appeared to me, from the sensation I received, as if the earth was suddenly crushed by its own weight. It resembled very nearly the sensation a person experiences when he takes a mass of snow in his hands, and endeavours to compress it; it is that feeling, as if the snow was suddenly crushed within itself, that I am endeavouring to describe,—a crushing of the fibres,—a sudden contraction of the atoms, which every person must be familiar with. Such were my ideas the moment after I had experienced the shock.

The water was so exceedingly luminous that, while we were rowing on board, it appeared, as it dripped from the oars which the men were plying, exactly like red-hot fluid metal. When I went on shore the following morning, I found that the inhabitants considered the earthquake of the preceding evening rather a violent one, it being sufficiently so as to cause a considerable rent in the wall of a Mr. Richardson's house, an Englishman, who has resided here for some time, and who stated to me that shocks of the kind I have mentioned were far from uncommon.

From a few English gentlemen who had taken up their abode at this place, from motives of business, I received many tokens of British hospitality. A hundred and fifty degrees of longitude may separate a man from his native country, but the distance does not wean him from the feelings of his youth, which he has imbibed in the land of his birth; the scorching rays of a tropical sun may blaze around him, and change the colour of

his complexion,—the frozen regions of the southern or northern pole may retard the rapid current of his blood, but they can neither change nor retard the warm and generous feelings of an Englishman, wherever he may happen to reside.

One day, on going up to the town of Coquimbo,—the best way to get to it from the port, as it is called, is on the back of a mule,—I found the inhabitants merry-making, and celebrating the feast of the "Cheya;" in this commemoration they have a very remarkable usage of throwing water at each other, or at any person they may meet or see in the street; the poorer persons carry it about in bladders, which have a small hole made in some part of them, which allows the fluid to escape at the will of the projector. By merely employing a little pressure upon it, a long stream of water rushes out, and bespatters the face of any luckless perambulator who does not quickly take to his heels or otherwise escape the ablution; but those who are higher in the scale of Croesus employ other means of enjoying their recreation. The ladies, for instance, amuse themselves by sprinkling rose or other scented waters upon the pedestrian from a balcony or window, and great is their delight when they succeed in surprising the unwary traveller with their odoriferous shower-baths. Such was my fate one fine evening, just before sunset: as I was passing through a quiet and lonely street, I was attracted to a certain spot, on perceiving a few very beautiful flowers lying scattered on the pavement, which happened to be directly under a balcony, and which had no doubt been purposely placed

there by the hands of some fair freebooter; for, no sooner had I secured the floral prizes, than I found myself freely sprinkled with the rosy perfume. I looked up immediately, but the being or beings had vanished who had emptied the phial of their gaiety upon me, but I heard sundry "still small voices" enjoying the delightful mischief with amazing satisfaction.

The following incident I hope may serve to show how cautious it is necessary for every person to be who is in the habit of visiting strange countries, so that they may not rely with a blind confidence at any time upon persons of whose manners and circumstances they may know but little.

Having been induced to accompany a Captain Chase to the town one day, on the promise that he would return with me to the port the same evening, we spent the day agreeably; but, when the evening arrived, I received a note from the captain, stating that it would be impossible for him to return to the port until the following morning, as business of a peculiar nature had interrupted his determination. I, therefore, who had determined to return at the time I intended in the morning when I set out, took measures accordingly, even against the advice of several English residents of the place; for I had urgent business at the ship, and I felt myself compelled to go; but it was near sunset before I mounted my mule for the purpose. I had not gone far before the darkness became intense, and I in some way or other unfortunately mistook my road, and after wandering to and fro for upwards of two hours, I found myself involved in

such a Cretan labyrinth, that I could neither find my way to the place of my destination nor to that which I had left, and which to have unravelled in such a night would have required the clue of Ariadne, with all the love she bore to Theseus. I had made some inquiries at the outskirts of the town, having entered several houses for that purpose; but now I was surrounded with trees and fields, and I had not seen a house for upwards of an hour, but hearing at last the sound of a guitar and of several voices indulging in shouts of mirth, I directed my mule to the spot; and when I arrived I perceived a number of people engaged in the court-yard of a house, merry-making; some were dancing, others were singing, while a few thrummed upon the "light guitar." I soon entered the festive throng, and endeavoured to make myself understood in inquiring my way to the port of Coquimbo, but they either could not or would not understand my questions, which certainly were put in wretchedly bad Spanish, and at last, after many fruitless attempts to procure the information I required, they induced me to sit on a wooden bench at the root of a wide-spreading fruit tree, to observe their rejoicings. I shall never forget the tune they thrummed upon the guitars, or the agile and graceful movements of the dancers, or the merry volubility of their songs, nor shall I ever cease to remember the condescension of the ladies who formed a part of the assembly. After they had finished one of their dances, one of the young women came from the group, and offered me a small quantity of a liqueur which she called in Spanish "aqua-

