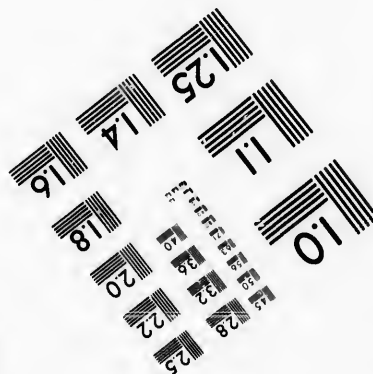
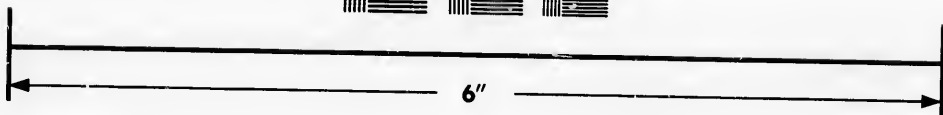
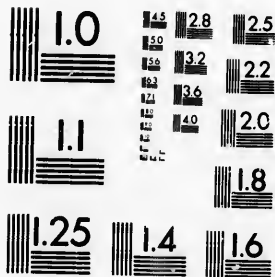


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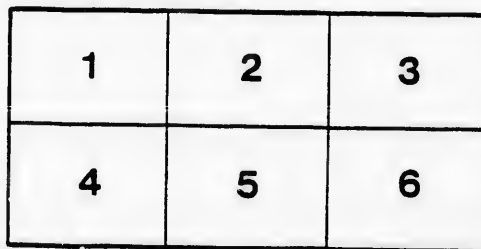
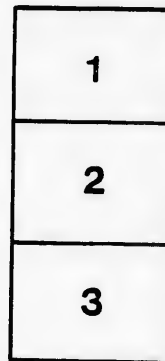
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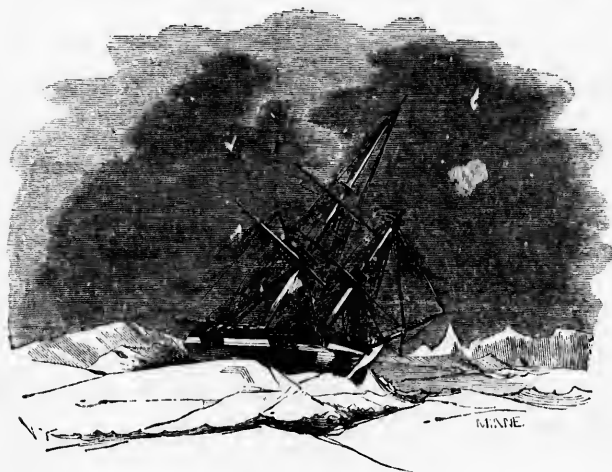
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BREAKING-UP OF THE ICE-RAFT.

RECENT POLAR VOYAGES.

A RECORD OF ADVENTURE AND DISCOVERY.



FAST IN THE ICE.

Thomas Nelson and Sons,
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RECENT POLAR VOYAGES.

A Record of Discovery and Adventure.

FROM THE SEARCH AFTER FRANKLIN TO THE
BRITISH POLAR EXPEDITION:
1875-1876.

BY THE

AUTHOR OF "THE MEDITERRANEAN ILLUSTRATED,"
"THE ARCTIC WORLD," &c.

Adams.

"Ye shall hear what they beheld
In other lands."

BYRON.

LONDON: THOMAS NELSON AND SONS.
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P R E F A C E.



THE subject of Discovery and Adventure in the Arctic Seas has always had an attraction for English readers, who cannot fail to remember how large and important a share English seamen have had in their exploration. The "Northern Lights" have witnessed some of the brightest deeds of heroic daring, some of the most remarkable manifestations of heroic endurance, which adorn the annals of the British Navy. From the days of Sir Humphrey Gilbert to those of Nares and Stephenson, the finest qualities of our race have been tested in the long and arduous struggle with the Arctic Winter, and the mighty influences of the perpetual Frost.

The present volume, however, is not designed as a history of that struggle. In its introductory chapter, it is true, it briefly sketches the leading episodes, and rapidly sums up the discoveries made at different periods, showing how the great Unknown World of the ancients has been gradually revealed to modern inquiry; but its chief purpose is to take up the record at the death of Franklin, and to detail what has been accomplished in the last quarter of a century. Of late years the object of explorers has not been to discover the North-West Passage, for that problem was solved by M'Clintock; but to trace out a route to the Pole, and to the supposed open Polar Sea. Advancing far beyond the limits of previous research, they have experienced greater dangers, undergone a

severer temperature, and pushed back the boundary of the Unknown to a point within four hundred miles of the Pole. They have shown that no open Polar Sea exists; that, in all probability, a dense ice-barrier everywhere prevents access to the coveted goal of geographical enterprise; while their labours have, at the same time, made us acquainted with the habits of Eskimo life, and the physical characteristics of the Arctic World.

In the following pages, then, after a preliminary sketch of the progress of Discovery in the Polar Seas, the reader will find full yet concise summaries of the expeditions of Dr. Kane, M'Clintock, Dr. Hayes, the *Hansa* and *Germania*, Lieutenant Payer, Captain Hall in the *Polaris*, and Captains Nares and Stephenson in the *Alert* and the *Discovery*. A Chronological List of Arctic expeditions between 1845 and 1876 is added. The compiler has endeavoured to preserve whatever was most valuable and interesting in the original narratives, while compressing them within the limits of a volume which he who runs may read. He has sought to do ample justice to the courage, patience, and resolution of the enthusiastic adventurers who have dared and suffered so much for the sake of science. Many of the incidents related would seem extraordinary if introduced by the novelist into his history of a fictitious hero. Many of the scenes described would seem incredible if depicted by the poet in the course of the most stirring epic. Yet these incidents are *true*,—the storm, the drifting ice-raft, the falling berg, the sinking ship, the breaking up of the great frozen floe: these scenes are *real*,—the vast plains of ice, the rugged hummocks, the bird-thronged cliff, the far-stretching glacier. And the reader, therefore, may enjoy all the excitement of romance, while conscious that he is being beguiled by no invention of the romancist.

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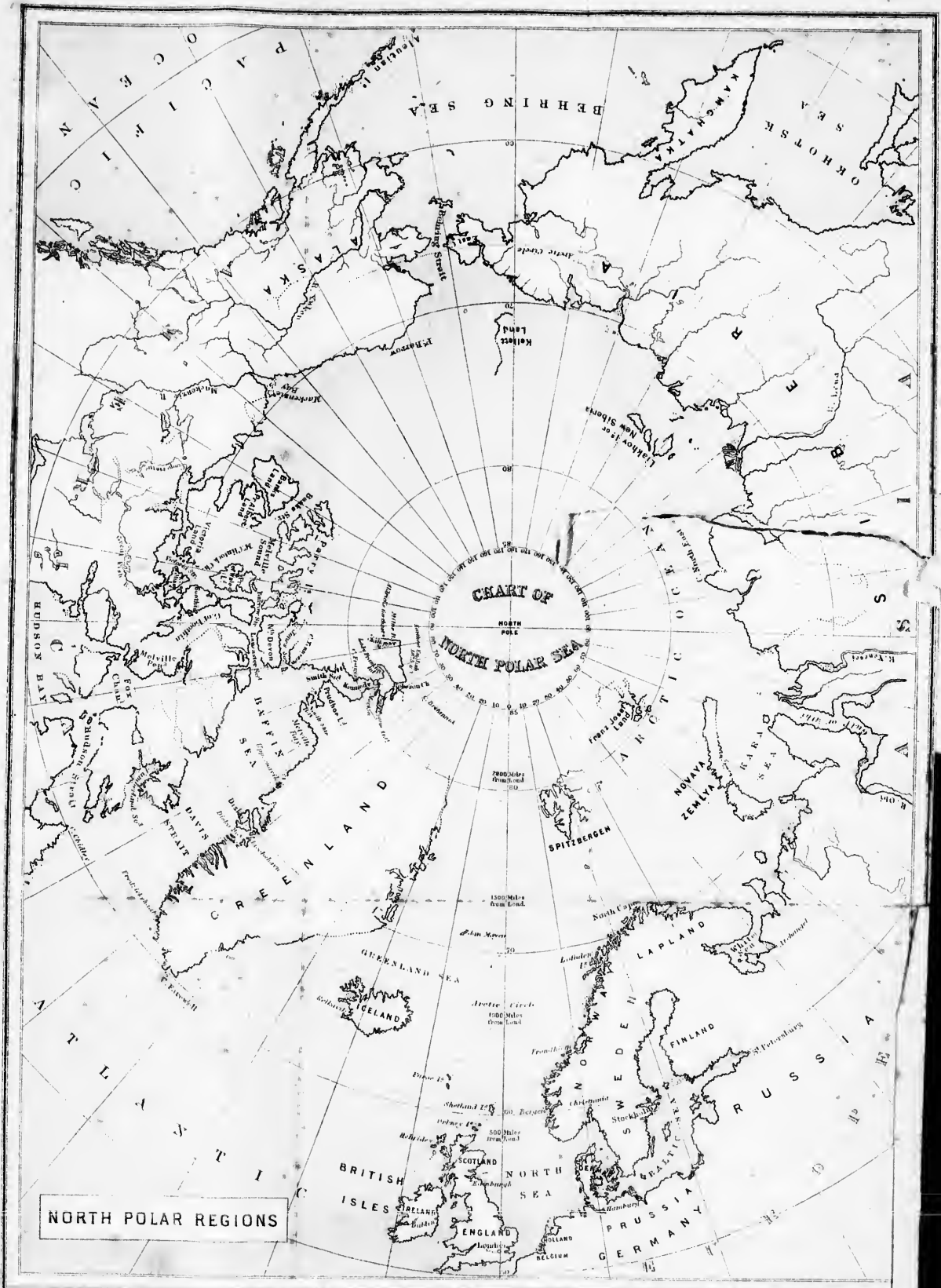
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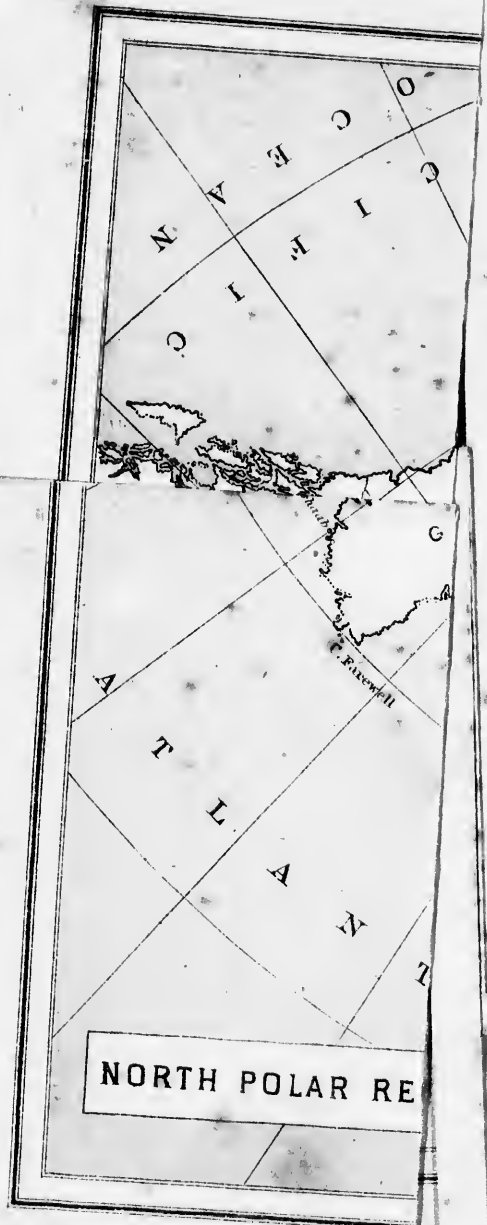
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RECENT POLAR VOYAGES.

CHAPTER I.

PROGRESS OF GEOGRAPHICAL DISCOVERY IN THE NORTH, FROM
THE REIGN OF HENRY VII. TO THE REIGN OF VICTORIA.

THE FIRST ADVENTURERS.



THE discovery of a North-West Passage to India—that is, of a water-way from the North Atlantic Ocean to the North Pacific, round the “hyperborean shores” of the great American continent—was an object which early engaged the attention and fired the ambition of the sea-captains of England.

They were incited to its accomplishment by the monopoly which Spain and Portugal had acquired of the Cape of Good Hope route to “far Cathay” and its apparently inexhaustible treasures: a monopoly solemnly sanctioned by Papal authority. English energies, no longer expended, after the accession of Henry VII.,

upon fruitless campaigns in France, or still more fruitless internecine strife, needed a much wider field for their expansion than England's insular limits could afford; and they sought that field successfully in the broad Ocean. This new spirit of enterprise was fostered by the stories of strange lands and new races of men which poured in on every side: stories of the deeds of the Portuguese mariners; stories of the achievements of Columbus and his followers. But, in truth, the North Sea fisheries had already made the merchants of Bristol familiar with the coasts of Greenland; and John Cabot and his English crew had gained the icy solitudes of Labrador two years before Columbus reached the actual mainland of America. It was natural, therefore, that the English adventurers, when they resolved to compete with those of Spain and Portugal in the discovery of new regions, should turn their thoughts towards the Northern World.

The first purely English name connected with the long records of Arctic Enterprise is that of Master Richard Thorne, at whose instigation King Henry VIII. sent two fair ships, "well manned and victualled, having in them divers cunning men, to seek strange regions." This was in 1527. Nothing is known of the result of the expedition, except that one of the ships was wrecked off Newfoundland.

A London gentleman named Hore, accompanied, strangely enough, by thirty members of the Inns of Law, and about the same number of adventurers of low degree, reached Newfoundland in 1535. There they underwent the most terrible sufferings, and in their

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WILLOUGHBY'S WINTER-QUARTERS.





utter want and reckless misery had recourse even to cannibalism. Many of the crew had died, when a French vessel arriving on the coast, the survivors surprised it by night, and carried it to England.

In the reign of Edward VI., Cabot, the reputed discoverer of Newfoundland, and an admirable seaman, was appointed "Grand Pilot of England" and Governor of "the *Mysterie and Companie of Merchant Adventurers* for the discoverie of regions, dominions, islands, and places unknown." In this capacity he organized an expedition to search out what we call the North-West Passage; that is, a supposed communication with India through the Arctic Ocean. Its leaders were Sir Hugh Willoughby and Richard Chancellor. Chancellor's ship was separated from her consorts, and sailing in a northerly direction, was wafted into a spacious bay on the coast of Muscovy. Sir Hugh's vessel and her companion were driven on a wild and lonely part of the bleak Lapland shore, near the mouth of the river Arzina. They entered the river on September 18, 1563, and remained in the haven it afforded for the space of a week; when, seeing that the year was far spent, and also "very evil weather, as frost, snow, and hail, as though it had been the deep of winter," they resolved to take up their quarters there. But as day followed day, each darker and drearier than the preceding, and no relief came, or could come, in those frozen solitudes and icy wastes, the brave adventurers perished, one by one; and many months afterwards their whitened bones were discovered by some Russian fishermen. Thus the work of Arctic Discovery began, as it has been carried on, with sore human suffering.

SIR MARTIN FROBISHER.

For several years the problem of the North was left untouched; owing, probably, to the unsettled state of England during the reign of Mary Tudor and the early years of Queen Elizabeth. But in 1575 the old thirst for Discovery revived; and certain "studious heads," moved with a commendable desire to discover the "more remote regions of the world and the secrets of the ocean," stimulated some "well-moneyed men," who were actuated partly by love of knowledge and partly by hope of gain, "to find out whether there were any strait in the north part of America through which men might sail to the rich country of Cathay, and so the wealth of the East and West might be conjoined by a mutual commerce." For this purpose they fitted out two small barques, the *Gabriel*, of thirty-five, and the *Michael*, of thirty tons, with a pinnace of ten tons; and these they placed under the command of Martin Frobisher, the son of a Yorkshire gentleman, who had won a good repute for courage, resolution, and nautical skill.

In these little "cockle-shells," carrying in all some thirty-five or forty officers and men, he sailed from the "silver Thames" on the 8th of June 1576. As he passed the Queen's palace at Greenwich, he saluted Her Majesty with a volley of ordnance; and Elizabeth, with that wonderful tact of hers, which served her better than the profoundest political sagacity, waved her hand to the adventurers from her palace window, and sent them a gracious message, in which she thanked them for their loyalty, and desired Frobisher to take leave of

her on the following day. This he did, and met with a very flattering reception.

On the 12th, Frobisher was clear of the river, and bent his course to the northward. On the 25th, he passed the stormy Shetland group, where he took in fresh water, and refitted the *Gabriel*. Sailing to the westward, he sighted, on the 11th of July, some "high and rugged land rising like pinnacles of steeples," where he would fain have rested his crews, but was prevented from finding a convenient port by the great store of ice that lay along the coast, and the thick-gathering mists. The land he saw was probably the southern extremity of Greenland.

While threading his way through the ice-encumbered seas he lost his pinnace, which was never again heard of; and the following day, in a storm, the *Michael* disappeared. Its crew proceeded westward, until they reached what is supposed to have been Labrador. Then, in the belief that Frobisher had been wrecked, as they could discover no traces of him, they put their ship about, and returned to England; arriving at Bristol on the 1st of September.

The *Gabriel*, with only eighteen officers and men on board, continued her adventurous voyage, and on the 21st of July reached the island-group lying to the south-west of Davis Strait. Frobisher supposed it to be a portion of Labrador, and named the first island he fell in with Queen Elizabeth's Foreland. He was prevented by fogs and ice from landing, and explored the whole archipelago in the hope of discovering a haven where he might refit his shattered vessel. This he

found at last in an island which he christened after Hall, the master of the *Gabriel*, who, with four sailors, first disembarked on it on the 1st of August. After repairing his ship, Frobisher pushed forward into the more southern of the two bays in Cumberland Island, and named it Frobisher Strait. He was under the belief that it would carry the navigator to the western coast of America.

The neighbouring land he christened *Meta Incognita*. Here one of his crew saw some "mighty deer" which seemed to be "man-kind!" They ran at him, and it was with difficulty he escaped from their attacks. Here Frobisher discovered traces of the frequent visits of the natives. "And being ashore upon the top of a hill, he perceived a number of small things floating in the sea afar off, which he supposed to be porpoises or seals, or some kind of strange fish; but coming nearer, he discovered them to be men in small boats made of leather. And before he could descend from the hill, certain of these people had almost cut off his boat from him, having stolen secretly behind the rocks for that purpose; whereupon he speedily hasted to his boat, and went himself to his halberd, and narrowly escaped the danger and saved his boat. Afterwards he had sundry conferences with them, and they came aboard his ship, and brought him salmon and raw flesh and fish, and greedily devoured the same before our men's faces. And to show their agility, they tried many masteries upon the ropes of the ship after our mariners' fashion, and appeared to be very strong of their arms and nimble of their bodies."

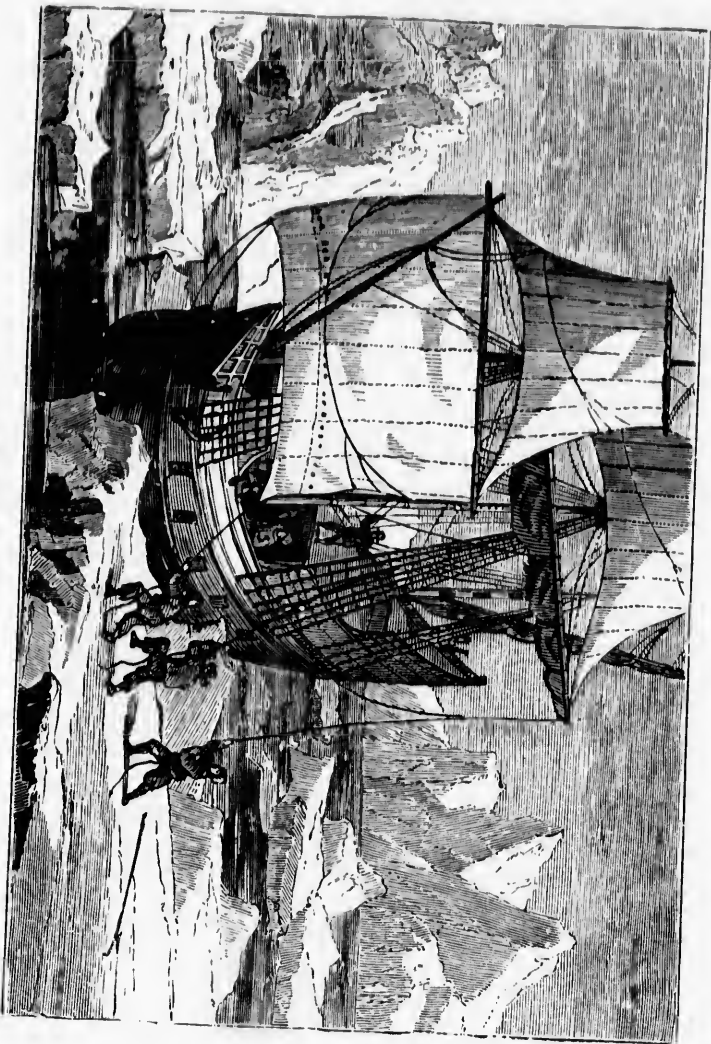
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now in the neighbourhood of the wished-for Cathay, and to explore the surrounding coasts he undertook numerous short expeditions, either in a rowing-boat or in the *Gabriel*. In the course of these he often came in contact with the natives, whom he described as "strange infidels, whose like was never seen, read, nor heard of before," "with long black hair, broad faces and flat noses, and tawny in colour, wearing seal-skins; the women marked in the face with blue streaks down the cheeks, and round about the eyes." One of these Eskimos he conveyed to England, where he died of a cold which he had caught at sea. Their boats were "all made of seal-skins, with a keel of wood within the skin. The proportion of them was like a Spanish shallop, save only that they were flat in the bottom and sharp at both ends."

Having lost his only boat, with five men in her, Fro-bisher felt that it was useless to proceed farther, and resolved on returning to England, in the hope of resuming his researches in the following year. The *Gabriel* arrived at Harwich on the 2nd of October, after an absence of four months, in which time she had sailed farther north than any previous expedition, with the exception of that commanded by John Cabot.

On the 3rd of October the adventurers reached London, where they were joyfully received with the great admiration of the people, bringing with them their "strange man" and an Eskimo *kajak*, or canoe,—both being "such a wonder unto the whole city and to the rest of the realm that heard of it, as seemed never to have happened the like great matter to any man's knowledge."

But Frobisher had with him something which proved of greater interest to those whom the thirst for knowledge or greed of gain induced to concern themselves about a short north-west passage to Cathay. This was a stone picked up by one of the seamen, which, when the seaman's wife had contemptuously thrown it into the fire, "glittered with a bright marcasite of gold." Being afterwards tested by some of the London gold-refiners, it was pronounced to contain a large quantity of the precious metal.

Now, indeed, the hopes of merchants and adventurers flamed up brightly, and everybody believed that the path to Cathay had been opened up to English enterprise; or if not to Cathay itself, at least to some land equally abounding in treasures. A second expedition was straightway determined upon; and receiving the sanction of Queen Elizabeth and her great minister, Cecil, a company was incorporated to carry it out, and to prepare for the conquest and settlement of such new lands as might be discovered. Frobisher was appointed "Captain-General by sea and Admiral of the ships and navy of the Company;" and three ships were got ready, the old *Gabriel* and *Michael*, and a much larger vessel, lent by the Queen, the *Aid*, of 180 tons, manned by sixty-five sailors and twenty-five soldiers. The two smaller ships carried about twenty-five men between them.

Frobisher weighed anchor at Blackwall on Whitmonday, the 26th of May, and dropped down to Gravesend, where, in a true spirit of devotion, the crews received the sacrament, and were duly prepared to act as good

Christians towards God and resolute men for all fortunes. He stayed three days at Harwich, quietly getting rid of those whom he suspected to be neither resolute men nor good Christians, and then bore away for the Orkneys. The people of these bleak and storm-beaten islands seem in Frobisher's days to have touched but the borders of civilization. When he landed, they fled from their poor cottages in a panic of fear,—which is not to be wondered at when we remember how frequently they suffered from the attacks of pirates. Their houses are described as very simply built of "pebble stone," without any chimneys, the fire being kindled in the centre. Wood was unknown, and for fuel they used manure and turf. "The goodman, wife, children, and other of the family, eat and sleep on the one side of the house, and the cattle on the other; very beastly and rudely, in respect of civility. They have corn, bigg, and oats, with which they pay their king's rents, to the maintenance of his house. They take great quantities of fish, which they dry in the wind and sun. They dress their meat very filthily, and eat it without salt. Their apparel is after the rudest sort of Scotland. Their church and religion is performed according to the manner of the Scots."

Frobisher quitted the "stormy Orcades" on the 8th of June, and sailed onward steadily for six-and-twenty days, much buffeted by contrary winds and rolling seas, but cheered by the constant daylight that prevailed. He fell in with some huge glittering icebergs, and with trunks of trees borne by the currents from the American coast; and on the 4th of July there was "great firing of

guns" and much rejoicing on board the *Michael*, its mariners mistaking an unusually great array of bergs, looming whitely through the mists, for the snow-burdened shore of Greenland. That shore, however, was really sighted in the evening; but it brought no comfort to the wave-worn adventurers. Frobisher vainly attempted to find a port into which he might convey his ships; and after three days' delay, was forced to leave behind him the long range of snowy mountains and of gloomy valleys, filled with slow rivers of ice labouring downwards to the very margin of the sea.

Directing his course to the strait discovered in his former voyage, he reached Hall Island on the 17th. Here he laid up his barques, and while his miners and refiners were collecting the supposed gold ore, he embarked in a couple of boats, with forty of his men, and made several exploring voyages.

Landing, on one occasion, on the northern shore of Frobisher Strait, he ascended a high hill, which, after offering up suitable prayers, and arousing the echoes with the blare of trumpets, he named Mount Warwick, in recognition of one of his patrons, the Earl of Warwick. On the summit a cairn of stones was raised. After descending its rugged side, he encountered a party of the natives, who showed a truly friendly disposition, and shouted joyously, and danced and leaped at the sound of the English trumpets. Neither Englishman nor Eskimo knew a single word of the other's language; but gestures and smiles are a language which is understood all the world over. An exchange of presents took place,—pins and other trifles being accepted by the

natives with evident gratification. Their manner of traffic is thus described:—They laid down of their merchandise upon the ground so much as they meant to part withal, and so looking that the other party with whom they traded should do the same, they did themselves depart, and then, if satisfied, came again and took in exchange the other's wares.

In this simple commercial transaction the English seamen spent most of the day. In the afternoon, as the summer twilight drew its shadows over the sea, they wended their way towards the shore, with the intention of re-embarking. Thither the Eskimos accompanied them, with many friendly signs, and evidently desirous they should stay. On his part, Frobisher was anxious some of them should visit the ships; and when they would not do this voluntarily, he resorted to stratagem. Having beguiled a couple of the Eskimos to the water's edge, he seized them, and with Captain Hall's assistance endeavoured to place them in the boat. However, they eluded his grasp, ran for their bows and arrows, and in conjunction with their comrades made so desperate an attack on the Englishmen that it required all their coolness and courage to repel it. One of the Eskimos, it is true, was captured, but all the rest were thenceforth converted into enemies.

In the course of the night Frobisher incurred another serious risk. Having rowed from Hall Island to an islet at some distance off, where he was forced by a sudden storm to remain for some hours, the same storm brought down upon his ships a tremendous flotilla of icebergs, the smallest of which was sufficient to destroy the little

squadron if they came in contact with it. All the night the English barques sailed to and fro, as in a maze, to avoid the great bergs which, first from one quarter and then from another, sailed down upon them. Some scraped us, says the chronicler, and some escaped us; but through vigilant and skilful seamanship they avoided every danger, and God being their "best steersman," the morning found them in safety. Frobisher then rejoined them, and a general thanksgiving was offered up by the captain-general and his followers for their happy deliverance.

The storm was attended with one happy result, for it so broke up the ice in Frobisher Strait as to render the channel navigable. For about a hundred miles the little squadron sailed into the unknown waters, anchoring at first in Jackman Sound, where he left his ships, and afterwards exploring the southern coast-land in his boats. Here he collected large quantities of the "gold ore," and made acquaintance with a great dead fish,—which was, in fact, a narwhal,—“being about twelve feet long, and in bigness answerable, having a horn, two yards in length, wreathed and straight, like in fashion to a taper made of wax, growing out of the snout or nostrils.”

On the 23rd, Frobisher took formal possession of the new land, entering with his company in marching order, and having special care by exhortations that all, with one voice, should, in the first place, thank God for their safe arrival; in the second, beseech Him that it would please his Divine Majesty long to continue the queen in the enjoyment of her crown and sovereignty; and

third, implore Him that, by Christian study and endeavour, these barbarous people, trained up in paganism and infidelity, might be led to the knowledge of true religion, and to the hope of salvation in Christ. After these devout supplications, they all marched through the country with ensign displayed, so far as was thought needful, and now and then piled up stones on high mountains and other places, in token of possession.

Frobisher next crossed the strait and visited the southern shore, which he supposed to be some part of Asia, believing that he had solved the mysterious problem which, in truth, was to find no satisfactory solution for three centuries later. Thence he sailed to the westward, and discovered the Countess of Warwick Sound and Island; after which, the accumulation of the pack-ice preventing their farther progress, they prepared to return to England.

Of the natives of these wild and previously unexplored regions, the historian of Frobisher's expedition gives a curiously graphic description, which may be compared with the particulars furnished by later voyagers, and bears strong testimony to our early seamen's minuteness and accuracy of observation:—

They are, he says, of the colour of a ripe olive. They are men very active and nimble. They are a strong people and very warlike, for, in our sight, upon the tops of the hills, they would often muster themselves after the manner of a skirmish, trace their ground very nimbly, and manage their bows and darts with great dexterity. They go clad in coats made of the skins of beasts, as of seals, deer, bears, foxes, and hares. They

have also some garments of feathers, being made of the cases of fowls, firmly sewed and compacted together. In summer they use to wear the hair side of their coats outward, and sometimes go naked for too much heat; and in winter, as by signs they have declared, they wear four or five fold upon their bodies, with the hair for warmth turned inward. These people are by nature very subtle and sharp-witted, ready to conceive our meaning by signs, and to make answer well to be understood again; and if they have not seen the thing whereof you ask them, they will wink and cover their eyes with their hand, as who would say, it hath been hid from their sight. If they understand you not whereof you asked them, they will stop their ears. They will teach us the name of each thing in their language which we desire to learn, and are apt to learn anything of us. They delight in music above measure, and will keep time and stroke to any tune you shall sing, both with their voice, head, hand, and foot, and will sing the same tune aptly after you. They will row with our oars in our boats, and keep a true stroke with our mariners, and seem to take great delight therein. For their weapons to offend their enemies or kill their prey withal, they have darts, slings, bows and arrows headed with sharp stones, bones, and some with iron.

The chronicler proceeds to describe them as friendly and kind-hearted one to another; as good fishermen and bold sailors; and as excellent marksmen, who seldom failed to hit their mark, notwithstanding the primitive character of their weapons. They had no other fuel than "heath and moss," and they kindled a fire by the

friction of a couple of sticks. They travelled in sledges drawn by dogs, and moved from place to place in quest of provisions.

The friendly intercourse between the Eskimos and the strangers was interrupted at last by an unfortunate skirmish, in which the former suffered severely. It is impossible not to reflect at how great a cost of suffering and wretchedness Science has achieved her conquests, and Knowledge extended her domains. We are prone to congratulate ourselves on the progress of Civilization, but seldom consider the sacrifices it has entailed both upon its servants and its victims. Yet we may not unfairly think of it as of the Juggernaut of the Hindus, whose triumphal march is over the bodies of the dead and dying; though these, indeed, are often willing sufferers, while Civilization is always most fatal to the races and peoples it designs to benefit, but who recoil from its dangerous presence. We can but hope that when the balance is struck hereafter it will show that the blessings of Civilization outweigh its evils. Yet such can hardly be the case until Civilization is always, everywhere, and in all things synonymous with Christianity.

The ships having by this time collected about two hundred tons of the supposed auriferous mineral,* and the season being far advanced, Frobisher determined on returning to England. And after safely weathering a succession of heavy gales, his vessels arrived at Bristol and Yarmouth towards the close of the year. The auriferous mineral, being assayed by competent gold-refiners, proved, however, a sore disappointment. It was pro-

* See our account of Captain C. F. Hall's voyages, in a later chapter.

nounced worthless, though every experiment that ingenuity could suggest was undertaken in the vain attempt to find the precious metal where Nature had not placed it, or had placed it only in inappreciable quantities.

Nevertheless, the Queen, and the adventurers, and the English people generally, comforted themselves with the hope that better and richer ore would be obtained on another occasion. A third expedition was equipped on a large scale. It was resolved not only to collect ore, but to found a colony. Accordingly, Frobisher set sail (May 31) with a fleet of fifteen ships, carrying a hundred and thirty able seamen, a hundred and sixty pioneers, and sixty seamen, besides gunners, shipwrights, carpenters, and surgeons, with "a minister or two to administer divine service and the sacraments according to the Church of England." An imposing force! But not destined to achieve any useful result, either by way of colonization or discovery, except that the admiral himself opened up the great inlet afterwards known as Hudson Strait; which is really one of the highways into the broad Pacific, and, had he followed its course, would have enabled him to antedate the labours of some of the boldest of his successors. Frobisher carried his fleet into the Countess of Warwick Sound, and endeavoured to settle his colonists. But they liked not the rigid climate or ice-bound soil—the mists, the shadows, and the darkness of that winter-world. They insisted on returning to England; and thither, accordingly, the admiral betook himself, leaving numerous relics of his abortive expedition to be discovered by Captain C. F. Hall in 1861-62

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LOSS OF THE "SQUIRREL."



SIR HUMPHREY GILBERT.

The next bold spirit who attempted the conquest of the North, and sought a passage to Cathay through Arctic ice-floes, was that most chivalrous of Elizabethan seamen, Sir Humphrey Gilbert. He had obtained a patent from the Queen, and with funds raised by the sale of his patrimony or supplied by his friends he fitted out five small ships, varying in size from twenty to two hundred tons, and gallantly sailed away into the unknown (1583). Deserted by one of his largest ships, he pushed onward to Newfoundland, and took possession of the harbour of St. John's and the surrounding country in the Queen's name. Then, with the *Delight*, the *Golden Hind*, and the little *Squirrel*, a mere cock-boat of ten tons, he proceeded on a voyage of discovery. The *Delight* was wrecked off Sable Island; and soon afterwards, having voyaged southward until near the Azores, the *Golden Hind* and the *Squirrel* were overtaken by a wild hurricane. His followers would fain have had Sir Humphrey remove on board the *Golden Hind*, but honour kept him in the tiny *Squirrel*. "I will not forsake," he said, "the brave and free companions with whom I have undergone so many storms and perils." So the little barque was cruelly tossed and buffeted by the raging waters; and our last knowledge of the knightly adventurer we owe to the captain of the *Golden Hind*, who saw him seated in the stern of his wave-worn pinnace calmly reading a book, and heard him utter the noble and never-to-be-forgotten words.—"Courage, my lads! we are as near to heaven

by sea as by land!" When morning came the pinnacle was no more to be seen; but Sir Humphrey's name lives greenly in the memories of men for ever.

CAPTAIN JOHN DAVIS.

Discouraged neither by Frobisher's failures nor by Gilbert's melancholy fate, the English merchants persevered in their efforts to read the secret of the Polar seas. In 1585 they listened to the plans of one John Davis, a native of Sandridge in Devonshire, and a veteran seaman; and some of them, in concert with Elizabeth's minister, Sir Francis Walsingham, furnished him with two stout and well-found barques,—the *Sunshine* of fifty, and the *Moonshine* of thirty tons,—in which to carry out his projects of discovery. He hoisted his flag in the *Sunshine*, and sailed from Dartmouth on the 7th of June. As the discoverer, or pioneer, of the Baffin Bay route, Davis occupies a place of renown among Arctic navigators, and we must describe his achievements at some length.

Towards the end of July, after a stormy voyage, in which Davis and his men saw no land, but many porpoises and whales, they sighted the south-east coast of Greenland, which, in allusion to its stern and sterile aspect, Davis poetically named the "Land of Desolation." The chronicler of the voyage describes it as "very high, and full of mighty mountains, covered with snow; no view of wood, grass, or earth to be seen; and the shore, two leagues off into the sea, so full of ice as that no shipping could by any means come near the same. The loathsome view of the shore and irksome noise of

the sea was such that it bred strange conceits among us, so that we supposed the place to be waste and void of any sensible or vegetable creatures."

Here Davis found a considerable quantity of drift-wood, and picked up a tree fully sixty feet in length.

Doubling Cape Farewell on the 25th of July, Davis stood away to the north-west; and on the 29th discovered a pleasant bay, spotted with isles of verdure, which he named Gilbert Sound. The people of the country, espying the two ships, visited them in their canoes, and holding up their right hand to the sun, and crying "*Ilizout*," would strike their breasts. On the Englishmen doing the same, the natives went aboard; men of good stature, beardless, small-eyed, and "of tractable conditions." The chronicler speaks of them as "very tractable people, void of craft and double-dealing, and easy to be brought to any civility or good order."

He shook hands with one of them, and the savage kissed his hand, and soon white men and Eskimos were on friendly terms. "We were in so great credit with them upon this simple acquaintance that we could have had anything they had. We bought five canoes of them. We bought the clothes from their backs, which were all made of seal-skins and bird-skins,—their buskins, their hose, their gloves,—all being commonly sewed and well dressed, so that we were fully persuaded that they have divers artificers among them. We had a pair of fine buskins of them, full of fine wool like beaver. We had of their darts and oars, and found that they would

by no means displease us, but would give us whatsoever we asked of them."

Davis understood from the Greenlanders that a broad open sea lay to the north-west, and on the 1st of August he sailed in quest of it; but quickly altering his intention, he entered the broad highway to the Pole which, as Davis Strait, still perpetuates the memory of this intrepid navigator.

On the 6th of August he again sighted land, in lat. $66^{\circ} 40'$, and dropped anchor in "a very fair road under a brave mount, the cliffs whereof were orient as gold." This promontory he named Mount Raleigh; a foreland to the north, Cape Dyer; another to the south, Cape Walsingham; and the bay itself, Exeter Sound. Here his men discovered four white bears lying at the foot of the mount, and killed one of them. Next day they killed another. "When we came up to him," says Jane, the historian of the voyage, "he lay fast asleep. I levelled at his head, and the stone of my piece gave no fire. With that he looked up, and laid down his head again. Then I shot, being charged with two bullets, and struck him on the head. He, being but amazed, fell backwards; whereupon we ran all upon him with boar-spears, and thrust him in the body. Yet, for all that, he gripped away our boar-spears, and went towards the water. Then he came back again, and one master shot his boar-spear and struck him in the head, and made him take the water and swim into a cove fast by, where we killed him, and brought him aboard."

The season being far advanced, Davis now turned

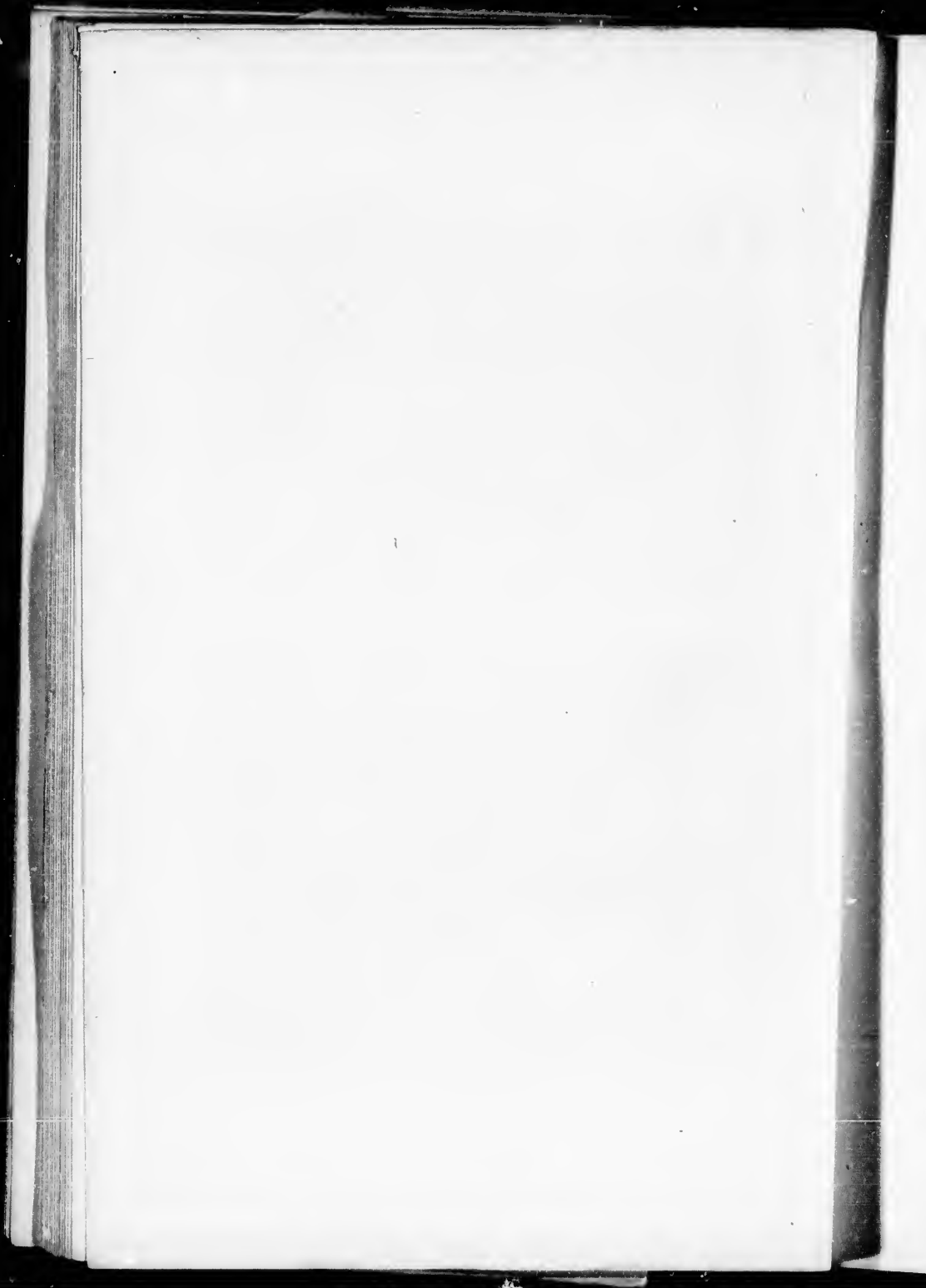
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THE "SUNSHINE" AND THE "MOONSHINE."



southward, and doubling a cape which he christened God's Mercy, discovered an ample channel, some thirty leagues across, of which the waters were of the very colour, nature, and quality of the main ocean. Sailing up it sixty leagues, he found himself involved in an archipelago of small islands; but the weather growing stormy, with frequent fogs, he resolved to sail for England. On the 10th of September, off the bleak coast of the Land of Desolation, he lost sight of the *Moonshine*, and supposed she had gone down. But she joined him again on the 13th; to be beaten off once more on the 27th, and find her way home alone. Strange to say, both vessels reached Dartmouth on the 30th of September, within two hours of one another.

Davis's expedition had been rich in geographical results. For the first time he had explored the southern coast of Greenland, and he had discovered the great channel of Davis Strait. The merchants who had sent him out were so pleased with his skill and encouraged by his success, that they resolved on the equipment of another expedition in the following year, and were supported in their venture by the co-operation of some merchants in the west of England.

Accordingly, with his old ships, the *Sunshine* and the *Moonshine*, and, in addition, the *Mermaid*, of one hundred and twenty tons, and the *North Star*, a little pinnace of ten tons, he sailed from Dartmouth on the 7th of May. When in the neighbourhood of Iceland, on the 7th of June, he divided his little squadron, despatching the *Sunshine* and the *North Star* on a voyage along

the eastern coast of Greenland; while he himself, with the *Mermaid* and the *Moonshine*, sailed in the track of his previous voyage.

We will first follow the *Sunshine* and the pinnace, under the charge of Richard Pope.