catching them with the hook. The ugly sun-fish now and then came floating by, and gave the young harpooner a chance of shewing his newly-acquired dexterity, by plunging the barbed iron into their grisly bodies. The ferocious sword-fish frequently shewed himself, much to the terror of the bonito and albacore, which shot through the fluid element with wonderful velocity, to escape from their voracious pursuers. The varieties of polypi and medusæ which abound here are immense, and would find the naturalist with employment for a century, were he to particularise the whole of their curious peculiarities.

While on the shore, the tall flamingo, the dingy shag, the golden-breasted penguin, the large grey pelican, the scissors-bill and diver, gave us sufficient objects for reflecting on the wisdom and greatness of Him who had formed them, and had placed them there, to enliven the barren and inanimate rocks with their presence—to inhabit the dreary solitude—to animate the wilderness. At night-fall lines of pelicans, returning from their day's fishing, could be seen flying towards the land, and in the morning at sun-rise they could be seen leaving it for the sea in the same order, going out to their daily labour. I have seen some of those lines, which are formed by each bird flying immediately after the other, for half a mile in length, and I have seen four or five such lines at the same moment. Now and then the great condor might be observed at an immense distance, floating in ethereal space, and with its powerful and wonderful eye scanning the surface of the vast plains or uneven beach

for some object of attack. So that wheresoever our observance fell we could enjoy rare and beautiful scenes, and as we still continued to steer pretty close to the shore, we had an opportunity of witnessing a greater variety of views than if we had been farther out at sea.

Five or six days after we had left Coquimbo, and not being more than forty or fifty miles from the main land of Peru, at about six A.M., sailing with a pleasant breeze, we found ourselves close abreast of a mass of rugged-looking rocks, which rise suddenly out of the sea; they are near the small island which is called "Isla de la Plata" by the Spaniards; and we soon discovered from the roaring noise we heard, that great numbers of the common hair seals were upon them, the male of which is as large as an African lion, with much of the same form of head, mane, and body as that noble animal possesses; only having in the place of legs a kind of fins, with which they swim with great power and velocity. Their roaring, joined with a kind of yelping or barking from a great number of cubs which attended their dams, was heard far above the roaring of the surf, which is in itself was remarkably loud. We soon got very near to them; and our captain immediately determined to send off three boats with their full complement of crews, for the purpose of killing as many of them as possible for the sake of their skins, which were known to be exceedingly useful on ship-board for various purposes. To send three boats with their crews was but the work of a few minutes; but for the boats to approach the rugged rocks in a prodigious surf, and land their

swimmer in his agony;" but another enormous roller appeared; again he is seen struggling on its snowy bosom—he approaches the shore—he is borne in rapidly—we spontaneously clasp each other's hands and form a living chain—the breakers roll over the heads of those nearest to him—a desperate effort is made, and he is snatched from the watery grave! the receding waves leave him again in our possession, amid cheers and heartfelt thanksgivings; the poor fellow was dreadfully bruised against the rocks, and his exhaustion was extreme, but a few days' rest, with a little proper attention, soon restored him to his wonted health and spirits.

I now left my companions, and ascended the rugged rocks to their highest elevation, where, on looking round at the various objects which were presented to my view, I was forcibly struck with the many rare beauties which they possessed. Looking to the west, which was even beyond the "far west" of Hoffman, there was the vast ocean lazily rolling, agitated by some distant wind, for at this spot naught but gentle zephyrs play during the whole year. The sea-bird could be seen, sometimes soaring high in the air, and sometimes suddenly dashing into the sea to secure its prey, the moment afterwards emerging from it, uttering its wild shriek, and retreating from the scene to devour its writhing victim.