He sailed round the southern and western coasts of Iceland, and at North Cape had some intercourse with its natives. Their dwelling-houses he found to be made, on both sides, of stones, with wood laid over them, and "turfs of earth." The roofs were flat. The boats were made of wood and iron all along the keel, like our English boats; and they had nails to nail them withal, and fish-hooks and other things "for to catch fish." They had also "brazen kettles, and girdles and purses made of leather, and knops on them of copper, and hatchets, and other small things as necessary."

Pope reached Greenland on the 7th of July, but was prevented from landing by a firm barrier of ice. He ascended as far northward, it is said, as lat. 80°. The apparently impenetrable character of the ice-floes, however, so daunted this somewhat incompetent explorer, that he hastily turned to the south, doubled Cape Farewell on the 31st of July, ran into Gilbert Sound—the rendezvous appointed by Davis—quarrelled with the natives, three of whom he cruelly murdered, and then made the best of his way home to England. The *Sunshine* arrived in the Thames on the 6th of October; but the little pinnace was lost sight of in a terrible storm on the 3rd of September, and never more heard of.

Davis, after leaving Pope on the 7th of June, pro-

ceeded to Gilbert Sound, where he did not arrive until the 29th, owing to bad weather, and the hindrance offered by masses of ice, which the currents brought down from the north. He was warmly received by the friendly natives, whose confidence he had won on his former visit by his honest dealing. "As the boats went sounding and searching," he says, "the people of the country having espied them, came in their canoes towards them, with many shouts and cries. But after they had espied in the boat some of our company that were here the year before with us, they presently rowed to the boat, and took hold on the oars, and hung about the boat with such comfortable joy as would require a long discourse to be uttered. They came with the boats to our ships, making signs that they knew all those that the year before had been with them. After I perceived their joy and small fear of us, myself with the merchants and others of the company went ashore, bearing with me twenty knives. I had no sooner landed but they leapt out of their canoes, and came running to me and the rest, and embraced us with many signs of hearty welcome." Afterwards they returned in much greater numbers, the ships being surrounded by fully a hundred canoes, which brought abundant supplies of newly-killed bears and birds, besides loads of skins and fish.

For a fortnight Davis lingered in this pleasant haven, occupying his leisure by boat-voyages along the coast. He ascertained that between the shore and the inland belt of mountains lay a varying tract of open, grassy country; but it was apparently uninhabited, and with-

out any signs of permanent settlements. He discovered, however, a large grave, protected from the weather by seal-skins, and containing a number of dead bodies.

His amicable intercourse with the Greenlanders still continued.

"I was desirous," says Davis, "to have our men leap with them, which was done; but our men did overleap them. From leaping they went to wrestling. We found them strong and nimble, and to have skill in wrestling; for they cast some of our men that were good wrestlers. They are of good stature; in body well-proportioned; with small, slender hands and feet; with broad visages and small eyes, wide mouths, great lips, close-toothed, and the most part unbearded. Their custom is, as often as they go from us, still at their return to make a new truce, in this sort: holding his hand up to the sun, with a loud voice he crieth "*Iliabout*," and striketh his breast, with like signs. Being promised safety, he giveth credit. They are idolaters, and have images, great store, which they wear about them, and in their boats, which, we suppose, they worship. They are witches, and have many kinds of enchantments, which they often used, but to small purpose, thanks be to God! They eat all their meat raw; they live most upon fish; they drink salt water, and eat grass and ice with great delight."

But a change came over the spirit of the scene. The Greenlanders were as far from perfection as civilized nations; and their appreciation of the rare gifts of their visitors bred in them such a desire to obtain possession of them that they did not hesitate to appropriate them,

where they were not forthcoming in any honester fashion. They cut away the boat of the *Moonshine* from her stern; they stole cables, and cloth, and oars, and a sword, a caliver, and a spear,—so angering the English seamen, that they desired their commander to dissolve the precarious alliance existing between them. Davis was wiser than his followers, and knowing that the thievish propensities of the natives arose from an ignorance of the laws that govern the relations of civilized society, was unwilling to deal harshly. At first, he tried what could be done by terrifying without injuring them, and fired a volley in the air, which scattered them like a flock of doves. Two hours afterwards, having recovered from their alarm, they returned and entreated a peace; and when this was granted, they brought seal-skins and salmon-peel. But if you “expel nature” by force, it will surely reassert itself; and as soon as the Greenlander saw iron, he sought to acquire it. Davis then ordered his men to refrain from ill-treating the simple creatures, to whom iron was as a source of infinite power and happiness, and to keep a stricter watch over their property.

It is impossible to peruse the record of Davis's voyages without being struck by his great sagacity, no less than by the skill and humanity with which he conducted all his intercourse with the natives. There were others of the Elizabethan seamen as brave, and even more adventurous; but none, perhaps, displayed so much of the composure, intrepidity, and policy which characterize a great naval commander. He reminds us forcibly of the most illustrious of navigators, Captain

Cook; and on the "bead-roll" of Arctic explorers his name must always occupy a foremost, if not the very first place.

Having been absent on one of his short boat-voyages, he returned to his ships on the 9th, to find his mariners complaining heavily of the Eskimos, who had stolen an anchor, cut one of the cables very dangerously, and assailed the Englishmen with volleys of large stones. Davis went ashore, and "used them with much courtesy;" after which they followed him on board, were kindly treated, and allowed to depart freely. But after sunset they resumed their annoying practices, and with slings threw stones very fiercely into the *Moonshine*, knocking down the boatswain. Davis ordered out his boats, and chased them, but could not overtake their light *kajacks*.

On the 11th, five of them came to make a new truce.

"The master acquainted me," says Davis, "with their coming, and desired they might be kept prisoners until we had our anchor again; and when he saw the chief ringleader and master of mischief was one of the five, he was very urgent to have him seized. So it was determined to take him. He came crying '*Iliacout*,' and, striking his breast, offered a pair of gloves to sell. The master offered him a knife for them. So two of them came to us: one we dismissed," the other was detained. The stolen anchor was then given up; but for some reason, which Davis has not recorded, he resolved on carrying his captive to sea with him. As he was well-treated, he seems not to have regretted his loss of liberty; and his "new suit of frieze of the Eng-

lish fashion" probably proved a sufficient compensation. He trimmed up all his darts and fishing-tools for general use, made oakum, and readily set his hand to the rope's-end.

Gilbert Sound was quitted on the 11th of July. Six days later, the two ships fell in with an iceberg, so huge, and so boldly marked along its margin with bays and capes, that Davis at first conceived it to be a snow-shrouded island which had hitherto escaped notice. His men began to despair when it was discovered to be a mass of solid ice; and their depression increased as day after day they slowly worked their way along the edge of a tremendous field of ice, enveloped in a fog so dense that they could see nothing before or around them, and so cold that their ropes and sails and shrouds were frozen, and seemed to be made of crystal. So great was the influence of Davis that none of them durst think of mutiny; but they went through their daily task with evident languor of spirit, and at last they went forward to the quarter-deck and implored him to return. Why struggle longer against the unconquerable elements? If he persisted in the endeavour, they would surely perish, and, through his overboldness, bring down upon his memory the curses of their widows and fatherless children.

Davis was resolute not to abandon his enterprise at their bidding, but he saw that it was useless to persevere with such timid spirits among his following. Accordingly, steering eastward, and making for the nearest shore, which proved to be that of Greenland, in $66^{\circ} 30'$

lat., or about five hundred miles to the north of Gilbert Sound, he proceeded to divide his crews and provisions. On board the *Mermaid* he embarked all the weak-hearted, with a sufficiency of stores, and despatched them homeward. He himself, with his bolder and more loyal followers, removed to the *Moonshine*, and on the 12th of August resumed his explorations. Crossing to Cumberland Island, he forced his way into Cumberland Sound, and sailed up it for some eighty leagues. He came to the conclusion that out of this sound might be found a passage to Cathay; but as it was late in the season, and his vessel was much shattered, he resolved to defer the quest of it to the following year.

Turning back on the 20th of August, he examined the coast-line southward with much care and accuracy. Thus he sailed past Meta Incognita, and crossed the mouth of the great channel now known as Hudson Strait—prevented, perhaps, by the accumulating ice-floes from recognizing its importance—and edging along the coast of Labrador, discovered Davis Inlet—or, as it is now called, Eskimo Bay—where he rested from the 28th of August until the 1st of September. Here upwards of forty great eod were caught with the sounding-lines, and some long spike-nails made into hooks. The land seemed fertile; at all events, it abounded in animal life,—bears, deer, pheasants, partridges, wild ducks, and other game.

Resuming his coasting voyage, Davis sailed as far south as Ivuetoke Inlet, in $54^{\circ} 30'$ lat.; and then, on the 13th of September, having lost his only anchor in a sudden storm, and two of his men in a skirmish with

the natives of an island off Labrador, he turned his prow towards England. A prosperous voyage across the Atlantic brought him into the picturesque waters of Dartmouth on the 1st of October.

Thus Davis had again shown his extraordinary abilities as a navigator; but the merchants who defrayed the cost of the expedition reflected that he had done but little towards achieving the route to Cathay, and many of them were loath to expend any more money in such apparently fruitless ventures. Some, however, were tempted by the prospects of a lucrative fishery on the coast of Labrador, and joined with Davis's great friend and patron, Sanderson, to fit out three ships,—the *Sunshine*, the *Elizabeth*, and the *Helen*,—two of which were to sail only as far as Labrador, while the third was to be used by Davis in the prosecution of his northern explorations.

Davis sailed from Dartmouth on the 19th of May 1587, and steered at once for Gilbert Sound, whence he designed to push northward with one of his ships, while the others crossed to Labrador. Some of his crew, however, were daunted by the aspect of the Arctic seas; and it was with difficulty that Davis suppressed a mutinous outbreak on board the *Sunshine* before the Sound was reached. He succeeded, however, in carrying his little squadron into the well-known port, on the 16th of June, and began to make arrangements for the departure of the two expeditions,—one in search of present gain, the other of future glory.

He had brought out with him the framework of a pinnace, and this he proceeded to put together for exploring purposes. But his design was frustrated by the thievish Greenlanders. Under cover of the night, they pulled the pinnace to pieces again, extracted all the nails, and stole every bit of iron they could discover. When caught in the midst of their depredations, they converted the broken boat into a kind of barricade, and defied the English sailors. Orders were given to the gunners to fire upon them; but, partly out of compassionate feelings, and partly from a desire not to injure the pinnace irreparably, they charged their guns with powder only. The report was sufficient to scare the Eskimos, and the wood-work was recovered, as well as so much of the iron as they could not carry with them in their rapid retreat to their canoes. But the pinnace was no longer of use, except to be turned into a rude fishing-boat for the use of the *Elizabeth*.

On the 21st of June, the two fishing-vessels left Gilbert Sound for the coast of Labrador, and Davis proceeded on his exploring voyage. His followers were faint-hearted, and ill disposed to imitate his brave adventurous spirit. They longed to return to the green shores of England; or, at all events, to be led no farther into the regions of winter than Labrador. But Davis protested that he would rather end his life with credit, than return with "injury and disgrace;" and so, after some hesitation, they agreed to live and die together, and committed themselves to the ship.

As he advanced along the west coast of Greenland,

Davis fell in with several parties of natives, with whom his men maintained a brisk exchange of commodities. Like all savages, they fully understood the value of iron, and would give anything they possessed for a knife, or even a nail. In this way the English seamen provided themselves with skins of bears and seals, which proved an useful protection against the inclemencies of the Arctic climate.

On the 24th of June, in the narrowest part of the Strait, and off Cape Walsingham, Davis encountered a huge iceberg, which, with its outline of headlands and bays, he mistook at first for Cumberland Island. On discovering the nature of his delusion, he continued his voyage northward, and sailed out of the Strait into that ample basin which is now known as Baffin Bay or Sea.

On the 30th he arrived in 72° latitude, or two hundred and fifty miles farther to the north than any previous navigator had penetrated. Here he discovered a little cape or promontory, which he named Sanderson Hope: the Danish colony of Upernavik is now planted in its vicinity. The natives gave him a very hospitable reception, and supplied him freely with birds, and dried fish, and flesh. But his eager spirit could not pause or linger; for, seeing before him "a great sea,—free, large, very salt, and very blue,"—he believed he had found the long-coveted passage to Cathay, and began to dream that the road to the north was thenceforth free and without impediment.

But he was soon to be rudely awakened from his illusion. On the 1st of July his progress was barred

by a huge field of ice; and when he had laboriously worked his ship around it, another rose up before him,—another, and yet another. Vast icebergs drifted southward in grim array; and it tasked all his seamanship, and all his calm courage, to carry his vessel safely through the labyrinth. In spite of every effort he was forced backward, and on the 29th he put into Cumberland Sound. Here, for three days, he sought for an outlet, but, like the great bay beyond, it was covered with masses of ice,—and the inertia of Nature (so to speak) triumphed over the energy of Man. There was nothing to be done but to return home; and with his battered, leaking ship, Davis “shaped his course for England, and, unhopd for of any, God alone relieving him, arrived at Dartmouth,” on the 15th of September 1587.

In 1602, Captain Weymouth adventured a voyage to the north-west, under a contract to forfeit all pay if he did not discover the passage to China. An Englishman, James Hull, served as chief pilot in a Danish expedition fitted out in 1605, which had no other result than a survey of some part of the Greenland coast. We next arrive at the name of

HENRY HUDSON.

Like Davis, Hudson ranks high among Arctic navigators, and his discoveries were of real importance. He made, in all, four voyages, sailing due north, north-east, and north-west; and his enterprise may be traced all along the American coast, from New York to the north

of the great bay, or sea, which preserves his name. His first voyage was made in 1607, under the direction of the Muscovy Company; and the order he received was straightforward and simple in the extreme: "Go direct to the North Pole." And this order he attempted to carry out in a small decked boat, with a crew of ten men and a boy! He steered due north along the shores of Spitzbergen, until he reached lat. $81^{\circ} 30'$; and then, for want of provisions, and owing to the approach of winter, was forced to return. When we consider the perilous character of the navigation of these northern seas, we cannot but marvel as we record that Hudson's little barque arrived safely in the Thames, on the 15th of September.

In the following year he sailed again, but took a north-easterly direction. His ship was somewhat larger, and his crew numbered fourteen men. But he ascended no higher than 75° , and returned to England in August.

His third voyage, in 1609, was made in the Dutch service. At first he made for the north-east, but being baffled by the ice-drifts, he sailed west, and touched the American coast in the neighbourhood of New York Bay. He discovered the noble river which still bears his name. The Dutch afterwards established a colony on its banks; and among their descendants long flourished wild strange legends of Hudson and his men. "It was affirmed," says Washington Irving, "that the great Hendrik Hudson, the first discoverer of the river and country, kept a kind of vigil there every twenty years, with his crew of the *Half-Moon*; being per-

mitted in this way to revisit the scenes of his enterprise, and keep a guardian eye upon the river and the great city called by his name."

In 1610, he made his fourth and last voyage, in a vessel of fifty-eight tons, stored and provisioned for six months. Frobisher Strait was gained on the 1st of June. Then came a desperate struggle against floating ice and contrary winds; but Hudson kept perseveringly to the westward, reached the extreme point of Labrador, which he called Cape Wolstenholm, and discovered an island-group to the north-west, the southern headland of which he named Cape Dudley Digges. Here a vast sea broadened before his astonished gaze; and the restless waters for the first time rolled and seethed under an English keel.

Into this great bay or sea he sailed for several hundred miles; and winter coming on, he encamped his crew upon Southampton Island, and hauled his ship aground. The hardships he and his men endured were terrible, for they were ill-fitted to contend with an Arctic winter, and had neither sufficient provisions nor stores. Hudson bore the trial uncomplainingly, sustained by a noble enthusiasm; but his followers grew discontented, and then mutinous, and on Hudson's attempting to resume the enterprise at the return of spring, they seized upon him, his son, and several sick sailors, and threw them into an open boat, in which they had previously stowed a fowling-piece, some gunpowder and shot, a small quantity of meal, and an iron pot (June 21, 1611). The castaways were voluntarily joined by John King, the carpenter, who refused

to share the shame of mutiny, and remained faithful to his captain to the last.

Yes, to the last; for Hudson and his companions were never more heard of. The ringleader of the mutineers, and five others, were slain by the natives on an island near Cape Digges. Of those who escaped, some died of starvation, and the remainder managed to carry the ship back to England. And thus miserably ended an expedition that, at the outset, promised such successful results.

BYLOT, BAFFIN, AND JAMES.

Notwithstanding Hudson's unhappy fate, his discovery greatly impressed the imagination of his contemporaries, who concluded that, by sailing across the great open water we now know to be a bay, they would reach the Chinese shore. In this conviction, Captain Button sailed northward in 1612. On the 15th of August he fell in with the mouth of a river, which he named Nelson River; where, at a later date, the Hudson Bay Company founded their first colonizing post. Here he wintered; displaying much sagacity in the discipline of his men, whom he preserved in good health by keeping them constantly occupied both in body and mind. In April 1613 the ice broke up; and resuming his voyage, he added to the chart a group of islands, in lat. 65° , now known as Mansfield Islands. He reached England in the following September.

In 1614 a voyage was made by William Baffin and Fotherby, and 1616 by William Baffin and Robert

Bylot, which resulted in the discovery of Whale Sound, Sir Thomas Smith Sound, Alderman Jones Sound, Sir Thomas Lancaster Sound, and Baffin Bay. These were notable additions to the chart of the Arctic World, which British enterprise was gradually defining and filling up; but by Baffin's contemporaries they were discredited. As Mr. Markham observes, the memory of a bold and scientific navigator had to wait many weary years for that full justice which comes at last. It was exactly two centuries* before another vessel forced her way into the "North Water" of Baffin Bay, and the great pilot's discoveries were almost forgotten. On maps published as late as 1818, may be seen a circular dotted line to the west of Greenland, with this legend,— "Baffin's Bay, according to the relation of William Baffin in 1616, *but not now believed.*"

The all-important discovery made by Baffin was that of the great channel leading out of his bay in a northerly direction, and opening upon the vast and still unknown region which stretches towards the Pole. He named it after Sir Thomas Smith, the governor, we may almost say the creator, of the East India Company; and a man of great sagacity, liberality, and enterprise. Of this sound Baffin says:—"It runneth to the north of 78°, and is admirable in one respect, because in it is the greatest variation of the compass of any part of the world known; for, by divers good observations, I found it to be above five points, or 66°, varied to the westward, so that north-east by east is true north, and so of

* Ross and Parry reached the "North Water" on August 8, 1818, in the *Alexander* and *Isabella*.

the rest. Also this sound seemeth to be good for the killing of whales, it being the greatest and largest in all this bay." It is now regarded as affording the only practicable route to the open Polar Sea; and we shall refer to it frequently enough when we come to speak of Recent Polar Voyages.

AN INTERVAL.

Little will be gained by dwelling upon the voyages of Steven Bennet (1603-1610), Jonas Poole (1610-1613), and Captain Luke Fox (1631),—the last of whom discovered Fox Channel, and penetrated other waters to the north and west, but did not penetrate as far north as Baffin. In 1631, Captain Thomas James was despatched by the Bristol merchants, and his voyage is remarkable for its misadventures if not for geographical results. He seems to have been unacquainted with the difficulties and dangers of Arctic navigation; and was driven to and fro by adverse winds and icebergs, until winter compelled him to land his crew on Charlton Island, and haul his ship ashore. Here they had bitter experience of the severity of an Arctic winter. Though they maintained a good fire in the hut they had constructed, their very beds were covered with frost, and water froze in a pan placed in front of the stove. Living almost wholly upon salt meat, they suffered much from scurvy; and it was with difficulty they contrived to build a boat, and at the return of summer escape from their ice-prison. They succeeded, however, in effecting their return to England.

For fully a century no further attempt was made to

solve a problem which men had come to consider as insoluble; and the maritime enterprise of England was principally directed to the colonization and survey of the Atlantic coast. When the great work of Discovery was again resumed, it was under the superintendence of the Russian Government, and in the North-East instead of the North-West. In 1741, Vitus Behring, a Dane by birth, but an officer in the Russian service, explored the coast of Kamtschatka. He was the discoverer of the straits which bear his name, and thus established the fact of the separation of Asia from America. Other Russian expeditions followed, which threw much light on the variation of the magnetic needle and other phenomena, and slowly but surely increased men's knowledge of the shores of the Arctic Ocean. The most important was the sledge-journey of Baron von Wrangell and Anjou in 1820-1823, which contributed some valuable facts to the treasury of physical science. Fighting against climatic hostility, they pressed forward, across the ice-bound plains of Siberia, to latitude $70^{\circ} 51' N.$, and longitude $155^{\circ} 25' W.$, where they found before them an open sea, which figures in their narrative as the "great Polynia." They were informed by a Tchuktchi chief, that from a point near Cape Chelagskoi, on a clear summer's day, snow-crowned mountains might be seen at a great distance to the north. This unknown northern land was invisible to Wrangell, but was sighted by Captain Kelutt; and afterwards, in 1867, by Captain Long, an American whaler, who approached it from Behring Strait. It is now laid down on the maps as Wrangell Land.

Of the labours of the Russian explorers generally, of such men as Hedenström, Anjou, Wrangell, Lütke, Baer, Middendorf, and Schmidt, it may fairly be said (in the words of a recent writer) that they place Russia second only to England among the nations who have won glory in the noble field of Arctic exploration. Great obstacles to their work have existed in the physical difficulties of the bleak *tundras*, and still bleaker shores of Northern Siberia; but these obstacles have been overcome by scientific enthusiasm, heroic resolution, and unquailing persistency. Thus it is that we owe to Russian explorers the examination and careful survey of more than a third of the threshold of the unknown Polar Regions.

BRITISH EXPEDITIONS.

In 1743, the British legislature stimulated the enthusiasm of the nation, and recalled the attention of British seamen to the gallant and successful labours of their ancestors in the Polar World, by the offer of a reward of £20,000 for the discovery of the North-West Passage. Several voyages were accordingly undertaken, though not with successful issues; and these were chiefly made through Behring Strait to the east, in the belief that an open sea lay between it and Hudson Bay.

Between 1769 and 1772, the intrepid Hearne made three land-journeys to the American shore of the Frozen Ocean. In the last of these he discovered the Coppermine River, which he traced to its source. In 1773, Captain Phipps (afterwards Lord Mulgrave) was sent out by the Admiralty with orders to make for the North Pole, as his primary object; and to take all such mag-

netic and meteorological observations, and to collect all such scientific data as might possess a distinctive value, as his secondary object. Phipps took the Spitzbergen route, but penetrated no farther north than $80^{\circ} 48'$. Nelson served as a midshipman on board this expedition, and met with the characteristic adventure with a Polar bear which Southey has described so pleasantly.

Baffled, but not discouraged, the British Parliament now offered (in 1776), in addition to its previous proposal, a sum of £20,000 for the actual discovery of the Pole, a similar sum for the discovery of any communication between the North Atlantic and North Pacific, and £5000 to any person who should attain within one degree of the Pole.

The last voyage undertaken by Captain Cook was in this direction. He passed through Behring Strait, but got no farther than $70^{\circ} 45'$.

In 1789, the Mackenzie River was discovered by Sir George Mackenzie.

The next name on the glorious record is that of Captain (afterwards Doctor) William Scoresby, well known as a successful and adventurous whaler. In one of his voyages (in 1806), while lying-to for whales in what are called the "Greenland Seas," on the east side of Greenland, he resolved to deviate from the beaten track and push towards the "Polar Sea," in the existence of which he strongly believed. Forcing his way through the pack-ice with almost incredible boldness and energy, he actually succeeded in clearing the formidable barrier, and entering "a great openness or sea of water," reached the high latitude of $81^{\circ} 30' N$. In

no succeeding voyage did he repeat this remarkable achievement; but he added largely to our knowledge of the eastern coast of Greenland, and accumulated much valuable and interesting information on the physical phenomena and natural history of the Arctic Regions. His various publications, moreover, contributed to keep alive the national interest in the work of maritime discovery, and led, more or less directly, to the celebrated expeditions of Parry, Ross, and Franklin.

SIR JOHN ROSS.

In 1818, the British Government resolved on an energetic effort to discover the long-wished-for Passage; and for this purpose the *Isabella* and the *Alexander*, two stout and well-found brigs, were placed under the orders of Captain John Ross, an officer who had already had some experience of the Northern Seas. The *Alexander* was commanded by Lieutenant Parry, a man of strong character and much scientific ardour. The two ships sailed on the 18th of April 1818, and took the usual Baffin Bay route. In latitude $75^{\circ} 54' N.$, Ross fell in with an Eskimo tribe who had never before seen the white men, and addressed them with the inquiries, "Who are you? Whence come you? Is it from the sun or the moon?" To these savages Ross gave the name of "Arctic Highlanders"; by no means a compliment to the hardy Gaels of Caledonia. Farther north, he came upon a line of cliffs covered with red snow; a phenomenon now known to be due to the abundant presence in the snow of a minute lichen, called the *Protococcus nivalis*.

At the farthest point which he reached, Ross was too far south to discern more than the outline of the land near Smith Sound ; but he named the bold headlands which guard the entrance to this famous channel after his two ships, Cape Isabella and Cape Alexander.

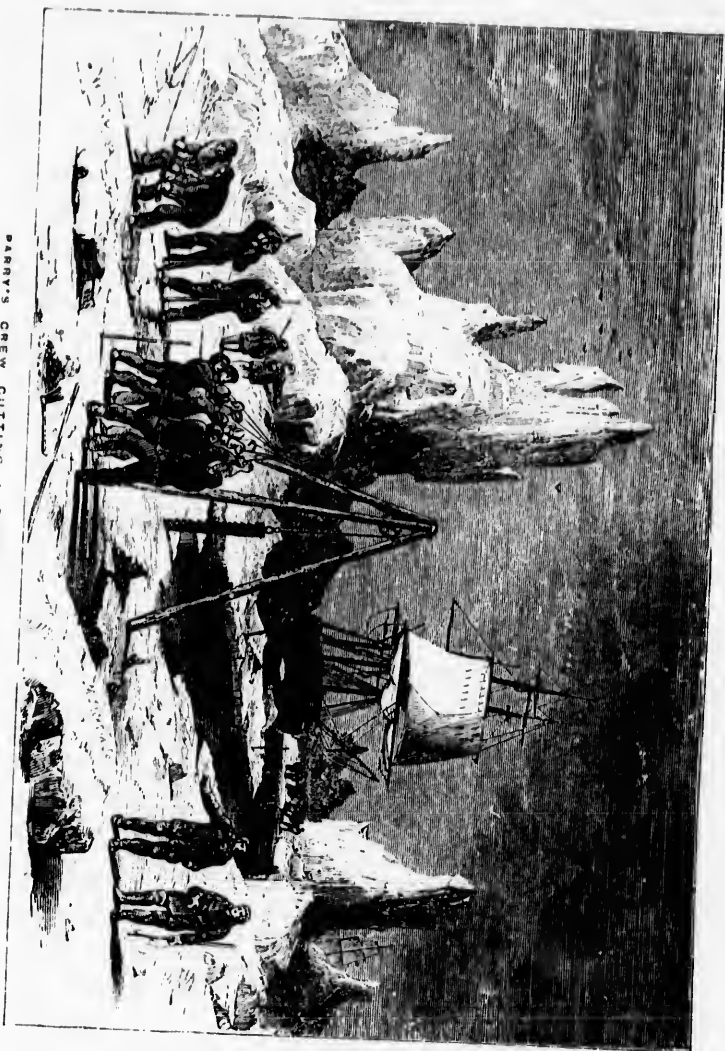
Descending the west side of the bay, he found the waters clear of ice, and extremely deep. The land was high, and the range of mountains, in general, free from snow. A noble inlet, nearly fifty miles wide, with cliffs on both sides, now offered itself to view, and the ships entered it on the 29th of August. But they had scarcely accomplished thirty miles when Ross, to the surprise and vexation of his officers, declared that he saw land stretching across the inlet at a distance of eight leagues, and ordered the ships to tack about and return. To this imaginary land he gave the name of Croker Mountains. Parry, on the other hand, was of opinion that this great inlet, now recognized as the Sir James Lancaster Sound of Baffin, was no land-locked bay, but a strait opening out to the westward ; and on the return of the two ships to England he openly declared this opinion. The English public supported the energetic Parry ; and, after a vigorous wordy warfare, the Government resolved to place him in charge of the *Hecla* bomb-ship and the *Griper* gun-brig, with which he sailed for the North on the 5th of May 1819.

SIR JOHN PARRY.

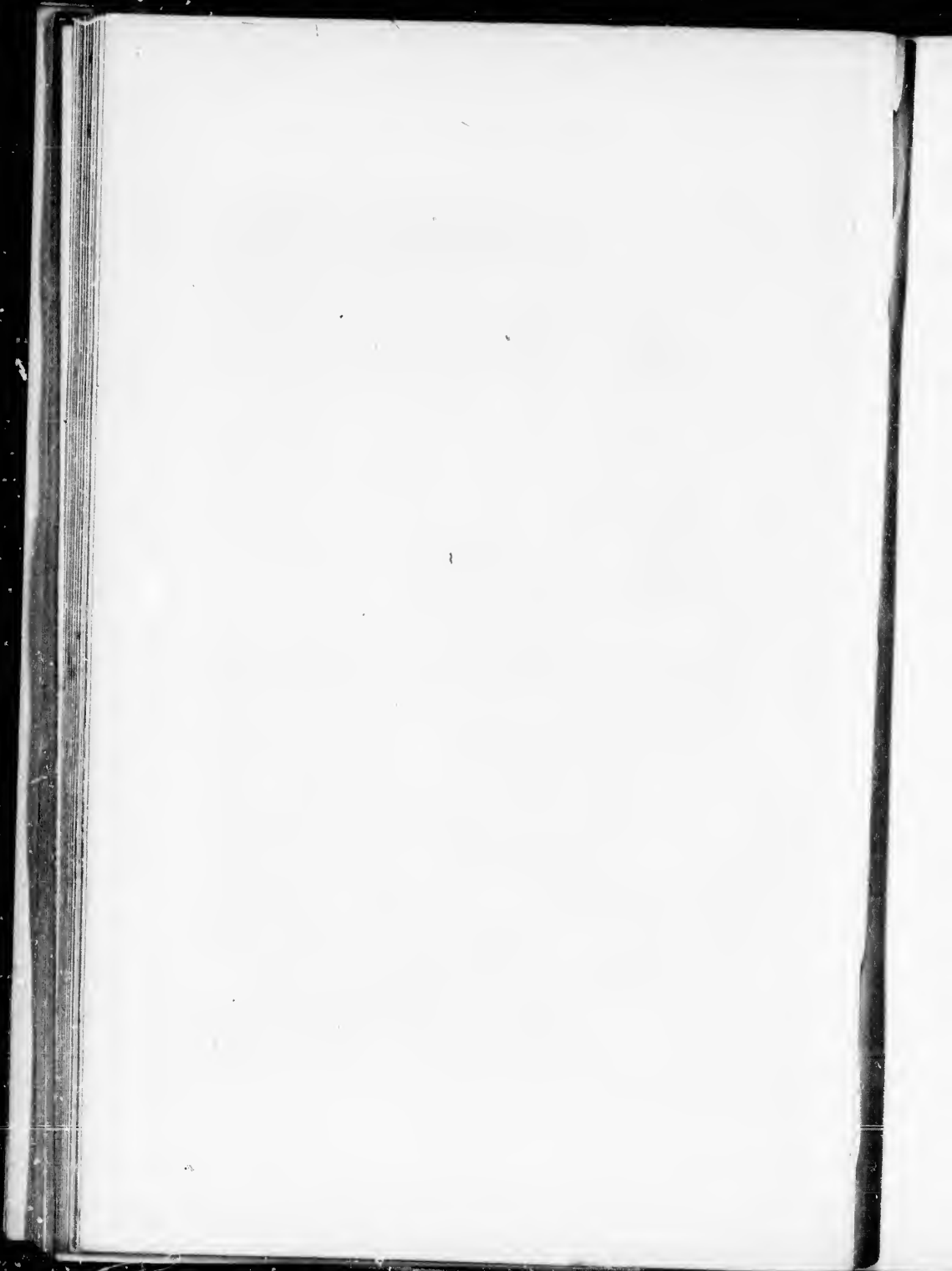
On the 15th of June he came in sight of Cape Farewell, and then steered northwards, up Davis Strait and Baffin Bay, as far as latitude 73°, where he found him-

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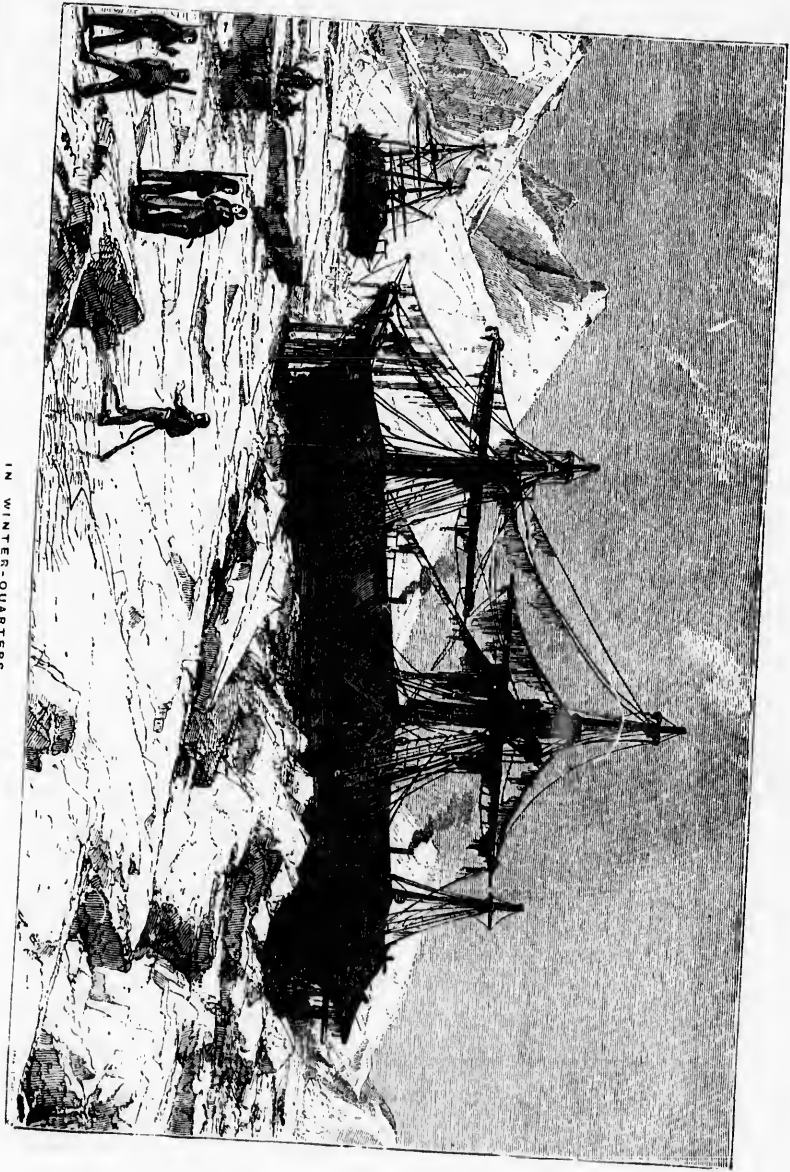
self hemmed in by masses of ice. On the 25th, however, a way opened up, and Parry pushed forward, boldly and energetically, until he reached Lancaster Sound. Here he was on the ground made familiar by the expedition of the preceding year, and was soon to determine whether Ross's supposed mountains had any real existence. "It is more easy to imagine than describe," says Parry, "the almost breathless anxiety which was now visible in every countenance, while, as the breeze increased to a fresh gale, we ran quickly up the sound."

As they advanced, the "Croker Mountains" disappeared into "thin air," and Parry proceeded as far as the mouth of a great inlet, which he named Barrow Strait. Entering this, he sailed onward to Prince Regent Inlet, which, with various capes, bays, and islands, he named and surveyed. On approaching the magnetic (not the actual) north pole, he found his compasses rendered almost useless by the "dip" or "variation" of the needle. Great was then the excitement on board the two ships; and the excitement increased to enthusiasm when, on September 4th, after crossing the meridian of 113° W. longitude, Parry announced to his men that they had earned the Government grant of £5000.

Two weeks later, they were beset by the ice, and in the Hecla and Griper Bay, on Melville Island, Parry resolved to pass the winter. In the following year, the thaw did not set in until July, and it was August before Parry released his ships. Then he started for home, and on arriving in England, about the middle of November 1820, was received with a hearty welcome.

His success led to his appointment to the command of another expedition in 1821. His ships, the *Hecla* and *Fury*, were equipped with every appliance that scientific ingenuity could suggest or unlimited resources provide. They sailed from the Nore on the 8th of May; they returned to the Shetland Isles on the 10th of October 1823. In the interval—seven-and-twenty months—Parry and Lyon (his lieutenant) discovered the Duke of York Bay, numerous inlets on the north-east coast of the American mainland, Winter Island, the islands of Annatook and Ooght, Hecla and Fury Strait, Melville Peninsula, and Cockburn Island. A glance at the map will show the reader how far to the westward these discoveries carried the boundary of the known region. While encamped on Winter Island, the English were visited by a party of Eskimos, whose settlement they visited in turn. There they found a group of five snow-huts, with canoes, sledges, dogs, and above sixty men, women, and children, as regularly and to all appearance as permanently fixed as if they had occupied the same spot the whole winter. The astonishment with which the English surveyed the exterior aspects of this little village was not diminished by their admission into the interior of the huts composing it. Each was constructed entirely of snow and ice. After creeping through two low passages, having each its arched doorway, the strangers found themselves in a small circular apartment, of which the roof formed a perfect arched dome. From this central apartment three doorways, also arched, and of larger dimensions than the outward ones, opened into as many inhabited apart-

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ments, one on each side, and the third opposite the entrance. Here the women were seated on their beds, against the wall, each having her little fireplace or lamp, with all her domestic utensils, about her. The children quickly crept behind their mothers; the dogs slunk into the corners in dismay.

The construction of the inhabited part of the hut was similar to that of the outer apartment, being a dome, formed by separate blocks of snow laid with great regularity and no small ingenuity, each being cut into the shape requisite to build up a substantial arch, from seven to eight feet high in the centre, and with no other support than this principle of building supplies. Sufficient light was admitted by a circular window of ice, neatly fitted into the roof of each apartment.

AN OVERLAND JOURNEY.

We must now return to the year 1819, when the British Government, in its desire to complete the conquest of the North Pole, resolved on an overland exploration as supplemental to its efforts by sea. It was resolved to survey the coast eastward from the Coppermine River to Behring Strait: and for this purpose an expedition was equipped, consisting of Lieutenant Franklin as leader; Dr. Richardson as naturalist; two midshipmen of high character—Messrs. Hood and Back; and two picked English seamen.

They arrived at York Factory, Hudson Bay, on the 30th of August; left it on the 9th of September; and reached Cumberland House, another of the Hudson Bay Company's settlements, on the 22nd of October;—

having accomplished a journey of 690 miles in forty-two days. After resting for awhile, Franklin and Back went forward by themselves to Chipewyan, near the west point of Athabasca Lake, in order to superintend the preparations being made for their intended adventure. It was a terrible journey. The cold was frightful, and beyond measurement, because the thermometer was frozen. Provisions were scarce, and every movement caused intense physical pain. But moral courage carried them over every difficulty, and Chipewyan was reached at last.

Here they waited until the rest of the party came up; and then, attended by a train of Canadian boatmen and Indians, they moved onward some 500 miles to Fort Enterprise, where a small hut was built of pine-wood to shelter them during the winter. It stood on a gentle ascent, at the base of which slept the frozen current of Waiter River. Here the explorers employed themselves in killing reindeer, and in preparing with their fat and flesh that dried, salted, and pounded comestible called pemmican. About one hundred and eighty animals were killed. But even this number did not furnish an adequate supply for Franklin's party; and as the expected stores of tobacco, ammunition, and blankets did not arrive, Mr. Back, with some Indian and Canadian attendants, returned to Chipewyan for them. Having obtained them, he once more rejoined the party at Fort Enterprise—after an absence of five months and a journey of 1104 miles, "in snow-shoes, and with no other covering at night in the woods than a blanket and deerskin."

It was the middle of June 1821 before the ice broke up in the Coppermine River. Then Franklin began his journey, passing down the stream in light birch-canoes, and occasionally pausing to hunt the reindeer, musk-oxen, and wolves which frequented its banks. Having reached the mouth of the river, the twenty adventurers launched their barks into the Polar Sea, which they found almost tideless, and comparatively free from ice.

The extreme westward point at which, after many perilous experiences, Franklin arrived, was situated in lat. $68^{\circ} 30'$, and he appropriately named it Point Turnagain. Between this headland on the east and Cape Barrow on the west, a deep gulf opens inland as far south as the Arctic Circle. It was found to be studded with numerous islands, and indented with sounds affording excellent harbours, all of them supplied with small rivers of fresh water, abounding with salmon, trout, and other fish. The survey of George the Fourth's Coronation Gulf—to adopt Franklin's barbarous nomenclature—being completed, the explorers prepared to return to Fort Enterprise. The overland part of the journey was attended with the most terrible hardships. They suffered from the combined afflictions of cold, hunger, and fatigue. They were so reduced in bodily strength that it was with difficulty they could drag along their languid limbs; and when at last within forty miles of their winter asylum, they found themselves at their last ration. No food, no shelter, and the severity of an Arctic winter pressing upon them! Mr. Back, with three of the stoutest Canadians, gallantly started forward to seek assistance; and were followed in a few

days by Franklin and seven of the party—leaving the weakest, under the care of Dr. Richardson and Mr. Hood, to proceed at leisure. Four of Franklin's companions, however, soon gave up the attempt from absolute physical incapacity. One of these—Michel, an Iroquois—returned to Dr. Richardson; the others were never again heard of. Franklin pushed forward, living on berries and a lichen called *tripe-de-roche*, and reached the hut; but it was without an inhabitant, without stores, and blocked up by snow. Here he and his three companions lingered for seventeen days, with no other food than the bones and skin of the deer which had been killed the preceding winter, boiled down into a kind of soup. On October 29th Dr. Richardson and John Hepburn, one of the seamen, made their appearance. But where were the rest of the party?

Dr. Richardson had a tragic tale to unfold. He stated that for the first two days after Franklin's departure his party had nothing to eat. On the third day Michel arrived with a hare and partridge, which afforded each a small morsel. The fourth day they fasted. On the 11th Michel offered them some flesh, which he declared to be part of a wolf; but they afterwards had good reason to suspect it was the flesh of one of the unfortunate men who had left Franklin to return to Richardson. They noticed that Michel daily grew more furtive and insolent, and were convinced that he had a supply of meat for his own use. On the 20th, while Hepburn was felling wood, he heard the report of a gun, and, turning quickly round, saw Michel dart into the tent. Mr. Hood was found dead; a ball

had penetrated the back of his skull: there could not be the shadow of a doubt that Michel had fired it. He now grew more suspicious and impatient of control than ever; and as he was stronger than any other of the party, and well-armed, they arrived at the conviction that their safety depended upon his death. "I determined," said Dr. Richardson, "as I was thoroughly convinced of the necessity of such a dreadful act, to take the whole responsibility upon myself; and immediately upon Michel's coming up I put an end to his life by shooting him through the head."

They occupied six days in travelling twenty-four miles, existing on lichens and pieces of Mr. Hood's skin cloak. On the evening of the 29th they came in sight of the fort, and at first felt inexpressible pleasure on seeing the smoke issue from the chimney. But the absence of any footprints in the snow filled their hearts with sad forebodings, which were fully realized when they entered the hut and saw the wretchedness that reigned there.

The exploring party was now reduced to four—Franklin, Richardson, Hepburn, and an Indian; and that these could long survive seemed impossible, from their absolute weakness and lack of food. Happily, on the 7th of November three Indians arrived, whom Mr. Back had despatched from Chipewyan with supplies; and they tended the sufferers carefully until all were strong enough to return to the English settlement. And in this way was accomplished a journey of 5500 miles; mostly over a bleak and barren country and under an inclement sky, with terrible cost of physical and mental

suffering, and with much loss of life, but with results which greatly enlarged the boundaries of geographical knowledge.

EXPLORATIONS BY SEA AND LAND.

Four expeditions—or, more correctly speaking, one expedition in four divisions—set out from England early in 1824. Parry was sent to explore Prince Regent Inlet; Franklin was ordered to descend the Mackenzie River to the sea, and then, dividing his party, to despatch one half to the eastward, while he led the other half westward to Behring Strait; Captain Beechy was commissioned to sail to Behring Strait *viâ* Cape Horn, and thence to Kotzebue Sound, where he was to wait for Franklin; and Captain Lyon was directed to keep southward of Southampton Island, up Rowe's Welcome to Repulse Bay, and across Melville Isthmus to Point Turnagain. The object in view, as the reader will surmise, was to ascertain the exact configuration of the northern shore of the American continent.

Captain Lyon met with many disasters, and, when within eighty miles of Repulse Bay, was compelled by the ice-drift and the adverse winds to abandon the enterprise.

Parry, with the *Hecla* and *Fury*, reached Lancaster Sound, but, being caught in the ice, was forced to winter at Port Bowen. In the following season the *Fury* was driven ashore by the pressure of accumulated masses of ice, and so damaged that Parry was obliged to remove her crew and stores to the *Hecla*; after which he returned to England.

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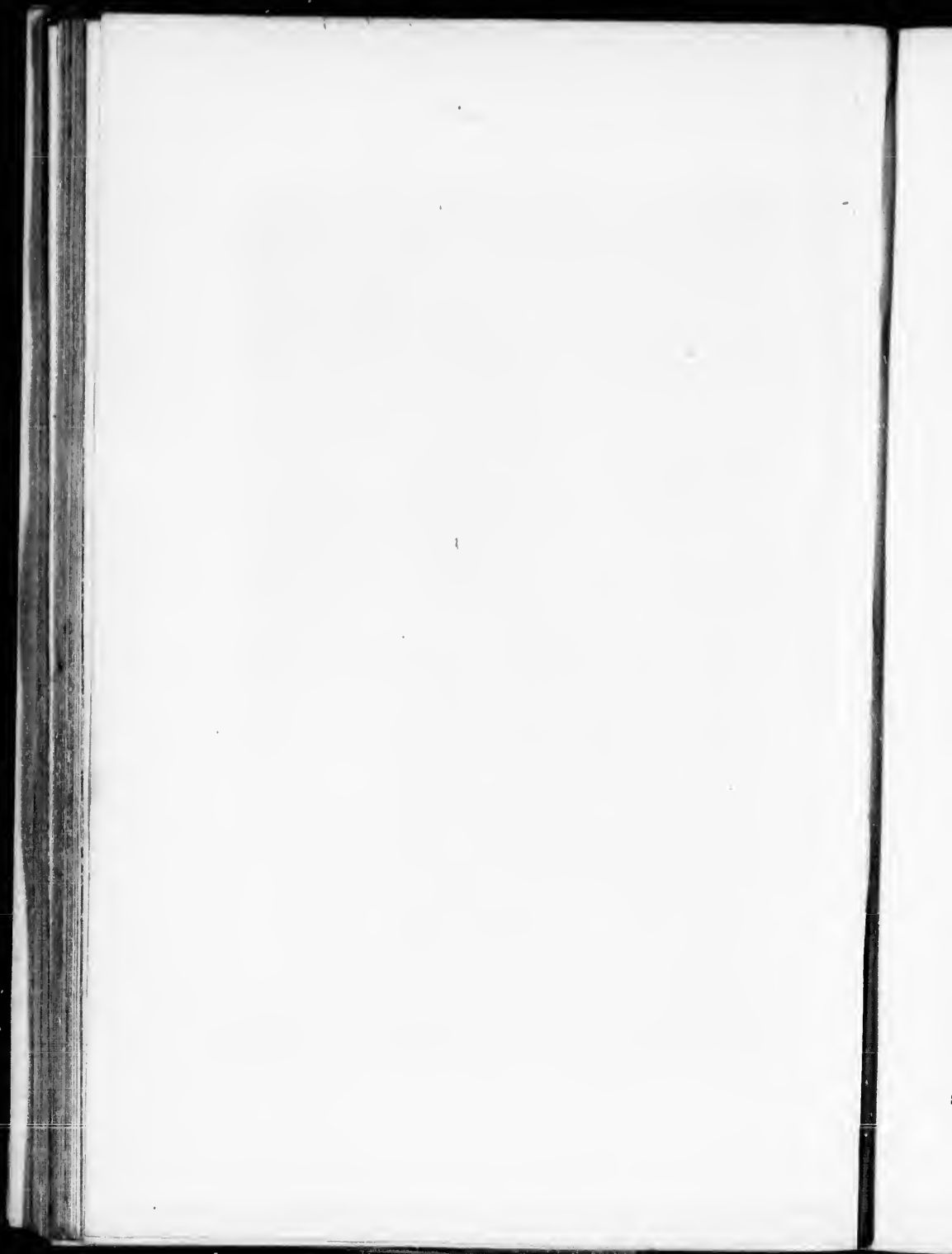
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ABANDONMENT OF THE "FURY"



Franklin was not much more successful. Accompanied by Dr. Richardson, Back, and Messrs. Kendall and Drummond, he arrived at Fort Chipewyan in July 1825; and thence proceeded to Great Bear Lake, where he wintered. When the spring returned he began the descent of Mackenzie River, and, after a voyage of 1045 miles, reached the sea in lat. $69^{\circ} 14' N.$, and long. $135^{\circ} 57' W.$ He then undertook the westward route, while Richardson travelled eastward. In long. $149^{\circ} 39' W.$ Franklin was arrested by a barrier of rock and ice, which he named Repulse Reef, and, being short of provisions, turned back; ignorant of the fact that Captain Beechey had brought his ship, the *Blossom*, up to Point Barrow, or only 146 miles distant from him. Franklin, after surveying the coast for 374 miles, and accomplishing a voyage of upwards of 2000 miles, returned to Great Bear Lake, where he was joined by Dr. Richardson. In the following year Beechey once more sailed for the appointed rendezvous; but Franklin meanwhile was on his way back to England.

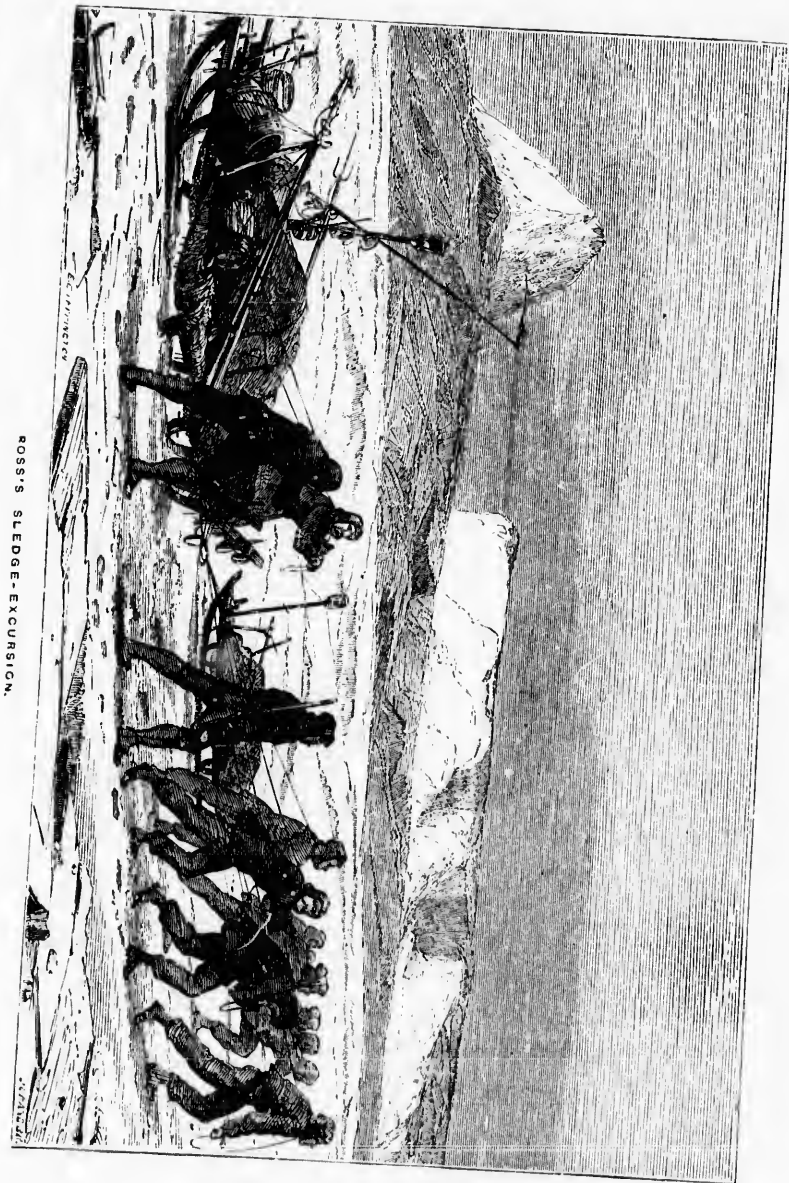
In 1827 the indefatigable Parry started with an expedition for the north shore of Spitzbergen. It was characterized by his daring attempt to cross the pack-ice in light boats and sledges; the former being used in the water-ways and pools, the latter in travelling over the frozen plains. Nothing but the strongest enthusiasm could have rendered this enterprise possible. When the explorers arrived at a gap in the ice, they launched their boats and embarked. On reaching the opposite side they landed, and by sheer force hauled up the

boats; a laborious process, occupying so much time, and making such demands on the men's strength, that only eight miles were accomplished in five days. They could not travel except by night, on account of the glare of the snow, which threatened them with blindness. Breakfasting soon after sunset, they laboured for some hours; then made their chief meal; and towards sunrise halted, lighted their pipes, wrapped themselves up in their furs, and laid down to rest. The reader must not suppose that the ice-fields of the Polar regions are as smooth and level as the frozen surface of an English river. They are intersected by "lanes" of water, and broken up by rugged hummocks of ice, which can be crossed only with extreme difficulty. In spite of every obstacle, Parry pressed on, ambitious to reach the 83rd parallel of latitude. But at last he became aware of the startling circumstance that, faster than *he* moved forward, the *ice* was carrying him backward; in other words, it was slowly drifting southward beneath his feet, and bearing him and his party along with it. To struggle against an adverse Nature was hopeless. In lat. 82° 45' he gave it up; for though they had travelled nearly 300 miles over the rugged ice and through half-frozen water, they had advanced no more than 172 miles from the *Hecla*.

MINOR EXPEDITIONS.

Steam was first used as an agent in Arctic exploration in 1829, when Sir Felix Booth placed a steamship, the *Victory*, under the command of Sir John Ross, and his nephew Sir James. The *Victory* made her way

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ROSS'S SLEDGE-EXCURSION.

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into Prince Regent Inlet; found the wreck of the *Fury* on the 12th of August; and on the 15th reached Parry's farthest point. Thence she accomplished 300 miles along a previously unexplored coast; and on the 7th of October went into winter-quarters in what is now called Felix Harbour. There Ross was held fast by the ice for eleven months. In September 1830 he once more got under way, but, after sailing for about three miles, was again caught in the pack-ice, and shut up until August 1831. On this occasion the *Victory* accomplished *four* miles, and on the 27th of September was imprisoned for another winter; having thus achieved exactly seven miles in two years.

In April 1832 James Ross made a sledge-excursion to the westward, and crowned himself with glory by reaching and fixing the magnetic North Pole in lat. $70^{\circ} 5' 17''$ N., and long. $96^{\circ} 46' 45''$ W.

The long imprisonment in the ice had by this time seriously affected the health of the crew; and as there was no chance of releasing the ship, Ross determined to abandon her, and effect his escape from the Polar solitudes in boats and sledges. He made first for the wreck of the *Fury*, in order to avail himself of her stores and materials; and after a terrible journey reached it, but so spent and broken down that farther progress was impossible. Here he wintered; the whole party undergoing the most fearful sufferings, and several dying. With the first warm days of the summer of 1833 their hopes revived. They resumed their perilous adventure; and on the 15th of August gained the open sea, and took to their boats. At midnight they passed Edwin Bay

and next morning reached the farthest point to which they had advanced in the preceding year. Finding an open "water-lane," they kept to the northward, and in the evening were tossing off the north-eastern point of the American continent. On the 17th great was their joy to see before them the ample expanse of Barrow Strait; and with a favourable wind they now steered to the south, passing Cape York and Admiralty Inlet, and on the 25th reaching the eastern shore of Navy Board Inlet.

At four o'clock on the following morning the look-out man announced that a ship was in sight; but as the breeze was blowing freshly, she bore away under all sail, leaving them behind. Fortunately a dead calm succeeded, and by dint of hard rowing our explorers approached so near that their signals were descried, when the ship heaved-to and lowered a boat, which made directly towards them. The mate in command asked them if they were in distress, and offered assistance, adding that he belonged to the *Isabella* of Hull, once commanded by Captain Ross, but then by Captain Humphreys. He was with difficulty convinced that his former commander stood before him,—declaring that it was all a mistake, for he had certainly been dead two years. When finally satisfied, he hastened back to his ship with the glad tidings, and immediately her yards were manned, and three ringing cheers greeted the captain and his party.

As soon as possible Captain Humphreys steered for England, and on the 12th of October reached Stromness in Orkney. The intelligence of the rescue so happily

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RESCUE OF THE CREW OF THE "VICTORY."



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accomplished quickly spread thence throughout the kingdom; and Captain Ross and his companions were received as men who had risen from the grave. On his landing at Hull he was welcomed by enthusiastic crowds, like a general fresh from the field of victory. He fully deserved the reception thus accorded to him.

In the fewest possible words, we must record the discovery of Great Fish River in 1833 by Lieutenant Back; and Dease and Simpson's exploration of Victoria Land and Boothia in 1838.

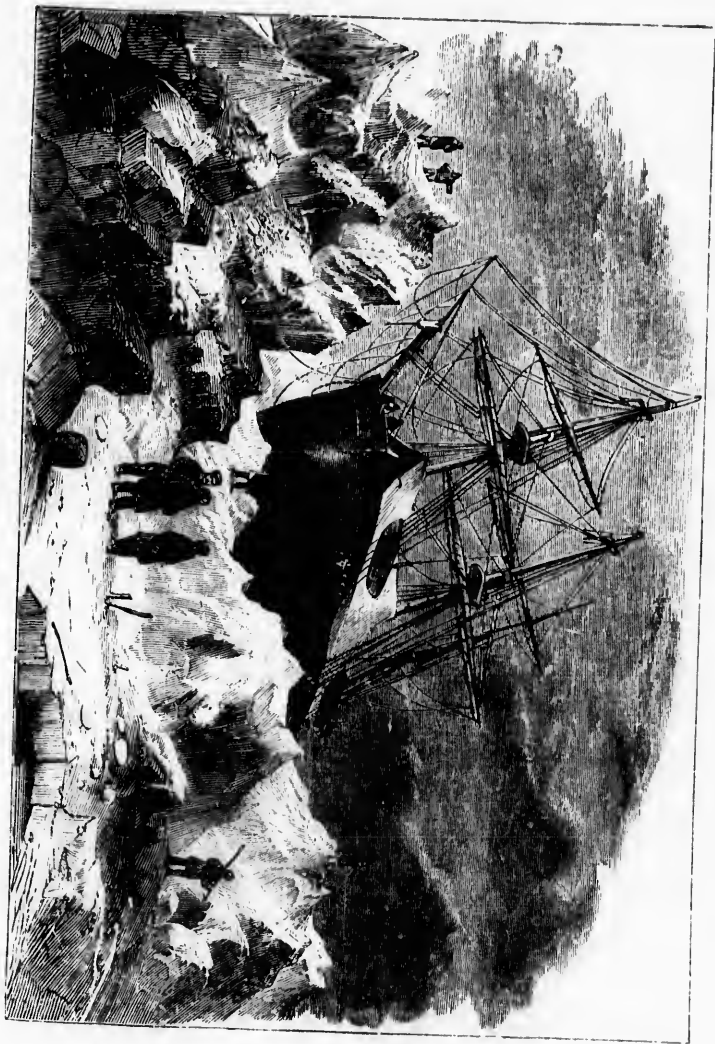
With somewhat more detail we must refer to Captain Back's exploration of the coast of Boothia Felix. He left England in the *Terror*, on June 14th, 1836, and on the 1st of August was struggling with the ice-floes off Resolution Island. On the 23rd he sighted Baffin Island, and began to work his way through a sea of ice to Southampton Island. Thence he proceeded towards Repulse Bay, where he intended to winter; but late in the month of September a violent storm drove him back past Cape Comfort, where the *Terror* was fairly ice-bound, resting on the solid ice as on a cradle, and driven to and fro as the great frozen plain moved with the heaving currents and rushing winds. In this position Captain Back and his followers passed the winter, enduring severe hardships, and constantly disquieted by violent gales.

Towards the close of February the floe rent asunder, with a commotion which threatened to crush the ship into dust. Hither and thither drove the broken masses, hurtling against one another, grinding and crashing to-

gether with the most appalling sounds,—now lifting the ship clean out of the water, now dashing against her sides with a force which made her reel from stem to stern. This series of disturbances extended into March. On the 16th they reached a crisis. A mad onset of floating ice raised the quivering vessel hard upon the floe. "Scarcely ten minutes," says Back, "were left us for the expression of our astonishment that anything of human build could outlive such assaults, when another equally violent rush succeeded, and in its way toward the starboard quarter threw up a rolling wave thirty feet high, crowned by a blue square mass of many tons, resembling the entire side of a house, which, after hanging for some time in doubtful poise on the ridge, at length fell with a crash into the hollow, in which, as in a cavern, the after part of the ship seemed imbedded. It was indeed an awful crisis, rendered more frightful from the mistiness of the night and dimness of the moon."

During this long and gloomy period of disaster, the unfortunate *Terror* was driven to and fro over a range of from twenty-six to forty-eight miles north-west of Seahorse Point; but after the 16th she kept away from shore, and set toward the south-east. Another month passed by, and still the ice held her in its grip. Then it parted for a while, and Back seized the opportunity to refit his shattered vessel. Once more it closed in, and so continued from the 7th of May till the 2nd of June, when it finally broke up, but without any violent commotion. Then the ship's hull was calked and coated with tar; and a channel having been cut through





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the broken floe into the open sea, the *Terror* finally regained her liberty on the 13th of July, after four months' detention.

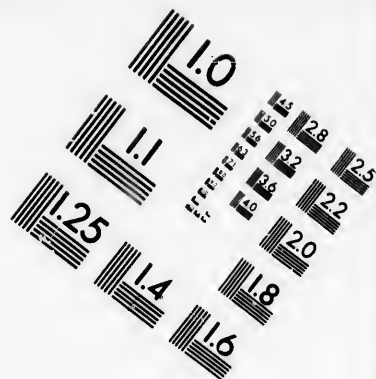
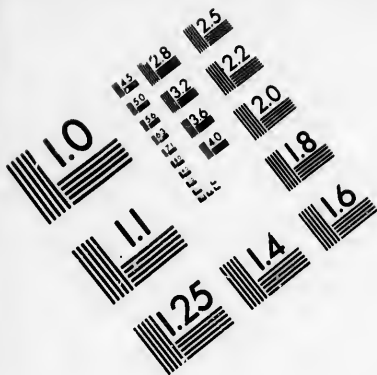
She was now near Charles Land; that is, about midway between Cape Comfort and the mouth of Hudson Strait. What was to be done? A careful inspection of the ice-battered vessel soon answered this question. There was nothing for it but to turn her prow homeward; and, indeed, no little doubt was felt whether she would ever gain in safety a British port. She was completely crazy, broken, leaky, riddled; and not even her tossing to and fro and prolonged battle with the grinding ice-masses had been a more perilous experience than her voyage across the northern Atlantic proved. How she rolled with every sea! how she bent before every gust of wind! When she reached the north-west coast of Ireland, she was actually sinking by the head, so that it was found necessary to run her ashore in Lough Swilly on the 3rd of September. Had she been three hours longer at sea, she would assuredly have foundered.

Captain Back's voyage added nothing to our knowledge of the geography of the Polar World; but it furnished a brilliant illustration of the resolution, courage, and endurance of British seamen. It occupies a page in Arctic History which is comparatively little known; yet it is a page of the highest interest.

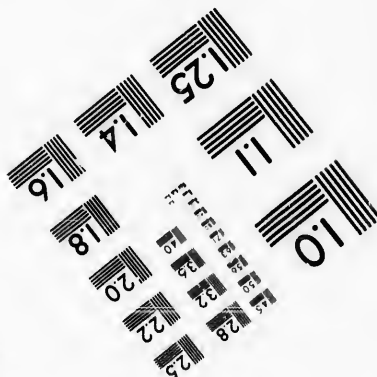
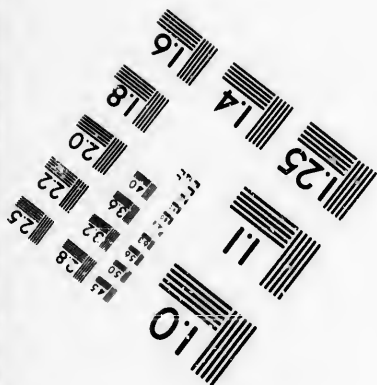
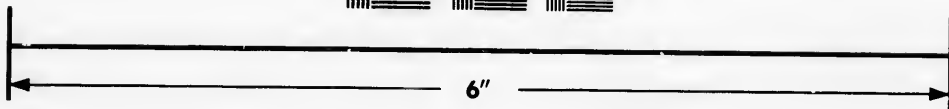
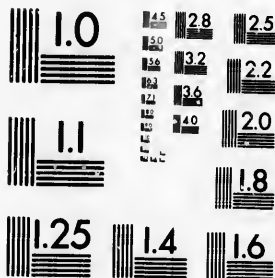
SIR JOHN FRANKLIN'S LAST EXPEDITION.

In the spring of 1845, the *Erebus* under Sir John Franklin, accompanied by the *Terror* under Captain





**IMAGE EVALUATION
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Crozier—both ships being carefully fitted out and provisioned for three years—sailed from the Thames. The crews numbered 137 picked men.

On the 8th of June they left the Orkneys, steering for the extreme point of Greenland known as Cape Farewell; where, indeed, the adventurer does, as it were, bid farewell to the security and liberty of the civilized world. A month later they lay at anchor in the middle of a group of rocky islets on the east side of Baffin Bay. Yet another fortnight, and we may see them with "the mind's eye," as some whalers saw them, gallantly struggling with the ice which impeded their progress across the Bay of Baffin to Lancaster Sound. Seven officers man a boat and drag her across the ice to visit the whalers. They go on board the *Prince of Wales* of Hull. "All well," they report; and express the blithest, cheeriest confidence in the success of their enterprise. After a hearty hand-grasp, they say good-bye and return to their ships. On the same evening (July 26th) the ice breaks up, the westward route lies open, and the Arctic expedition ploughs the waves for Lancaster Sound. Thereafter a cloud descends upon it; it passes into the heart of the grim solitudes of the Polar World, and men hear of it no more. Whither it bent its course, and how it reached Cape Riley and Beechey Island, or what mishaps befel! the two stout ships composing it, are problems of which the solution even now is far from complete.

THE SEARCH.

When two years had elapsed without any tidings of

the expedition reaching England, the public mind grew seriously alarmed. Expectation deepened into anxiety; anxiety darkened into fear. When the winter of 1848 passed away, and still no tidings came, it was felt that further inaction would be intolerable. Hitherto the great object had been the discovery of the North-West Passage; now the thoughts of men were all directed to a search after Franklin and his companions. Strangely enough, Providence had so ordered it that in the search after these "martyrs of Science" the former object was attained.

An expedition in search of the missing heroes was despatched under Sir James Ross; and another under Sir John Richardson: both added to the stores of geographical knowledge, but nothing more. These had worked from the eastward; Captains Moore and Kellet worked from the westward, entering Behring Strait, and actually reaching, by their boats, the mouth of Mackenzie River. In the spring of 1849, the British Government offered a reward of £20,000 to any private explorers, of any nation, who should discover and succour the wanderers; and Lady Franklin, out of her own resources, organized several relieving parties. So it happened that, in 1850, no fewer than twelve vessels, led by Ross, Rae, M'Clure, Osborne, Collinson, Penny, Austin, Ommaney, Forsyth, and De Haven, besides boat and sledge companies, plunged deep into the far Northern wildernesses to trace the footprints of the lost.

The Admiralty orders to Franklin had been, to pass through Lancaster Sound into Barrow Strait; thence to Cape Walker; and from Cape Walker, by such course

as he might find convenient, to Behring Strait. The general opinion was, that he had got to the west of Melville Island, and then been caught by the ice among the numerous islands lying in that part of the Arctic Sea. And it was supposed that he would be engaged in an effort to cross the ice, and reach either one of the Hudson Bay settlements, or some whaling-station.

Dr. Rae therefore started for Banks's Island, with the intention of pushing on to Cape Walker. Captains Collinson and M'Clure sailed for Behring Strait, in order to take up the eastward route. Captain Austin in the *Resolute*, Captain Ommaney in the *Assistance*, and Lieutenants Cater, and Osborne in the *Pioneer* and *Intrepid*, proceeded to Baffin Bay, in order to follow up Franklin's track; while other westward-bound expeditions, such as the *Felix*, under Captain Sir John Ross, Captain Forsyth in the *Prince Albert*, Captain Penny in the *Lady Franklin*, started for various points of Banks Land and Boothia. An American expedition, fitted out by Mr. Henry Grinnell, a New York merchant, and consisting of the brigs *Advance* and *Rescue*, under Lieutenant De Haven, sailed also for Banks Land and Melville Island in May 1850.

It was in this year that the first traces of the missing voyagers were discovered, through the accidental detention at Beechey Island of two of the searching expeditions,—namely, those of Austin and Penny.

When these, in August 1850, had reached the mouth of Wellington Channel, they were driven, by the large ice-fields sweeping out of it and out of Barrow Strait, to seek shelter in a great bay formed at the eastern

entrance of the Channel, and almost bisected by Beechey Island. On the 23rd, a boat's crew from Captain Ommaney's ship, the *Assistance*, landed on one of the headlands of this bay, and, to their absolute surprise, discovered signs of a former visit from Europeans. Under the bold dark cliffs of Cape Riley might be seen the ground-plan of a tent, scraps of rope and canvas, a quantity of birds' bones and feathers; besides a long-handled rake, that had been used apparently in collecting the beautiful weeds of the ocean-bed. Nothing was found, however, to identify these relics with Franklin's expedition. When Captain Penny heard of the "find," he determined, in conjunction with Lieutenant De Haven (of the Grinnell expedition), to prosecute a careful search in the vicinity of Wellington Channel. While the exploring ships were lying under the west point of Beechey Island, some of the men obtained permission to go ashore. On landing, they sauntered towards a low projecting spur which stretches to the north, choosing a convenient spot to cross the huge ridges of ice lying piled up along the beach. They were seen to mount the ridge or backbone of the point; in a minute afterwards they were observed from the ships to rush towards a dark object, and gather round it with every sign of excitement. It was immediately *felt* that fresh traces had been discovered, and a rush of all hands took place to Beechey Island. There, on the point, stood a carefully constructed cairn, of a pyramidal form. The base consisted of a series of preserved meat-tins filled with gravel and sand, and more meat-tins were so arranged as to taper upwards to the summit, where was

fixed the remnant of a broken boarding-pike. But no record could be found; nothing to connect it with Sir John Franklin. Presently, as they looked along the northern slope of the island, other strange objects caught their eye. Another rush of eager, breathless beings, and all stand in silence before three graves. Some of them are unable to refrain from tears as they mutter the words inscribed upon the rude tablets, "*Erebus and Terror.*"

On the 27th of August, as if drawn by some magnetic attraction, no fewer than ten searching-vessels met at Beechey Island, and several lay there during the winter, with the view of resuming their work in the spring of '51; but no additional discoveries were made. Sledging-parties were sent out in all directions, and along the shores of Wellington Channel, the coasts of Banks Land, and the waters from Barrow Strait to Melville Island, 675 miles of new coast-line were surveyed. The outcome of all this labour and adventure was represented by the generally accepted conclusion that Franklin, after leaving Wellington Channel, had moved in a south-west direction.

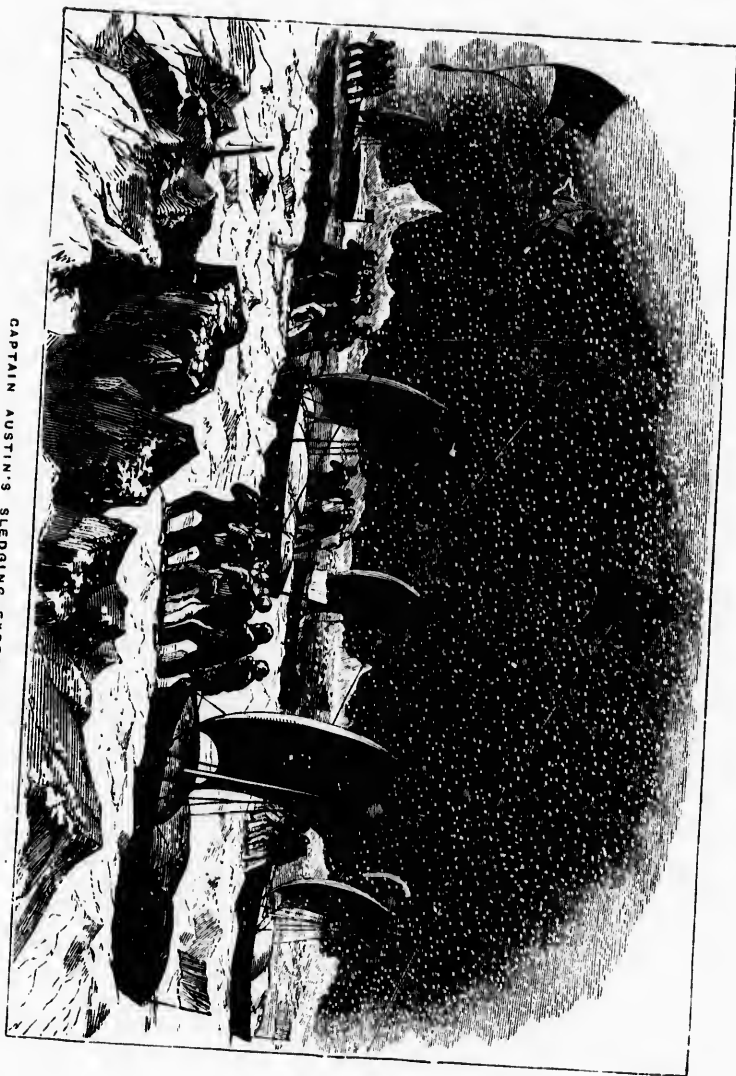
Special reference should be made, however, to the skilfully organized sledge-expeditions of Captain Austin. These were designed to explore the coasts and islands along Parry Strait, the sea-belt westward from Barrow Strait to Melville Island, and the north end of Banks Land; Wellington Channel being reserved for Captain Penny. The westward party, numbering fourteen sledges and one hundred and four men, started, under

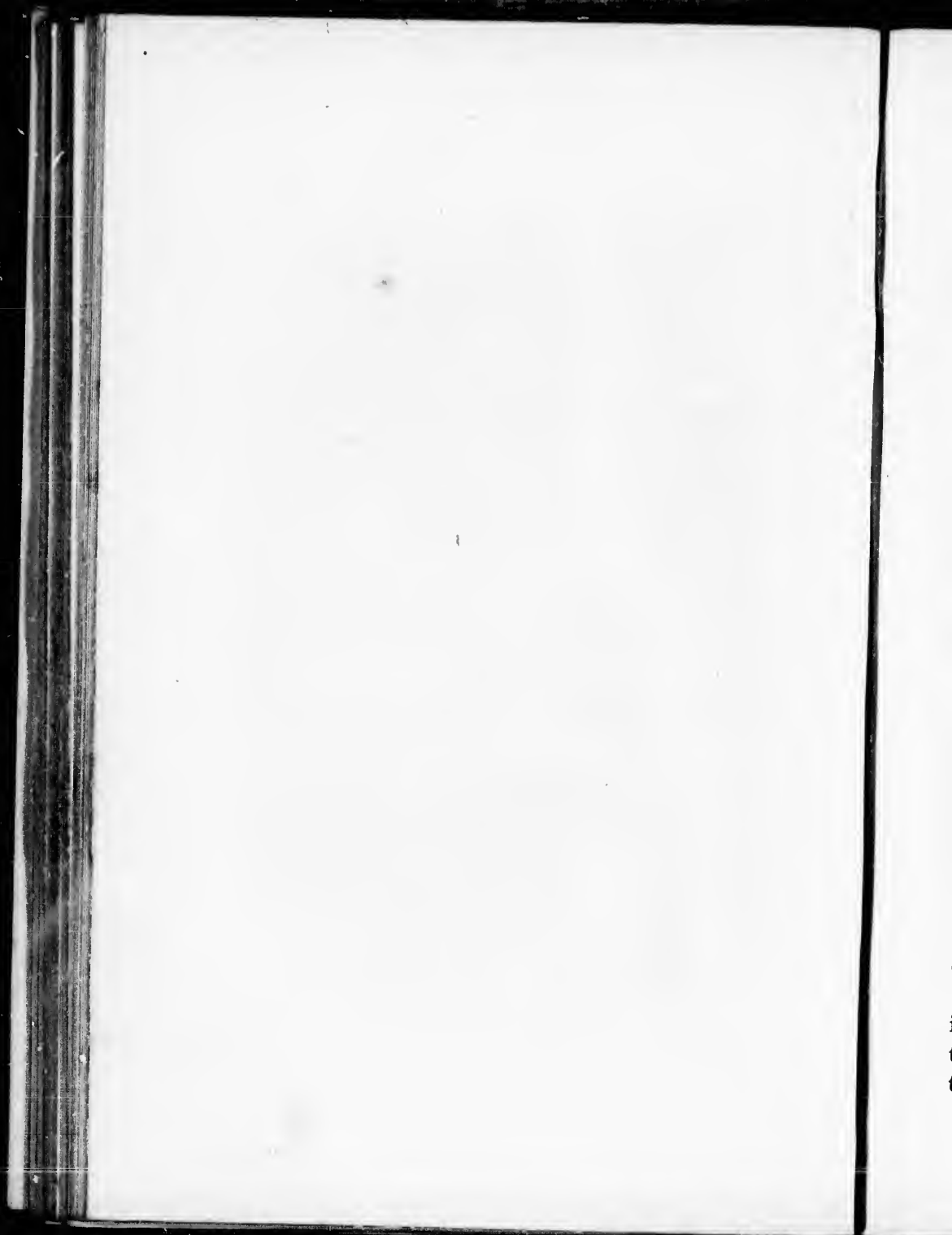
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CAPTAIN AUSTIN'S SLEDGING-EXPEDITION.





Captain Ommaney, on the 14th of April 1851, to an encampment on Griffin Island, where they were carefully inspected by Captain Austin. On the evening of the 15th they set out, with kites and sails attached to the boats, and their men singing lustily while hauling at the drag-ropes.

Three of the parties proceeded along the southern, and three along the northern shore. The record of their achievements runs as follows:—No. 1, under Captain Ommaney, travelled 480 miles, of which 205 were previously unknown, and was absent 60 days. No. 2, under Lieutenant (afterwards Admiral) Sherard Osborne, discovered 50 miles, travelled 506 miles, was absent 58 days. No. 3, under Lieutenant Browne, travelled 375 miles, discovering 150 miles of coast, and was absent 44 days. Three went to the southward. Of those which took a northerly course, No. 1 travelled 550 miles, discovering 70 miles of coast, and was absent 62 days. No. 2, commanded by Lieutenant M'Clintock, travelled 760 miles, discovered 40 miles of coast, and was out for 80 days. Lieutenant M'Clintock pushed as far westward as a point in latitude $74^{\circ} 38' N.$, and longitude $114^{\circ} 20' W.$ No. 3, under Surgeon Bradford, travelled 669 miles, discovering 135, and being absent 80 days. The achievements of these parties show what may be expected from the sledge-journeys to be undertaken in connection with the present Arctic expedition (1876).

The other sledges were absent only for periods varying from twelve to thirty-four days; their business being to form depôts of provisions, ascertain positions, and take observations. But though their work seems easier

than that of the farther-reaching parties, they suffered much more severely; for no fewer than twenty-eight of their men were frost-bitten, and one of the leaders died from cold and fatigue.

After receiving and considering the reports sent in by his officers, Captain Austin came to the conclusion that the expedition under Franklin had not proceeded either to the southward or westward of Wellington Strait.

The sledge-parties appointed to explore Wellington Channel were six in number, and consisted of forty-one men, led by Captain Stewart, Messrs. Marshall, Reid, and J. Stuart, and Surgeons Sutherland and Goodsir, under the general superintendence of Captain Penny. They started on the 27th of April, but soon met with stormy weather, and after having been sore buffeted for several days were forced to return. They rested awhile, and then, on the 6th of May, set forth again. Some made so bold a circuit as almost to touch the most northerly of Captain Austin's parties; but their principal feat was the discovery of a wide westward channel of open water, extending along the further side of the lands which bound Barrow and Parry Straits.

In this discovery Captain Penny was personally concerned, and he made vigorous efforts to follow it up. Following the coast-line of Wellington Channel, he reached latitude $75^{\circ} 22' N.$ at Cape Duhorn, from which he struck ten miles north-westward to Point Decision. Thence, on the 15th of May, he crossed the ice, still in a north-westerly direction, to an island which he named Baillie Hamilton. On the 17th, after completing the circuit of this island, he reached the open strait, saw in

it twenty-five miles of clear water, and discovered a headland in the distance, with a dark sky over it, indicating open water on the further side. This point was found to be in latitude $76^{\circ} 2' N.$, and longitude $95^{\circ} 55' W.$, and the strait was designated Victoria Channel.

Dr. Kane, the surgeon accompanying Lieutenant De Haven's expedition, about this time fell in with what he conceived to be traces of heavily-laden sledges; and he formed the opinion that Franklin had gone north from Cape Riley as soon as the ice broke up in 1846, and from Wellington Channel had pushed right into the Polar Sea. Accordingly, in this direction the *Adventure* made her difficult way as far as possible, Dr. Kane displaying an almost reckless courage which gained him the sobriquet of "the mad Yankee." No more relics, however, were then discovered; though, afterwards, a record found at Point Victory confirmed the accuracy of Kane's conjecture, and showed that Franklin *had* attempted that course, though driven back by insuperable obstacles.

Several expeditions followed one another in heroic efforts to wrest from the icy North the solemn secrets it so jealously preserved. But no further information was obtained of Franklin and his companions. Whether they had turned homeward and perished in Baffin Bay; whether, as Kane supposed, they had advanced to the north-west by Wellington Channel; or whether (as was indeed the case) they were ice-bound in Melville Island, were problems, the solution of which seemed destined to remain an impossibility.

The Wellington Channel route was again explored, in April 1852, by Sir Edward Belcher, who had five vessels under his command,—the *Assistance*, *Resolute*, *North Star*, *Pioneer*, and *Intrepid*. In the same year Lady Franklin despatched the *Rattlesnake* and *Isabel* to Behring Strait to assist Captains Collinson and M'Clure; while Dr. Rae undertook another survey of Boothia; and Captain Inglefield, with the *Lady Franklin* and *Phoenix*, repaired to Barrow Strait in support of Sir Edward Belcher. But, as an American writer remarks, it is singular that not one of these expeditions, whether equipped by the Government or by private generosity, was despatched to Melville Sound, the very spot where the lost seaman might be expected to be found if he had carried out the instructions he received from the Admiralty. "It was not," says Mr. Blake, "until five years after the question of Franklin's safety was mooted that Dr. Rae penetrated to Cape Walker; and beyond that there seemed a fatality, brooding over all the explorers, which tabooed the only true and proper course to the south and west of Melville Sound. Every place to which he was not sent was thoroughly ransacked; whither he was sent, not a single ship or man was ordered."

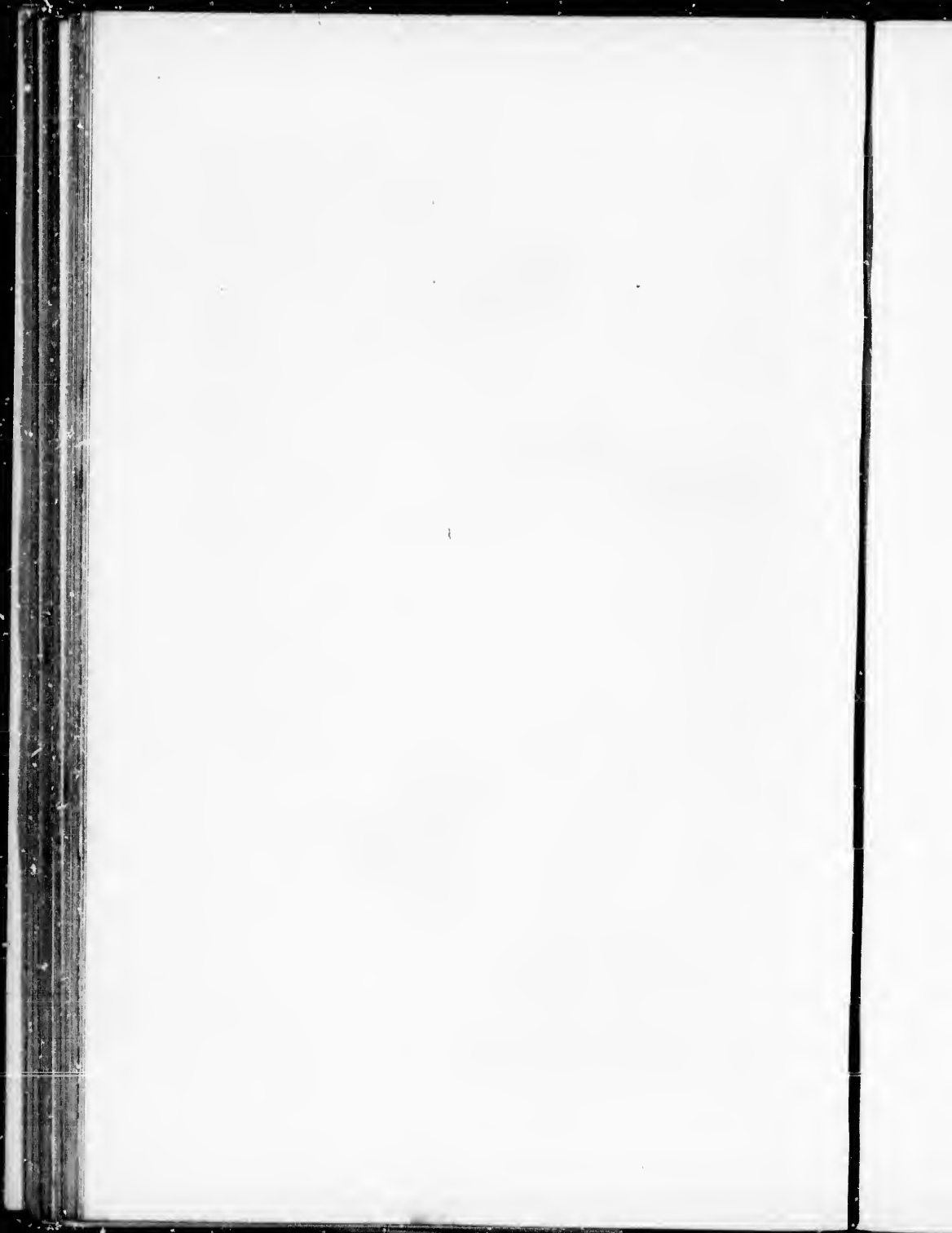
A melancholy incident must be recorded in connection with Captain Inglefield's expedition. It was accompanied by a gallant and enthusiastic young Frenchman, Lieutenant Bellot, as a volunteer explorer; but during a terrible gale of wind he was blown from a piece of floating ice, and drowned (August 18, 1853).

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DEATH OF LIEUTENANT BELLOT.





Our narrative now brings us down to one of the most remarkable of Recent Polar Voyages; that which, in 1853, was undertaken by the able and intrepid American surgeon and naturalist, Dr. Kane. He adopted the Smith Sound route, from a conviction, based on his discovery of the sledge-tracks at the mouth of Wellington Channel, that Franklin had steered northward through these waters until he had reached the Polar Sea, and that he was there imprisoned among the ice.

CHAPTER II.

DR. ELISHA KANE.