Around the island on which I stood, the ocean was dashing itself into a thousand fantastic shapes; while on one side of the rock, which was nearly perpendicular, a large arch-like opening was seen, which formed the way from the sea into an immense and partly unroofed

✓ *Charles Fenno?*

cavern, which embraced a large portion of the centre of the island; the waves every half minute rushed through this opening with exceeding force and quantity, filling the cave with foam, and causing a considerable vibration of the whole island. As I stood observing the broken seas which every now and then rushed into the cavern, I saw the sea lion, which had been struck with the harpoon, forced by the waves through the opening I have mentioned in company with another of the same size. Near the centre of the cavern they came in close contact, and then commenced between them one of the most savage encounters that it was ever my fortune to witness: whether the wounded one took the other for his destroyer, or from what cause it arose it is impossible for me to conjecture, but the harpooned one immediately seized the other by the throat with the most savage fierceness, while the victim of his ferocity returned the act by seizing his antagonist by the side of the head. In this struggle they were joined by the broken and roaring billows, that dashed them to and fro with great velocity. In their vehement struggles for the mastery, sometimes they could be seen on the top of the snow-white surf, which became tinged with their blood; they would then totally disappear, and in a few minutes they would again be seen close to the craggy sharp pointed rocks, and apparently escape being dashed to pieces against them by mere miracle. But after I had witnessed this wild conflict for about four or five minutes, a vast wave came rushing foaming through the archway from the sea; an extraordinary agitation was caused in

From the beginning of June to about the middle of September we fell in with great numbers of large whales, which we saw sometimes every day for weeks, so that we were kept in constant excitement with chasing and capturing them; for the details of which operations I beg to refer the reader to the account contained in the "Chase and Capture of the Sperm Whale," in the first part of this work, chapters xii. and xiii.

About the middle of September we found the weather becoming tempestuous; the whales also became very scarce, or seldom seen; they appeared going off to the southward, no doubt in search of more abundant food; for now the sea, which during the two former months had teemed with polypi, medusæ, flying-fish, and squid, was getting quite deserted. They had, towards the latter end of September, nearly all disappeared; and no doubt the squid, upon which the sperm whale feeds, had taken its departure also, for during the two previous months we frequently had seen detached portions of them floating on the surface, upon which the whales had been feeding, and which no doubt had escaped from their jaws; but now nothing of the kind could be seen, and we therefore prepared for our departure also, and, steering about south-west, on the 5th of October 1831, made the Bonins, which form a small group of islands not far from the coast of Japan, in the longitude of $141^{\circ} 30'$ east, and in the latitude of $26^{\circ} 30'$ north. They were, at the time of our visit, all uninhabited except North Island, upon which two or three Europeans and a few Sandwich Islanders were endeavouring to form a settle-

ment. We saw numbers of whales surrounding those islands, and we had the good fortune to capture several; they were mostly females accompanied by their young ones, although we saw some large males occasionally, and once in considerable numbers; I then imagined from seeing so many together, and all of them going fast in one direction towards the south-west, that they were migrating.

But we had not been long off those islands before we experienced one of the most dreadful typhoons, or Indian hurricanes, that the world ever produced, and which astonished some of our oldest seamen. We had had nothing but calms and light airs of wind for several days, when our attention was drawn to an increasing swell of the sea which came from the north-east, soon after which the atmosphere assumed a very sombre and melancholy appearance, having a peculiar light, from the sun's rays piercing remarkable clouds of a dull ochreous red colour, which tinged the ship, the sea, and everything round. All of us expected some convulsion of nature was about to ensue, which caused us to feel both sad and uncomfortable, and even the sea-caps that broke upon the enormous waves, which had now frightfully increased, seemed to us to make a melancholy moan. The birds which before had attended us in considerable numbers, now left us to our lonely fate, and had betaken themselves to some safe retreat at a distance, or had resorted to the hollow rock, the thick forest, or shady glen. Our captain, not behind in care for the safety of the ship, ordered all sail to be taken in

except a new main-topsail and a storm-trysail, which we were obliged to have bent to keep the ship somewhat steady in the prodigious swell which still continued to increase.