A.D. 1853.



SECOND American expedition in search of Sir John Franklin was fitted out in 1852, and placed under the command of Dr. Elisha Kane, who had already served in 1850 under Lieutenant De Haven, and was well fitted for the arduous and honourable post offered to him, by his ability, resolution, power of endurance, and enthusiasm. Having accepted the conduct of the enterprise, he proceeded to enlist volunteers, and to mature his plans. Believing that the peninsula of Greenland extended far to the northward, approaching the Pole in all probability nearer than any other known land, and that in this way he would obtain easier access both to the east and west than from Wellington Channel, he resolved on an overland route in as direct a line north as it was possible to follow. In other words, he proposed to start from the most northern attainable point of Baffin Bay, and thence, pressing on toward the Pole as far as boats or sledges could carry him, to examine the coast-lines for vestiges of the lost party.

His little company consisted of eighteen officers and men,—including Dr. Hayes, surgeon; August Sonntag, astronomer; and Henry Brooks, first officer.

On the 30th of May they left New York in Mr. Grinnell's brig, the *Advance*; in eighteen days reached St. John's, Newfoundland, where they took on board a noble team of Newfoundland dogs, the gift of Governor Hamilton; and thence proceeded to Baffin Bay.

On the 1st of July they entered the harbour of Fiskernaes, in Danish Greenland; a little colony of fishermen, who deal in cod, and crapefish, seal and shark oils, and live a life of hardship and enterprise, in which the profits seem utterly incommensurate with the risks. Here Dr. Kane engaged an Eskimo hunter, one Hans Christian, notably expert both with kajack and javelin; fat, good-natured, and, except when stimulated by the excitement of the hunt, as stolid and impassive as a North American Indian. Thence they kept along the coast to Sukkertoppen, a great depôt for reindeer-skins; and on the 10th of July put to sea, steering to the north and west in the teeth of a heavy gale.

Seventeen days later the expedition reached Melville Bay, a basin which is celebrated both for the number of its icebergs and its whales, and has witnessed the loss of many a goodly vessel. Keeping to the westward, Dr. Kane resolved to *double* Melville Bay by keeping outside of the belt of broken land-ice; but the voyage proved both difficult and dangerous. The floes gathering round his brig, he anchored her to an iceberg to prevent her from being completely imprisoned. But they had scarcely enjoyed a "breathing spell" before they

were startled by a succession of loud, crackling sounds; followed by a shower of ice-fragments, not larger than a walnut. They accepted the warning; hauled in their anchors; and put out into the open just as the face of the berg fell down in ruins, with a report like that of near artillery.

On the 1st of August they made fast to another large berg, "a moving breakwater, of gigantic proportions:" this carried them steadily to the north; and when all danger from the drifting ice was over, they got under way, and through a tolerably clear channel took their course to the north-east, while the heavens were lighted with the glory of the midnight sun, and the surrounding ice-fields glittered like one great resplendency of gem-work,—blazing carbuncles, and rubies, and molten gold.

Keeping a mid-course through the bay, Dr. Kane succeeded in reaching the North (or Cape York) Water on the 3rd of August, and saw before him Smith Sound, which is now universally recognized as the great highway to the Arctic Pole. On the 5th he passed the "Crimson Cliffs" of Sir John Ross; so called from the masses of rose-red snow which lodge in their ravines and gorges. Hakluyt Island, with its tall spire of gneiss about 600 feet high, was the next station; and on the 6th he sighted Cape Alexander and Cape Isabella, the two promontories which guard the entrance to Smith Sound. He found the aspect of the coast singularly uninviting. To the west the snow descended with heavy uniformity to the water's edge, and was only here and there relieved by glimpses of the green-

clad soil. On the right rose an array of cliffs, the frowning grandeur of which would have fitly dignified the threshold of "the proudest of southern seas." Their average height varied from 1200 to 1500 feet, with some of their precipices rising sheer and unbroken for 800 feet.

On Littleton Island Dr. Kane determined to establish his first depôt of stores, for use on the return voyage. The life-boat was loaded with provisions, blankets, and other articles, and then buried. Along her gunwale were placed the heaviest rocks the men could handle; and after the interstices had been filled up with smaller stones and sods of andromeda and moss, sand and water were poured among the layers. All this, frozen at once into a solid mass, would be hard enough, it was hoped, to resist the claws of the Polar bear.

To the surprise of our explorers, they discovered that they were not the first human beings who had sought a shelter in this desolate spot. It was evident, from a few ruined walls here and there, that it had once been the seat of a rude settlement; and in the little knoll cleared away to cover in the deposit of stores were found some human remains.

Nothing, says Dr. Kane, can be imagined more sad and homeless than these memorials of extinct life. Hardly a vestige of growth was traceable on the bare and ice-scarred rocks; and the huts so closely resembled the broken fragments around that it was almost difficult to distinguish one from the other. Walrus-bones lay about in all directions, showing that walrus-meat had been the principal food of the inhabitants. There were

remains, too, of fox and narwhal, but no signs of seal or reindeer.

The Eskimos, unable to restore their dead to the embrace of their mother-earth, seat them as in the attitude of repose, with the knees drawn close to the body, and then enclose them in a sack of skins. The implements used in life are grouped around: they are covered with a rude dome of stones, and a cairn is piled above. Thus a cenotaph is formed, which remains intact for generation after generation. The Eskimos never profane the resting-place of the dead.

REFUGE HARBOUR.

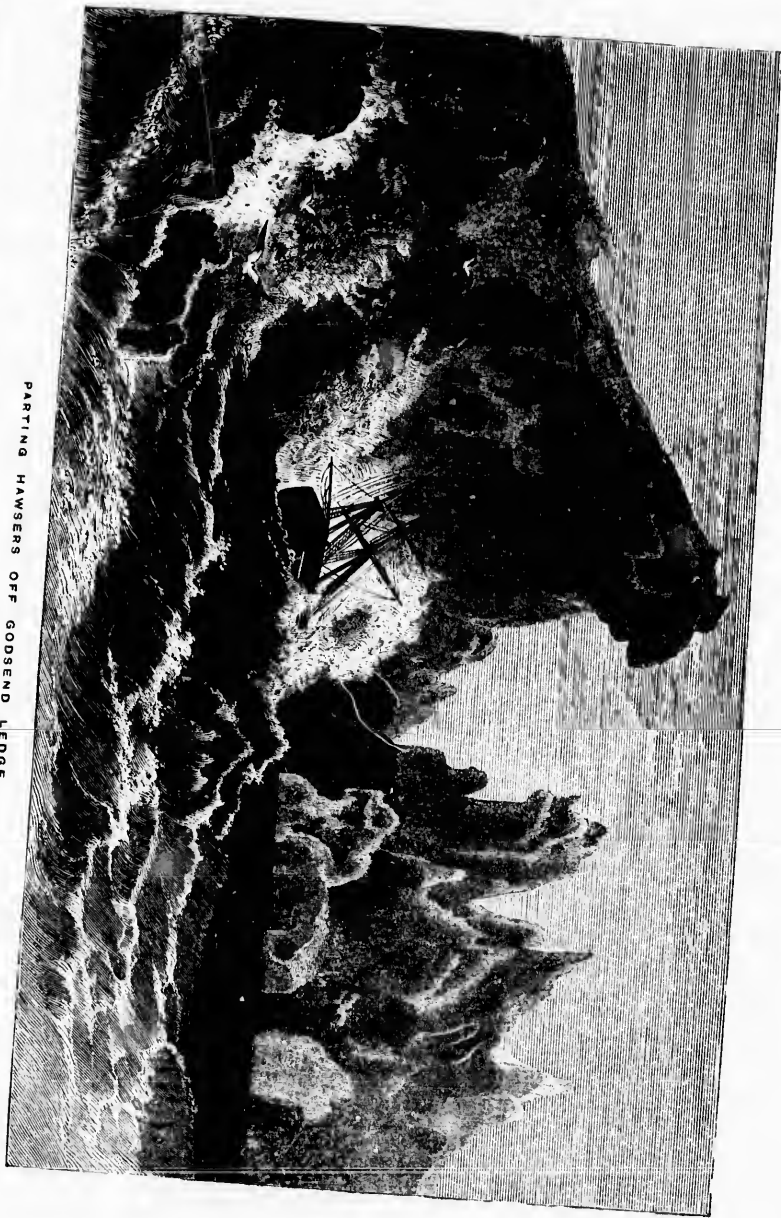
Continuing his adventurous course, Dr. Kane pressed through the drifting ice to some distance beyond Cape Lifeboat Cove, and took shelter in a beautiful little bay, landlocked from east to west, and accessible only from the north, which figures conspicuously in his narrative under the name of Refuge Harbour. It was some time before the ice broke up sufficiently to permit of his effecting his escape; and even after he had once more got out into the channel, he had a daily fight with bergs and floes. At one time, while anchored off a rocky island which he called "Godsend Ledge," a perfect hurricane came on; and though he had three hawsers out, they snapped one after the other, like mere threads, and the *Advance* drifted to and fro at the mercy of the "wild ice." His only hope of safety lay in mooring close to a berg; and this effected, the brig was towed along as by a gigantic courser—"the spray dashing over his windward flanks, and his forehead ploughing up the

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lesser ice as if in scorn." Drifting masses, broken up and hurtled together by a tremendous storm, threatened them with destruction; and the explorers were thankful when, on the 22nd, the gale abated, and they carried their little vessel into comparatively smooth water, sheltered by the ice-belt which lined the rocky and mountainous coast.

Having secured a haven of safety for the *Advance*, Dr. Kane resolved to make a personal inspection of the coast, in order to select a convenient winter-station from which he might start on his sledge-journeys in the following spring. For this purpose he had caused his best and lightest whale-boat to be fitted with a canvas cover, that rendered it not less comfortable than a tent. A supply of pemmican was packed in small cases, and a sledge taken to pieces stowed away under the thwarts. The boat's crew consisted of Brooks, Bon-sall, M'Gary, Sonntag, Riley, Blake, and Morton. Each man had buffalo-ropes for his sleeping-gear, carried a girdle full of woollen socks to keep them dry by the warmth of the body, and slung a tin cup and a sheath-knife to his belt. A soup-pot and lamp for the mess, and a single extra day suit as common property, completed the outfit.

A SLEDGE-JOURNEY.

Leaving Ohlsen in command of the *Advance*, Dr. Kane and his little company pushed off in the *Forlorn Hope*, as she was christened; and after a cruise of about twenty-four hours reached the ice-belt, where they hauled her up, and stowed her away snugly under the

shelter of a large hummock; after which they pushed forward in the sledge.

Their journey across the rugged surface of the ice was by no means without let or hindrance. It is easy to glide over the frozen level which encrusts one of our British lakes or streams in a severe winter; but the icy wastes of the Arctic region are broken up by gullies, water-ways, and hummocks, rendering the traveller's passage one of considerable difficulty. In five days Dr. Kane advanced only forty miles; and finding the obstacles almost insurmountable, he abandoned the sledge, and the whole party proceeded on foot. With the exception of their instruments, they carried no burden but their pemmican and one buffalo-robe. The weather, as yet not far below freezing-point, did not make a tent essential to the bivouac; and being so lightly equipped, they were able to make twenty to twenty-four miles a day.

On the 5th they came upon a noble bay, perfectly open, and in strange contrast, therefore, to the ice outside. The cause of this at the time inexplicable phenomenon, was afterwards found to be a roaring, tempestuous river, which, issuing from a fiord at the inner extremity of the bay, thundered irresistibly over a rugged bed of rocks. This river, which appears to be the largest as yet known in North Greenland, was about three-quarters of a mile wide at its mouth, and sensible to the tidal influence for about three miles. Its course was afterwards traced to an interior glacier, from the base of which it welled in many streams that

flowed into a single channel about forty miles above its mouth.

Here, in the heart of the dreary snowscape, the travellers met with an Arctic flower-growth, of considerable variety of form and colour. The infiltration of the melted snows fed its roots, and the reverberation of the sun's heat from the rocks fostered its delicate life. Amid festuca and other tufted grasses, brightened the purple lychnis and sparkled the white stem of the chickweed; together with a graceful hesperis, reminding the wanderers of the fragrant wallflower of our old English gardens.

After fording the river, Dr. Kane called a halt, in lat. $78^{\circ} 52'$, and long. $78^{\circ} 41' W$. The next morning, leaving four of his party to recruit themselves, he struck across to a north-eastern headland, which he named, after the great English novelist, Cape William Makepeace Thackeray. It was the last station on the coast of Greenland determined by theodolite observations. About eight miles beyond projected a lofty headland, which Kane named Cape Francis Hawke.

The prospect which Dr. Kane beheld from the high ground in this vicinity was most impressive. It extended beyond the 80th parallel of north latitude. Far off on the left lay the western shore of the Sound, receding towards the dim, misty north. To the right a rolling country led on to a low, dusky, wall-like ridge, which he afterwards recognized as the Great Glacier of Humboldt; and still beyond this, reaching northward from the north-north-east, lay the land which now bears the honoured name of Washington—its most pro-

jecting headland, Cape Andrew Jackson, bearing about fourteen degrees from the farthest hill on the opposite side, Cape John Barrow. All between was one vast sheet of ice. Close along its shore, almost looking down upon it from the crest of their lofty station, the explorers could see the long lines of hummocks dividing the floes like the trenches of a beleaguered city. Farther out, a stream of icebergs, increasing in numbers towards the north, presented an almost impenetrable barrier; but beyond these the ice seemed less obstructed and obstructive, and patches of open water glimmered on the distant horizon.

Dr. Kane now led his party back to the brig, resolved to winter in the secure bay he had found for her, and to occupy the dreary months in expeditions to different points, so as to obtain a complete knowledge of the neighbouring coast. When the ice broke up in the ensuing summer, he trusted to resume his onward course.

FIRST WINTER IN THE ICE.

Winter was approaching rapidly. By the 10th of September the thermometer had fallen to 14° , and the ice-floes had been welded by newly-formed ice into a compact mass, with an unbroken surface. About sixty paces north of the ship an iceberg had been caught in the toils, was frozen in, and remained the gigantic neighbour of the adventurers as long as they remained in Rensselaer Harbour. The rocky islets around were fringed with hummocks; and as the tide fell, their sides were coated with opaque crystals of bright white. The

birds had gone : the sea-swallows—which abounded when we first reached here—and even the young burgo-masters (gulls) that lingered after them, had all taken their departure for the south. Except the snow-birds, these are the last to migrate of all the Arctic birds.”

The chief portion of the ship's cargo was now unloaded, and deposited in the storehouse on Butler Island. Vigorous efforts were made to increase the supplies of provisions. Steaks of salt junk, artistically cut, were strung on lines, “like a countrywoman's dried apples,” and soaked in festoons under the ice. The salmon-trout and codfish purchased at Fiskernaes were placed in barrels, perforated to permit a constant circulation of water through them. The “pickled cabbage” was similarly treated, after a little potash had been used to neutralize the acid. All these articles were submitted to twelve hours of alternate soaking and freezing, the ice-crust being removed from them previous to each immersion.

A dog-house was also erected on Butler Island; but in reference to it, Dr. Kane records a remarkable illustration of the canine character. The Eskimo dogs could not be persuaded to sleep away from the vessel. They preferred the bare snow, where they could lie within the sound of human voices, to a warm kennel upon the rocks. Strange, he says, that this dog-distinguishing trait of affection for man should show itself in an animal so imperfectly reclaimed from a savage state that he can hardly be caught when wanted.

Dr. Kane's dogs were both Eskimos and Newfoundlanders. Of the last he had ten, which he was carefully

training in a light sledge to drive (unlike the Eskimos) two abreast, with a regular harness, a breast-collar of flat leather, and a pair of traces. Six of them made a powerful travelling team; and four could carry Dr. Kane and his instruments, for short journeys around the brig, with considerable facility.

The sledge was built of American hickory, thoroughly seasoned, and skilfully combined the three paramount considerations of lightness, strength, and diminished friction. It was named the "Little Willie." Another and stronger sledge, made after a model furnished by the British Admiralty, was called the "Faith." It measured thirteen feet in length and four in breadth, and could carry fourteen hundred-weight of mixed stores.

THE OBSERVATORY.

An observatory was also erected. The islet on which it stood measured some fifty paces long by forty broad, and rose about thirty feet above the water-line. Here the adventurers raised four walls of granite blocks, cementing them together with moss and water, and the never-failing assistance of frost, which converted the most heterogeneous materials into a compact mass. On the whole was laid a substantial timber roof. The pedestals for the support of the various instruments in use consisted of a conglomerate of ice and gravel, well rammed down while liquid in iron-hooped pemmican casks, and quickly hardening into solidity. Adjoining was a magnetic observatory, with wooden floor as well as wooden roof; and upon the open ice-field, about one hundred and forty yards from the ship, a meteorological

observatory, with thermometers, lanterns, and other appliances.

The perils to which Dr. Kane and his party were exposed may be estimated from the following incident, which we shall allow him to describe in his own words.

"We have narrowly escaped," he says, "being burned out of house and home. I had given orders that the fires, lit under my own eye, should be regularly inspected; but through a misadventure the watch had for a time pretermitted opening the hatches. As I lowered a lantern, which was extinguished immediately, a suspicious odour reached me, as of burning wood. I descended at once. Reaching the deck of the fore-castle, my first glance towards the fires showed me that all was safe there; and though the quantity of smoke still surprised me, I was disposed to attribute it to the recent kindling. But at this moment, while passing on my return near the door of the bulkhead, which leads to the carpenter's room, the gas began to affect me. My lantern went out as if quenched by water; and as I ran by the bulkhead door, I saw the deck near it a mass of glowing fire for some three feet in diameter. I could not tell how much farther it extended, for I became quite insensible at the foot of the ladder, and would have sunk had not Mr. Brooks seen my condition and hauled me out.

"When I came to myself, which happily was very soon, I confided my fearful secret to the four men around me—Brooks, Ohlsen, Blake, and Stevenson. It was all-important to avoid confusion. We shut the doors of the galley, so as to confine the rest of the crew and

officers aft, and then passed up water from the fire-hole alongside. It was done very noiselessly. Ohlsen and myself went down to the burning deck; Brooks handed us in the buckets; and in less than ten minutes we were in safety. It was interesting to observe the effect of steam upon the noxious gas. Both Ohlsen and myself were greatly oppressed until the first bucket was poured on; but as I did this, directly over the burning coal, raising clouds of steam, we at once experienced relief: the fine aqueous particles seemed to absorb the carbonic acid instantly.

"We found the fire had originated in the remains of a barrel of charcoal which had been left in the carpenter's room, ten feet from the stoves, and with a bulk-head separating it from them. How it had been ignited it was impossible to know. Our safety was due to the dense charge of carbonic acid gas which surrounded the fire, and the exclusion of atmospheric air. When the hatches were opened, the flames burst out with energy."

A RIGOROUS CLIMATE.

Gradually the severities of an Arctic winter made themselves more and more keenly felt; and those exposed to the weather, notwithstanding every precaution, with difficulty escaped very painful touches of frost-bite. Of a party who had travelled some sixty miles to establish a *cache*, or depôt of provisions, north of Cape Bancroft, not a man but was more or less affected. This is not to be wondered at, when we reflect that the temperature had sunk to 25 degrees *below* zero. The darkness advanced with insidious steadiness; and early

in November we read that stars of the sixth magnitude were visible at noonday. The black masses of the hills, with their glaring patches of snow, were plain for about five hours of the day; all the rest was gloom. Except upon the island of Spitzbergen, which has the advantage of an insular climate, tempered by ocean currents, no Christian men had wintered in so high a latitude; and they who there confront the terrors of the North are Russian seamen, inured from earliest years to cold and hardship.

On the 7th of November, we find Dr. Kane calculating that "our darkness has ninety days to run before we shall get back even to the contested twilight of to-day. Altogether, our winter will have been sunless for one hundred and forty days."

With various devices these prisoners in the Arctic solitudes endeavoured to beguile their monotony. They got up a fancy ball; and they published an Arctic newspaper, *The Ice-Blink*, with the appropriate motto,—"In tenebris servare fidem." It is true the circulation was somewhat limited; but the articles were not unworthy of a wider public. A fox-chase, something like the boyish sport of "Hare and Hounds," was occasionally got up, and other measures were adopted to combat a depression which is the natural but dangerous result of extreme cold. Frequent excursions were also made, though they did but reveal the completeness of the desolation which surrounded Dr. Kane's winter-camp.

Some idea of the rigour of the climate in the month of February (1854) may be gathered from the following data. The thermometers ranged from 60° to 75° below

zero—that is, 92° to 107° below freezing-point! At such temperature chloric ether became solid, and even chloroform exhibited a kind of granular skin or pellicle upon its surface. Spirit of naphtha froze at -54° , and oil of sassafras at -49° . The exposed portions of the human body were surrounded with a wreath of vapour by the quick condensation of its exhalations. The air, when inspired, was perceptibly pungent, and imparted a sensation of dryness to the air-passages. It was noticeable that every man involuntarily breathed in, as it were, a guarded manner, with compressed lips.

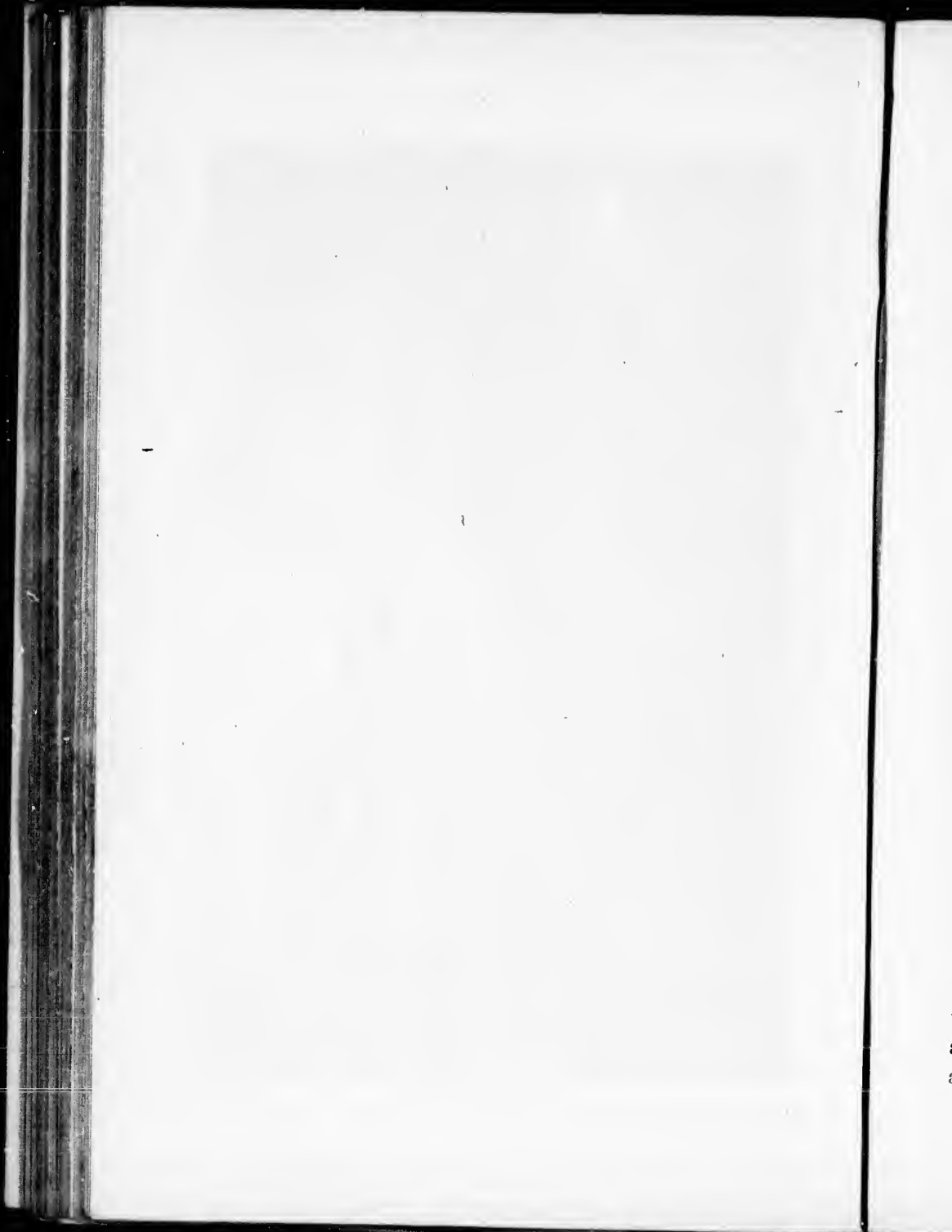
The first traces of returning light were observed at noon on the 21st of January, when a tint of orange lighted up, very briefly, the southern horizon. Necessarily, the influence of the long and intense darkness was very depressing, and was felt even by the lower animals, many of the dogs dying from “a mental disease,” clearly due to the absence of light. The symptoms of this disease were very peculiar, and deserve to be indicated. The more material functions of the poor creatures went on, it would appear, without interruption,—they ate voraciously, retained their strength, and slept soundly. But, otherwise, they acted as if suffering from lunacy. They barked frenziedly at nothing, and walked in straight and curved lines with anxious and unwearied perseverance. They fawned on their masters, but without seeming conscious of the caresses lavished upon them in return. Their most intelligent actions seemed automatic; sometimes they clawed you, as if seeking to burrow into your seal-skins; sometimes they remained for hours in moody silence, and then

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RETURN OF THE SUN.





started off howling as if pursued, and ran up and down for hours.

AN ARCTIC "INTERIOR."

On the 21st of February, Dr. Kane started forth on an expedition to welcome back the sun. He forgot his past experiences and present sufferings when once more he beheld the glorious orb of day, and nestled in its glow with a sensation of delight, like that of bathing in perfumed water. Wonderful influence of the sun! It seemed to inspire our explorers with new life, fresh strength, fresh hope,—body and mind were quickened and recruited by the invigorating rays; and by degrees the adventurers began to think of resuming the work of exploration.

A day in March was spent after the following routine,—and the description is generally applicable to the various aspects of their winter-life on board the ice-bound brig.

At half-past seven all hands rose, washed on deck, opened the doors for ventilation, and then went below for breakfast. As fuel was scarce, the cooking was done in the cabin. Breakfast—for all fared alike—was hard tack, pork, stewed apples frozen like molasses-candy, tea and coffee, with a delicate portion of raw potato.

Afterwards, those who smoked indulged in their pipe until nine; then all hands turned to—idlers to idle, workers to work; one to his carpenter's bench, another to his "preparations" in canvas; one to play tailor, another to make shoes; one to skin birds, one to tinker, and the rest to the "Office."

Let us take a peep into the "Arctic Bureau."

One table, one salt-pork lamp, with rusty chlorinated flame; three stools, and as many waxen-faced men, with their legs drawn up under them, the deck at zero being too cold for the feet. Each has his department. Kane is writing, sketching, and projecting maps; Hayes copying logs and meteorologicals; Sonntag "reducing" his work at the observatory. A fourth, as one of the working members of the hive, has long been defunct,—you will find him in bed, or studying "Littell's Living Age."

At twelve took place a business round of inspection, and orders were issued sufficient to fill up the day with work.

Next came the drill of the Eskimo dogs,—a dog-trot specially refreshing to their driver, whose legs creaked with every kick, and whose rheumatic shoulders chronicled every descent of the whip. And in this way the captives went on until dinner-time; when their fare was much the same as at breakfast, with the exception of pickled cabbage and dried peaches being substituted for tea and coffee.

At dinner, as at breakfast, raw potato was introduced as a hygienic luxury. Yet, like most medicine, it was not as appetizing as it was wholesome. Even when grated nicely, with the ugly red spots omitted, and oil freely added as a lubricant, the partakers were fain to shut their eyes and "bolt" it, like Mrs. Squeers's molasses and brimstone at Dotheboys Hall.

Sleep, exercise, amusement, and work at will, carried on the day till six o'clock supper; a meal something like

breakfast and something like dinner, only more sparing; and then the officers submitted to Dr. Kane the day's reports.

These dismissed, a game at chess or cards was indulged in, or light reading for those who preferred it. Then the watch was set, and "silence reigned around."

THE ICE-FOOT.

A peculiar feature of the Arctic region is the so-called "ice-foot" (Danish, *eis-fod*), a zone of ice, which stretches along the shore from the Arctic Circle far away into the uttermost North. To the south it breaks up under the genial influence of summer, and even as high as Upernavik or Cape Alexander it disappears; but in higher latitudes it is a perennial growth, clinging to the bold faces of the cliffs, and following the curves of the bays and the indentations of the rivers.

Though it changes with the seasons, it never wholly passes away—that is, to the north of Cape Alexander. It forms a broad and secure platform, a level highway of travel, elevated above the grinding ice of the sea, and adapting itself like a shroud to all the sinuosities of the land. It will be convenient to speak of it as the "ice-belt."

Though subject to occasional disruption, and diminished by thaws and evaporation, it measures the severity of the year by its rate of increase. Rising with the first inclemencies of the fading summer, it enriches with curious and fantastic frost-work the undulating sea-line; a little later, and it is moulded into bolder shapes by collision with the drifting floes and

rocks falling from the cliffs which bound it. Before the advent of the rigid winter, it is already solidified into an impenetrable rampart; and so it continues to gain in size and strength with the successive freezing of the tides, until summer returns, and its progress is arrested by the melted snows and rushing water-torrents.

During Dr. Kane's first winter at Rensselaer Harbour, the ice-belt grew to three times the size it had presented on his arrival; and by the middle of March the islands and adjacent shores were blocked up by a continuous icy terrace, nearly 27 feet high, and 120 feet wide.

In mid-winter, however, the ice-foot is not an unbroken level. Like the floes, it has its barricades, serried and irregular, which can be traversed only with toil and difficulty.

A TERRIBLE JOURNEY.

On the 20th of March another party was sent out to establish a depôt of provisions, and Kane and the rest of his followers waited only for their return to begin the transit of the bay. Late at night on the 31st, they were working cheerfully by the glare of their lamps, when a sudden noise of steps was heard above, and immediately afterwards Sonntag, Ohlsen, and Petersen came down into the cabin. If there was something startling in their unexpected arrival, much more startling was their appearance. They were swollen, haggard, and scarcely able to speak.

Where were their companions?

Behind in the ice,—Brooks, Baker, Wilson, and Pierre,—all frozen and disabled; and they themselves had risked their lives to carry the pitiful news. Where

were their comrades lying? With cold white lips they muttered that they could not tell; somewhere in among the hummocks to the north and east; the snow was drifting round them heavily when they parted. "Irish Tom" had gallantly remained to feed and care for them; but of their recovery there was little hope. It was useless to put additional questions; they were too exhausted to be able to rally their ideas.

Not a moment was to be lost. While some attended to the feeble wayfarers, and made ready a hasty meal, others rigged out the "Little Willie" with its tent-like cover, and placed in it a supply of pemmican. Then Ohlsen, as the least exhausted, was strapped on the sledge, encased in a fur bag, with his legs wrapped in dog-skins and eider down, and away went the rescue-party. It consisted of nine men and Dr. Kane. The thermometer, when they set out, stood at -41° , or 78° below freezing-point.

A tower of ice, called by the men the "Pinnacly Berg," served as their first landmark; other colossal icebergs, extending in long beaded lines across the bay, helped to guide them for some distance; and it was not until they had travelled for sixteen hours that they began to lose their way.

That their lost comrades were somewhere in the gloomy area before them, and within a radius of forty miles, they knew; but this was to know little. And Mr. Ohlsen, who now woke from a prolonged slumber with unequivocal signs of mental disturbance, seemed to have lost the bearing of the bergs,—which, indeed, in form and colour, continually repeated themselves.

“Passing ahead of the party,” says Kane (and there is a deep pathos in his simple unadorned narrative), “and clambering over some rugged ice-piles, I came to a long level floe, which I thought might probably have attracted the eyes of weary men in circumstances like our own. It was a light conjecture; but it was enough to turn the scale, for there was no other to balance it. I gave orders to abandon the sledge, and disperse in search of footmarks. We raised our tent, placed our pemmican in *cache*, except a small allowance for each man to carry on his person; and poor Ohlsen, now just able to keep his legs, was liberated from his bag. The thermometer had fallen by this time to $-49^{\circ}.3$, and the wind was setting in sharply from the north-west. It was out of the question to halt,—it required brisk exercise to keep us from freezing. I could not even melt ice for water; and, at these temperatures, any resort to snow for the purpose of allaying thirst was followed by bloody lips and tongue: it burned like caustic.

“It was indispensable, then, that we should move on, looking out for traces as we went. Yet when the men were ordered to spread themselves, so as to multiply the chances, though they all obeyed heartily, some painful impress of solitary danger, or perhaps it may have been the varying configuration of the ice-field, kept them closing up continually into a single group. The strange manner in which some of us were affected I now attribute as much to shattered nerves as to the direct influence of the cold. Men like M’Gary and Bonsall, who had stood out our severest marches, were

seized with trembling fits and short breath; and, in spite of all my efforts to keep up an example of sound bearing, I fainted twice on the snow.

"We had been nearly eighteen hours out without water or food, when a new hope cheered us. I think it was Hans, our Eskimo hunter, who thought he saw a broad sledge-track. The drift had nearly effaced it, and we were some of us doubtful at first whether it was not one of those accidental rifts which the gales make in the surface-snow. But as we traced it on to the deep snow among the hummocks, we were led to foot-steps; and, following these with religious care, we at last came in sight of a small American flag fluttering from a hummock, and lower down a little masonic banner hanging from a tent-pole hardly above the drift. It was the camp of our disabled comrades. We reached it after an unbroken march of twenty-one hours."

They found the little tent almost buried in the snow. When Dr. Kane came up, his men, who had outstripped him, were standing in silent file on each side of it. With a delicacy of feeling which is almost characteristic of sailors, and seems instinctive to them, they expressed a desire that he should enter alone. As he crawled beneath the tent-curtain, and, coming upon the darkness, heard before him the burst of welcome gladness that came from the poor prostrate creatures within, and then for the first time the cheer without, his weakness and gratitude almost overcame him. "They had expected him," was their exclamation; "they were sure he would come!"

There were now fifteen souls in all; the thermometer

was 75° below the freezing-point; the sole accommodation a tent barely able to contain eight persons: consequently, more than half the party were compelled to keep from freezing by walking outside while the others slept. The halt, however, was not prolonged. Each refreshed himself by a two hours' sleep, and then the homeward march began.

They carried with them nothing but the tent, furs to protect the rescued party, and food sufficient for a journey of fifty hours. Everything else was abandoned. Two large buffalo bags, each made of four skins, were doubled up, so as to form a kind of sack, lined on each side by fur, closed at the bottom, but opened at the top. This impromptu sack was laid on the sledge, of which the tent, smoothly folded, served as the floor. The sick, with their limbs sewed up carefully in reindeer-skins, were placed upon the bed of buffalo-ropes, in a half-recumbent posture; due warmth was maintained by a plentiful supply of skins and blanket-bags; and the whole was so lashed together as to leave only a single opening opposite the mouth for breathing.

These preparations completed, a short prayer was uttered, and the brave little company started on their return. The difficulties they met with, however, were such as severely tested their courage and endurance. A great part of their track lay among a succession of hummocks, some of them extending in long lines, fifteen or twenty feet in height, and all so steep that to ascend them was impossible. The sledge had to pursue a winding course in and out of these serious obstacles, frequently driving through gaps filled with recently-fallen snow,

which hid the fissures and openings in the ice beneath. These, says Kane, were fearful traps to disengage a limb from, for every man was painfully aware that a fracture or even a sprain might cost him his life. In addition, the sledge was top-heavy with its load, which weighed not less than 1100 lbs., while the maimed men could not bear to be lashed down tight enough to secure them against falling off.

Yet, for the six hours, the progress of this undaunted band was cheering. They advanced nearly a mile an hour, and reached the new floes before they were absolutely weary. "Our sledge," says Kane, "sustained the trial admirably. Ohlsen, restored by hope, walked steadily at the leading belt of the sledge lines; and I began to feel certain of reaching our half-way station of the day before, where we had left our tent. But we were still nine miles from it, when, almost without premonition, we all became aware of an alarming failure of our energies."

Bonsall and Morton, two of the most robust of Kane's party, besought permission to sleep. They declared that they did not feel cold, and that all they wanted was a little repose. Presently Hans was found frozen almost into rigidity under a drift; and Thomas, standing erect, had his eyes closed, and could scarcely articulate. Soon afterwards, John Blake threw himself on the snow, and refused to rise. They made no complaint of feeling cold; but it was in vain that Dr. Kane "wrestled, boxed, ran, argued, jeered, or reprimanded;" he found that an immediate halt was unavoidable.

Again we quote from his own narrative, on the simplicity of which it is not possible to improve :—

“We pitched our tent with much difficulty. Our hands were too powerless to strike a fire; we were obliged to do without water or food. Even the whisky had frozen at the men's feet, under all the coverings. We put Bonsall, Ohlsen, Thomas, and Hans, with the other sick men, well inside the tent, and crowded in as many others as we could. Then leaving the party in charge of Mr. M'Gary, with orders to come on after four hours' rest, I pushed ahead with William Godfrey, who volunteered to be my companion. My aim was to reach the half-way tent, and thaw some ice and pemmican before the others came up.

“The floe was of level ice; the walking excellent. I cannot tell how long it took us to make the nine miles, for we were in a strange sort of stupor, and had little apprehension of time. It was probably about four hours. We kept ourselves awake by imposing on each other a continued articulation of words, though such utterances must necessarily have been incoherent. Godfrey and I afterwards retained only a very confused recollection of what preceded our arrival at the tent. We both, however, remember a bear walking leisurely before us, and tearing up as he went a jumper that Mr. M'Gary had improvidently thrown off the day before. He tore it into shreds, and rolled it into a ball, but made no attempt to interfere with our progress. Godfrey, who had a better eye than myself, looking some miles ahead, could see that our tent was undergoing the same unceremonious treatment. I thought I saw it too,

but we were so drunken with cold that we strode on steadily, and, for aught I know, without quickening our pace."

Probably their approach proved the safety of the contents of the tent; for on their arrival they found it uninjured, though the bear had overturned it, and tossed pemmican and buffalo-ropes into the snow; only a couple of blanket-bags were missing. With great difficulty they raised it, crawled into their reindeer sleeping-bags without a word, and for three hours enjoyed a dreamy but intense slumber. When Dr. Kane awoke his long beard was a mass of ice, frozen fast to the buffalo-skin; and Godfrey had, literally, to *cut him out* with his jack-knife.

Water was melted and some soup cooked before the party arrived; they accomplished the nine miles in five hours, were doing well, and, considering the circumstances, in excellent spirits. The day was calm, and the sun clear, so that the journey was less onerous than it might have been. The new-comers enjoyed the refreshment that had been got ready for them; the crippled were repacked in their robes, and the whole party sped briskly toward the ranges of ice-hummocks that lay between them and the Pinnacly Berg.

These hummocks came properly under the designation of squeezed ice. A great chain of bergs stretching from north-west to south-east, moving with the tides, had compressed the surface-floes, and reared them upon their edges in a singularly fantastic manner.

Desperate efforts were required on the part of our

worn and weary travellers to carry them across the rugged area; desperate indeed, for their partially resuscitated strength failed them anew, and their self-control began to desert them. They could no longer refrain from eating snow; and, as a consequence, their mouths swelled, and some of them became speechless. They must have perished had not the day been warmed by a clear sunshine, so that the thermometer rose in the shade to within four degrees of zero.

As they grew weaker and weaker, their halts necessarily became more frequent; and they would fall, in a semi-somnolent condition, on the snow. Strange to say, these brief intervals of slumber proved refreshing, so that Dr. Kane was induced to try the experiment in his own person, taking care that Riley should arouse him at the end of three minutes. Afterwards he timed the men in the same way. They sat upon the runners of the sledge, and fell asleep immediately, but were startled into wakefulness the moment their three minutes had elapsed.

At eight in the evening the wayfarers were clear of the floes, and gained some new hope at the sight of the well-known Pinnaely Berg. Brandy, which sometimes proves an invaluable resource in emergencies, had already been administered in table-spoonful doses. After a final and stronger dram, and a longer rest, they resolved on a last effort to reach the brig, which they attained at one hour after noon.

But words are inadequate to describe their sufferings

in this last stage of their journey. They were completely delirious, and no longer entertained any clear apprehension of what was transpiring. Like men in a dream they staggered onward, blindly, uncertainly. From an inspection of their footprints afterwards, it was seen that they had steered a bee-line for the brig, guided by a kind of instinct, for they remembered nothing of their course.

When about two miles from the brig they were met by Petersen and Whipple, with the dog-traces, and a supply of restoratives, for which Kane had sent a message in advance by Bonsall. As soon as the frozen, wayworn creatures were safe on board, Dr. Hayes took them under his charge. All were suffering from brain-symptoms, functional not organic, and to be rectified by rest and abundant diet. Ohlsen was for some time afflicted with blindness and strabismus; two others underwent amputation of parts of the foot, but without dangerous consequences; and two died, in spite of every attention. The rescue-party had travelled between eighty and ninety miles, dragging a heavy sledge for most of the distance. They had been out for seventy-two hours, and halted in all eight hours. The mean temperature of the whole time, including the noontide hours of three days, was about -41° , or 73° below freezing-point. Except at their two halts they had no means of quenching their thirst, and they could at no time intermit vigorous exercise without freezing.

It is difficult to find a severer "experience" of the perils of Arctic winter-travelling, when all the circum-

stances are taken into consideration ; and the reader will readily admit that Dr. Kane showed as much decision, sagacity, and heroic resolution as any leader of a "forlorn hope," marching to certain death under an enemy's fire.

From the depression that followed these events, Kane and his party were roused by a visit from the Eskimos. The first who presented himself was a tall, powerful, well-built fellow, with swarthy complexion and piercing black eyes. He wore a hooded *capôte* of mixed white and blue fox-skins, arranged with some degree of taste ; and booted trousers of white bear-skin, which, at the end of the foot, terminated grimly with the animal's claws. This visitor was quickly followed by a number of his countrymen. He showed himself both frank and fearless, and went on board the brig alone. Dr. Kane having satisfied himself that no mischief was intended, invited his companions, and some eight or nine at once accepted the invitation. Others, meantime, as if contemplating a long visit, brought up from behind the hummocks as many as fifty-six fine dogs, with their sledges, and secured them within two hundred feet of the brig, thrusting their spears into the ice, and picketing the dogs to them by the seal-skin traces. It was evident the animals understood the meaning of the operation, and as soon as it commenced they lay down quietly. The sledges were made of small fragments of porous bone, very skilfully fastened together by thongs of hide ; the runners, which shone like burnished steel, were of highly-polished ivory, obtained from the tusks of the walrus.

They had no other weapons than knives, which they carried in their boots; and lances, which they lashed to their sledges. The latter was a formidable arm. The staff was made of the horn of the narwhal, or else of the bear's thigh-bones lashed together: wood was not used. As for the knives of the party, a single rusty hoop from a current-drifted cask might have furnished them all; but the lancet-shaped tips of the spears were made of steel, and rivetted not unskilfully to the tapering bony point. This steel was obtained from the more southern tribes.

When the Eskimos first came on board, they showed themselves somewhat rude, rough, and unruly. They spoke, three or four at a time, to each other and to their American hosts, laughing heartily at not being understood, and then chattering away as rapidly as before. They were perfect representatives of perpetual motion, going everywhere, trying doors, and forcing their way through dark passages, round casks and boxes, and out into the light again, anxious to touch and handle everything they saw, and soliciting or endeavouring to secrete everything they touched. Dr. Kane found it the more difficult to restrain them, as he was anxious they should not suppose him alarmed by their numbers. But their curiosity was so insatiable, that it became necessary at last to use something like force to keep it within proper bounds.

Dr. Kane's whole company was mustered and kept constantly on the alert; but they did their spiring gently, and the utmost good-humour prevailed. The Eskimos still continued to run in and about the vessel,

bringing in provisions, and carrying them out again to their dogs on the ice; and this occupied them until the afternoon, when they lay down to sleep like tired children. Dr. Kane ordered them to be made comfortable in the hold; and a large buffalo-robe was spread for their convenience in the vicinity of the galley-stove.