In the second night after the rolling of the waters had commenced, the wind suddenly sprung up, and increased during the night to a hard gale, which however died away at sun-rise, and we again found ourselves without wind, the ship being left entirely to the mercy of the waves, which caused her to roll most frightfully, her chain-plates striking the water occasionally with terrific force, and the waves striking against the stern, so that the violent shocks thus caused at times jerked us off our seats. Some of our sailors thought the gale of the preceding night had finished the convulsion; but in this they were much mistaken, for about three P.M. the wind again suddenly arose, and in about half an hour blew a complete gale, which continued to increase in violence until about two A.M. the following morning, when a sudden howling blast of wind of extreme violence laid the ship entirely on her beam ends, carrying the storm-trysail away, with all our trifling movables from the decks. The uproar which was set up at this time from the howling of the wind, the beating and dashing of the waves, the working of the ship, the creaking of the masts and clashing of the back-stays, intermixed with the hoarse calling of the sailors, made "night hideous," and rendered the scene altogether indescribable. That was a dreadful night to me, and to all on board; we met each other with melancholy looks, at the same time

clinging to anything which was within reach, to prevent ourselves from being thrown down. The blustering bully of fine weather now looked pale with affright; shivering and shrunk, his mind had forsaken him, and not a word escaped his lips; the dashing spray, which at times flew over the decks, caused his craven soul to cower in pitiable plight: but those who might have been thought, from their gentleness and civility, men wanting nerve and courage were now seen facing the danger with unaverted heads, quiet—yet bold, unassuming—yet proud; they feared not the raging of the elements, because, knowing their own hearts, they trusted to Him who "rides in the whirlwind and governs the storm."

All of us longed for morning, and when it broke, an awful sight presented itself. The typhoon was still howling in all its fury, and it was so powerful that it appeared to strike the ship like something solid, or similar to a rush of water; a lull for a few seconds would ensue, and then heavy and sudden blasts would come on in quick succession, striking the ship with such amazing force that made every plank to shake in her well-constructed frame. The ship now plunging head-long into an immense hollow amid the waves, and now rising rapidly on the top of one, while another the next moment threatened to overwhelm us, and finish the catastrophe,—all conspired to render our situation an awful one. At about eight A.M., I accompanied the captain to the top of the companion-ladder, and we both sustained ourselves in the erect position, although with great

difficulty, by firmly holding the capstan with both hands while we were anxiously watching the ship wrestling with the enormous waves; every time that she plunged her head into them the masts bending to such an extent that we every moment expected them to go by the board,—the carpenter's axe slung to windward ready to cut them away if necessary. A prodigious wave came careering and roaring along towards the weather-bow of our ship—she struggled to avoid it, but she pitched almost perpendicularly headlong into a deep hollow, which came immediately before her,—the monstrous wave lifted its gigantic head nearly as high as the fore-top, and then fell completely over her decks, even to the main hatchway—it was a dreadful moment! the sudden cries of our brave mariners were heard above the storm, as they gave command or uttered their concern. The ship remained as if she was fixed in the wave for a few seconds, she was unable to rise from the water which held her under its weight, but she recovered herself with a jerk, and the massive bowsprit was broken like a reed; she rose upon the next wave, another struck her, and threw the wreck of the bowsprit across the fore-castle; there was an immediate rush made forwards by the crew, who secured it with lashings; immediate attention was also paid to the foremast, which was now likely to go, but it was properly secured in time to prevent the calamity. The ship now rode more easily, not pitching so much, and we endured the hurricane till near sunset before it began to decline; but by sunrise the following morning the sea had fallen, the face of

nature wore its accustomed brightness, the air was serene and sweet, and the hurricane had passed.

A few days after we had experienced the typhoon, we ran in under the lee of South Island to repair our damage, and two boats were sent on shore to obtain some fish, plenty of which surround these islands. When we got on shore we saw the devastation the storm had committed on some parts of the island. Large tamana trees, which are a kind of mahogany, had been blown down, while the smaller trees were damaged in various ways to a frightful extent; large masses of coral had been detached from the rocks by the fury of the waves, and were driven and left high upon the beach.

Winding along the indented and rocky shore in the boats, we suddenly came to the mouth of a marine cave of considerable extent, and the boats were headed in, to explore the beauties of this solitary place, situated so far from the common haunts of man. When we had ventured within a short distance of this ocean grotto, we were all greatly delighted at the natural beauties which adorned it in every part; we could not form any idea of its extent inwards, for all was darkness in that direction, although we must have been at one time fifty yards within its mouth, and where the sea still formed its floor. About twenty yards within its entrance was the spot which nature had fixed upon to bestow her beauties with the most liberal hand. If the eye ascended, then its high and vaulted roof was seen, fretted and time-worn into a thousand fantastic forms,—the long stalactites hung down midway, and pierced the

or the cause of it; but it most probably arises from the naturally uninviting, disgusting appearance of this wolf of the waters, combined with a sudden reflection upon its well known blood-thirsty, cruel, and utterly merciless character.

The sun was now very near the horizon, and of course the light of the day was subsiding, when I reminded the third mate, who had the care of the boat, that it was time we should be thinking of taking our departure, and advised him to weigh our boat's anchor. He accordingly gave orders for the line to be coiled up, and the anchor weighed, for we had caught enough fish to serve the whole ship's crew for two or three meals; but the anchor had unfortunately become fouled, or fixed in between two large masses of detached rock, and it was a long time, and with a great deal of difficulty, before we succeeded in getting it clear. We did this at last, but not till it was nearly dusk; the men immediately sat to their oars, and did their best to get outside the land in time to get a sight of the ship before dark; but what was our surprise and chagrin when we could not discover her in the direction we expected. The oars were fixed apeak, and we all stood up in the boat anxiously looking for our only home. In a minute or two our New Zealander called out in an exulting tone, that he could see the ship: it could not escape his eagle eye. We all looked in the direction in which he pointed—we all became convinced it was the ship. We could make out her three masts like black streaks in the gloom, but she was in quite a different direction from that in which we

left her—for things had entirely altered—the face of nature had changed—the wind had shifted, and blew much stronger; instead of being now on the lee side of the land, the wind was blowing along the shore. The ship had been driven to leeward in consequence of the change in the wind and the strong current that sets to the westward.

Not a moment was lost in putting the boat's head in the direction of the ship, and we kept that course as well as we could by the aid of a star, which now appeared in the dark firmament. The boat was steered by the mate, as is usual on such occasions, he being considered, and with propriety, the most proper person to do so. It now became quite dark, and we had continued our course for some time, and nothing further had been seen of the ship—nothing heard except the breaking of the "sea-caps" and the distant roaring of the surf, with now and then an ejaculation from the mate to the New Zealander to "look out," when in a moment three or four of us saw a light quite on our beam, but at a very great distance; it appeared even with the surface of the ocean. We soon discovered it to be a blue light, which the captain had no doubt ordered to be burnt to apprise us of the situation of the ship, but from that moment a feeling of hopelessness ran through us of reaching her.

The wind was freshening every moment; it was blowing a stiff breeze—the ship was too far off for us to see a lantern suspended in her rigging, and we knew that there were only one or two more blue lights on board. The sea began to run higher and higher every moment;

to gain the shore manifested by the whole crew; they would rather be dashed to pieces against the rocks than founder silently on the bosom of the ocean without a chance of escape. They understood the sign which the Almighty in his goodness is pleased to hold out to his creatures, that they may escape into some protective glen or cave from the violence He is about to inflict on nature for some wise purpose;—they knew that in a very short time there would be a convulsion of nature, —that there would be an Indian hurricane, which is more violent than any other in the world,—that aged trees would be torn out by the roots,—that the sea would be like an agitated cluster of mountains, striking against each other with awful force and impetuosity,—raising clouds of mist, which would be swept away with almost the rapidity of lightning.

The boat's head was put about three points off the wind, taking the sea upon her bow, and she was headed in as much as possible for the shore. Enormous exertions were not made by the men to gain the rocks, trusting to Providence for a landing-place; I was asked by the crew almost in one voice, if I could recollect the spot where I had noticed the opening in the surf. I replied I thought the boat's head was directed towards it,—I formed this idea from the appearance of the high land, the figure of which I had noticed, its black upper edge could just be observed raised in the clouds: the rowers increased their exertions, they cheered, they were answered by the roaring surf, which we heard louder and louder every moment, in a short time we could

observe its wild forms dancing in the air to its own wild sounds—but there was destruction to us in it, death was in its foaming embrace! Around its base horrible sharks were prowling for the unfortunate victims of the troubled waters. We could just observe a breach of continuity in the “rollers,”—it was the passage I had seen and had spoken of; we appeared to be approaching it rapidly, more so than the strength of our oars could impel us; there appeared to be a rapid current setting in through the opening—the crisis approached! The men simultaneously ceased rowing forward, and backed their oars to prevent themselves and boat from being whirled to destruction; the passage was narrow, in its centre there was no surf that we could perceive in the darkness,—but on each side there were tremendous pillars of raging foam. We all remained in doubt what to do, the darkness was still extreme, it appeared impossible to pass through without getting into contact with the sides of the channel, which looked like a marble sepulchre, opening its jaws to receive us. A few bright flashes of lightning, succeeded by terrific peals of thunder, and which were followed by a howling blast of wind, left us no choice; the boat was now drawn by the current and impelled by the furious wind and waves into the pass. In an instant we were surrounded by the foaming waters, far above our heads—they appeared about to overwhelm us—there was a death-like stillness amongst us, each grasping in an agony of mind some part of the boat. At this moment a light was held out by an invisible hand, we could perceive our situation more