In this stove blazed a fire of coal; and the new fuel, too hard for blubber, too soft for freestone, filled them with amazement. They saw, however, that it would work quite as efficiently as seals' fat, and borrowing an iron pot and some melted water, proceeded to parboil a couple of pieces of walrus-meat. The main portion of their meal—that is, five pounds of meat a head—they preferred to eat raw. It was observed that they did not all eat together, but each man as he listed; and when he had done eating he lay down to sleep, his raw chunk of meat lying beside him. When he awoke he took a few additional bites, and then to sleep again! They did not lie down as Europeans do, but adopted a sitting posture, with the head drooping on the breast, and snoring (most of them) famously.

In the morning they departed, after selling four of their dogs and all the walrus-meat they could spare for some needles and beads and a supply of old cask staves.

DISCOVERIES.

At the end of April, leaving ten of his party in the brig, Kane, with seven men, started on an exploring expedition, resolved to follow up the ice-belt to the Great Glacier of Humboldt, there obtain a replenish-

ment of pemmican from the *cache* made in the previous October, and then make an attempt to cross the ice to the American shore. This was to be the "crowning expedition" of the campaign,—to attain the Ultima Thule of the Greenland shore, measure the dreary frozen waste that spread between it and the unknown West, and hunt round the furthest ice-circle for an opening into the mysterious regions beyond. It was not carried out in its entirety, but it resulted, nevertheless, in geographical discoveries of great interest.

Let us trace the eastern coast-line of Smith Sound, now acknowledged to be the sole highway to the Pole, beginning at Refuge Harbour.

Cape Alexander may be taken as the westernmost point of Greenland. Thence the shore strikes nearly north and south, like "the broad channel of which it is the boundary;" but on reaching Refuge Inlet it bends nearly at a right angle, and runs from west to east until it has crossed the 65th meridian. Two indentations occur between the cape and the inlet: the first near the Etah settlement, which was visited in 1855 by a Rescue Expedition under Lieutenant Hartstene, and bearing his name; the other, the Lifeboat Cove of Dr. Kane's charts. In both the great dead-white glaciers strike down to the water-line, having slowly forced their way from the gorges among the rocky hills of the interior.

Besides these gaps or indentations, the coast-line is varied by a series of headlands differing much in character, and at Cape Hatherton sinking into undulating hills. All along it lies an archipelago of islands, where

the eider, the glaucous gull, and the tern, breed in countless numbers.

Cape Hatherton is a lofty and conspicuous mass of porphyritic rock.

North of Refuge Harbour the coast assumes a very different character. There are no deep bays, no descending glaciers; and the deep fiords and inlets do not reappear until we approach Rensselaer Harbour. Here the geological structure changes also, and the cliffs are distinguished by their bold diversity of form, reminding the spectator of ruined temples, or the shattered façades of glorious cathedrals and minsters. Their height sometimes exceeds one thousand feet.

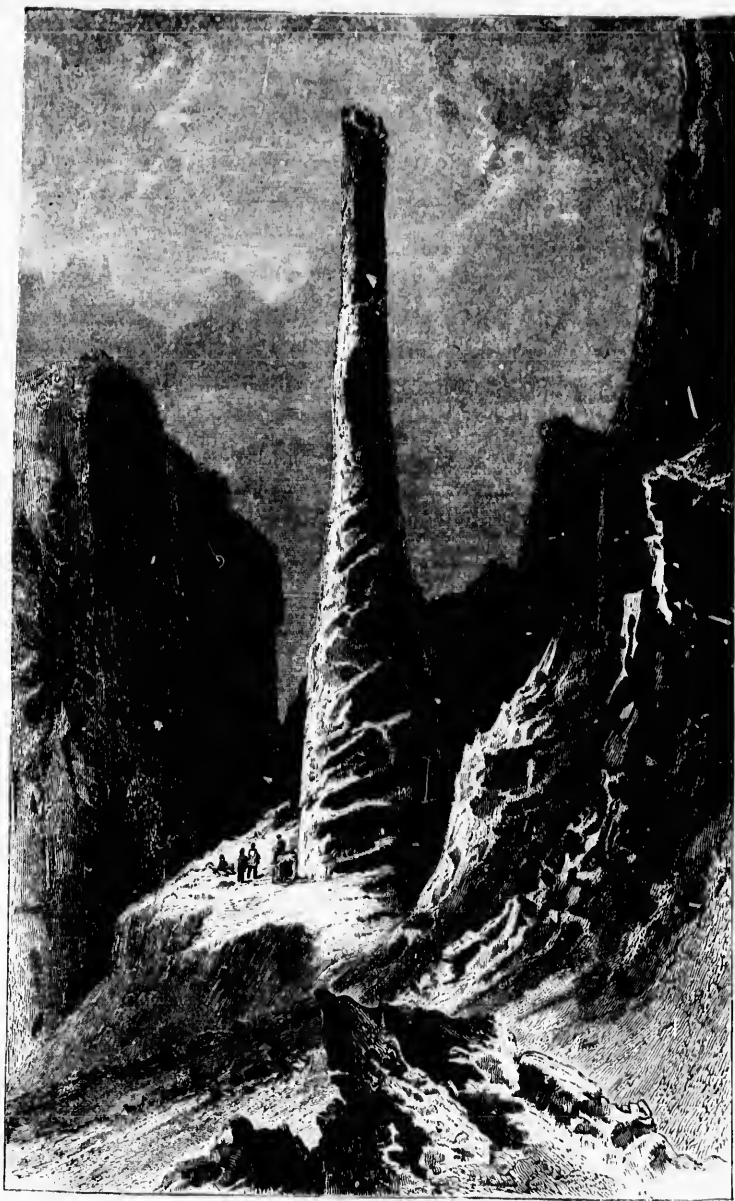
This grand and impressive structure extends as far as the Great Glacier, except where diversified by the sweep of four great bays, each communicating with deep gorges, which are watered by streams from the inland ice-fields. The average elevation of the tableland bordered by these cloven, rugged, precipitous cliffs is about 900 feet; but far away, in the direction of the *mer de glace* of the unknown interior, it rises to 1900 feet.

According to Dr. Kane, the most picturesque portion of the North Greenland coast is met with between Cape George Russell and Dallas Bay. Here the warm red sandstones contrast agreeably with the cold whiteness of the snow-fields and the ice-plains, and into the dreary Arctic landscapes introduce something of the character of more genial climates. The influence of the seasonal changes has worked on the cliffs till they have assumed the appearance of jointed masonry, which

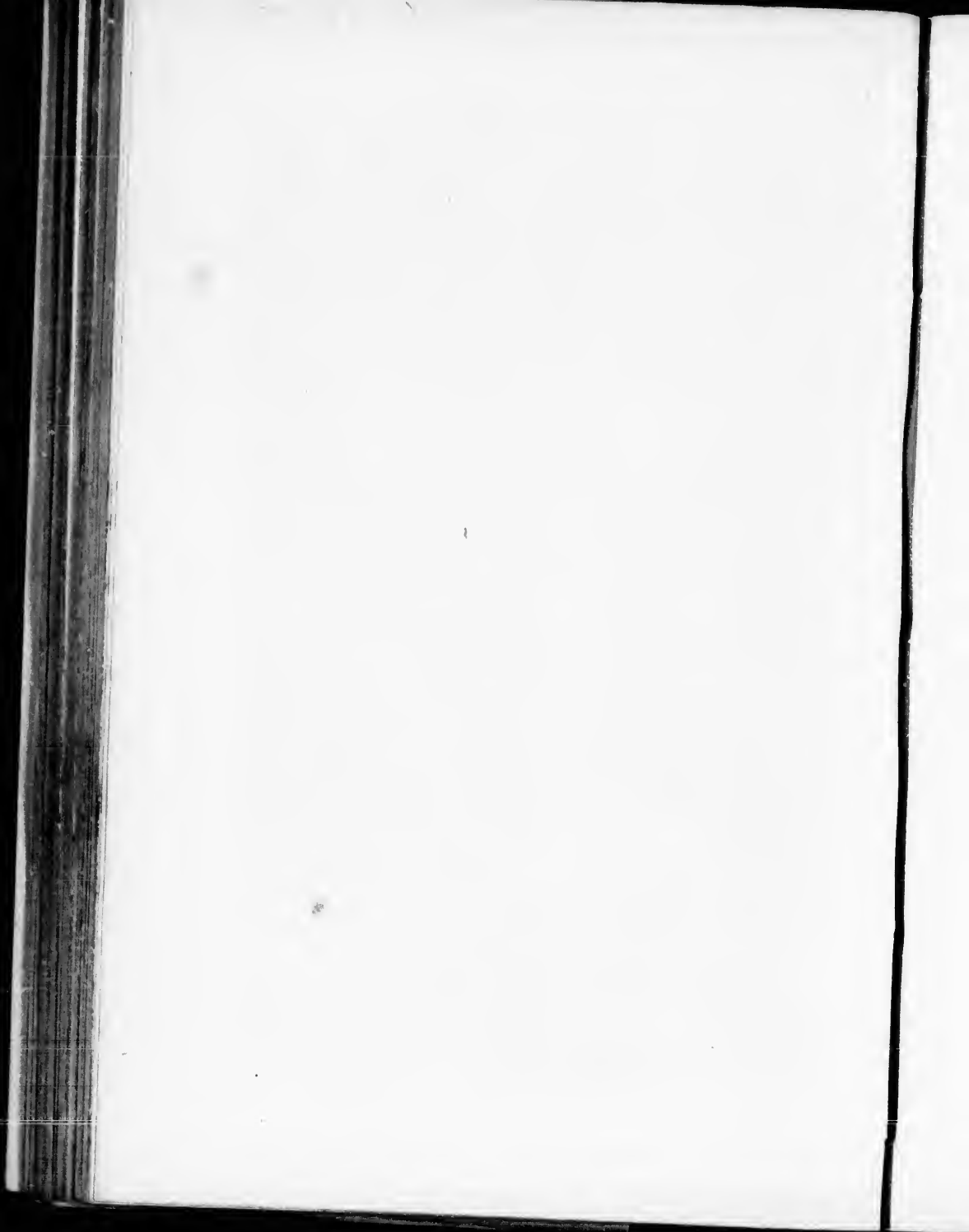
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TENNYSON MONUMENT.



the narrow topmost layer of greenstone caps with mimic battlements.

A remarkable feature of this part of the coast was distinguished by our explorers as the "Three Brother Turrets." The rocky precipice rose at the mouth of a sun-lighted gorge into the fantastic resemblance of a castle, flanked with triple towers, boldly and clearly defined.

Beyond this point, in lat. 79°, a single cliff of greenstone rose from a crumbled base of sandstones, like the boldly chiselled rampart of an ancient fortress. At its northern extremity, on the edge of a profound ravine which the action of ice and water had excavated in the strata, stands a solitary column or minaret-tower, as sharply finished as if wrought by the chisel of the sculptor. The length of the shaft was estimated at 480 feet, and its pedestal or plinth was 280 feet high.

"I remember well," writes Dr. Kane, "the emotions of my party as it first broke upon our view. Cold and sick as I was, I made a sketch of it, which may have interest for the reader, though it scarcely suggests the imposing dignity of this magnificent landmark. Those who are happily familiar with the writings of Tennyson, and have communed with his spirit in the solitudes of a wilderness, will apprehend the impulse that inscribed the scene with his name."

Beyond this Tennyson Monument lies the Advance Archipelago; and to the east extends the Great Glacier that has received the name of the illustrious German philosopher and traveller Humboldt. It seems impos-

sible to convey in words any adequate idea of the vast frozen river which connects* instead of dividing the two continents of America and Greenland. Its curved face, from Cape Agassiz to Cape Forbes, measures fully sixty miles in length, and presents a grand wall or front of glistening ice, kindled here and there into dazzling glory by the sun. Its form is that of a wedge, the apex lying inland, at perhaps "not more than a single day's railroad travel from the Pole." Thus it passes away into the centre of the Greenland continent, which is occupied by one deep unbroken sea of ice, twelve hundred miles in length, that receives a perpetual increase from the water-shed of vast snow-mantled mountains. A frozen sea, yet a sea in constant motion, rolling onward slowly, laboriously, but surely, to find an outlet at each fiord or valley, and to load the seas of Greenland and the Atlantic with mighty icebergs, until, having attained the northern limit of the land it overwhelms, it pours out a mighty congealed torrent into the unknown Arctic space!

The discoveries which we have thus summarized

* "I have spoken of Humboldt Glacier as connecting the two continents of America and Greenland. The expression requires explanation. All of Arctic America north of Dolphin and Union Straits is broken up into large insular masses, and may be considered as a vast archipelago. While, therefore, a liberal definition would assign these land-masses to the American continent, Grinnell Land cannot strictly be regarded as part of the continent of America. Washington Land seems, in physical character and position, to be a sort of middle ground, which, according to the different views of geographers, may be assigned indifferently to either of the two great divisions. From the American land-masses it is separated by a channel of but thirty-five miles in width; and at this point Greenland, losing its peninsular character, partakes in general character with the land-masses of the West. A water-channel not wider than Lancaster Sound or Murchison's, which have heretofore not been regarded as breaking a geographical continuity, is all that intervenes."
—*Dr. Kane*, p. 504.

were not made without much suffering on the part of Dr. Kane and his followers. The heroic leader, indeed, almost succumbed to the terrible hardships of this adventurous journey, and was carried back to the sledge in so prostrate a condition that recovery seemed hopeless. It may be doubted, indeed, whether his strength was ever thoroughly recruited, though the skill and attention of Dr. Hayes, and his own undaunted spirit, rescued him from the jaws of death. All the men were more or less afflicted, and in the middle of June only three were able to do duty, and of the officers Dr. Hayes alone was on his feet.

The Great Glacier had effectually terminated the labours of the explorers in that direction; and Dr. Kane determined that their future search should be made to the north and east of Captain Inglefield's Cape Sabine. He still cherished a belief that some, at least, of the hardier members of Sir John Franklin's expedition must be alive, and, having made their way to the open spot of some tidal eddy, had set bravely to work, under the teachings of an Eskimo, or one of their own whalers, and trapped the fox, speared the bear, and killed the seal, walrus, and whale.

EXPLORATIONS.

Dr. Hayes and William Godfrey started on the 20th of May, and returned on the 1st of June. Through labyrinths of rugged hummocky ice they gallantly struggled; frequently in crossing the ridges, which were from twenty to forty feet in height, their sledge would capsize and roll over and over, dogs, cargo, and

all, into the drift below. Dr. Hayes suffered greatly from snow-blindness, and Godfrey's energies completely broke down. They succeeded, however, in crossing to the west coast of the channel, which they explored for about two hundred miles, from Cape Frazer to Franklin Pierce Bay; and then returned across the ice to the east coast, striking land at or near Cape Inglefield, and then keeping along the ice-belt to Rensselaer Harbour. Dobbin Bay was discovered in the course of this adventurous journey.

Another expedition was immediately resolved upon, with the view of discovering an outlet to the north from the great bay or basin of ice, since called Kane Sea—a continuation of Smith Sound—in which the explorers were involved. This expedition was designated the North-East Party; and consisted of M'Gary, Bonsall, Hickey, and Riley, under the direction of William Morton, and accompanied by Hans the Eskimo. Their orders were to push forward as far as the base of the Great Glacier, and there fill up with provisions from the *cache*. M'Gary and three men were then to attempt to scale and survey the glacier, while Morton and Hans crossed the bay in the dog-sledge and advanced along the north-west coast.

During their absence signs of summer daily grew more numerous. Bird, insect, and vegetable began to make their appearance. The songs of the snow-birds filled the air with melody. The verdant sap revived in the andromeda; the willows hung out their downy catkins; and lichens, starwort, and drabas put forth

their tender shoots beneath the snow. The seals now showed themselves on the ice-floes, and furnished a welcome dish at the table of our winter-worn explorers. They were chiefly of the rough or hispid species, whose flesh is eaten universally by the Danes of Greenland, and is almost the main sustenance of the Eskimos. When raw it has a flabby look, more "like coagulated blood than muscular fibre;" but when cooked it assumes a sooty colour. It is described as close-grained, but soft and tender, with a flavour of lamp-oil; a mere *souppçon*, however, for the blubber, when fresh, is sweet and delicious,—at least, in the early summer.

The seal are shot as they bask in the sun by their *atluk*s or breathing-holes. At first they are exceedingly shy and timid, but towards midsummer it becomes easier to approach them; and this more particularly because the sun-glare frequently renders them nearly blind.

Each seal yields a considerable supply of oil: on an average, about five gallons.

The only other species that frequented Remsselaer Harbour was the *Phoca barbata*, or large bearded seal; the *usuk* of the Eskimos. This animal frequently attains the length of ten feet, with a circumference of eight feet, and owing to its unwieldy bulk is frequently mistaken at a distance for the walrus.

The *netsik*, or hispid seal, will not perforate ice of more than one season's growth; and the hunters search for it, therefore, in places where the water was open in the previous year. But the *usuk*, or bearded seal, has no *atluk*, or opening. For purposes of respiration it trusts

to fissures and chasms in the ice, and hence it is found wherever the bergs or floes have been in motion. Their range, consequently, is much more extensive than that of their little "sun-basking brethren," who herd together in large numbers, so as in some places to cover the ice with a dark dense mass of living animals.

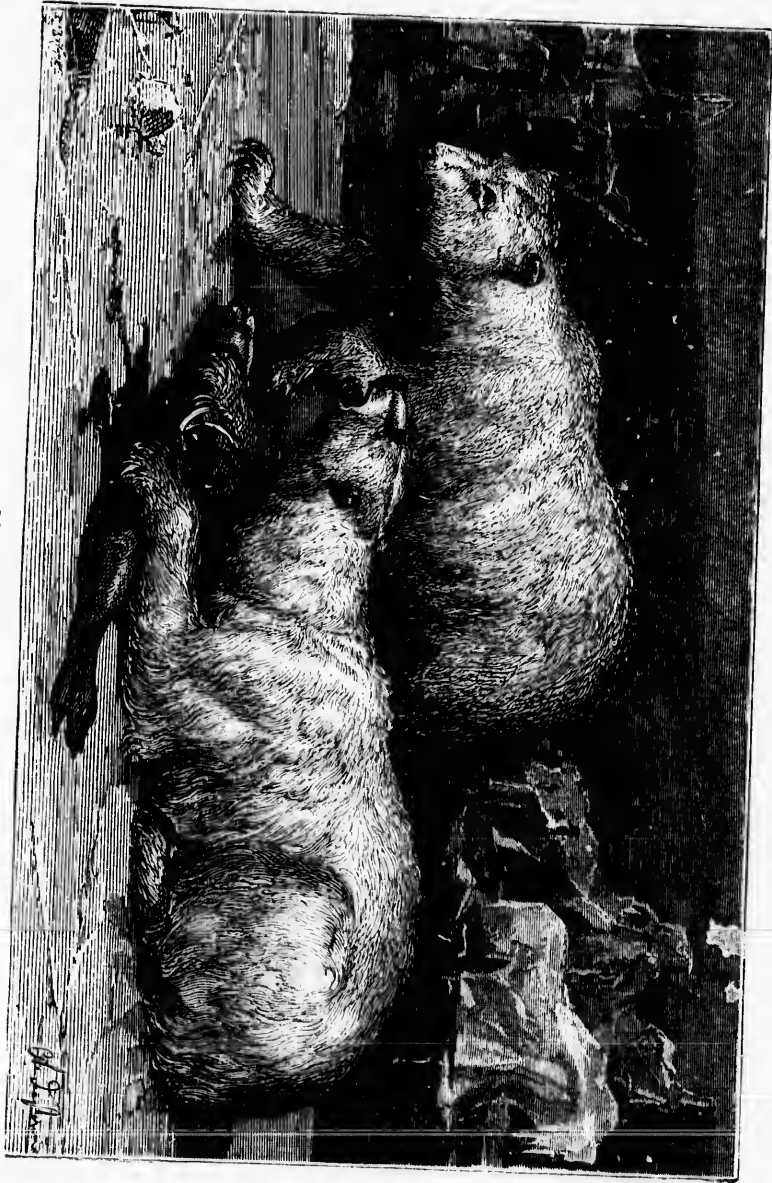
"On one occasion," says Kane, "while working my way towards the Eskimo huts, I saw a large *usuk* basking asleep upon the ice. Taking off my shoes, I commenced a somewhat refrigerating process of stalking, lying upon my belly, and crawling along step by step behind the little knobs of floe. At last, when I was within long rifle-shot, the animal gave a sluggish roll to one side, and suddenly lifted his head. The movement was evidently independent of me, for he strained his neck in nearly the opposite direction. Then, for the first time, I found that I had a rival seal-hunter in a large bear, who was, on his belly like myself, waiting with commendable patience and cold feet for a chance of nearer approach.

"What should I do? The bear was doubtless worth more to me than the seal; but the seal was now within shot, and the bear 'a bird in the bush.' Besides, my bullet once invested in the seal would leave me defenceless. I might be giving a dinner to the bear and saving myself for his dessert. These meditations were soon brought to a close; for a second movement of the seal so aroused my hunter's instincts that I pulled the trigger. My cap alone exploded. Instantly, with a floundering splash, the seal descended into the deep, and the bear, with three or four rapid leaps, stood dis-

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POLAR BEARS.



consolately by the place of his descent. For a single moment we stared each other in the face, and then, with that discretion which is the better part of valour, the bear ran off in one direction, and I followed his example in the other."

PHYSIOLOGY OF THE POLAR BEAR.

The Polar bear is an animal of original character; remarkable, as philosophers would say, for his strong individuality. His curiosity is insatiable, and it frequently leads him into difficulties from which he cannot always extricate himself successfully. One night, during the sledge-journey of Bonsall and M'Gary, they had encamped in the usual manner, and taken refuge from the severities of the weather under the roof of their tent. They were enjoying a sound sleep after the day's fatigues, when, about half an hour after midnight, M'Gary became conscious of a movement in the snow immediately by his head. Waking hastily, he was able to make out that a large animal was prowling round the tent. His shout of surprise aroused his companions; but as they had left all their guns in the sledge, a little distance off, they felt themselves in a predicament. What was to be done? Egress was impossible, for the bear had taken up a position at the tent-opening; and displaying the utmost indifference to lighted matches and brandished torches of newspaper, proceeded to regale composedly on the carcass of a seal which had been shot on the previous day.

One of the besieged, however, Tom Hickey by name, bethought himself at last of an approved military strata-

gem; and while the enemy kept watch in the front, *he* escaped in the rear, through a hole which he cut in the canvas of the tent. Seizing a boat-hook that lay outside, he dealt Bruin a blow which constrained him to retreat some paces beyond the sledge. Tom then sprang forward, seized a rifle, and fell back in safety on his comrades; handing the weapon to Mr. Bonsall, who deftly loaded it, and brought down the enemy with a bullet through his body.

The last *cache* of provisions, on which Dr. Kane had relied for the supply of this reconnoitring-party, was found to have been rifled by the bears, though it had been erected with much care and labour. No obstacle, however, could overcome the strength and curiosity of these "tigers of the ice." Not a morsel of pemmican remained except in the iron cases, which, being round, with conical ends, had "defied both claw and teeth." Yet they had been rolled and tossed in all directions, like so many footballs, though over eighty pounds in weight. An alcohol-case, bound strongly with iron, was split up into small fragments. A tin can of liquor was twisted into a ball; the bear's strong claws having pierced through the metal as if it had been so much paper.

Salt meats they evidently did not relish; but ground coffee had pleased their palate; and so keen was their appetite for old canvas, that even the flag of the expedition had been gnawed down to the very staff. They had evidently enjoyed themselves thoroughly; tying up the heavy india-rubber cloth into hard knots,

and rolling about the bread-barrels after the fashion of boys with their marbles.

MORTON'S EXPEDITION.

Some interesting results were obtained from the expedition under Morton. Their progress across the ice was not unattended with danger; but these explorers were men not easily daunted. They clambered up hillocks, and bridged broad chasms, and wound in and out of towering bergs, with equal skill and intrepidity; well seconded by their dogs, which showed as much sure-footedness as mules. At Cape Andrew Jackson they reached what appeared to be the farthest limit of the ice; and, looking northward, up Kennedy Channel, saw a broad expanse of open water. The landscape was also of a brighter character than any they had recently seen; a long low plain spreading between large headlands, and relieved here and there by ranges of rolling hills. Down the valley came a flock of brent geese with whirring wings; and the waves were darkened by the shadows of ducks and dovebies. Tern abounded, and the air literally echoed with their shrill cries.

The great channel of open water continued to spread to the northward. Broken ice was floating in it, but with passages fifteen miles wide, and perfectly clear. "There would have been no difficulty," it is said, "in a frigate standing anywhere."

Pushing forward boldly, Morton and his companions entered upon a bold deep curve in the eastern shore, which they designated Lafayette Bay. Beyond it lay

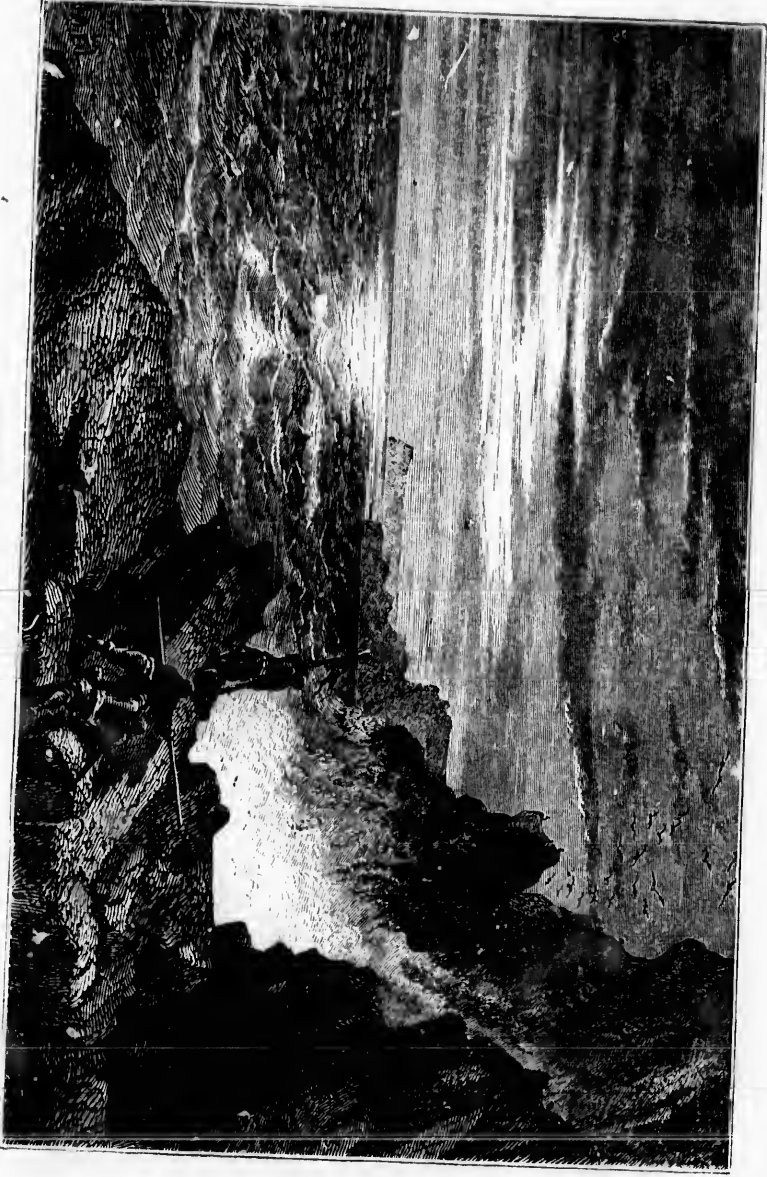
two islands, which Dr. Kane afterwards named in honour of Sir John Franklin and Captain Crozier. The *ne plus ultra* of their adventurous journey was Cape Constitution, where the ice-foot seemed nearly to terminate. Here the cliffs were about two thousand feet in height, nobly guarding the water-way which apparently led to the enchanted region of the North Pole. Morton attempted to pass round the cape, but as there was no ice-foot his efforts were in vain; and he found it impossible to ascend the lofty cliffs. So he fastened to his walking-staff the Grinnell flag of the *Antarctic*—a well-worn relic, which had already fluttered in two Polar voyages—and rearing it on high, its weather-worn folds floated freely “over the highest northern land, not only of America, but of the globe.” Straining his gaze into the misty distance, Morton could dimly see, far away on the western shore, a bare truncated peak, which is supposed to be 2500 or 3000 feet in height. This peak, says Kane, the most remote northern point of Earth, takes its name from the great pioneer of Arctic travel, Sir Edward Parry. It is allowable to suppose that the future explorer who shall succeed in reaching the mighty mass, and in ascending to its summit, will be able to survey, without let or hindrance, the free broad waters of the open sea that rolls around the Pole!

A RECONNAISSANCE.

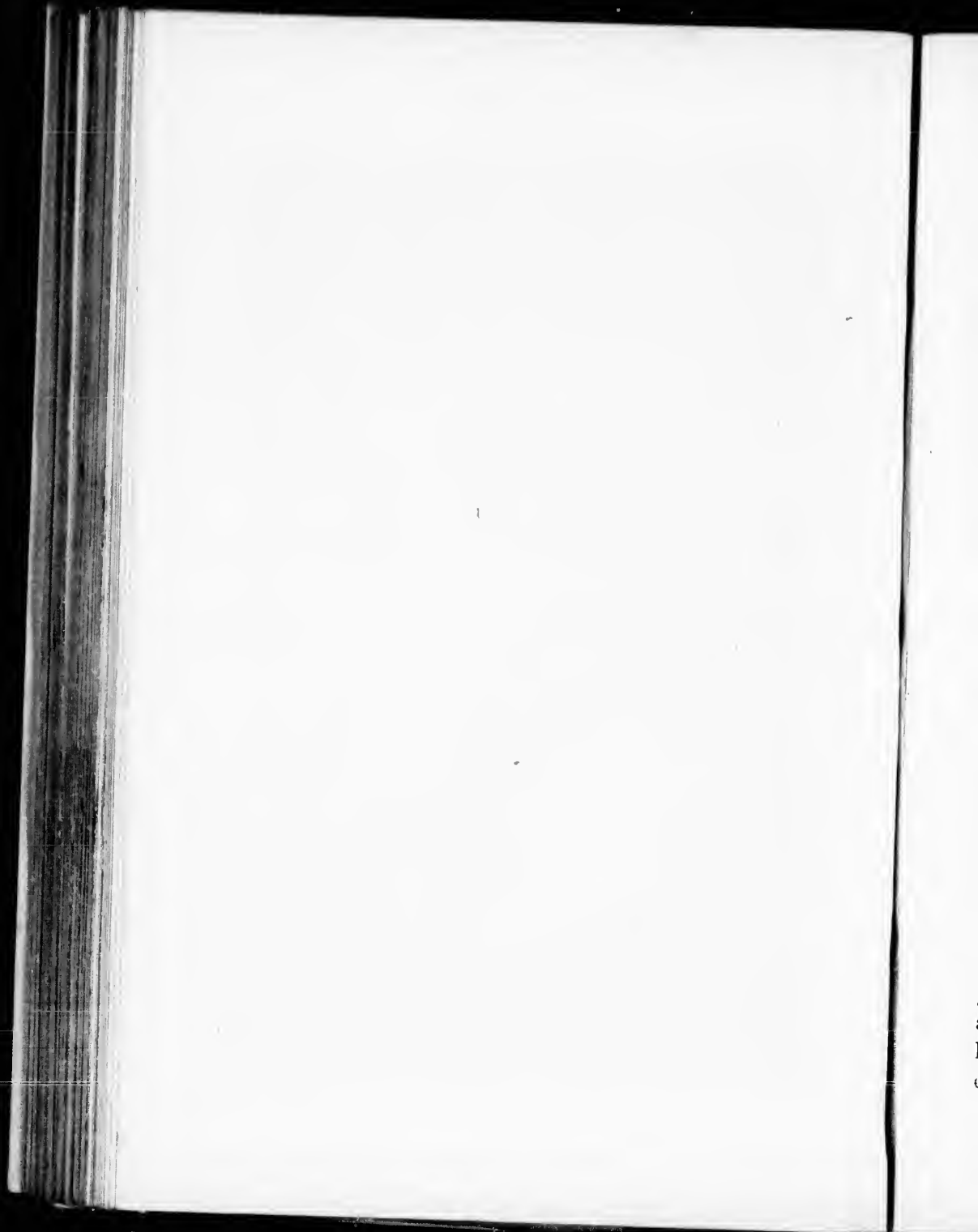
All the sledge-parties were once more on board ship, and the season for Arctic exploration was over. So far as Kane and his followers could judge, between

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MORTON AT CAPE CONSTITUTION.



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their station at Rensselaer and the north water of Baffin Bay extended one vast barrier of unbroken ice. Advance or retreat seemed alike impossible. Yet the growing scarcity of provisions rendered it necessary that they should establish a communication with some point where fresh supplies could be obtained; and, after much consideration, the undaunted leader of this "forlorn hope" resolved on an attempt where he would fall in with the squadron under Sir Edward Belcher. For this purpose he chose five active men, the most energetic and experienced of his party; and having refitted and rigged up his old boat, started, about the middle of July, on his bold adventure. Near Littleton Island he observed some flocks of ducks, and by following them up to their breeding grounds obtained an abundant supply. Dr. Kane furnishes a striking picture of the islets and rocky ledges where the birds made their rude and irregular nests. Of one, which he calls Hans Island, he says that the glaucous gulls, these cormorants of the Arctic seas, had made it their peculiar homestead. Their progeny, already full-fledged and voracious, crowded the guano-whitened rocks; and the mothers, with long necks and gaping yellow bills, swooped above the peaceful shallows of the eiders, seemingly just as their wants required. A more domineering and insatiable rapacity could not be imagined. The gull would gobble up and swallow a young eider with almost indescribable rapidity. For a moment might be seen the paddling feet of the poor little wretch protruding from the mouth; then came a distension of the neck as it descended into the stomach;

a few moments more, and the young gulls were feeding on the ejected morsel.

The mother-duck, of course, nearly distracted, battled gallantly and perseveringly; but she could not always reassemble her brood, and in her efforts to defend one, uncovering the others, was frequently left as desolate as Niobe.

Continuing his course, Dr. Kane got out of the strait, and passed into the open sea-way, where his boat was tossed to and fro in a manner that added neither to the comfort nor composure of his companions. While steering for Cape Combermere, a headland on the west coast of what is called the North Water, they were overtaken by a tremendous gale from the north, which nearly capsized them. Their escape was due to the skill and tenacity with which M'Gary handled that whaler's marvel, the long steering-oar, heroically remaining at his post for two-and-twenty hours. Great was the relief when they entered the drift-ice, obtaining some protection from the rolling waves; and fastening to a small ice-floe, rode out the storm under a warp and grapnel.

When the weather abated, they resumed their voyage, and after descending as far south as Clarence Head laid their course for the Greenland shore. But after reaching Northumberland Island they encountered the great enemy of Arctic navigators—the pack-ice. Steadily they forced their way through such narrow channels as presented themselves, accomplishing in three days about fifteen miles. At Cape Parry, however, the southern

boundary of Whale Sound, and one of the great landmarks of the Greenland shore, they came to "a dead halt." A solid mass lay before them, extending onward to the remote horizon. "There were bergs in sight to the westward, and by walking for some four miles over the moving floe in that direction, M'Gary and myself succeeded in reaching one. We climbed it to the height of a hundred and twenty feet," says Kane, "and, looking out from it with my excellent spy-glass to the south and west, we saw that all within a radius of thirty miles was a motionless, unbroken, and impenetrable sea." In the Apocalyptic record of St. John we read, with wonder, of a "sea of glass." Here was a sea of crystal—level, rugged, solid, immovable; which defied the navigator even more surely than the rock-bound cliffs defy the summer waves.

Until this vast waste broke up, or underwent some change, farther progress was impossible; and Kane returned to Northumberland Island, in order to rest and refresh his men. Here he discovered a colossal glacier, which, from an interior ice-lake, slowly rolled its huge bulk down the labouring valley, to the very brink of the sea. In many places it could be seen overflowing, as it were, the very crest of the rocks, and depending in immense icy stalactites seventy and one hundred feet in length. These, through the action of the continuous overflow, were still increasing in size; some of them breaking off as their weight became disproportionate to their tenacity; others augmenting by constant supplies from the interior, but throwing off broken masses with an incessant clang and clamour. The plain below these

ice-cataracts was heaped up with the wreck and refuse, while torrents of foaming, muddy water poured along the rugged surface, carrying rocks and gravel downward to the sea.

A SECOND WINTER IN THE ICE.

They now returned to the brig, which for eleven months had been imprisoned in the ice, and undertook some operations, with the view of effecting her release; or, at least, of warping her toward Butler Island. In this latter effort they succeeded, and having attained a more convenient and sheltered position, they hoped a heavy wind would accomplish their entire liberation. But August was far advanced; winter threw its dreary shadows before; the young ice began to close in all round; and no change in their condition was brought about either by favourable winds or high tides. Kane found himself face to face with the question which so often perplexes the boldest and readiest, What is to be done? He was compelled to own that the release of the brig was impossible: should he essay another winter on board, or should he attempt to reach the Danish settlements on the coast of Greenland? He resolved to give his crew their choice, announcing at the same time his intention of standing by the brig until the following spring. After some deliberation, eight out of the seventeen survivors of the party elected to remain with their courageous leader; namely, Brooks, M'Gary, Wilson, Goodfellow, Morton, Ohlsen, Hickey, Hans Christian. The others started on Monday, the 28th, in the old boat, determined to push their way south, if it were at

all possible; but one of them, George Riley, returned a few days afterward. The rest passed, as it were, into a cloud and the shadow of darkness; and many weary months went by before the veil was lifted.

Over the incidents of Kane's second winter in the ice we shall not linger; as, necessarily, they differed but little from his former experiences. Taking a hint from the Eskimos, he turned his ship into an *igloë*, or hut: padding the quarter-deck with moss and turf until it formed a nearly cold-proof covering; and, below, enclosing a space of some eighteen feet square within walls constructed of the same material. The floor was calked carefully with plaster of Paris and common paste, and covered with Manilla oakum a couple of inches deep, and a canvas carpet. The entrance was from the hold, by a low, moss-lined tunnel, corresponding to the *tossut* of the native huts. But no precaution could guard them effectually against the terrible cold of an Arctic winter, and they suffered severely; their pains being aggravated by the prevalence of scurvy among them, and the want of proper and sufficient food.

Communications were established with the Eskimos. At first, owing to their disregard of the distinction between *meum* and *tuum*, the course of friendship did not run smooth; but Dr. Kane's energy and resolution effected a satisfactory settlement. A treaty of peace was concluded, by which the *Inuit*, or Eskimos, promised:—"That they would not steal. That they would bring fresh meat. That they would sell or lend them

dogs. That they would keep them company whenever they wanted them, and show them where to find the game."

On the other hand, the *Kablunah*, or white men, swore:—"We promise that we will not visit you with death or sorcery, nor do you any hurt or mischief whatsoever. We will shoot for you on our hunts. You shall be made welcome aboard ship. We will give you presents of needles, pins, two kinds of knife, a hoop, three bits of hard wood, some fat, an awl, and some sewing-thread; and we will trade with you of these and everything else you want, for walrus and seal meat of the first quality."

Bear-hunting, seal-hunting, walrus-hunting; visits to Anoatok, the Eskimo settlement,—these were the main features of the winter-life of the ice-bound explorers. There is a sad monotony about them; and it is impossible to read page after page of Dr. Kane's journal without feeling that one of the greatest trials of himself and his companions must have been the dreary sameness of the long, dark, winter months, and the constant recurrence of familiar objects, familiar scenes, and phenomena which, by their frequency, had lost most of their interest.

Dr. Kane himself, however, was to some extent supported by his keen interest in Nature, and even in the Arctic night could find much at which to wonder. The intense beauty of the Arctic firmament, he says, can hardly be imagined. It seemed extended immediately above their heads, with its stars magnified in glory, and the very planets shining with a radiance

that proved unfavourable for astronomical observations. "I am afraid," he says, "to speak of some of these night-scenes. I have trodden the deck and the floes, when the life of earth seemed suspended—its movements, its sounds, its colouring, its companionships; and as I looked on the radiant hemisphere, circling above me as if rendering worship to the unseen Centre of light, I have ejaculated in humility of spirit, 'Lord, what is man, that thou art mindful of him?' And then I have thought of the kindly world we had left, with its revolving sunshine and shadow, and the other stars that gladden it in their changes, and the hearts that warmed to us there, till I lost myself in memories of those who are not—and they bore me back to the stars again."

As the winter advanced, the condition of the prisoners—for such they were—daily grew worse, and most of them were brought to the very verge of the grave by scurvy. In December not more than three were capable of active work; and to increase the gloom of the prospect, they found their store of fuel insufficient, and Dr. Kane saw that they would be compelled to have recourse to the outside oak-sheathing of the brig.

It is almost impossible to enter fully into their sufferings, because we gentlemen of England who live at home in ease have no standard by which, as it were, to appraise them. We have never experienced a temperature fifty degrees below zero; know nothing of the agonies of scurvy; have never spent week after week uncheered by the genial sunlight; have never been imprisoned in the bonds of an Arctic winter! We can say no more

than that they had much to bear, and that they bore it heroically.

On February 25, 1855, the sun once more rose above the long, deep, gloomy night of an Arctic winter. Early in March they obtained a supply of walrus-meat, which probably saved the lives of the whole party. A brief entry in Dr. Kane's journal, under the date of April 22nd, "speaks volumes" as to the wretched condition of these brave men, who had adventured into the Arctic wilds on a mission of love and charity. Here it is: "I read our usual prayers; and Dr. Hayes, who feels sadly the loss of his foot, came aft and crawled upon deck to sniff the daylight. He had not seen the sun for five months and three weeks!"

Dr. Kane now undertook a sledge-journey to Etah, an Eskimo settlement, in order to effect the purchase of a fresh supply of sledge-dogs. Here he was hospitably received. A visit to an Eskimo hut, however, is not one of pleasure. Such an "amorphous mass of compounded humanity" is nowhere else to be seen: men, women, and children, with little but their native dirt to cover them, crowded together in a close stifling cell, fifteen feet by six! As Kane failed to obtain the dogs, he was forced to abandon the further exploration he had meditated.

PREPARATIONS.

For with the spring had returned Dr. Kane's all-absorbing desire to accomplish the object of his enterprise—the discovery of some traces of the Franklin expedition, or, as he hoped, of its survivors. His work could not be regarded as finished, he felt, until the further

bore it

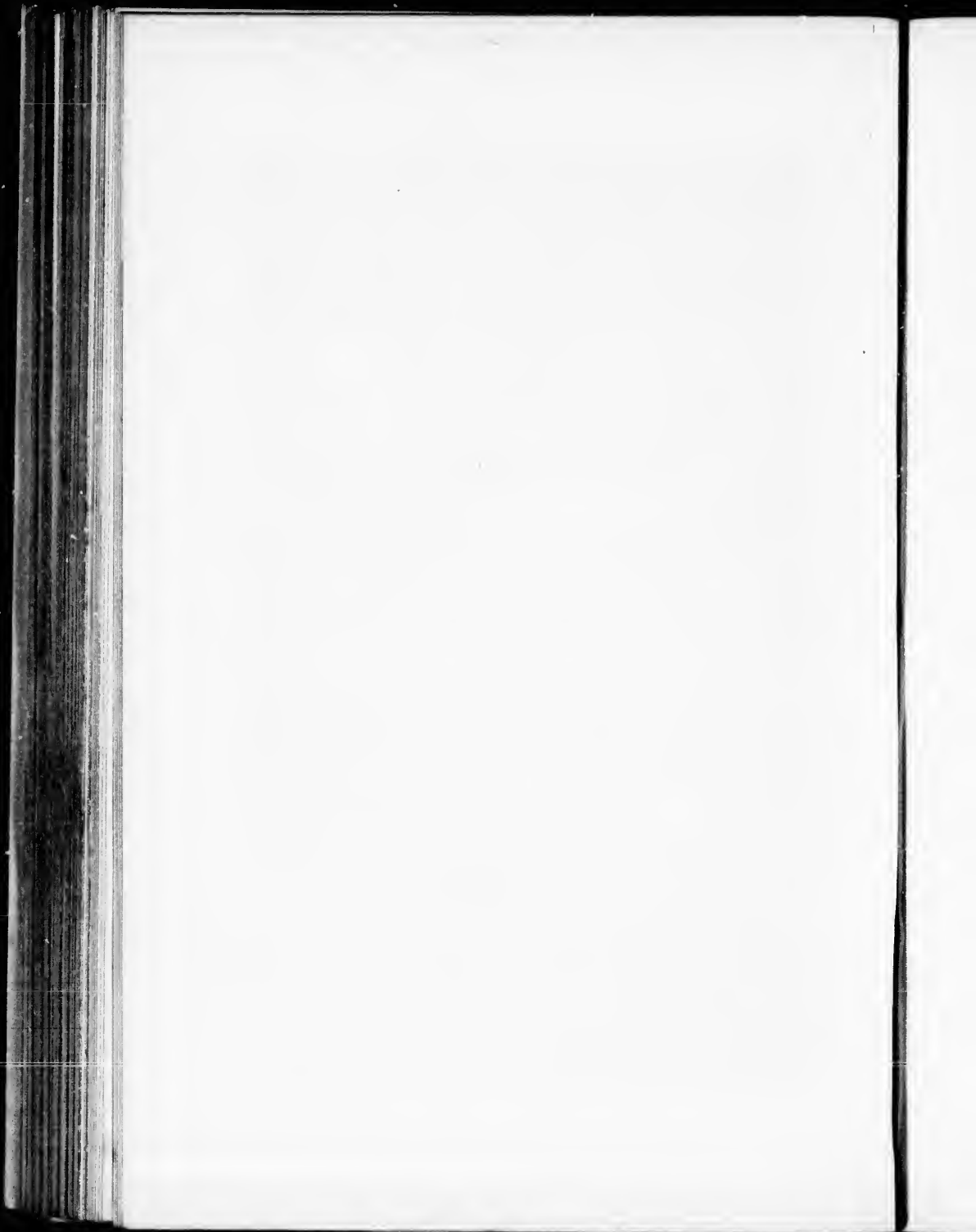
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VISIT TO AN ESKIMO HUT





shores beyond Kennedy Channel had been searched; but he was without dogs, the indispensable means of travel. Out of sixty-two only four were left. Nothing remained but to prepare for the homeward journey; for escaping, if escape were possible, from the regions of ice and snow in which they had so long been involved.