the very ground trembling under my feet from the forcible beating of the surf—the wind groaning and howling through the forest, and against the rocks, with terrible strength; now and then might be heard the cracking of some huge tree, which could no longer withstand the ruthless fury of the blast; and now a stream of fire darting its zig-zag course with wonderful velocity buries itself in the briny and troubled bosom of the ocean, lighting up all nature with its lurid flame, shewing the agitated waters hissing and foaming in the distance, followed by horrid sounds of thunder, terrible in the extreme, causing a sickening of the very soul.

I felt desolate, as if the whole world had become a chaos, except the spot on which I stood,—I and my companions, like the family of Noah, were the only saved! With what agonized feelings did I think of my beloved one, and my dear kindred;—could she but have cast a look across the world of waters, and have seen my melancholy standing-place—could I but have seen her beloved form, what joy would have filled my heart!—but we were divided by the diameter of this immense globe—we were antipodes; but although the cold ocean, the snow-clad mountain, and a thousand dangers separated us, still we were as “one soul in a divided body;” there was a never-failing powerful attraction between us, superior to that power which attracts the mariner’s compass; for although it exerts its subtle influence at an immeasurable distance, and with undeviating truth, yet when closely approaching the supposed object of its distant choice, vacillates, acts with uncertainty—its

secret influence is lost, when we should have supposed it would have evinced redoubled power.

I at length followed the example of my companions, rolling a detached mass of coral from the edge of the sea to the side of the fire, on which to rest my head. I reclined upon the sand, and notwithstanding the roar of the elements soon fell asleep, but during which dreams of a disagreeable nature continually harassed me, and I was in a short time entirely aroused by the voices of several persons near me, which I soon discovered to be my fellow adventurers, who had risen from their uncomfortable resting places, and were discussing the incidents of this adventure. The fate of the ship of course now formed the principal topic of their conversation; one supposed she had been driven a long way from the island while another stated that the typhoon had blown gradually round the compass, and therefore she could not at present be at any very great distance; still a heart-rending and melancholy foreboding hung upon us all, that she was lost! The last time we saw her she was drifting in the direction of North Island; we knew that great numbers of detached and sunken rocks lie about there, which cause the navigation to be extremely dangerous, and more particularly in a hurricane, when nearly all command of the ship is lost.

The eastern part of the heavens now became slowly illuminated, betokening the coming day, the cheering sight of which lessened our melancholy and increased our hope. The violence of the storm had somewhat abated; the glorious sun was rising to light the mariner

approach. We essayed the same performance at another place about a mile distant, and although we saw some dilapidated huts, nothing, except a few birds, started at our appearance. The country seemed untimely bereft of its inhabitants, as it were by plague or by famine: here were the remains of the handicraft of the savage, but the agent had vanished, leaving the marks of his rude ingenuity. There was a silence too, and solemnity here which naturally inspired us all with the reflection, that a handful of men, thousands of miles from their own country, had ventured into this almost unknown region, and boldly sought, without arms or protection, the habitation of the savage, and actually endeavoured to surprise him in his haunts, by probably unwelcome and intrusive sounds. But, after having visited various places, we did not meet with any during the whole day, and I have often thought since that it was a most fortunate circumstance that we did not, for who could have calculated safely on their conduct to us when they found that we were but few in number, without even the sight of the ship for a protection, which was so far off that her masts could not be seen? But this only forms another instance of the adventurous spirit of the whale fishermen, who know no fear among the remote parts of the world, which they visit in their hardy industry. But, alas! how many brave men have at various times fallen a sacrifice to this kind of daring. Finding our search fruitless, we resolved upon returning to the ship, and we began rating and gibing the mate on the unsuccessful chase he had

led us; and many of us, from various circumstances, doubted his information altogether; and as we were rowing along the borders of the surf, which was rolling on the shore,—now indulging in the loud laugh, and now listening to the vehement assertions of the mate in vindication of his conduct,—we were suddenly impelled into the surf, which we were rowing too near. In a moment we found ourselves on the top of its foaming crest; and, as we were “broadside on,” we escaped being dashed to pieces in a most miraculous manner by a fortunate twirl of the boat and the excessive exertions of the rowers, who were strong enough to force the boat against the next roller as it came running upon us,—but we suffered nothing except a good ducking from the spray, which flew over and half-filled one of the boats. This affair sobered our merriment for some time; and such is the elasticity of good-humour which pervades sailors, that they appeared to have forgotten the event altogether long before we arrived near the ship.