The necessary preparations were energetically undertaken, notwithstanding the enfeebled condition of the party, and carried out with much method. They included the manufacture of clothing, of bedding, and provision bags, the package of provisions, and the repair and equipment of the boats.

These were three in number; but all were well worn by exposure to ice and storm. Two were "cypress whaleboats," twenty-six feet long, with seven feet beam, and three feet deep. These were strengthened with oak bottom-pieces, and a long "string-piece" bolted to the keel. The gunwale was fortified, and additional depth obtained, by means of a washboard of light cedar, about six inches high. A neat housing of light canvas was stretched upon a ridge-line sustained fore and aft by stanchions, and hung down over the boat's sides, where it was fastened (stopped) to a jack-stay. Each boat carried a single mast, stepped into an oaken thwart in such a manner that it could be readily unshipped and carried, with the oars, boat-hooks, and ice-poles, alongside the boat. The third boat was the little *Red Eric*, which was mounted on the old sledge; not, indeed, with any intention of using her for purposes of navigation, but to cut her up for firewood, in case the supply of blubber should fail.

Powder and shot, on which the lives of the travellers depended, were carefully distributed in bags and tin canisters. The percussion-caps Dr. Kane himself took charge of, as more precious than gold. To Mr. Bonsall were intrusted the arms and ammunition. Places were arranged for the guns, and hunters appointed for each boat. Mr. Petersen looked after the cooking-gear. In fact, for each man a special duty was found, and nothing was neglected that could contribute in any way to the safety of the party. The completeness and thoughtfulness of these preparations had the best effect on the spirits of the men; and though some of them still doubted whether escape was possible, all braced up their energies to make the attempt. As most of them were invalids, some little preliminary training was needed; but this required to be very gradual. "We made but two miles the first day," says Kane, "and with a single boat; and, indeed, for some time after this I took care that they should not be disheartened by overwork. They came back early to a hearty supper and warm beds; and I had the satisfaction of marching them back each recurring morning refreshed and cheerful."

They bade farewell to the brig, which had been their home for upwards of two years, with much solemnity. The whole company assembled in the dismantled winter-cabin to assist in the ceremony. It was Sunday. They read prayers and a chapter of the Bible. Then Dr. Kane addressed them in a few manly words. He did not attempt to disguise the difficulties that lay before them; but he declared that they could be overcome by energy

and subordination to command, and that the thirteen hundred miles of ice and water that lay between them and North Greenland could be safely traversed by the majority—and that, indeed, there was hope for all. He added that, as men and mess-mates, it was their duty—and a duty enjoined upon them alike by religion and true courage—to postpone every consideration of self to the protection of the sick and the wounded; and this, under all circumstances, and by every one of them, must be regarded as a paramount order. In conclusion, he desired them to reflect upon the trials they had experienced and surmounted, and to remember how often an unseen Power had rescued them in the hour of danger. In Him it was for all of them to put their trust, confident that He would shield and save.

HOMEWARD BOUND.

All hands being ready, the brig was abandoned, and they proceeded to their respective stations in the two boats. Excluding four invalids, who were unable to move, and Dr. Kane, who had to drive the dog-team and serve as common carrier and courier, they numbered only twelve men. It was needful, therefore, to concentrate their entire energies upon one sledge at a time, as six to a sledge would have been incapable of moving it. The routine established was most precise: Daily prayers both morning and evening, all hands gathering round in a circle, and standing uncovered during the short exercise; regulated hours; fixed duties and positions at the track-lines and on the halt; the cooking to be taken by turns, the captains of the boats

alone being excused. The charge of the log was confided to Dr. Hayes, and of the running survey to Mr. Sonntag; of the boats and sledges to boatswain Brooks, a man of tried courage and proved fidelity.

Up to the evening of the 23rd, the progress made by the adventurous little company had scarcely exceeded a mile a day for one sledge. On the 24th both sledges arrived at First Ravine, a distance of seven miles; and the dog-sledge had brought on to this point the buffalo bags and other sleeping appliances which had been prepared for the winter. That they should sleep in comfort was essential to the well-being, nay, the very existence, of the adventurers; and it was a rule, therefore, from which few departures were permitted, that a new day's labour should not be begun until all had recovered, as far as possible, from the fatigues of the previous day. Their halts were regulated by the condition of the men, and not fixed by arbitrary hours: sleep was proportioned to the length and trials of the march. The thermometer still ranged below zero; but the housed boats, well crowded, and fully stocked with sleeping-gear, were comfortable enough to weary men; besides which, they slept by day, when the sun was warmest, and travelled when they would be safe from the injurious effects of its reflected glare.

Over the earlier portion of the escape journey we need not linger. The first five weeks were occupied in short stages, in intercourse with the Eskimos, in long halts for the comfort of the sick, in the replenishment

of supplies. Gradually, however, they advanced to the southward; and their progress was expedited, on the 6th of June, by the coming up of a fresh breeze, which enabled them to hoist their canvas and *sail* their sledges across the ice. This was a new sensation to the foot-sore wayfarers. "Levels which, under the slow labour of the drag-ropes, would have delayed them for hours, were glided over without a halt. They thought it dangerous work at first, but the speed of the sledges made rotten ice nearly as available as sound. The men could see plainly that they were approaching new landmarks, and leaving old ones behind. Their spirits rose: the sick mounted the thwarts, the well clung to the gunwale; and for the first time for nearly a year broke out the sailor's chorus, 'Storm along, my hearty boys!'"

DIFFICULTIES.

But all was not smooth, as the following extract from Dr. Kane's journal will show:—

"From this time," he says, "we went on for some days, aided by our sails, meeting with accidents occasionally—the giving way of a spar or the falling of some of the party through the spongy ice—and occasionally, when the floe was altogether too infirm, labouring our way with great difficulty upon the ice-belt. To mount this solid highway, or to descend from it, the axes were always in requisition. An inclined plane was to be cut, ten, fifteen, or even thirty feet long; and along this the sledges were to be pushed and guided by bars and levers with painful labour. These are light things, as I refer to them here; but in our circum-

stances, at the time I write of, when the breaking of a stick of timber was an irreparable harm, and the delay of a day involved the peril of life, they were grave enough. Even on the floes the axe was often indispensable to carve our path through the hummocks; and many a weary and anxious hour have I looked on and toiled while the sledges were waiting for the way to open. Sometimes, too, both on the land-ice and on the belt, we encountered heavy snow-drifts, which were to be shovelled away before we could get along; and within an hour afterward, or perhaps even at the bottom of the drift, one of the sledge-runners would cut through to the water.

“It was saddening to our poor fellows, when we were forced to leave the ice-belt and push out into the open field, to look ahead at the salt ice-marshes, as they called them, studded with black pools, with only a white lump rising here and there through the lead-coloured surface, like tussocks of grass or rushes struggling through a swamp. The labour would have been too much for us, weary and broken as we were, but for the occasional assistance we derived from the Eskimos. I remember once a sledge went so far under, carrying with it several of the party, that the boat floated loose. Just then seven of the natives came up to us—five sturdy men and two almost as sturdy women—and without waiting to be called on, worked with us most efficiently for more than half a day, asking no reward.”

On the 12th of June the expedition reached Littleton Island, where they found their depôt of provisions

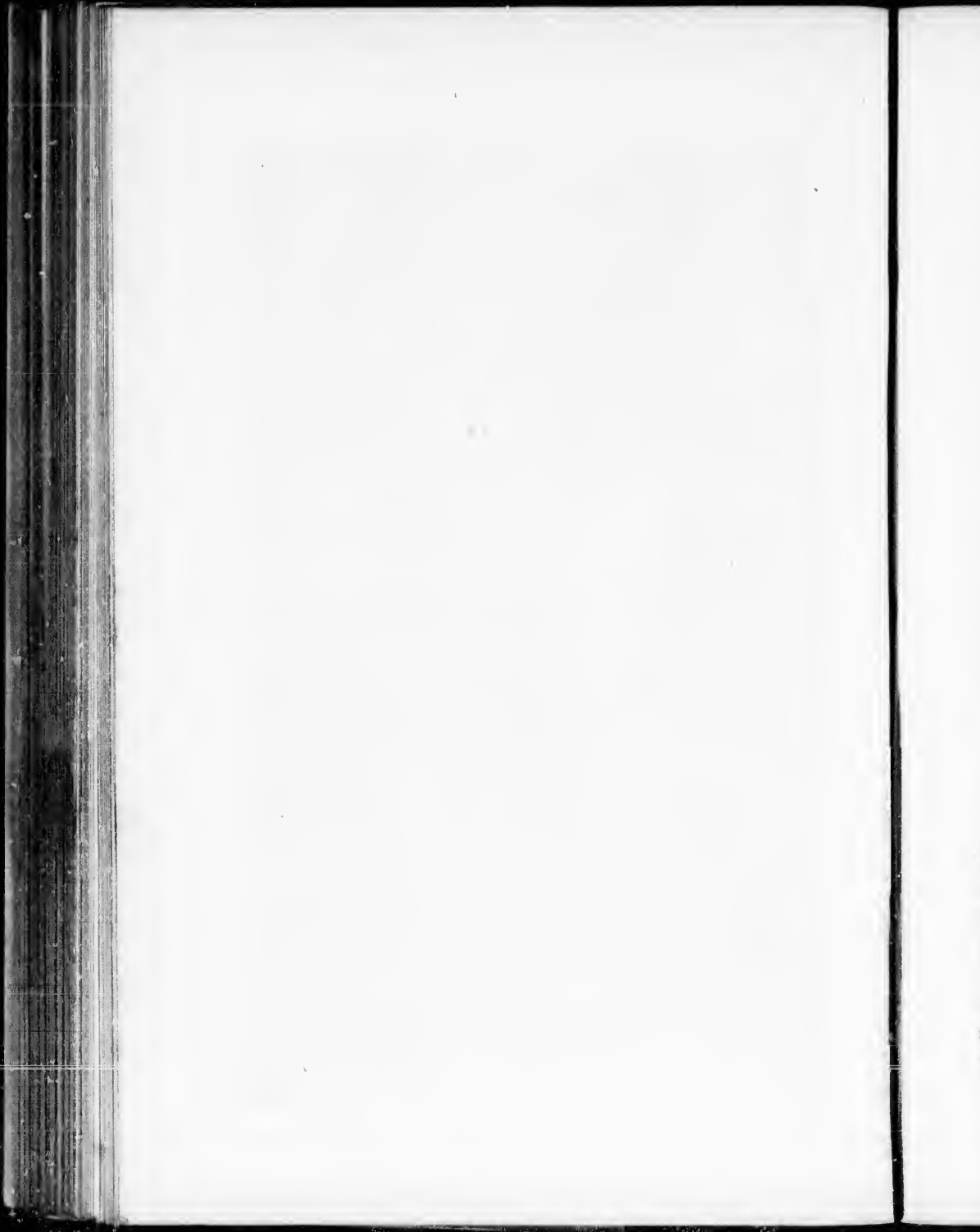
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THROUGH THE ICE





in excellent order. Ohlsen, one of the bravest and most intelligent of Dr. Kane's crew, at this point succumbed to disease, and was buried decently in a little gorge; his remains being duly protected from fox and bear. After this sad ceremony the march was resumed; but as they neared the Eskimo settlements it became less toilsome, assistance being freely given by the children of the Arctic World. They volunteered their aid at the drag-ropes; they carried the sick upon hand-sledges; they poured in abundant supplies of fresh food, the quantity of little auks they brought being characterized as "enormous." They fed the explorers and their dogs at the rate of eight thousand birds a week, all of them caught in their little hand-nets. No wonder that, under such favourable circumstances, Dr. Kane and his followers threw off their gloom for a time. The men indulged in their old fore-castle songs; the sledges began to move merrily ahead; and the old moody silence gave way to laugh and jest.

RESUMING THE VOYAGE.

On the 16th of June the boats reached the open water. The deep blue horizon glimmered before the longing eyes of the wanderers; the roar of the billows came up from the icy beach; the odour of the sea was drunk in as if it carried with it new strength and life. They encamped in the immediate vicinity of Cape Alexander, at the southern entrance of Smith Strait. Against the rugged sides of the dark headland the surf beat tumultuously; and every man longed to be ploughing through it, and steering onwards to that

genial South where lay safety, and friends, and honour, and home.

A month was occupied in a careful repair of the boats, which, split with frost and warped by sunshine, had opened at the seams, and required calking, and swelling, and launching, and stowing, before the crews could embark.

After an unsuccessful attempt on June 17th, which was defeated by a sudden gale, the boats got under way at four P.M. on the 19th, Dr. Kane leading in the *Faith*. She was followed by the *Red Eric* on his quarter, and the *Hope* astern. In the *Faith* were M'Gary, Petersen, Hickey, Stephenson, and Whipple; in the *Hope*, Mr. Brooks, Dr. Hayes, Sonntag, Morton, Goodfellow, and Blake; in the *Eric*, Bonsall, Riley, and Godfrey.

The wind freshened as they doubled the westmost point of Cape Alexander; and as they looked out upon the broad expanse of the open sea, they could perceive the kittiwakes, and the ivory-gulls, and the jagers dipping their strong wings in the foam-crested waves. They seemed the very same birds—so, at least, the adventurous voyagers thought—they had left two years before, filling the air with their shrill cries, and catching fish in the beautiful water. They sought to rest for the night at Sutherland Island; but a precipitous wall of ice prevented them from landing. Then they stood away for Hiakluyt Island,—not an agreeable voyage, as a “short chopping sea” was running from the south-east. The *Red Eric* was quickly swamped; but Riley and Godfrey contrived to struggle to the *Faith*, and Bonsall to the *Hope*. It was impossible to remove

the cargo of the little boat. All they could do was to keep her from sinking, and tow her behind the larger craft. The *Hope* was also leaking rapidly; but just then the boats got in among the floating ice—which always affords some protection against wind and current—and fastened alongside an old floe. The weary mariners then turned in to sleep, without hauling up the boats.

The next morning they quitted their temporary refuge, and proceeded to extricate themselves from the ice-labyrinth; afterwards rowing across the open water to Hakluyt Island.

Here the boats were dragged ashore and calked. A tent was rigged up for the sick; and the bill of fare, "bread-dust and tallow," was varied by a few birds.

On the 22nd, through a blinding snow-storm, they pushed on to Northumberland Island; where they were greeted by a myriad of auks, and returned the greeting by an invitation (which they found irresistible) to grace their table. A fox also saluted them with an admirable imitation of the "Huk-huk-huk," or cry of distress, which never falls in vain upon the ears of an Eskimo; but the sly fellow, after enticing them a mile and a half in pursuit, escaped their guns.

The boats entered a little patch of open water that conducted them to the beach, immediately below one of the hanging glaciers. These formed a curious and very interesting spectacle. It seemed as if an ice caldron inside the coast-ridge was boiling over, and flinging its crust in huge fragments from the overhanging lip into the sea below.

On the 23rd, partly by rowing through winding channels, and partly by dragging the boats over the rugged ice, they succeeded in crossing Murchison Channel, and encamped for the night on the land-floe at the base of Cape Parry. Next day brought them to the neighbourhood of Fitz-Clarence Roek, "one of the most interesting monuments that rear themselves along this dreary coast: in a region more familiar to men, it would be a landmark to the navigator. It rises from a field of ice like an Egyptian pyramid surmounted by an obelisk."

It is astonishing that such progress was made as is here indicated, when we consider how scanty and how insufficient was the daily allowance of food on which these gallant men subsisted. At this time each man's rations consisted only of six ounces of bread-dust and a lump of tallow about the size of a walnut; to which was added a eup of that great restorative, tea, when they could run their boats under the lee of a berg and fill their kettles with snow, so as to procure fresh water. Dr. Kane says they drank immoderately of this stimulating beverage, and derived great advantage from it.

Still, the effects of a diet so imperfect were gradually seen in the decline of their muscular power.

The men themselves seemed scarcely aware of it, and the difficulty they experienced in dragging and pushing they referred to supposed obstacles in the ice and sludge rather than to their own weakness. But one morning—the 26th—as they endeavoured to push forward through the fog, and found themselves hemmed in on all sides by ice-fields so distorted and rugged as to defy all at-

tempts to cross them, the truth seemed to burst simultaneously upon every mind. They had lost the sensation of hunger, and were almost satisfied with their pasty broth, and the large draughts of tea which accompanied it.

"We were sorely disheartened," says Kane, "and could only wait for the fog to rise, in the hope of some smoother platform than that which was about us, or some lead (that is, channel) that might save us the painful labour of tracking. I had climbed the iceberg, and there was nothing in view except Dalrymple Island, with its red brassy face towering in the unknown distance. But I hardly got back to my boat before a gale struck us from the north-west, and a floe, tacking upon a tongue of ice about a mile to the north of us, began to swing upon it like a pivot, and close slowly in upon our narrow resting-place.

"At first our own floe also was driven before the wind, but in a little while it encountered the stationary ice at the foot of the very rock itself. On the instant the wildest imaginable ruin rose around us. The men sprang mechanically each one to his station, bearing back the boats and stores; but I gave up for the moment all hope of our escape. It was not a nip, such as is familiar to Arctic navigators; but the whole platform where we stood, and for hundreds of yards on every side of us, crumbled, and crushed, and piled, and tossed itself madly under the pressure. I do not believe that, of our little body of men, all of them disciplined in trials, able to measure danger while combating it,—I do not believe there is one who this day can explain how

or why—hardly when, in fact—we found ourselves afloat. We only know that, in the midst of a clamour utterly indescribable, through which the braying of a thousand trumpets could no more have been heard than the voice of a man, we were shaken, and raised, and whirled, and let down again in a swelling waste of broken hummocks; and, as the men grasped their boat-hooks in the stillness that followed, the boats eddied away in a tumultuous skreed of ice, and snow, and water.

“We were borne along in this manner as long as the unbroken remnant of the in-shore floe continued revolving, utterly powerless, and catching a glimpse every now and then of the brazen headland that looked down on us through the snowy sky. At last the floe brought up against the rocks, the looser fragments that hung round it began to separate, and we were able by oars and boat-hooks to force our battered little flotilla clear of them. To our joyful surprise, we soon found ourselves in a stretch of the land-water wide enough to give us rowing-room, and with the assured promise of land close ahead.”

But as they approached it they saw that it was fenced round by a precipitous wall of belt-ice, in which was neither an opening of access nor a nook of refuge. The gale rose, and all that could be done was to get a grapnel out to the ice, and hold on until the tide came up. In this perilous position, and with winds and waves raging around them, the voyagers were kept hard at work to bail out their leaky boats, which strained every timber, and seemed on the point of foundering.



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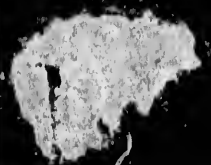
At three o'clock the tide had risen so high that they found themselves able to scale the ice-cliff. One by one the boats were hauled up on a narrow ledge, and dragged into a deep, narrow gorge which provided an effectual shelter. Here the little company ensconced themselves, the cliffs warding off the fury of the gale.

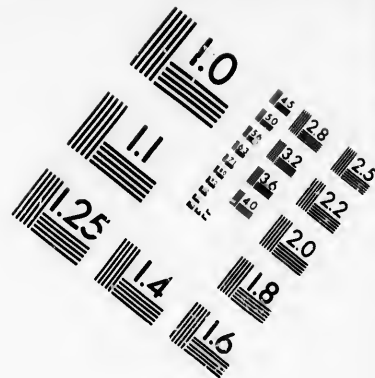
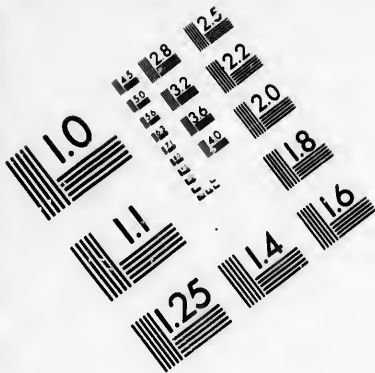
Just as they had "encaved" the last boat, the *Red Eric*, their ears were saluted with the long-unheard but familiar and welcome sound of a passing flock of eiders, whose whirring wings almost darkened the sky with their shadows. Intense was the joy of the wave-worn adventurers, for they knew the breeding-grounds of the birds must be close at hand; and as they turned in, "wet and hungry," to their long-coveted sleep, it was only to dream of "eggs and abundance."

In the icy gorge they remained for three days, and "eggs and abundance" they did indeed enjoy, gathering as many as twelve hundred eggs in a day. Outside, the tempest still let loose its violence, and the egg-hunters found it difficult to keep their feet; but a merrier set of gourmands than were gathered in the crystal cave, far away in these bleak regions of the desolate North, never "surfeited in genial diet."

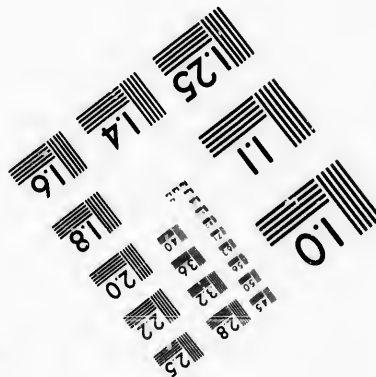
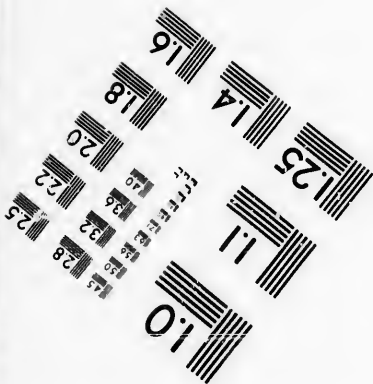
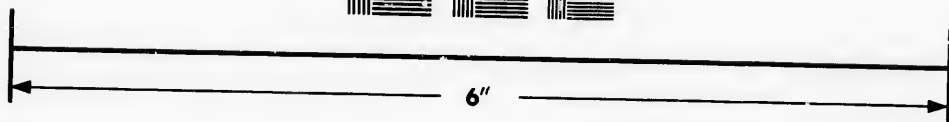
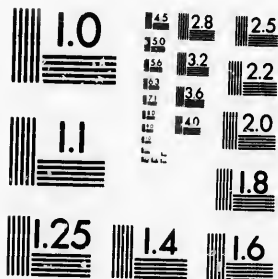
Though the snow-shower was still heavy, on the 3rd of July the wind began to abate; and on the following morning, after a moderate libation in honour of the day, which is a memorable one in American annals, they lowered their boats, and bade a grateful farewell to "Weary Man's Rest."

For some days they slowly fought their way to the





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south, along the narrow water-ways which opened between the belt-ice and the floe. Owing to the dulness of the weather, they could take no observations, and they had arrived off a huge glacier, throwing its spur far into the sea, before they discovered that it was impossible any longer to follow up the shore. Their progress was arrested by great chains of bergs, interspersed with barricades of icy hummocks. For sixteen hours they sought, and in vain, a mode of egress. The whole sea was a mass of rugged, broken ice.

PROVIDENCE HALT.

The birds, which had been so abundant when they left Dalrymple Island, and had seemed to promise a continuous supply, had been driven off by the storm. The voyagers were again reduced to short daily rations of bread-dust, which did not fail to influence unfavourably their strength and energies. Dr. Kane was fearful, therefore, to put out into the open sea; and, in spite of the barriers of ice, determined to prosecute his in-shore route, which alone offered a prospect of game. They occupied two-and-fifty hours in forcing this rugged passage: an arduous and painful labour, which would have been insupportable but for the disciplined endurance of these gallant explorers.

After this difficulty had been conquered, they had the satisfaction of finding the water-channels broadening before them, and on the 11th came in sight of Cape Dudley Digges. At first their hearts rejoiced, in the belief that their troubles were ended; but a glacier, not laid down in the charts, suddenly thrust out its icy

tongue before them, and seemed to defy their advance. Their first resolve, says Kane, was to double it at all hazards, for the crews were too much weakened to undertake another wearisome "tracking" across its hummocky surface, and the soft snow which covered the land-floes was an insuperable obstacle. But on approaching the glacier they found a spot where it was broken up into fragments of ice and half-melted "sludge," and the boats accomplished the passage. This done, the condition of the frozen sea before them forced upon Kane's mind the conviction that further advance was impossible, and that they must patiently watch and wait until the advancing summer had done its work, and opened up to them a channel of escape.

Therefore they made for the cliffs. Grim and gloomy was their aspect, but it was better to rest beneath their protecting shadow than to await the fruitless ventures of the sea.

Here, at the base of a lofty precipice, still adhered to the rock a fragment of the winter ice-belt not exceeding five feet in width. The tides broke over it, and the waves incessantly lapped it, but it afforded a safe resting-place for the boats. Above, Pelion seemed heaped upon Ossa; cliff piled over cliff, until in the high distance the rocks looked "like the overlapping scales of ancient armour." They attained an elevation of at least eleven hundred feet, and their summits were wreathed in fog and mist; their rugged sides, broken with cleft and ledge and crag, were tenanted by innumerable birds. The nests were thickest on the rocky shelves some fifty yards above the water; but "both lumme and tridactyl

gulls filled the entire air with glimmering specks, cawing and screeching with an incessant clamour."

The harsher features of the scene, however, were somewhat relieved by a natural bridge which opened on the right into a little valley cove, beautifully tapestried with soft green mosses, while beyond and above it rose the cold white wall of the glacier.

At its seaward termination, this glacier, this huge river of ice, measured seven miles across; it sloped upward and inward for about five miles, and then, following the irregularities of its rocky substructure, suddenly rose into a steep crevassed hill, mounting in terraces, one above another. Then came two basins, as it were, of less rugged ice, from which the frozen river passed into the great *mer de glace*, or ice-sea, of the interior.

From a high craggy hill to the northward it was possible to obtain a view of this wonderful congealed ocean, which apparently forms the continental axis of Greenland; "a vast undulating plain of purple-tinted ice, studded with islands, and absolutely gemming the horizon with the varied glitter of sun-tipped crystal."

According to Dr. Kane, the water-flow from the lower surface of the glacier exceeded that of any of the northern glaciers, except the Humboldt and one near the Eskimo settlement of Etah. One torrent which poured across the ice-foot was two to five feet deep, and broadened upon the floes for several hundred yards; another, finding its outlet near the summit of the glacier, dashed merrily over the rocks, and fell in abounding cataracts upon the beach below.

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THE CLIFFS AT PROVIDENCE HALT.

The ranunculus, saxifrages, chickweeds, numerous mosses, and Arctic grasses, thrive vigorously near the level of the glacier's first declivity; stone-crops some two hundred feet higher. The thermometer marked 90° in the sun, but only 38° in the shade.

Such were the physical characters of the scene. Fortunately for our wanderers, it was not deficient in the attractive element of animal life. The lumme, nearly as large as the canvas-back ducks of America, and even more nutritious and savoury—their eggs, highly esteemed as delicacies on the Labrador coast—the cochlearia, growing richly in the guano-fertilized soil,—and all these, in endless abundance, added to the attractions which it possessed in the eyes of Dr. Kane and his followers.

On the 18th of July, after a week's delightful rest at Providence Halt, the voyage was resumed. Preparation had been made for it by laying in a store of lumme; two hundred and fifty of which had been duly skinned, spread open, and dried on the rocks, to vary the diet of bread-dust and tallow to which the crew would be again restricted. Their course still lay along the margin of the shore-ice. After passing the Crimson Cliffs of Sir John Ross, the voyage seems to have assumed quite a holiday character. The birds along the coast were glad in the sunshine of the young summer, and bright streams of water from the ice-fields above poured their crystal threads over each verdurous cape. Our sportsmen, says Dr. Kane, would clamber up the cliffs, and come back laden with little auks; great generous fires of turf, that cost nothing but the toil of gathering, blazed with a

cheerful radiance and a generous warmth; and our happy oarsmen, after a long day's work, made easy by the prospect of peace and plenty, would stretch themselves in the sunshine, and indulge in happy dreams, until roused to morning prayers. Doubtless, the enjoyment was all the keener because everybody knew that the festival could not last.

INCIDENTS OF THE VOYAGE.

The end of it came at Cape York. Here, owing to the late development of the season, the coast-ice presented a solid, unbroken surface, traversed by none of those "leads" or water-ways which had hitherto served the voyagers so well. A fast floe stretched out before them, with numerous tongues extending to the south and east. The only question was, Should they halt again until the shore-ice opened, or abandon the coast and venture into the open water?

Dr. Kane soon decided that rest was impossible, for at this part no birds were to be found, and the stock of provisions was now reduced to 640 pounds, exclusive of the dried birds; or about 36 pounds per man. Of fuel there remained, including the empty provision-bags, a supply for about three weeks.

The boats having been hauled up and refitted, the crews re-embarked, and pushed south by west into the ice-fields. The navigation was rendered exceedingly difficult by the huge hummocks which obstructed the view ahead, and the frequent fogs. After a while they found themselves blocked up, the canal into which they had strayed having no outlet, and closing up behind

them as they advanced. There was nothing to be done but to haul the boats up on the sledges, and retrace their way to the westward. As only two were available, the *Red Eric* was now cut up and stowed in pieces on board the other boats to serve as fuel. Then the harassed men dragged them over the broken ice until they reached an open channel, and were able again to launch them.

The squadron, reduced to two boats, resumed its westward course. Provisions were running low; birds were scarce; the allowance of fuel was sadly restricted. Under the influence of insufficient rations the strength of the wayfarers was declining, but stern necessity compelled a still further reduction. Five ounces of bread-dust, four of tallow, and three of bird-meat, was all that could be allowed as a day's ration for each man! And this in a rigorous climate, and under the trying circumstances of constant exposure and incessant toil.

Dr. Kane remarks as curious that the effect of insufficient food is not, as might be supposed, the pangs of hunger. The first symptom is loss of power, often so imperceptibly brought on that only an accident reveals its extent. "I well remember," he says, "our look of blank amazement as, one day, the order being given to haul the *Hope* over a tongue of ice, we found that she would not budge. At first I thought it was owing to the wetness of the snow-covered surface in which her runners were; but as there was a heavy gale blowing outside, and I was extremely anxious to get her on to a larger floe to prevent being drifted off, I lightened her cargo, and set both crews upon her. In the land of promise off Crimson Cliffs, such a force would have

trundled her like a wheelbarrow : we could almost have borne her upon our backs. Now, with incessant labour and standing-hauls, she moved at a snail's pace."

It was on this occasion that the little company nearly lost their best boat, the *Faith*, which drifted away from the ice-floe. The sight produced an almost hysterical impression, for she had on board all their stores. Happily, before they could fully realize all the consequences of her probable loss, a flat cake of ice eddied into the vicinity of the floe. M'Gary and Dr. Kane sprang upon it, and succeeded in floating it across the chasm in time to secure the boat. Then the rest of the crew rejoined her, with emotions of thankfulness which the reader may well imagine.

As they continued their voyage, things grew worse and worse. The men began to suffer from their old difficulty of breathing, as well as from swollen feet, and, what was still more serious, inability to sleep. When it is remembered that they were now in the open bay, in the full line of the great ice-drift to the Atlantic, and in boats so shattered and leaky that even constant bailing would hardly keep them afloat, it must be owned that their position was as dark and hopeless as can well be imagined. At this conjuncture, however, when hope seemed hopeless, they discovered a large seal, asleep, and slowly floating on a small patch of ice. If it could be captured, they were saved!

Oh, how carefully, how cautiously and silently, with stockings drawn over their oars as mufflers, they crept down upon the wished-for prize! As they drew

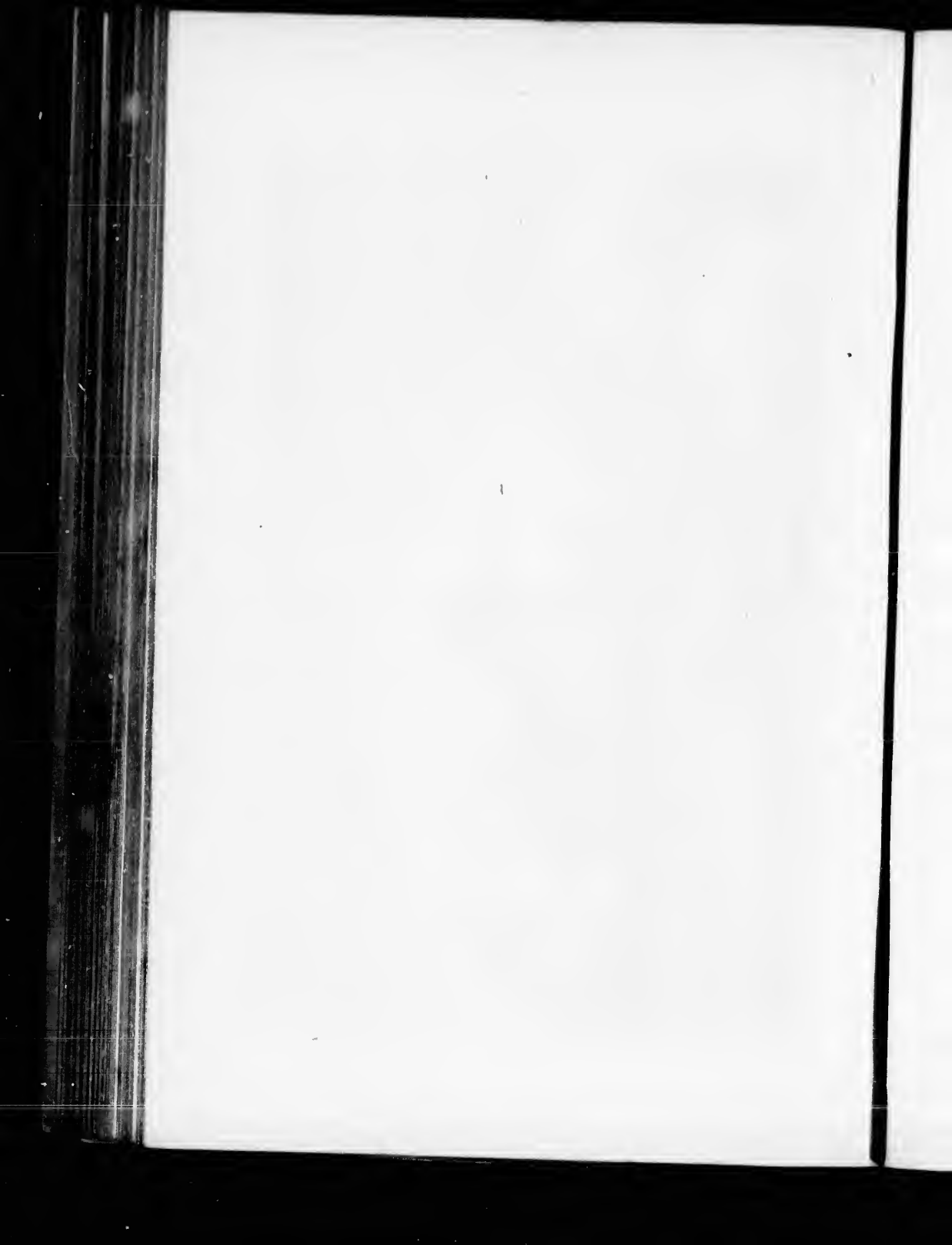
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near, so intense became the excitement that they could hardly keep stroke. At last they arrived within a hundred yards; the oars were taken in; and with a single scull astern they dropped stealthily into the current. Petersen was in the bow, with the large English rifle, and everything depended upon his nerve and coolness. Suddenly the seal rose on his fore-flippers, gazed at the advancing boat with startled curiosity, and prepared for a plunge. Would they lose him? No; at that moment the report of the rifle disturbed the still air, and simultaneously with it the seal relaxed his great bulk on the ice, and, at the very brink of the floe, his head fell helplessly to one side.

With a wild shout both boats charged full upon the floes. Eager hands seized the precious booty, and lifted it upon safer ice. The men, as if lost in a delirium of joy, ran over the ice, crying, laughing, and brandishing their knives. Never was animal more quickly prepared for the table; never were viands more keenly relished. A grand cooking fire was kindled, and the famished voyagers enjoyed that night a strange, almost a savage orgie.

RELIEF AT HAND.

It is unnecessary to dwell minutely on the later incidents of the journey. On the 1st of August Dr. Kane sighted the Devil's Thumb, and was soon in waters that are familiar to every whaler. Passing to the south of Cape Shackleton, the voyagers followed up the quiet-water channels that run parallel to the coast, occasionally killing a seal or some birds, and at night encamping upon the rocks.

Two days later, as they were slowly rowing through the mist, a familiar sound—the cadence of a “halloo”—came to them over the waters. With joyous hearts they pulled in the direction of the sound, and in about half an hour could make out the single mast of a small shallop. “’Tis the Upernavik oil-boat!” cried Petersen, half laughing, half crying. And such, indeed, it proved to be. In a few minutes they were on board of her, and in the embraces of old friends.

“Here,” says Kane—and the conclusion of his wonderful narrative is best given in his own words—“here we first got our cloudy, vague idea of what had passed in the big world during our absence. The friction of its fierce rotation had not much disturbed this little outpost of civilization; and we thought it a sort of blunder as Charlie Mossyn told us that France and England were leagued with the Mussulman against the Greek Church! He was a good Lutheran, this assistant cooper, and all news with him had a theological complexion.....

“But ‘Sir John Franklin’? There we were at home again. Our own delusive little speciality rose uppermost. Franklin’s party, or traces of the dead which represented it, had been found nearly a thousand miles to the south of where we had been searching for them.And so we ‘out oars’ again, and rowed into the fogs.

“Another sleeping-halt has passed, and we have all washed clean at the fresh-water basins, and furbished up our ragged furs and woollens. Kasarsoak, the snowy top of Sanderson Hope, shows itself above the mists, and we hear the yelling of the dogs. Petersen had

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THE DEVIL'S THUMB



been foreman of the settlement; and he calls my attention with a sort of pride to the tolling of the workmen's bell. It is six o'clock. We are nearing the end of our trials. Can it be a dream?


"We hugged the land by the big harbour, turned the corner by the old brew-house, and in the midst of a crowd of children hauled our boats for the last time upon the rocks.

"For eighty-four days we had lived in the open air. Our habits were hard and weather-worn. We could not remain within the four walls of a house without a distressing sense of suffocation. But we drank coffee that night before many a hospitable threshold, and listened again and again to the hymn of welcome, which, sung by many voices, greeted our deliverance."

Dr. Kane and his party remained at Upernavik until the 6th of September, when they embarked on board the *Marianne* for the Shetland Isles. But putting in at Godhavn, they caught sight of an American squadron, under Captain Hartstene, which had been despatched in quest of them, and soon afterwards found themselves under the shelter of the national flag. At New York Dr. Kane received the honourable welcome to which his courage, his fertility of resource, his patient resolution, and his noble purpose had entitled him. And though he had failed to discover Sir John Franklin, he had deserved well of the civilized world, having considerably enlarged its knowledge of the Polar Regions.

CHAPTER III.

VOYAGES OF M'CLURE AND M'CLINTOCK.

HE year 1853 witnessed the solution of the geographical problem which had so long engaged the curiosity of the scientific mind, and the discovery of that North-West Passage from which so much had at one time been expected. Captain M'Clure, in the *Investigator*, entering the Polar Seas by Behring Strait, pushed forward to a point near Deary Island; and thence making his way across the ice, encountered Lieutenant Pim, one of the officers of Captain Kellett, who had entered by Baffin Bay. This memorable event occurred on the 19th of April. Twenty days later, the passage was completed by Captain Collinson, in the *Resolute*; who afterwards turned to the south-east, explored many sounds and inlets, and discovered some relics of Franklin's party. It should be added that M'Clure, having wintered in 1850 near the spot where the connecting waters could be traced, had proved the feasibility of the passage, by observation, as early as October 31st of that year. M'Clure was knighted as a reward for his services; and Collinson (now Vice-Admiral) received an honorary medal.

In the course of his expedition, M'Clure explored the west side of Banks Land, where the ice presses close against the cliffs in masses of stupendous dimensions. It draws forty and fifty feet of water, and rises in rolling hills upon the surface, some of them measuring one hundred feet from base to summit.

M'CLINTOCK'S EXPEDITION.

These discoveries accomplished, and all hope of ascertaining the fate of Franklin and his followers seeming chimerical, the British Government showed itself unwilling to risk more lives and treasure among the frozen wastes of the North. But Lady Franklin, with heroic devotion, refused to abandon her chivalrous work. She expended the remains of her private fortune in the purchase of a stoutly built screw-schooner, the *Fox*, and called for volunteers to man it. Among those who eagerly offered their valuable services was Captain M'Clintock. Since 1848 he had been almost constantly employed in Arctic research, and had distinguished himself by his sagacity, courage, and fertility of resource. He was immediately appointed to the command of the *Fox*; and the expenses of the expedition being defrayed by subscription, he was able to sail from England in the summer of 1857.

He reached Melville Bay without difficulty; but here he encountered the familiar enemy of Arctic pioneers, and, hemmed in by the ice, was constrained to endure the delay of the long and tedious winter. And that Divine mercy which has so often and so wonderfully been vouchsafed to the heroes of Northern Discovery

watched over the little *Fox* and her crew of five-and-twenty men. "The ark which bore the hopes of a loving wife and the prayers of so many friends, was not to be swallowed up in the wreck-strewn depths of Baffin Bay."

So the winter passed, with the usual discomforts and painful experiences of an Arctic winter; and in July 1858 the *Fox* was able to resume her voyage, and reach across to Lancaster Sound. She arrived at Beechey Island on the 11th of August. Here M'Clintock found the depôt of provisions left by various expeditions, as well as boats, huts, stores, and clothing, in excellent preservation, and with much satisfaction replenished his diminished supplies.

Once more the voyage was resumed; and past the ice-bound shores, and through floating masses and glittering bergs, the stout little *Fox* went on her way,—westward, beyond Cape Hotham; westward, beyond Griffith Island; southward, through Peel Channel; between the bleak and snow-crowned cliffs of Capes Bonny and Walker,—until again her course was arrested by the insuperable and ubiquitous barrier. Then M'Clintock retraced his course as far as Bellot Channel, the water-way which leads from Regent Inlet into that great Arctic bay whose waters wash the American coast from Great Fish River to Behring Strait. From the 20th of August to the 6th of September the gallant explorer patiently watched for an opportunity of penetrating into the channel. Its entrance was a mile wide, and guarded by lofty cliffs of granite, over which the shadows of noble hills dominated. Through this

majestic portal the restless waters rolled huge blocks and bergs of ice, sweeping them along with a fierce six-knot tide; but the *Fox* escaped every danger, and passed through the strait.