But we had not yet surmounted all the dangers and disagreeables fated to pertain to this trip, for after we had “made out” the ship for some time in the distance, and had approached within four miles of her, the sun began to dip into the horizon, and darkness came on with great rapidity, and above all, a storm suddenly arose, accompanied with vivid lightning, and torrents of rain fell in such quantities as to render a view of any object a quarter of a mile off impossible. The wind blew with such violence, that had it not been most fortunately fair for us we must have run before it in our

up in their bosoms were indicated by the expressions of their dark countenances, and the motions of their limbs; they did not attempt to move their canoes, but they scarcely knew how to proceed,—some appeared ready to leap overboard, while others, bolder than the rest, beckoned us to approach with winning and disarming smiles, and some were evidently much excited both by fear and curiosity. We happened to open our proceeding in a manner which quickly convinced them that our visit to their dominions was a friendly one. I wore at the time a small white calico riding-cap, and when we got close to one of their canoes I reached across, and placed it on the head of one of the men who appeared to be a chief;—the effect was instantaneous; a yell of satisfaction from the assembled multitude arose which I shall never totally forget, then such a chattering and gibbering broke from the preceding yell, that we in the boats were scarcely able to hear each other speak, and when the “tumult dwindled to a calm,” we set about endeavouring to make them understand that we wanted either fresh animal or vegetable provision, but we were not destined to make the slightest impression in that respect, although some of our men crowed like a cock to make them know that we wanted fowls, others squeaked and grunted like a pig, but all our talent and ingenuity in these ventriloquisms were thrown away upon these people, who stared in vacant astonishment at our curious gesticulations and sounds.

We succeeded a little better with regard to other matters; for when we shewed a young man a portion of

a yam which we had brought from the ship, the poor fellow paid the greatest possible attention to our signs in order to understand our wants; his mental struggles for that purpose were vehement, and when he thought he had obtained the much-desired information he dashed off in his little canoe, in which he was alone, with such remarkable energy of manner and desire to please, that his acts formed one of the most interesting features of the scene: he stood in the centre of his pigmy canoe, and dashed his paddle into the water on either side, alternating with such quickness and power as to make his little bark rush over the yielding fluid with amazing speed; he very quickly returned, using all his strength in the same manner as he went, and when he came alongside our boat he was almost breathless, and was in a most agitated state,—he had brought a small plant in his hand, which was not the kind we wanted, nor did it appear of any service whatever to us; and when he found all his exertions had been entirely fruitless, he put on a visage that surpassed all woe-begones that I had ever seen before; however, we did not allow him to go unrewarded for his trouble and good-will, which quickly brought back the agreeable aspect that he had for a short time lost.

We now saw a very large canoe, completely filled with people, putting off from the shore, and as it came slowly towards us we had doubts arise in our minds as to their intentions, which caused us to look round for the ship, when to our great surprise we found we had drifted from her about two miles; this discovery did

ceive them, and the same routine of business or pleasure occurs again in a few minutes, and is thus continued for hours. The moment the birds are produced, every person who wishes to bet calls aloud for any one to accept his offer,—some running round the arena, others thrusting themselves through the crowd to obtain a more favourable view of the combatants before he stakes his money, shewing as much anxiety in his countenance as if the fate of nations depended on the issue of the combat. At the same time, in some other part of the arena, another may be seen who has staked largely, livid with agitation, watching each movement of the birds when they are about to make the onset with the greatest possible perturbation; and when on the first rush the secret is discovered, by his favourite combatant becoming deeply and mortally wounded with the curved knife of his more fortunate adversary, he is seen almost to sink to the earth,—his dark eyes at the same time glaring around with a despairing motion; the next moment he is observed close by the side of his wounded favourite, and he seizes the unfortunate bird, and vainly endeavours to support it for another attack, which might in turn be fatal to his antagonist, but the sanguinary monster with increased emotion perceives its life-blood trickling upon the sand, its valiant neck gradually loses its arch-like form, and it falls dead from the hands of its supporter, who with agitated breast, with muttering and faltering voice, trembling limbs, and subdued spirit, slowly withdraws from the brutal scene cowardly and conquered.