Yes, passed through the strait; but only to be blocked up by a great belt of fixed ice, some miles in width, beyond which could be seen the dark-green crests of an open sea.

Here winter overtook the adventurers; and having laid up his sturdy schooner in as secure a position as possible, M'Clintock prepared to organize boat and sledge expeditions for the exploration of the neighbouring shores.

TRACES OF THE LOST.

On the 17th of February 1859, he and Captain Allen Young, his second in command, left the ship to establish their depôts of provisions for the meditated journeys. Young took a westward route, in order to reach Prince of Wales Land; while M'Clintock, accompanied by Mr. Petersen, a veteran Danish explorer, proceeded in a southerly direction to the Magnetic Pole. Their excursions were not without hardship. The cold was so intense that the mercury froze in the barometers! Yet they were cheerfully carried out, for the explorers found that at last they were on the right track. At Cape Victoria, on the west shore of Boothia, and in lat. $69^{\circ} 50' N.$, long. $96^{\circ} W.$, Captain M'Clintock ascertained from the Eskimos that, some years before, a ship had been shattered by the ice off the north coast of King William Land, but that all her people had gained the land in safety, and travelled across to the

Great Fish River, where they died. The natives showed him some wood which they had obtained from a boat left by the white men on the said river.

At last, then, there was some hope that the mystery which had so long enshrouded the fate of the *Erebus* and *Terror* would be dispelled; and on the 2nd of April the searching-parties proceeded from Bellot Strait. Captain Young struck to the north and west, so as to survey the unexplored region lying between Bellot Channel and Sir James Ross's farthest point in 1849, on the one hand, and Lieutenant (late Rear-Admiral) Osborn and Brown's extreme limits, in 1851, on the other hand. His work was carefully done, but proved fruitless of result. More successful were M'Clintock and Lieutenant Hobson. They both struck across to King William Land from Point Victoria; and learning from some natives that a second ship had been sighted off this land, they separated, so as to explore it thoroughly,—Hobson taking the western and M'Clintock the eastern side.

The latter swiftly and steadily proceeded on his way, and from King William Land crossed to Montreal Island; then rounded the estuary of the Great Fish River, and visited Point Ogle and Barrow Island. No fragments of wreck were found, no bones of the lost crews; but M'Clintock fell in with many of the natives, who gave him all the information they themselves possessed, and gladly bartered away their relics of the *Erebus* and *Terror*. Resolving on completing the circuit of King William Land, M'Clintock now turned to the north-west; and landing on the north side of

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THE CAIRN AT CAPE HERSCHEL.



Simpson Strait, made for the cairn erected by that discoverer in 1839 upon Point Herschel. When within ten miles of it, he came upon a bleached skeleton. The unfortunate man, probably one of the stewards of the lost expedition, had evidently fallen behind the retreating party, and perished in his solitude.

The cairn at Cape Herschel had evidently been meddled with; and Captain M'Clintock conjectured that the wanderers had placed in it a record, which the natives had subsequently removed.

From Cape Herschel to the westernmost point of King William Land the traces of the Eskimos were numerous, and had obliterated those of Franklin and his followers; but from that westmost point to Cape Felix, M'Clintock met with abundant evidence of their sufferings and miserable condition. He from the south, and Lieutenant Hobson from the north, thoroughly examined the whole of this "haunted ground," with results which may be briefly indicated as follows:—*

The *Erebus* and *Terror* spent their first winter at Beechey Island, in the spot discovered by the expedition under Captains Austin and Penny; having previously explored Wellington Channel as far as 77° N., and passed down into Barrow Strait, between Cornwallis and Bathurst Land. It is a curious and inexplicable fact that these winter-quarters (1845-46) Franklin left, for the purpose of prosecuting his south-west voyage from Cape Walker in obedience to his instructions,

* We are indebted here to Rear-Admiral Osborn's lucid summary in his "Leaves from an Arctic Journal."

without leaving a single record. In 1846, the two ships entered Peel Channel, but on the 12th of September were caught in the ice off King William Land. In May 1847, Lieutenant Graham Gore and Mr. Des Vœux landed and erected a cairn a few miles south of Cape Victory, depositing in it a document to say that all the crews were then well, and Sir John Franklin in command. But in less than a month afterwards the heroic leader was stricken down: a merciful fate for him, as it spared him the terrible experiences which awaited his followers.

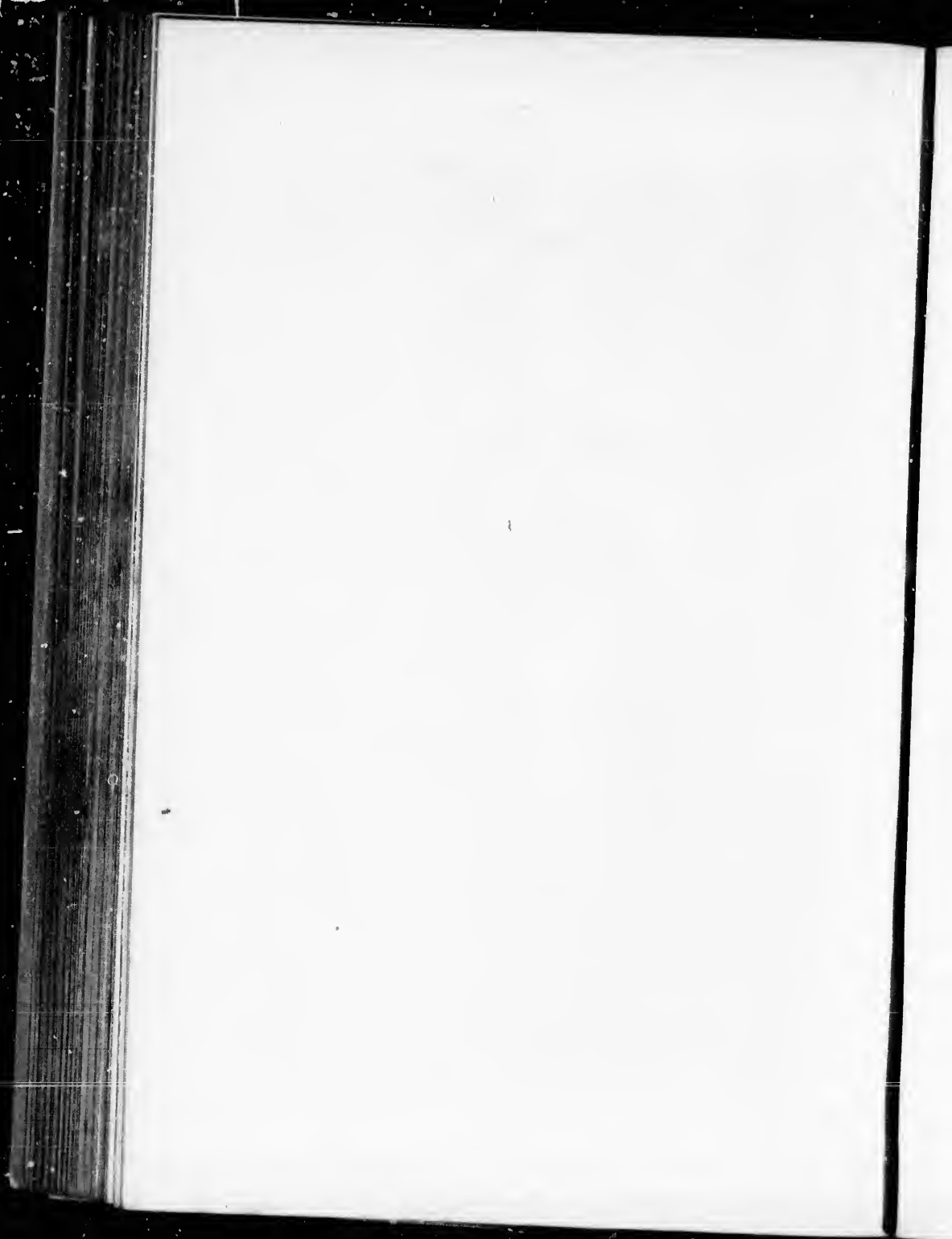
As the ice did not break up, the two vessels were held fast for another winter,—the winter of 1847-48,—during which no fewer than nine officers and fifteen men died. On the 25th of April, the survivors came to the resolution of abandoning the doomed ships; and, one hundred and five in number, and led by Captains Crozier and Fitzjames, they started for Great Fish River. The vast quantity of articles left at the point of departure is a significant evidence of their enfeebled condition. From this spot to a point about half-way between Point Victory and Point Herschel nothing important was discovered; and the skeletons and relics were all deeply embedded in snow. At the half-way point just spoken of, however, Lieutenant Hobson caught sight of a piece of wood projecting from the snow; and on digging round it exhumed a boat, standing on a very heavy sledge. Within it were two skeletons: one, lying in the bottom of the stern-sheets, and covered with a quantity of clothing; the other, half-erect in the bows, as if the poor fellow had crept there to look out, and in

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A STARTLING DISCOVERY.



that position had yielded to the slumber which knows no waking. A couple of guns, loaded and ready cocked, stood close at hand, apparently prepared for use against wild animals. Around this boat was found another accumulation of cast-off articles; and M'Clintock conjectured that the party who had dragged the sledge thus far were *returning to the ships*, having discovered themselves unequal to the terrors of the journey they had undertaken. This is possible; but we can hardly doubt that the stronger portion of the crews pushed forward with another boat, and that some reached Montreal Island and ascended Great Fish River. On this subject we shall have more to say when we come to speak of Captain C. F. Hall's adventures among the Eskimos.

FURTHER PARTICULARS.

In 1854, Dr. Rae, in his overland expedition, fell in with some Eskimos who spoke of having seen forty men dragging a boat near the Fish River, under the leadership of a tall, stout, middle-aged man; a description fairly agreeing with the appearance of Captain Fitzjames. Sherard Osborn is of opinion, therefore, that the strongest of the survivors, under Fitzjames, pushed on to perish in the dreary wildernesses of the Hudson Bay territory (for relics have been found on the Fish River, fifty miles above Montreal Island); and that the weak, if ever they reached the ships again, did so only in time to see them wrecked by the breaking up of the ice in the autumn of 1848. We know from the Eskimos that one ship sank; and that the other, on board of which was one dead person, "a tall, large-

boned man," was driven ashore. These wrecks, however, could not have occurred on the coast between Capes Victory and Herschel; for in that case the natives would assuredly have appropriated the relics discovered by M'Clintock and Hobson. We come, therefore, to M'Clintock's conclusion, that the wrecked ship went ashore somewhere within the region frequented by the Fish River Eskimos; and that in the years 1857-58 the ice had probably swept her away again, and finally destroyed her.

Let the reader remember, as a commentary on the vanity of human wishes, that the point at which the *Erebus* and *Terror* were caught in the ice in 1846, was but ninety miles from the point reached by Dease and Simpson in their boats in 1838-39. So that had Franklin and his followers but accomplished those ninety miles of open water, they would have won the prize for which they had dared and endured so much, and have returned home to enjoy the well-earned applause of their countrymen. . . But Providence had decreed otherwise. "They were to discover," says the historian of their labours, "the great highway between the Pacific and Atlantic. It was given them to win for their country a discovery for which she had risked her sons and lavishly spent her wealth through many centuries; but they were to die in accomplishing their last great earthly task; and, still more strange, but for the energy and devotion of the wife of their chief and leader, it would in all probability never have been known that they were indeed the First Discoverers of the North-West Passage."

THE END.

Thus ended the search after Franklin, so far as Great Britain was concerned.

The unhappy fate of his expedition seemed to exercise a disastrous influence on British enterprise; and English seamen almost entirely withdrew from further exploration in the region in which their forefathers had gained such distinction. In the following pages we shall follow with interest the adventures of Americans, Swedes, Germans, Austrians; but no English names will be conspicuous in the romantic narrative. Happily the old spirit has again revived in England, and the year 1875 witnessed the equipment of a Government expedition, well-manned and well-officered, which may be expected worthily to uphold the reputation of our navy. Let us hope that it is destined to complete the great work begun by English seamen upwards of three centuries ago, and that British keels will be the first to plough that open Polar Sea which has been the object of so many daring speculations and the inspiration of so many brilliant dreams.

CHAPTER IV.

THE VOYAGE OF DR. HAYES.



OUR readers will be familiar with the name of Dr. Hayes as that of the bold and skilful surgeon of the American expedition commanded by Dr. Kane. The hardships he underwent and the dangers he confronted in that remarkable expedition having in nowise chilled his spirit of adventure or quenched his thirst for knowledge, he began, about 1858, to prepare for a new exploration, the object of which was to complete the survey of the north coasts of Greenland and Grinnell Land, and to push his researches as far as practicable in the direction of the North Pole.

His proposed base of operations was Grinnell Land, which he had discovered in 1855, and had personally traced beyond the parallel of latitude 80°. His experience had led him to the conclusion that if once the ice-belt in Smith Sound could be passed, it was possible to reach the open sea beyond; for that the sea about the North Pole was not frozen, had come to be accepted as a fact by the most cautious physicists.

Having laid his schemes before various scientific

societies, it received an amount of support which enabled Dr. Hayes and his friends to purchase and fit out a strong, well-built schooner of 133 tons burden, named the *United States*. Accompanied by Messrs. Sonntag and Radcliffe as astronomer and assistant-astronomer, and with a crew of twelve officers and men, he sailed from Boston on the evening of the 6th of July 1850, and on the following day was once more tossing on the waves of the broad Atlantic.

All went well with the courageous voyagers, and on the 30th of July they crossed the imaginary boundary of the Arctic Circle. Enveloped in cloud lay the Greenland coast, at a distance of about ten leagues. The monotony of the voyage was now interrupted by their meeting with their first iceberg. It was floating directly in their course,—an irregular pyramidal mass, about three hundred feet at its base, and perhaps half as high, with the white clouds curling about its spiral summit,—but they contrived to clear it. Then came the rough passage of Davis Strait; and on the 2nd of August they lay becalmed for a while off the Greenland coast, contemplating with eyes of admiration and wonder its broad valleys, its deep ravines, its frowning cliffs, its general aspect of desolate magnificence.

As the mist cleared away to the westward, the broad bosom of the sea lay exposed to their gaze, with iceberg after iceberg drifting across its surface, like fairy towers. They seemed to have been suddenly admitted to a glimpse of the marvels of the land of the Northern Gods. Here was the Valhalla of the old Vikings, and the city of the sun-god Freya, and the eëry caves of Alfheim,

and the silver roof and golden walls of Glitner; and yonder, piercing the clouds, rose Himinborg, the Celestial Mount, where the bridge of the gods reaches across to heaven.

No doubt these strange creations of the Norse poetry were suggested by some such scenes as spread, awful and yet beautiful, before the eyes of our voyagers: the mingled wonders of land and sea might well inspire a poet's fancy; the rolling waters and their flashing castles of ice, the snow-shrouded mountain-peaks and the deep valleys between them.

The details of the picture are sketched by Dr. Hayes with much graphic force and vivid colouring. The following description is adapted from his eloquent pages:—

BEAUTY OF THE ICEBERGS.

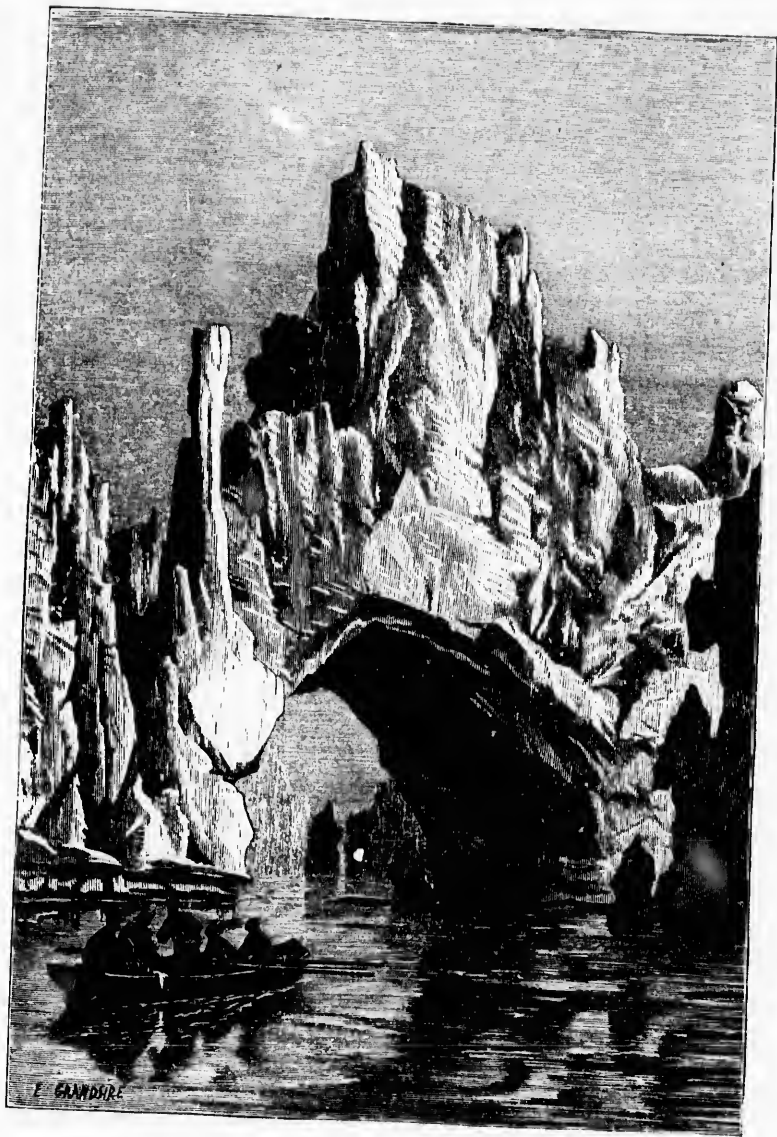
The air was almost as warm as that of a southern summer eve; and yet before them were the icebergs and the bleak mountains, with which it is impossible, in this land of green hills and waving woods, to associate any other idea than that of cold repulsiveness. Bright and soft was the sky, and as strangely inspiring as that of Italy. The bergs had lost their cold, frozen look, and glittered in the glow of the brilliant heavens like masses of solid flame or burnished metal. Those near at hand seemed to have been wrought out of Parian marble, and incrustated with shining gems of pearl and opal. One in particular challenged attention by its grandeur. Its form was not unlike that of the Roman Coliseum, and it lay so far away that half its height was buried beneath the rim of the "blood-red

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A ROMANTIC SCENE.



waters." As the sun, in its course along the horizon, passed behind it, one might have thought that the old Roman ruin had broken out into a sudden conflagration.

Where the bergs cast their silent shadows the water was a rich green; and nothing could be softer or more tender than the gradual colouring of the sea as it shoaled on the sloping tongue or spur of each floating mass. Where the ice overhung the water the tint deepened, and a cavern in one of the nearer bergs exhibited the solid colour of the malachite mingled with the transparency of the emerald; while, in strange contrast, a broad streak of cobalt shot diagonally through its body.

The romantic character of the scene was increased by the numerous tiny cascades which leaped into the sea from these floating islands; the water being discharged from lakes of melted snow and ice which tranquilly reposed far up in the valleys separating the icy ridges of their upper surface. From other bergs large pieces were occasionally detached, crashing into the water with deafening roar, while the slow ocean-swell resounded hoarsely through their broken archways.

The breeze rising, Dr. Hayes was able to make the harbour of Pröven, escorted by a flotilla of those famous Greenland boats, to which frequent reference has already been made,—the *kajaks*.

What is a *kajak*? Apparently, the frailest of all craft that ever dared the sea. It measures eighteen feet in length, and as many inches in width; and tapers, curving upwards, to a point at either end. Its frame-

work, or skeleton, is of wood; which is covered with tanned seal-skin, sewed together, very deftly and strongly, by the native women—so deftly and strongly that not a drop of water can find its way through the seams! The boat is about nine inches deep, and covered at the top as at the bottom, with the exception of a small space in the centre, which admits the boatman as far as his hips. This central space is surrounded with a wooden rim, over which the kajaker laces the lower edge of his water-tight seal-skin jacket, so as to fasten himself *in*, and keep the water *out*. For the purpose of propulsion he uses a single oar, about six feet long, terminating at either end in a blade or paddle. This he grasps with firm hand in the middle, and dips in the water alternately to right and left. Buoyant beyond all belief, impervious to water, light as a feather, graceful as a duck: such is the Greenlander's kajak. But as it has neither ballast nor keel, it is necessarily top-heavy; and both skill and courage are needed to manage it. The kajaker, however, seems born to the art; and in this gossamer-like canoe rides across billows which would swamp an ordinary boat, and dashes through breakers which close over his head.

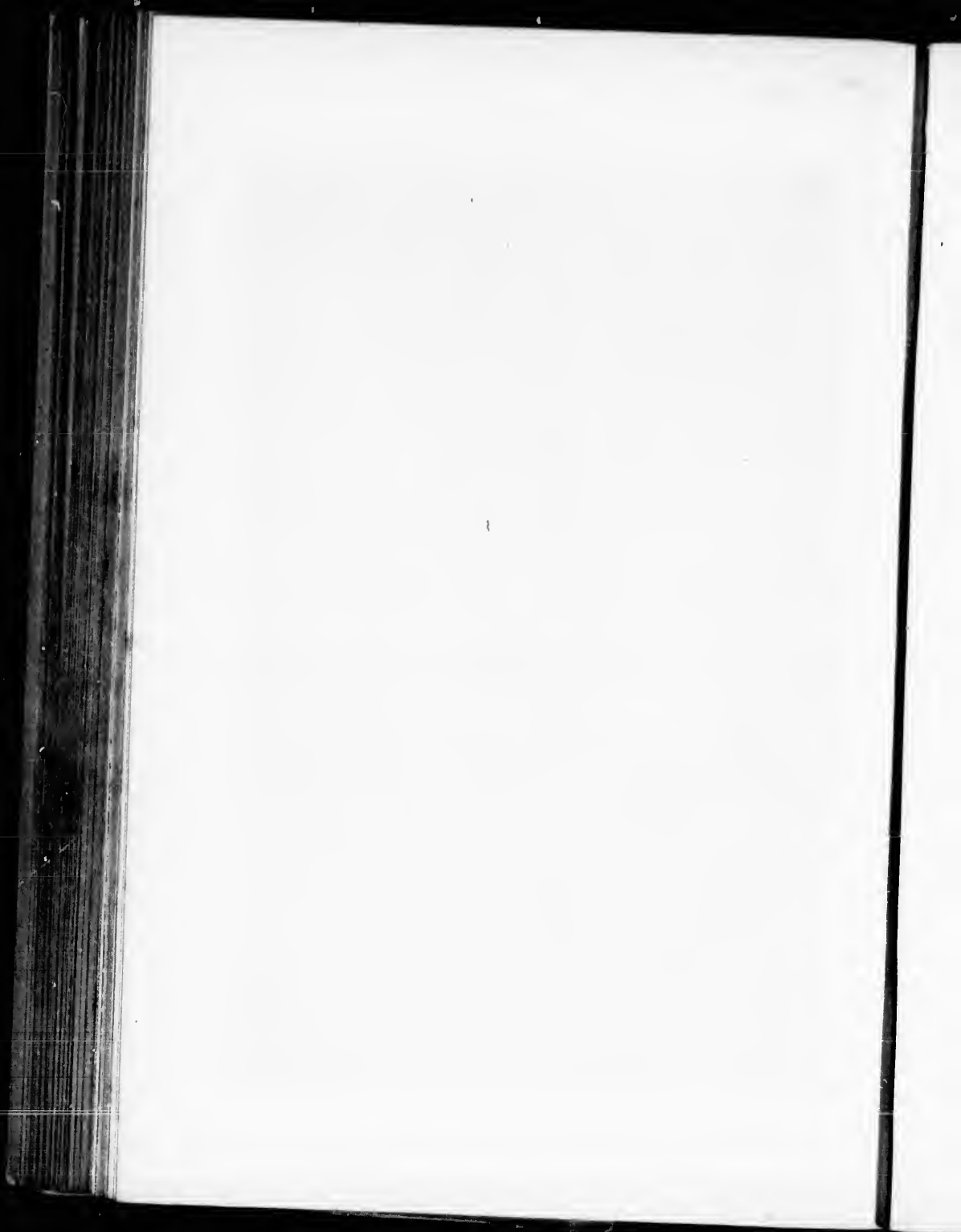
At Pröven Dr. Hayes stayed only long enough to purchase a team of dogs, and he then pushed on to Upernavik, where he arrived on the 12th of August. Here more purchases of dogs were made, and each member of the crew was carefully provided with all the necessaries of an Arctic wardrobe. Three native hunters were also engaged, and an interpreter, who was perfectly

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ESKIMO KAJAKS.





familiar with the Eskimo language, an excellent hunter, and a skilful dog-driver. An addition of two Danish sailors brought up the numerical strength of Dr. Hayes' party to twenty souls. Their preparations being completed, they quitted Upernavik, amidst the hearty good wishes of its hospitable inhabitants, and bade a long farewell to the comforts of civilization. Now, indeed, they began in earnest their difficult enterprise, and launched themselves among the dangers of Arctic navigation. At Upernavik the voyager takes leave, as it were, of the Known world, and enters upon the Unknown; or, at least, he passes into a region of eloud and shadow, the very outlines of which, as yet, have not been traced with any degree of certainty.

A NARROW ESCAPE.

It was no easy task to guide the schooner through the icy labyrinth in which she was soon involved. On one occasion she with difficulty escaped destruction.

A perfect "nest of icebergs" lay to leeward; and the current carried the *United States* towards them with inconvenient rapidity. Dr. Hayes ordered a boat to be lowered, and a mooring-cable to be run out to a berg which lay grounded at a distance of about one hundred yards. While this was being done, the schooner grazed the side of a berg which rose a hundred feet above her topmasts, and then slipped past another of inferior dimensions. The crew, by pushing against them with their ice-poles, changed to some extent the schooner's course; but suddenly an eddy modified the direction of her drift, and she struck, with her starboard quarter,

the dreaded mass, disengaging huge blocks of ice which would have crushed her had they fallen upon her.

The berg now began to revolve, and was "settling slowly" over the threatened vessel. Small lumps of ice began to rattle down on the after-deck, and drove the crew and officers to the fore-castle for safety. At length the berg itself saved them from ruin. An immense mass broke away from the submerged portion, and this, at least a dozen times larger than the schooner, rose up within a few yards of her, with a tremendous volume of foam and water flying from its sides. The revolution of the berg was checked by this rupture, and the berg settled down in the opposite direction.

But now another danger occurred. A long tongue was projecting immediately underneath the schooner; and the keel slipped and grinded upon it, until it seemed probable that the ship would be hurled into the air, or else capsized. Here again the berg proved their safety. A loud report was heard; another and another followed in swift succession; the roar seemed to fill the air with a thousand echoes. The opposite side of the berg had split off, piece after piece, tumbling a vast volume of ice into the waves, and sending the revolving berg back upon the ship. The movement now was quicker; fragments began again to fall; and, already sufficiently alarmed by the dissolution which had taken place, Dr. Hayes and his followers were in momentary expectation of seeing the whole side nearest to them give way, and crash down upon the steamer,—in which case she would inevitably be carried down beneath it; doomed as surely

as a shepherd's hut beneath an Alpine avalanche. As Coleridge says,—

“ The ice was here,
The ice was there,
The ice was all around ;
It creaked and growled,
And roared and howled
Like demons in a swound.”

The men in charge of the boat had by this time succeeded in planting an ice-anchor and attaching a cable ; and the crew on board the schooner began to haul in ; a long, a strong, and steady pull, for they knew they were pulling for their lives. Seconds seemed minutes ; minutes seemed hours ; but at length they began to move off. Scarcely were they twenty yards distant when the expected disruption occurred. The side nearest to them split off, and crashed wildly into the sea, raising a tremendous swell, and covering the agitated waters with fragments of ice.

But they were safe, and as they gradually receded they could look back calmly on the scene of their terror. The shattered berg, or so much as was left of it, rocked and rolled like a tempest-tossed ship. At each wild spin, fresh masses were disengaged ; and as its sides came up with long sweeps, great cascades fell from them into the sea with a strange hissing, seething noise. After several hours of this incessant agitation, the wreck of the once colossal berg settled down into quietude, and the sea began to flow with its usual calmness.

VIEW FROM AN ICEBERG.

Having moored his schooner to a berg which seemed

to offer a sufficiently secure asylum, Dr. Hayes clambered up its frozen slope, and reached the summit. The view commanded from this elevated point was not less remarkable than extensive. To the south-east a rocky headland flung its shadow upon the water, and the sunlight was separated from the shade by a boundary so distinct that it was difficult not to look upon the margin of radiance as the edge of a "fathomless abyss."

To form an idea of the immense quantity of ice which was enclosed within the visible horizon is not easy. Dr. Hayes found an enumeration of the separate bergs impossible, giving it up in despair when he had counted five hundred. Near at hand the eye could distinguish the harsh ruggedness of their sharp outlines. Farther off, they seemed to melt away into the soft gray sky, or the sea of liquid silver, suggesting by their very indistinctness the strangest and most wonderful images of birds and beasts, of human forms, of gigantic architecture,—spires touched with golden gleams, vast airy domes, or buttressed towers radiant with unearthly light!

To the east, the bright bosom of the sea was gemmed with tiny islets; and in the channels which intersected them, the icebergs, great and small, thronged in close array, massing together in the distance until they were absorbed, apparently, in a snow-covered plain, and this again, in its turn, disappeared in a cloud of bluish whiteness. Yes; far away against the horizon, like a vague white cloud, lay the vast *mer de glace*, of which we have already spoken as occupying the whole interior of

the Greenland continent. The snowy slope was one of its dependent glaciers; and this glacier, the reservoir from which had been discharged, at irregular intervals, most of the icebergs scattered so thickly over the scene.

MELVILLE BAY.

Continuing his voyage among the bergs and islands, Dr. Hayes entered Melville Bay on the 23rd of August, and had the gratification of finding it free from ice.

Melville Bay, for the seaman, comprehends all that expansion of Baffin Bay which begins southward with the "middle ice," and terminates northward with the "North Water." The North Water is sometimes reached at Cape York, in lat. 76° , but generally higher up; the "middle ice," or, to use the well-known term, made so familiar by the narratives of so many Arctic voyagers, the "pack," not infrequently stretches down to the Arctic Circle. This "pack" consists of drifting ice-floes, which vary in extent from feet to miles, and in thickness from inches to fathoms. Sometimes these masses are closely pressed together, with few or no interspaces; sometimes they are wide apart, according to the various influences of wind and tide. They are always more or less in motion, but drift in whatever direction winds and currents may sway them.

To penetrate this formidable barrier is the work of weeks, nay, of months; but since Baffin discovered the great sea named after him, in 1616, it has been annually undertaken by a fleet of whaling-ships. The route is a dangerous one, but the whalers prefer it; for though many a stout ship goes down with her sides crushed in

by the merciless ice, those which escape disaster almost invariably return with ample cargoes of oil and blubber from Lancaster Sound and the neighbouring waters.

As the summer draws on, the "middle ice" breaks up in such wise as to afford a tolerably clear channel, and gradually the land-ice, or shore-belt, gives way to a considerable extent. A narrow strip, or "ice-foot," as Dr. Kane calls it, usually remains to the very close of the season; and along its margin the whalers and exploring-vessels make their way, so as to avoid being beset in the terrible "pack."

The formation of the pack is thus explained by Dr. Hayes:—The great Polar Current, which comes down through the Spitzbergen Sea and along the east coast of Greenland, heavily laden with masses of ice, and with a sparse supply of drift-wood from the Siberian rivers for the use of the people of Greenland, sweeps around Cape York, and there diverges to the westward. Swollen by the ice-encumbered current which issues from the Arctic Ocean through Smith, Jones, and Lancaster Sounds, it strikes to the southward, past Labrador and Newfoundland, receives a tributary from Hudson Strait, "wedges itself in" between the Gulf Stream and the shore, cools the waters of Newport and Long Branch, and finally disappears in the great ocean off the headlands of Florida.

Now a glance at the map will show that this movement of the current forms, where the "middle ice" is found, a kind of slow-moving whirlpool; and in this the ice is churned and carried round so as to prevent its rapid movement southward. By the end of August,

nevertheless, it is considerably reduced in dimensions, owing to the combined action of the sun and the waters. August, therefore, is, in one sense, the most favourable month for navigators, because the water-way is comparatively open. On the other hand, the winter is close at hand; and should it come on suddenly, the ice quickly gathers in, north, south, and east and west, and the vessel caught within its iron grasp has no chance of escape for the next nine or ten months.

IN SMITH SOUND.

Dr. Hayes was fortunate enough to cross Melville Bay in fifty-five hours, and standing in-shore at Cape York, succeeded in picking up an Eskimo hunter named Hans, who had served in Dr. Kane's expedition. He also, with characteristic good-nature, took on board the hunter's wife and baby, though afterwards he had cause to lament his generosity.

Dashing on through group after group of icebergs, the schooner swiftly progressed along a line of bold and rugged coast, broken by deep gorges, and relieved by numerous streams of ice. One of these, the Petowak Glacier, measured fully four miles across. Then came Booth Bay, where Dr. Hayes established his winter-quarters in his boat-journey of 1854, and underwent many bitter experiences of an Arctic winter. Passing Whale Sound, outside of Hakluyt Island, which figures in the record of Dr. Kane's expedition, the adventurers saw before them the darkly-frowning headlands which guard the entrance to Smith Sound; Cape Alexander on the east, and Cape Isabella on the west. With bergs

to the right of them, bergs to the left of them, they pressed forward; but a terrible gale rising suddenly, and a heavy pack of ice barring their course, they were compelled to run in-shore and take shelter under the land. The scene at night was marked by an awful grandeur. A dark cloud lowering from the northward brought the white slopes of Cape Alexander into bold relief. Great sheets of drifting snow rolled over the cliffs, and streams of it swept down every gorge and valley. Whirlwinds raised it from the hill-tops, and carried it through the air like a storm of white spray. A glacier descending through a ravine to the bay below was covered with a broad shroud of "revolving whiteness." The sun went down beneath a black and ominous horizon. Out at sea the aspect of Nature was still more dreadful. Off the cape the wild waters were lashed into a weltering mass of spray. Words, indeed, cannot convey any adequate idea of the "vast volume of foam" which quivered over the deep, and rose and fell with each throb of the varying wind, or of those rushing terrible clouds which swept across the heavens in the path of the storm. Upon the air were borne shrieks and lamentations, dreary and loud as those of the scurrying blast which, down in the second circle of the *Inferno*, appalled the imagination of Dante; and the clouds of snow and vapour were tossed upon the gale, like the condemned souls upon that "tyrannous gust."*

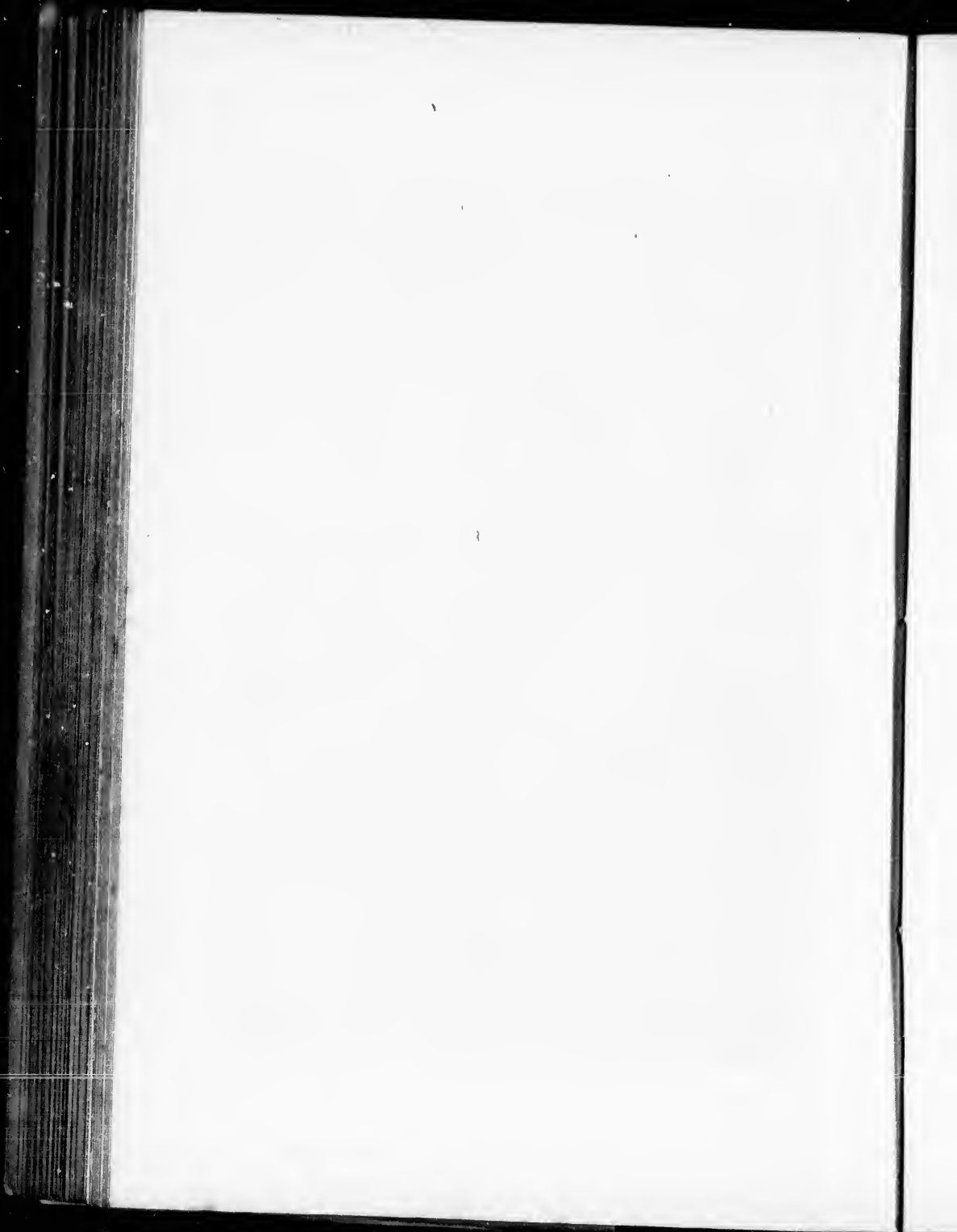
* See the *Inferno*, Canto V. :—

"Bellowing there groaned
A noise, as of a sea in tempest torn
By warring winds. The stormy blast of hell
With restless fury drives the spirits on,

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DR HAYES' MEETING WITH HANS.



The hurricane continued for two or three days, and forced the schooner out of the Sound. On the 3rd another attempt was made, and proved successful. After a desperate struggle, the brave men fought their way into Hartstene Bay, where the shattered ship was patched up as well as possible. Dr. Hayes then made an effort to cross the Sound, as his object was to explore the western coast, but in this he failed; and as the ice was rapidly accumulating, and the season near its close, he resolved to take up his quarters for the winter in a sheltered little cove within the bay, which he named Port Foulke. It was situated about twenty miles by latitude, and eighty miles by the coast, from Dr. Kane's encampment at Rensselaer Harbour, and about eight miles north-east from Cape Alexander.

The ice soon closed in upon the schooner.

Calmly accepting the inevitable, the crew now set to work to land the cargo, and shelter it in a storehouse of stone, which was erected on a terrace some thirty feet above the tide-mark. Three of the Greenlanders were detailed as an organized hunting force; Mr. Sonntag and his assistants took charge of the scientific department. The schooner, when unloaded, was carefully and thoroughly fitted up as a winter-home. Sails being unbent, yards lowered, and topmasts housed, the upper deck was roofed in so as to form a house, eight feet high at the ridge and six feet six inches at the sides. Every chink and crack were closed up with

Whirled round and dashed amain with sore annoy.
When they arrive before the ruinous sweep,
There shrieks are heard, there lamentations, moans,
And blasphemies 'gainst the good Power in heaven."

tarred paper; four windows provided for light (while the light lasted) and ventilation. The crew found accommodation in the hold, which was suitably scrubbed, floored, and whitewashed. In the centre stood the cooking-stove; and above it was suspended a simple apparatus for melting water from the snow or ice,—namely, a funnel-shaped double cylinder of galvanized iron connected with the stove-pipe at one extremity, and opening at the other into a large cask.

So far as provisions were concerned, the imprisoned explorers had at the outset no cause for discouragement. The rigging of the schooner looked like a well-supplied game-store—a dozen reindeer, and clusters of rabbits and Arctic foxes, hanging invitingly from it. Nor did the supplies diminish, for daily the hunters returned with the abundant spoils of their rifles. They reported the pleasant tidings of reindeer in herds of tens and fifties still lingering in the pasture-valleys, so that both men and dogs were well provided.

Near the storehouse was erected an observatory, eight feet square and seven feet high—a structure of canvas, snow, and skins—the interior of which was handsomely equipped with scientific instruments; and Mr. Sonntag and his assistants found ample scope for the spirit of inquiry.

All around the schooner spread a sea of ice, over whose level surface the dogs careered with much satisfaction. From the upper deck to the frozen sea a superb stairway of slabs of this same “cheap Arctic alabaster” was constructed; and the snow was piled around the schooner’s sides in a solid em-

bankment, which greatly added to the warmth of the interior.

It may here be noted that the sun sank out of sight behind the southern hills on the 15th of October; and the little company of brave men were face to face with the long winter darkness of the Polar World. At first a kind of soft twilight prevailed, and the golden glow of the unseen orb of day rested on the mountain-tops; but surely and steadily the partial radiance lessened, and slowly and surely came on the sad obscurity of the Arctic night.

Dr. Hayes occasionally amused himself with taking his team of dogs on an excursion. They were twelve in number, healthy, strong, and swift of foot. They would carry the sledge over the ice at a tremendous speed, accomplishing six miles in twenty-eight to thirty-three minutes. But to manage them is quite an art, for they are guided solely by the whip and voice.

On the outside are placed the strongest dogs; and the team sways to right and left, according as the whip falls on the snow to the one side or the other, or as it touches the leading dogs. The voice aids the whip, but the experienced driver relies more upon compulsion than upon persuasion. This whip is a wonderful instrument. Its lash is about four feet longer than the traces, and tipped with a "cracker" of hard sinew, quite capable of phlebotomizing a refractory animal. Its material is simply raw seal-hide, and it is attached to a light whip-stock only two feet and a half in length. Hence, to roll out the lash to its full length is a truly

difficult undertaking, and in this, as in other arts, it is practice only that makes perfect.

Driving an Eskimo team, take it all in all, seems to be, as Dr. Hayes describes it, the very hardest kind of hard work. Incessantly must the driver ply his whip, and ply it mercilessly as well as incessantly, or it will avail him nothing. The least hesitancy or weakness on the driver's part is immediately detected by his dogs, and they act accordingly. Unless fully convinced that the soundness of their skins is at his mercy, they will indulge in the greatest liberties. "If they see a fox crossing the ice," says Dr. Hayes, "or come upon a bear-track, or 'wind' a seal, or sight a bird, away they dash over snow-drifts and hummocks, pricking up their short ears and curling up their long bushy tails for a wild, wolfish race after the game. If the whip-lash goes out with a fierce snap, the ears and the tails drop, and they go on about their proper business; but woe be unto you if they get the control. I have seen my own driver sorely put to his mettle, and not until he had brought a yell of pain from almost every dog in the team did he conquer their obstinacy. They were running after a fox, and were taking us toward what appeared to be unsafe ice. The wind was blowing hard, and the lash was sometimes driven back into the driver's face; hence the difficulty. The whip, however, finally brought them to reason; and in full view of the game, and within a few yards of the treacherous ice, they came first down into a limping trot, and then stopped, most unwillingly. Of course this made them very cross, and a general fight, fierce and angry, now

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ESKIMO SLEDGE AND TEAM.





followed, which was not quieted until the driver had sailed in among them and knocked them to right and left with his hard hickory whip-stock."

THE ESKIMO CHARACTER.

Another source of amusement presented itself to the leader of our ice-imprisoned party, in the character and manners of his Eskimo followers.