We had managed to spend our time agreeably enough during the few days we had as yet remained at this place, and I have no doubt we should have continued to do so, had not a most unfortunate and serious accident befallen our second mate, which threw us all into the greatest discomfiture and melancholy: it occurred to him while discharging a cannon by the captain's orders, for the purpose of foolishly saluting an American ship, which was about leaving the harbour. The poor fellow had discharged it several times, but the reports were not sufficiently loud to please the captain, who ordered it to be again loaded and fired, which the mate thought he would do this time with effect, and therefore not only did he cram into its mouth a seaman's capful of powder, but commenced ramming down the wadding with a handspike, which, as he was doing, a spark that had remained in the breech of the gun from the previous firing ignited the charge, and the explosion which took place shattered his right arm to atoms. Of course the consternation which occurred among us all, from this melancholy affair, was not of a trifling description, and when the captain saw the mischief his imprudence had occasioned, he wrung his hands, and shed tears like a child. It was my painful duty to amputate the wounded member, which I am proud to have to state was accomplished with celerity, and without giving unnecessary pangs to my unfortunate shipmate, who soon recovered, and still lives to tell the melancholy tale. By this unfortunate catastrophe our mate lost his best friend, his right arm, and we lost a valuable officer in a ✓

of their united efforts, and still more strengthened the buoyancy of their minds. And indeed good fortune attended us with an unsparing hand, for in about six weeks we obtained above six hundred barrels of sperm oil, which completed our cargo. Never shall I forget the pleasurable excitement that prevailed among all around, when the last slain whale measured its huge length along the limpid waves—cheer after cheer ascended, and made the decks resound with their recoil. The exciting grog was quaffed to dearest wife or maid, or nearest friend, with joyous heart and generous throb of warmest hope. And when the rich amber-coloured store was placed below in the sure hold, then up ran the busy mariners, and stretched upon the yards with willing hands the whitened sails, and heaved with urgent hope for kindly gales to waft them to their homes.

We now steered to the north-east, being bound again to the Sandwich Islands, it being necessary to refit the ship and refresh the crew, before we attempted to pass through the distant regions, or witness the uncommon scenes that might present themselves. We soon found ourselves in the latitude of forty degrees north of the equator; it being necessary to make so much northing in order to get to windward of the Sandwich Islands during our passage—because of the north-east trade winds which prevail all around them, so that if a ship attempted to make the straight course, she would soon find herself far to the leeward of the islands.

From the time of completing our cargo up to our arrival in forty north, we had passed through an immense

× *Sort of a ground-swell in this sentence.*

number of large sperm whales, indeed we had seen them almost every day. They appeared migrating, or going off in herds or “schools” to the southward. At this time we were only about three days sail from the islands which lie to the southward of the sea of Kamschatka, which is the longest passage a ship can possibly make from England; and the reader will find, if a chart or map is consulted, that the distance which then existed between us and our native land was enormous. If the fact of whale fishermen wandering so far in search of their prey was not fully proved from various authentic records, would not Europeans in general deem the first narration of such journeyings, as an account too improbable for them to believe? are works of romance beyond the apparent fiction of their doings in those distant regions; where, trusting to their frail bark, they brave the Indian typhoon, sail along the shores of unfriendly and savage tribes, and at times carry off the rich produce of their seas in sight of their very habitations?

On Monday the 6th of August 1832, at about three P.M., we again crossed the meridian of longitude, making ourselves 180 degrees of longitude distant from the pleasant town of Greenwich, finding our latitude also to be 38° 39′ north of the equator. On the 14th, being in the longitude of 168° 37′ 30″ west, and latitude 35° 32′ north, we fell in with the regular north-east trade winds. During this day we passed through large quantities of medusæ, intermixed with great numbers of the *ianthina fragilis*, a purple shell which generally floats on the surface of the ocean, about the size of a walnut;

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*Vide Langsdorff—Captain D'Wolf
Brazil Fishery*

& page 342 Indian Fishery

[—————?—————]

*U.S.S. Pea[cock] stove by a whale, &
finally stove by a rock. My old friend
Com: Ap Catesby Jones*

Daniel Boon—neighbor's spout &c

(1100 lb avg. of a bu[II] ox.)