He came to the conclusion—at which other travellers seem to have arrived—that the Eskimos are a very strange kind of people, and that it is impossible to place any reliance upon them. They possess no eminent virtues and no eminent vices; except, indeed, this want of trustworthiness, which sometimes attains to very disagreeable proportions. They are curiously self-contained: never asking assistance, never offering it; insensible to sympathy; absolutely undisturbed by any emotions of charity or generosity. In sickness or distress they do not think of proffering assistance; on the other hand, if it is asked for they do not refuse it. But they give of their stores in an indifferent and desultory fashion, which shows that the gift is not withheld, because it would be too much trouble to withhold. From the rude snow-hut of the hardy hunter, the brother who has lost his team, or been unsuccessful in the chase, is not turned away; but he is never invited. If an Eskimo knew that his own brother was starving at some short distance off, he would not carry to him a single meal; but he would allow the poor wretch to enter his hut and take what he needed.

Contrary to the statements of some of our Arctic

explorers, Dr. Hayes affirms that the Eskimos neither beg, borrow, nor steal; though he qualifies his statement by the admission that this wonderful independence, this stainless honesty, is not exhibited in their dealings with the white man. It may be doubted whether it always holds good in their dealings with one another.

It is in harmony with their strange impassiveness that they never fight; but from this it must not be inferred that they are free from the universal passions of hatred, envy, and jealousy. Only, they conduct their quarrels somewhat after the old Italian fashion,—secretly harpooning a decrepit old man or woman who has become a burden, or a more successful competitor in the chase, or a person whom they choose to regard as bewitched. They do not hesitate to kill their own children, if they think their family grows too numerous, or if any of them should be born with some marked physical defect. At least, such are the habits, says Dr. Hayes, of those tribes who have not been reached by the influences of Christian civilization, or have not caught something of the aggressive spirit of the old Norsemen, who, from the ninth to the fourteenth centuries, lived and fought in South Greenland.

A JOURNEY ON THE GLACIER.

The great glacier which Dr. Kane had named, in allusion, we suppose, to John Bull, "Brother John's Glacier," descended into the valley near the head of Foulke Fiord, a deep inlet of the sea lying to the north of Port Foulke. Dr. Hayes resolved to attempt its exploration.

Taking with him Mr. Knorr, three of his crew (McDonald, Heywood, Petersen), and one of his Eskimos (Peter), he started on the 22nd of October. The sledge was lightly laden with a small canvas tent, two buffalo-skins for bedding, a cooking-lamp, and provisions for eight days. Progress, therefore, was rapid, and the foot of the glacier was reached on the same day. After a halt the sledge was unloaded, and its equipment carried on the men's shoulders to the top of the glacier; then the sledge itself was hoisted up; and the journey being resumed, five miles were accomplished before the explorers rested for the night.

The following day they continued the ascent, and travelled thirty miles; next day, twenty-five miles; and then they began to experience the very worst inconveniences of Arctic travelling. The temperature had sunk to 30° below zero, and so fierce a wind blew in their teeth that they were compelled to pitch their tent and take refuge in it. At this time they were posted five thousand feet above the sea, and seventy miles from the coast, in the midst of an apparently boundless frozen waste. Neither hill nor gorge was in sight; nothing but ice and snow—the rugged, sloping surface of the glacier. And so intense was the cold, that to remain within the tent motionless was as impossible as to persist in face of the biting, murderous gale. There was no alternative but to return; and hastening down the declivity, they ran a race against death.

They had travelled upwards of forty miles, and descended about three thousand feet, before they ventured

to halt. Here they found the wind much milder, and the temperature twelve degrees higher. Once more they pitched their tent, and enjoyed a sound night's rest.

They accomplished the latter part of their journey by moonlight. At the base of the glacier a delightful calm prevailed; and the homeward route, down its lower face, and across the valley, and over the frozen ice-bridge of the fiord, lay through a scene as picturesque as it was unusual. Sheets of drifting snow fitted above the white-topped hills like squadrons of phantom riders. They were signs and witnesses that the gale still raged on the heights, though all was hushed and calm below. The azure arch of heaven was wholly cloudless; and the stars which studded it, like gems of purest ray serene, shone reflected in the tranquil mirror of the valley-pool. How white, how cold, how impassive looked the glacier! Who, from its silent, death-like aspect, could surmise that, like a river, it was rolling its burden down the shuddering gorge? What a contrast between its moonlit surface and the shadows of the frowning cliffs! Besprinkled with islands, the dark fiord noiselessly wound its way between the swarthy headlands, and gave up its ice-clad waters to the restless summons of the all-absorbing sea. The lofty snow-shrouded mountains of the west coast loomed in the horizon like the walls of a palace of the gods. Upon the sea lay the cold, white mist, obeying in its undulations the impulse of the wind,—occasionally revealing the huge mass of a slowly-floating iceberg; occasionally flashing with the strange reflections

of the auroral light. And from behind it came lurid magnetic gleams, irradiating the surrounding darkness, and darting fiercely among the starry groups, like "fiery arrows" shot up by evil spirits of another world.

THE GLACIER-SYSTEM OF GREENLAND.

What is Greenland, except along its narrow strip of shore, but one immense reservoir of ice,—a great internal basin, which constantly overflows, and sends down into the sea, in all directions, its frozen torrents and congealed streams?

What it is, it has become through the influence of the law of Circulation, which does not more certainly prevail in the warm, green regions of the world, than among the icy heights of the Himalayas, the Alps, or the Andes.

The ocean throws off its waters by evaporation. They circulate through the air, and, in these cold regions, return again to earth in the form of snow—snow which is partly converted into water, to feed the springs, and streams, and rivers; and partly into ice, to supply the *mers de glace* and the great glaciers.

The ice thus formed is estimated to equal, in the Alps, fifty-eight inches annually. Undisturbed, the successive layers would raise Mont Blanc four hundred feet higher in a century, and four thousand feet higher in a thousand years.

But this astonishing result is prevented through the operation of the glacier-system, which carries off the superfluous ice as the rivers carry off the superfluous waters. In truth, a glacier is simply a river of ice;

and the "river-systems" of the warmer zones of our globe become the "glacier-systems" of the colder.

The *exact method* of the glacier-movement has not been demonstrated to the entire satisfaction of scientific men; but it is evident that the ice possesses a combined ductility and viscosity, and perhaps it is allowable to compare its motion to that of a mass of jelly.

Observe, then, a beautiful instance of Nature's love of an equilibrium. The ice accumulated every year by the action of the winter-frosts is balanced every year by the quantity carried downwards in the huge frozen floods of the glaciers.

Nothing impedes the movement of the glacier, which may be slow, but is irresistible. It adapts itself to the configuration of the lower chains of hills, and flows over their summits, or insinuates itself between their windings. Pouring into the valleys, it gradually fills them up, until they are level with the highest hills. Coming to a precipice, it leaps headlong over its brink, and streams into the plain below—a frozen cataract. So, winter and summer, it moves on its way, grinding down the rocks, and tracing its furrows like a giant plough on the mountain-side; winter and summer it continues its ceaseless course, until at length it reaches the margin of the sea. But even here it does not stop. "Pushing back the water, it makes its own coast-line; and moving still onward, accommodating itself to every inequality of the bed of the sea, as it had before done to the surface of the land, filling up the wide bay or fiord, expanding where it expands, narrowing where it narrows, swallowing up the islands in its slow and

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A POLAR GLACIER.



steady course, it finally reaches many miles beyond the original shore-line."

This is the climax of its progress. When it first emptied its frozen volume upon the coast-line, and spread into the bay which, in the course of time, it was to fill up, its face was several feet in height. But as it moved forward it gradually sank below the level of the waters; and finally its lofty front has almost disappeared.

Then, owing to physical agencies, which our limited space prevents us from attempting to explain—physical agencies connected with the expansive properties of ice—a disruption of the glacier takes place: a huge mass is broken off, and buoyed up to the level natural to fresh-water ice; and this huge mass, drifting slowly away with the current, floats out into the sea as an iceberg. By-and-by that iceberg will melt into the waters, and, the process of evaporation being resumed, will pass into the air; as mist and rain will again descend upon the earth: and in this way the great law of Circulation is everlastingly maintaining the equilibrium of the natural forces.

Here we may be allowed, before resuming our narrative, to avail ourselves of Dr. Hayes' eloquent description of one of these marvels of the Arctic Ocean,—the huge, grand, white masses of the icebergs:—

Solemn, stately, and erect, he says, in tempest and in calm, it rides the deep. Through its broken archways the waves resound, and thunder against its adamantine walls. In the morning it is veiled in clouds as impenetrable as those which shrouded the fair form of

Arethusa, in the beautiful Greek fable; at noon the sun equips it in silver armour; in the evening it is resplendent with all the glowing colours of the sunset; and in the silent night its surface glasses the heavenly orbs. Drifting snows whirl over it in winter; sea-gulls make it their haunt in summer. Its lofty spires are touched with the last rays of expiring day; and when the long darkness has passed, it catches the first faint glow of returning light, and with gilded crest announces the coming of the morn. The elements combine to do homage to its matchless beauty. Its loud voice is wafted to the shore, and the echoes carry the sound into the heart of the remotest hills. The sun steals through "the veil of radiant fountains" which shimmer over it in spray and foam in the summer winds; and the rainbow hangs out its many-tinted banners on its lofty crest. With wreaths of soft vapour it is garlanded by the air, and all around it the waters shine with the rare glory of emerald and sapphire. Onward, onward, to fulfil its destiny, it sails along the blue pathway of the sea, heedless of varying winds, heedless of passing seasons. And in the course of time succumbing to the universal law of Nature, it sinks back slowly into the all-absorbing waters from which, long ages ago, it took its rise. Of this great law it is, indeed, a noble monument, and to the changes of time a more solemn witness than "the Egyptian Pyramids or the obelisk of Heliopolis." Before man came upon the world, which had been so carefully prepared to receive him as its lord, the crystals of which that iceberg is built up were dew-drops sparkling in the sun, and

snow-flakes falling through the air, like feathers from the wings of unseen spirits!

A couple of icebergs visible from Dr. Hayes' winter-camp were named the Twins, or Castor and Pollux. Nor were they unworthy of the name; for one rose 230 feet above the level of the sea, and the other 247 feet.

THE WINTER-CAMP.

We return to the camp and its "humours," which were many. The imprisoned explorers do not appear, at least in the early winter, to have suffered from tedium. Their occupations were distinct and various; they were well housed and well fed; each day brought its duties and its novel experiences; and the Eskimo members of the little company were a never-failing source of entertainment. Jacob, the youngest of the natives, furnished the men with a target for their fists. He seems to have resembled the "fat boy" in *Pickwick*, both in his capacity for eating and his amazing powers of sleeping. When he was not eating he was sleeping, and when he was not sleeping he was eating. The necessary consequence of such a life was a remarkable increase of corpulence. His cheeks were puffed out like blown bladders, and altogether he answered the description of Mirabeau's fat friend, who had been created apparently for no other purpose than to demonstrate the wonderful extensibility of the human skin. One day he was sent upon deck to dress a couple of reindeer; but having succeeded in exposing a savoury morsel, he paused in his task, cut a slice off the half-

frozen carcass, and some time afterwards was found fast asleep between the two dead animals, with the last shred of his *bonne bouche* hanging from his lips.

Some amusement was afforded, also, by the conjugal vagaries of Hans and his wife. The Eskimo lady was singularly disinclined for work, and when invited to assist in replenishing the men's winter-wardrobe obstinately refused. Dr. Hayes describes her as the most dogged of her sex. She was indifferent to everything and everybody, and about once a fortnight indulged in a fit of ill-temper, in which she was wont to declare her intention of abandoning Hans and the expedition, and returning to her own people. She essayed the experiment on one occasion, and, with her baby on her back, dashed away towards Cape Alexander. Hans, however, came out of his tent, as calm and impassive as ever, and stood leisurely smoking his pipe, and surveying the receding form of his wife and child with the most provoking unconcern. Dr. Hayes thought it desirable to call his attention to his wife's strategic movement.

"Yes, me see."

"Where is she going, Hans?"

"She no go; she come back all right."

"But she will freeze, Hans?"

"She no freeze; she come back by-by, you see."

And he continued to smoke his pipe with a quiet chuckle and a complacent conviction of his knowledge of the ways of womankind in general, and of his wife in particular. And in about two hours the Eskimo

Xantippe came back, looking very blue and cold, and evidently very much subdued.

Dr. Hayes was fortunate in the original character of most of the men composing his expedition. The cook was a negro, and apparently a negro of the kind one is apt to suppose peculiar to popular songs and amusing anecdotes. Like Yorick, only in a very different degree, he was a fellow of infinite mirth and fancy; and, what was more to his commander's purpose, he was well skilled in the culinary art.

On one occasion he set before Dr. Hayes a fillet of venison, garnished with currant jelly, a perfect triumph of taste and philosophy.

"I t'inks de commander likes dis," said he, "coming from de cold."

"Yes, cook, it is really superb. Now, what can I do for you?"

"T'ank you, sar. I t'inks if de commander would only be so kind as to give me a clean shirt, I shall be very t'ankful. He see dis one be very dirty, and I gets no time to wash him."

"Certainly, cook; you shall have two."

"T'ank you, sar;" and with a marvellous doubling of the body which is intended for a bow, cook retires to his stool and his coppers. It was his boast that he had never been off the ship's deck since she quitted Boston. "Vat should I go ashore for?" he would exclaim. "Me go ashore! De land be very good place to grow de vegetables, but it no place to be. I never goes ashore ven I can help it, and, please my hebenly Fader, I never vill!"

A BEAR-HUNT.

On the 6th of November Mr. Sonntag and a small company of adventurers returned from an attempt they had made to reach the Humboldt Glacier. The chief incident of the journey, which had been rendered painful and perilous by the rugged nature of the ice, was the pursuit and capture of a Polar bear and her cub. They were roused on the margin of a ridge of "hummocky ice," where they had been sleeping, and made at once for the open cracks, some four miles distant, in order to take to the water. Off dashed the dogs in fierce pursuit, with bold disregard of the safety of the sledges or of the persons seated upon them. In and out of the labyrinth of hummocks shook and clattered the two teams, sorely discomposing the drivers, and flinging Mr. Sonntag on the snow. The delays which took place gave the bears a start of fully a mile, so that there was reason to fear they would reach the open water. But the dogs seemed to be conscious of this fact as well as the hunters; and on gaining the broad level plain they swept onward at a tremendous speed. The sledges almost flew over the hard snow, and the chase assumed the aspect of one of those wild demon-hunts depicted in so many of the German ballads.

In less than a quarter of an hour the dogs had lessened the distance between themselves and their quarry to two hundred yards; but the water was close at hand. During all this frenzied chase the old bear was delayed by her cub, which she was evidently unwilling to abandon. Terrible was the poor creature's

agony, and her cries were painful to hear. Anxious and frightened, the cub trotted along by her side as best she could; and although she greatly retarded the progress of the mother, the latter remained true to the instincts of maternal affection. "One moment," says the historian of the chase, "she would rush forward toward the open water, as if intent only upon her own safety; then she would wheel round and push on the struggling cub with her snout; and then, again, she would run beside it, as if coaxingly encouraging it to greater speed. Meanwhile her enemies were rushing on and steadily nearing the game. The dogs, forgetting their own fatigue in the prospect of a speedy encounter, pressed harder and harder into their collars. The critical moment was rapidly approaching; and, to add to the embarrassments of the Bruin family, the little bear was giving out."

Now, see the pursuers within fifty yards of the pursued. Each hunter bends forward, seizes the end of the line which holds together the traces, and slips the knot. At once the swift course of the sledges is arrested; and the dogs, released from their burden, spring towards their prey. The old bear hears them coming, and, sheltering her little one between her legs, bravely awaits the assault.

Foremost in the charge is a veteran dog named Oosisoak. Close beside him dashes the gallant Queen Arkadik, and a score of other wolfish beasts—for the Eskimo dog is more than half wolf—follow in hot disorder. When in upon the enemy, her formidable front and terrible roar teach them that discretion is the

better part of valour, and dividing, they attack on each side; only one young and inexperienced dog presuming to face the powerful animal, and falling dead at once beneath her huge paw. Then she turns upon her other assailants. In doing so she uncovers the cub, which is instantly involved in the *mêlée*. What a scene! The frantic movements of the two bears, the roar of the mother, the cry of her cub, the howls and hoarse utterances of the contending dogs,—a new Homer is needed to describe the features of such a combat.

At length the hunters bring up their forces. Jensen and Hans load their rifles, and, watching their opportunity, take aim and fire. A ball strikes the bear in the mouth, another in the shoulder; but the wounds are slight, and serve but to increase her fury.

All the dogs have now combined in an attack on the old bear, and the snow is soon crimson with blood. The assailants suffer severely, but, undaunted, press the attack. How long the Homeric episode would have lasted, who can tell? but that a *deus ex machinâ* intervened in the person of Mr. Sonntag, who came up with another weapon. A well-directed volley from the three weapons brought the bear down upon her side, and the dogs immediately made a rush at her. But, though greatly weakened by loss of blood and the prolonged struggle, she was not mortally hurt; and springing to her feet, she once more put the pack to flight. Her cub, however, now sank dead at her feet; and forgetting for a moment her own strait, she stooped down and licked its face, and endeavoured by caresses to revive in it some signs of life. At last she became aware of

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the truth, and suddenly turning on her assailants she attacked them with an access of fury. Then perceiving that she had other enemies than the dogs, she charged at Hans, who threw away his spear and took to ignominious flight. The bear pursued, and in a moment more neither his own swift feet nor the dogs could have saved him. But Sonntag and Jensen, having reloaded their rifles, arrested her career with a couple of bullets, which stretched her dead upon the snow.

MIDWINTER.

Day by day the year approached its close, and the Arctic winter asserted itself in all its severity. It is difficult for us, dwelling in a temperate clime, to realize all its terrible accompaniments. The oppression of the prolonged darkness it is impossible for us to understand. A night prolonged through several months weighs down both the mental and physical energies, and involuntarily saddens even the most sanguine spirit. Habit has so accustomed us to the succession of morning, noon, and night, that we fail to recognize the healthful influence of this continual change; yet it is a boon of singular value and importance, which we should learn to appreciate after the experience of an Arctic winter-night.

Still, it must be admitted that in clear weather the moon affords some relief. From its rising to its setting it shines unintermittently, and keeps above the horizon until its ten days of radiance are ended. There is something singular in its brightness, which is probably due to the transparency of the atmosphere, and the increased intensity afforded by the reflecting power of the snow.

Snow-storms at Port Foulke were numerous and heavy. Between the dawn of winter and the 1st of December the amount of snow which fell was forty-eight inches. Its crystals were remarkably beautiful; and Dr. Hayes notes the fact—which we have observed in our British winters—that perfect crystals are exhibited only when the snow falls in a temperature comparatively mild. Their form is always hexagonal; but though the rays are infinitely various in their development, they all possess the same radical foundation.

A disagreeable incident of the winter detention at Port Foulke was the outbreak of an epidemic disorder among the dogs, resembling mania or delirium. The mortality was dreadful. In the first two weeks of December eighteen died; three more deaths occurred in the following week; and Dr. Hayes found himself reduced to nine animals. As all his plans of exploration in the coming spring depended upon the efficiency of his teams as a means of transportation across the ice, his anxiety was great; and in order to obtain a fresh supply, he determined on sending Mr. Sonntag, with Hans as driver, to the nearest Eskimo settlement on Northumberland Island, if necessary, or to Whale Sound, if haply any station should be found upon its shores.

With twelve days' provisions, they set out on the 21st of December. Their journey proved very eventful; but before we follow it up we must ask the reader to witness, as Dr. Hayes witnessed, a remarkable display of the aurora borealis.

THE AURORA BOREALIS.

It was early in the morning of the 6th of January. The darkness was so profound as to be oppressive. Suddenly, from the rear of the black cloud which obscured the horizon, flashed a bright ray; but before one could say "Behold!" the "jaws of darkness did devour it up." Presently an arch of many colours fixed itself across the sky, like a bridge for the armies of the Unseen, and the aurora gradually developed. The space within the arch was filled by the black cloud; but its borders brightened steadily, though the rays discharged from it were exceedingly capricious—now glaring like a vast conflagration, now beaming like the glow of a summer morn. More and more intense grew the light, until from irregular bursts it matured into an almost uniform sheet of radiance.

Towards the end of the display its character changed. The heavenly dome was all aflame. Lurid fires flung their awful portents across it, before which the stars grew pale, and seemed to recede farther and farther from the earth. The gentle Andromeda seemed to fly from the scene of warfare; even Perseus, with his brilliant sword and Medusa shield, drew back apace; the Pole Star vanished from the night; and the Great Bear, trusty sentinel of the North, for once abandoned his watch, and followed the fugitive. The colour of the light was chiefly red, but every hue had its turn, and sometimes two or three were mingled; blue and yellow streamers shot across the terrible glare, or, starting side by side from the wide expanse of the radiant arch,

melted into each other, and flung a strange shade of emerald over the illuminated landscape. Again this green subdues and overcomes the red; then azure and orange blend in rapid flight; subtle rays of violet pierce through "a broad flush of yellow," and the combined streams issue in innumerable tongues of white flame, which mount towards the zenith. Surely it is impossible to gaze upon a scene so various, so unearthly, so wonderful, without a silent recognition of the wisdom and power of the great Final Cause! The emotional side of our nature comes in to strengthen and exalt our reason; our faith quickens; our convictions acquire a new life; our hearts, however cold before, are compelled to pour their passionate raptures into the grateful yet exultant strain, *Te Deum Laudamus*,—"We praise thee, O God: we acknowledge thee to be the Lord!"

It may well be credited that the play of these orange and red and violet and emerald lights upon the surrounding objects produced the most marvellous effects. "The weird forms of countless icebergs," says Hayes, "singly and in clusters, loomed above the sea, and around their summits the strange gleam shone as the fires of Vesuvius over the doomed temples of Campania. Upon the mountain-tops, along the white surface of the frozen waters, upon the lofty cliffs, the light glowed, and grew dim, and glowed again, as if the air were filled with charnel meteors, pulsating with wild inconstancy over some vast illimitable city of the dead."

Silent was the scene; yet it practised a strange deception upon the senses, for the swift flashes seemed fol-

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THE AURORA BOREALIS.



lowed by unearthly noises,* which fell upon the ear like

....."The tread
Of phantoms dread,
With banner, and spear, and flame!"

THE ARCTIC NIGHT.

As a contrast to the glow and splendour of the foregoing picture, we may place one of the Arctic night, when its deep-blue skies are no longer illuminated by electric coruscations.

All authorities agree in speaking of the severe ordeal to which the Arctic night exposes the European explorers. Physically, the experience is endurable; though there can be no doubt that its influence is to some extent unwholesome, and that the withdrawal of light acts upon the human frame as it does upon vegetation. But to civilized man's moral and intellectual faculties it is a bitter trial. To that new world which it unfolds to the senses they do not harmoniously adapt themselves. A discord and a difference exist between man and nature. He feels, for the first time, how salutary and delightful are those changes of morn, and noon, and night which refresh more temperate regions; what strength, and joy, and renovating energy there are in the alternation of sunrise and sunset, day and night. How he longs to see again the warm glow of morning reddening the eastern skies, lighting up the tops of the hills, and gradually

* The auroral exhibition, according to the testimony of several observers, is actually accompanied by sounds like that of crackling or rustling silk; something similar, we presume, to the discharge of sparks from an electric machine. Such is the testimony of Dr. Henderson. On the other hand, both Parry and Lyon say they never heard any sound. Sir J. Richardson thinks the auroral movements are sometimes audible. That the aurora dims the stars, is strongly affirmed by Parry as well as by Hayes.

wakening into life the quiet valley, the flowery plain, and the crystal stream! How he longs for the golden noon, with its genial sunshine, and its soft murmuring sounds which bear testimony to nature's happiness! How he longs for the purple glories of the sunset, when the great orb of day sinks serenely and majestically below the horizon, and the earth kindles in the reflection of its departing pomp! How he yearns for those healthful influences of dawn which brace him up for his daily labour; how he misses the tranquillizing power of twilight, which soothes and encourages to rest! From day to day he finds himself possessed by a single desire; on his lips and in his heart is Goethe's well-known prayer: "Light! light! more light!" He wearies of the continual gloom; it becomes to him a burden and a terror; he feels as if it had laid hold upon him with an icy grasp, and would no more let him go.

On the other hand, it may be conceded that the Arctic night has its interesting and fascinating aspects for the cultivated mind, when it can shake off the weight and oppression of the prolonged silence and almost continual darkness. It has, as we have seen, its glorious auroral phenomena, flooding land and sea with a many-coloured radiance, which may well recall "the consecration and the poet's dream," for only in "poet's dream" could anything so strangely beautiful have been imagined. Then there is a charm in the keen, cold light of the stars, in the eëry lustre which falls upon the hills and icebergs, in the flashing whiteness of the snow-shrouded mountain-peaks and majestic glaciers.

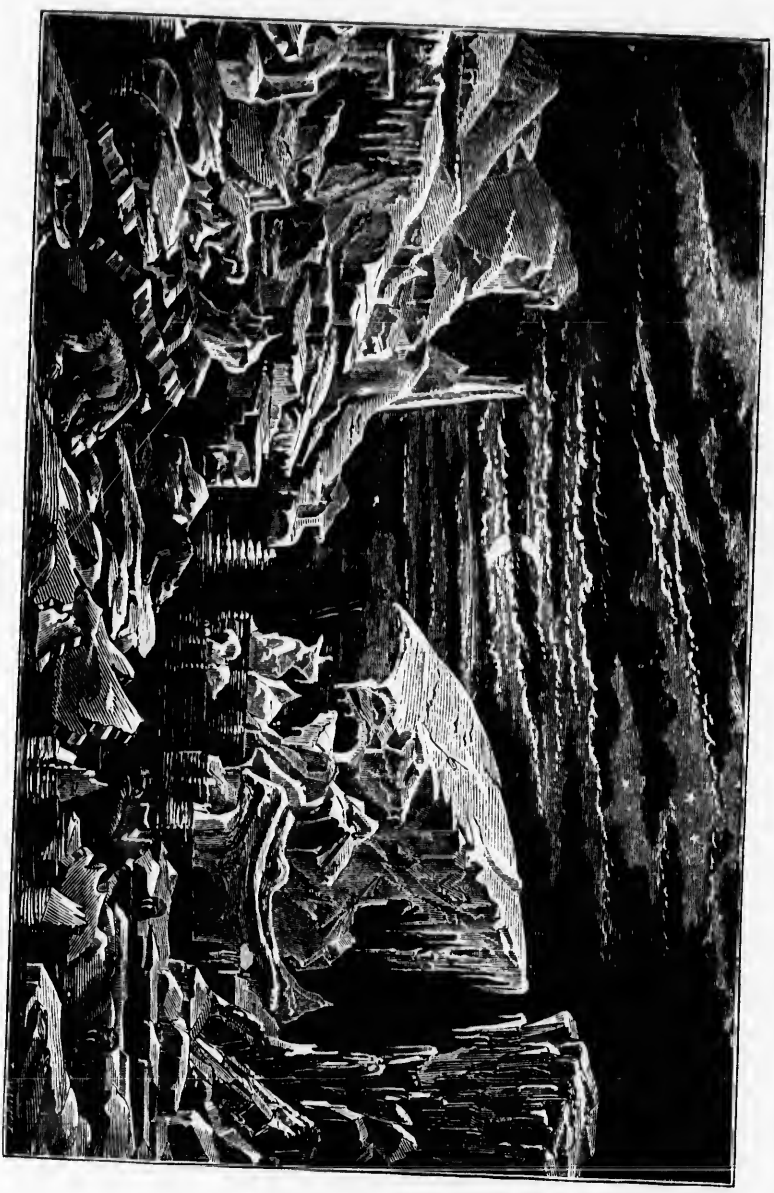
"Nature," says Dr. Hayes, "is here exposed on a

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AN ARCTIC NIGHT.





gigantic scale;" that is, man stands so completely face to face with it, that he feels himself dwarfed in its presence, and recognizes for the first time the grandeur of its proportions. Out of the glassy sea rise the dark fronts of lofty cliffs, flinging their shadows over the desert of frozen waters. Mountain-summits, which foot of man has never profaned, seem to pierce the very heavens, and lift to the stars their virgin snows. In huge and massive floods the glaciers roll their burden of the innumerable ages into the sea. "The very air, disdaining the gentle softness of other climes, bodies forth," says Hayes, "a loftier majesty, and seems to fill the universe with a boundless transparency; and the stars pierce it sharply, and the moon fills it with a cold refulgence. There is neither warmth nor colouring underneath this ethereal robe of night. No broad window opens in the east, no gold and crimson curtain falls in the west, upon a world clothed in blue, and green, and purple, melting into one harmonious whole, a tinted cloak of graceful loveliness. Under the shadow of the eternal night, Nature needs no drapery and requires no adornment. The glassy sea, the tall cliff, the lofty mountain, the majestic glacier, do not blend one with the other. Each stands forth alone, clothed only with Solitude. Sable priestess of the Arctic winter, she has wrapped the world in a winding-sheet, and thrown her web and woof over the very face of Nature."

MR. SONNTAG'S JOURNEY.

We have recorded the departure of Mr. Sonntag on a visit to the nearest Eskimo settlement, with the view

of purchasing a team of Eskimo dogs. He was accompanied by Hans the hunter, and their return was expected in a few days. But, to the surprise at first, and to the alarm and anxiety afterwards, of Dr. Hayes, December passed away—a new year opened, and January was far advanced—yet there came no news of Mr. Sonntag. The suspense became intolerable, and Dr. Hayes was preparing to start in search of him, when two Eskimos arrived with the sad news that the poor astronomer was dead. They also informed him that Hans, with his wife's father and mother, was on his way back to the schooner; but, owing to the condition of his dogs, was travelling by slow and easy stages.

When Hans at last made his appearance, he was accompanied, however, only by his wife's brother; for the father and mother had broken down, and were left, along with the dogs, in the neighbourhood of the glacier, waiting for assistance. This was at once despatched, and the two old people were brought to the vessel, and properly cared for; as well as the feeble, weary, almost lifeless dogs, now reduced to five in number!

From the story told by Hans, it appeared that the travellers had easily cleared Cape Alexander, and struck across the ice to Sutherland Island, where they built a snow-hut, and rested for a few hours. In due time they set out for Northumberland Island, and had proceeded on their course about five miles when Sonntag, feeling somewhat chilled, sprang off the sledge, and ran ahead to restore himself by exercise. Suddenly Hans observed him sinking. He had come upon some thin ice, cover-

ing a recently open tide-crack, and not perceiving the danger, had stepped forward. The ice gave way, and he fell in. Hans hastened to his rescue, and the two then turned back for Sorfalik, where a snow-hut could afford them shelter. Unfortunately, Mr. Sonntag did not change his wet clothing; and when the sledge halted at Sorfalik, Hans discovered that his companion was stiff and speechless. Removing him into the hut as quickly as possible, he placed him in the sleeping-bag, administered some brandy, and having tightly closed the hut, lighted their alcohol lamp, for the double purpose of elevating the temperature and making some coffee. His efforts were in vain; Sonntag never recovered consciousness, and in a few hours died.

Having closed up the entrance to the hut, to protect the dead body against carnivorous animals, Hans resumed his journey, and reached Northumberland Island. He found, however, that the natives had abandoned their settlement; and after a night's rest he went on to Netlik, which was also deserted. At Iteplik, however, some twenty miles farther, he came upon a few families. Among them were two Eskimos who had known Dr. Hayes on his former visit to the Arctic Regions, and they volunteered to carry him the news of Mr. Sonntag's melancholy fate; while Hans despatched a couple of boys with his team to Cape York, to acquaint the Eskimos in that locality with Dr. Hayes' presence and his wants. On their return he started again for Port Foulke; where he arrived, as we have seen, with his team reduced to five miserably attenuated dogs.

Such was Hans' story. Dr. Hayes did not accept it as true in all its details, but had no means of disproving it. The expedition had utterly failed in its object, besides costing him the life of a trusted companion and old friend, and all he could hope for was that some of the wandering Eskimos might be induced to bring him a reinforcement for his skeleton team.

EXCITEMENT OF THE CHASE.

Meantime, as the approach of day became more and more discernible, the imprisoned explorers found an agreeable relief from the monotony of their occupations in the chase. The reindeer abandoned their winter fastnesses in the remote valleys, and came down towards the shore. The Polar bear and the Arctic fox likewise forsook their remoter haunts, and began the pursuit of the seal and the ocean-birds; the fox generally following in the track of the bear, and obtaining a portion of his prey. There are two distinct varieties, or rather species, of the Arctic fox,—the white and the blue. The term "blue" is slightly inaccurate, the colour being rather that of a solid gray; but it has a bluish effect in contrast with, or reflection upon, the snow. The fur of both species is highly valued.

The habits of the Polar bear are too well-known for any detailed description to be necessary. Everybody has read of its ferocity, its courage, its amazing strength, its devoted attachment to its young, its curiosity, and its voracious appetite. During the long winter-darkness that appetite can very seldom be satisfied; but in the summer, when the seal make their appearance upon the

ice-floes, it indulges in unlimited gluttony. It is probable that its ferocity has been much exaggerated; at least, it does not appear to attack man except when hotly pursued and driven to bay. Then, indeed, it is a dangerous opponent; for one blow from its heavy paw will crush a limb or dash out its assailant's brains.

Dr. Hayes relates that one day, when observing with much interest the effect of the spring-tides upon the ice-foot, he suddenly found himself confronted in the "pale moonlight" by an enormous bear. He had just emerged from the hummocks, and was on the full trot towards the shore. Man and bear became conscious of each other's presence at one and the same moment. As Dr. Hayes was without a rifle or other means of attack or defence, he concluded that "discretion was the better part of valour," and wheeled suddenly in the direction of the ship; feeling much like the village-maiden in the ballad, who fancies that a phantom is close-pursuing her retreating steps. However, after a few lengthy strides he looked back over his shoulder, and to his surprise and gratification discovered the bear making for the open water with a celerity that satisfactorily indicated the nature of his reflections.

THE ESKIMO GUESTS.

When weary of the chase, Dr. Hayes and his followers found abundant amusement in studying the idiosyncrasies of their Eskimo guests, the father, mother, and brother of Hans' wife, respectively named Tcheitchenguak, Kablunet, and Angeit. The last was a lad of mischievous disposition, as full of tricks as a monkey,

and a source of infinite entertainment to the sailors, who petted him after their rough, good-natured fashion. Kablunet, his mother, was an industrious and ingenious woman, expert in the manufacture of every article of an Arctic wardrobe, from the outer coat to the boots. She was light-complexioned, as her name indicated—"the child with the white skin."

Neither she nor her husband was prepossessing in appearance. According to our English ideas, broad faces, heavy jaws, projecting cheek-bones, narrow foreheads, small black eyes, flat noses, and long thin lips, do not constitute the elements of physical comeliness. Their hair was jet-black, but not abundant. Short in stature, their frames, nevertheless, gave evidence of muscular strength and considerable powers of endurance. Tcheitchenguak wore a beard on the upper lip and chin; an unusual distinction, the face of the Eskimo being generally as beardless as that of the Mongolian, which it closely resembles in typical characteristics.

Their attire was not adapted to set off their personal charms, had they had any. An European tailor or *modiste* would have been shocked by its want of gracefulness and elegance. But it was well-adapted to the climate, and so contrived as to afford the best possible protection against its rigour. Very little difference exists between the masculine and feminine costume of the Eskimos. It consists always of nine pieces: a pair of boots, stockings, mittens, pantaloons, an under-dress, and a coat. The man wears bear-skin boots, reaching to the top of the calf, where they meet the bear-skin pantaloons. Those of the woman aspire nearly to the

middle of the thigh, and are made of tanned seal-skins; but her pantaloons are of bear-skin. The stockings are of dog-skin; the mittens of seal-skin. The under-dress is manufactured of bird-skins, with the feathers turned inwards for greater warmth; and the coat, which is drawn on over the head like a shirt, and has no opening in front, of the skin of the blue Arctic fox.

The coat, we must explain, terminates in a hood which envelops the head as completely as an Albanian *capote*, or a Turkish veil, or a monk's cowl. This hood is the chief mark of distinction between the dress of the two sexes. In the woman's costume it is pointed at the top, to receive the hair, which is twisted up into a hard, horn-like tuft; in the man's it is round, and fits closely to the scalp.

Such is the Eskimo dress; at least, such was the dress of the interesting couple, Tcheitchenguak and Kablunet. It varies sometimes in materials; but in its general composition differs very little from that which we have described.

Tcheitchenguak and Kablunet, after awhile, grew weary of Hans' tent, or of Hans' company, or of both; and going ashore, proceeded to construct a snow-hut. A beaver, however, would have contrived a more comfortable habitation! It was nothing better than a cave or tunnel fashioned in a bank of snow. Just opposite the ship lay a narrow gorge, in which the snow had accumulated to a great depth, leaving, as it swept and eddied through the opening, a kind of cavern, formed by the solid rock on the left and the snow-bank on the right and overhead. Tcheitchenguak started from the

inner side of this natural hollow, burying himself in the snow like a rabbit in the sand, and worming his way down into the drift with great rapidity. After he had worked downward for about five feet, he struck off horizontally for about ten feet more.

This operation completed, he began the construction of his den. Lustily did he strike his shovel into the frozen snow above his head, bringing it down in large blocks, which he hastily cleared away, and soon excavated a space that enabled him to stand upright. Having attained the proper dimensions, he then smoothed and levelled the sides of his cave; fixed up a doorway, through which it was just possible to crawl on all-fours; finished off the tunnel entrance; laid down a flooring of stones, which was afterwards covered with several layers of reindeer-skins; tapestried the white shining walls with hangings of the same description; lighted a couple of oil-lamps; suspended a deer-skin across the doorway, and exclaimed (in Eskimo), *Opus consummatum est!*

A few hours later, when Dr. Hayes paid a visit of ceremony, he found the "interior" quite warm and comfortable. There was no fire, of course, but sufficient light was given by the two lamps: the temperature had risen to freezing-point; Kablunet was plying her needle, like a model housewife; Angeit, the sailors' pet, was regaling on some surreptitious tit-bits of venison; and Tcheitchenguak was engaged in the repair of a harpoon. Such was the "at home" of an Eskimo family.

The tools and implements of the Eskimos are necessarily of the simplest construction, yet they display a

certain rude ingenuity. Their lance consists of a wooden shaft or handle, with an iron spike (when procurable) firmly secured to one end of it, and a piece of walrus tusk, shod with sharp iron, at the other. The harpoon staff was a narwhal tooth or horn, six feet in length; a hard solid piece of ivory, perfectly straight. The head was a piece of walrus tusk, three inches long, with a hole through the centre for the line, a hole into one end for the sharpened point of the staff, and at the other end an iron tip. The line was nothing more than a strip of raw seal-skin, about fifty feet long, which had been cut from the body of the seal in a continuous coil. Then, for the rabbit-trap: a seal-skin line, provided with numerous loops, and *voilà tout!* A shallow dish of soft soap-stone, resembling a clam-shell in shape, and measuring eight inches by six; such was the lamp. The pot was a square-sided vessel of the same material. A piece of hard granite served as flint, a lump of crude iron ore as steel; the wick was composed of dried moss; and the tinder, of the delicate downy covering of the willow catkins.

SUNRISE.

Signs of the coming spring now began to rejoice the captives. In the outer bay the ice was all broken up, and along the shore a flock of dovekies winged their way. Better than all, on the 18th of February the heavens were once more flushed with the promise of sunrise. Officers and men immediately started for the neighbouring hills, in order to greet the orb of day. The scene filled them with new life. Far away to the south spread an open sea, with a fleet of

icebergs slowly careering over its waves. The winds broke up the surface into multitudinous ripples, and effectually prevented it from freezing. Light wreaths of "frost-smoke" rose over it, and then sailed away on the breeze to the south-west. To the left, the mountains raised their lofty summits, and near Cape Alexander the glacier-river rolled its flood downward from the *mer de glace*. On the crests of the silent hills, and above the broad ramparts of the cape, floated lazy clouds of fleecy whiteness, through which the sun's splendour streamed in golden fire, until the whole southern firmament glowed with the glory of the approaching day.

The dark spur of Cape Alexander lay directly south of the watchers, who knew that the sun would emerge above it at exactly the meridian hour, rolling along the horizon, with only half its sphere above the deep-blue rim of sea. Never did mother watch more eagerly by the bedside of her youngest, waiting for the warm light on the pallid cheek which should tell of danger past, than these hardy adventurers for the moment of sunrise. Presently a ray of light shot through the cloud-wreaths on the brow of the morning, blending them into a mysterious mass of purple gleams, and, as it drew nearer and nearer, widening in every direction this purple lustre, while the icebergs successively caught the glorious tidings, and arrayed themselves in silvery splendour to do homage to the god of day. No words can describe the marvel of the change which came over the face of the sea. We ourselves have seen such a scene early on a summer morning, or rather just as night was disappearing, and have felt as if death were suddenly trans-

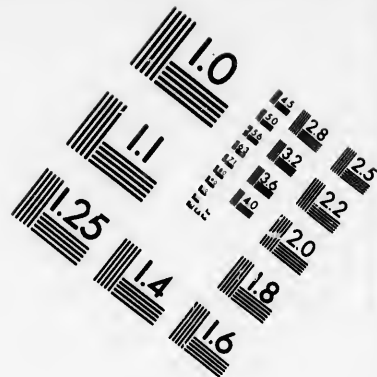
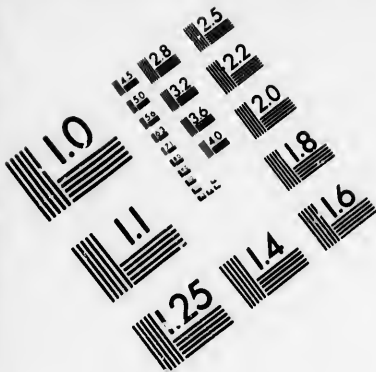
formed into life, as if a cold shadow had passed from the bosom of Nature, and earth and sea were once more hallowed by the roiling Presence of the Infinite Love.

The dark-red cliffs soon shone with a warm colouring; the hills and the mountains laughed as they assumed their robes of glory; the face of ocean broke out into "multitudinous laughter." It is coming—it has come! And every man, as, with a sudden impulse, he lifts his hat and hails the glorious face of the long-lost wanderer, feels that it is good to have seen the sun.

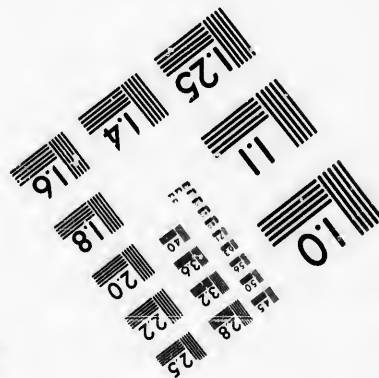
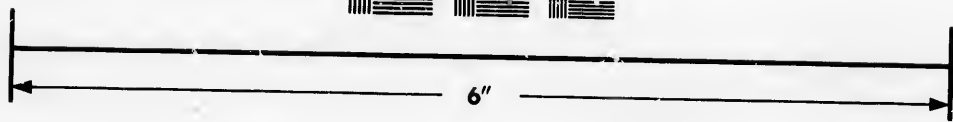
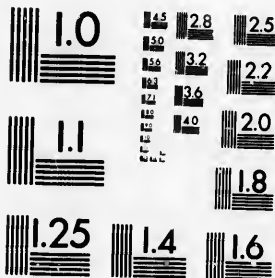
"Welcome, the lord of light and lamp of day;
 Welcome, fosterer of tender herbis green;
 Welcome, quickener of flourished flowers' sheen;
 Welcome, support of every root and vane;
 Welcome, comfort of all kind fruits and grain;
 Welcome, the birds' green beild upon the brier;
 Welcome, master and ruler of the year;
 Welcome, welfare of husbands at the ploughs;
 Welcome, repairer of woods, trees, and boughs;
 Welcome, depainter of the bloomit meads;
 Welcome, the life of everything that spreads."

Such is the rapturous strain in which an old Scotch poet greets the great "day-god," the light-giver, the parent of life and love. The watchers on those lonely hills, with wastes of Arctic ice and snow around them, were conscious of even a deeper feeling of gratitude and admiration. The friend of all hopeful associations, says Hayes, had returned to infuse a new glow into their hearts. After an absence of one hundred and twenty-six days, he poured his blessings once more on a cold and desolate world, and that world went forth to meet him. After a while he will rend asunder the sheet of frozen snow, and tumble it in "gushing fountains" to





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the sea, and will water the earth to life and warmth, so that the flowers will bud and bloom, and turn their grateful eyes towards him, as he keeps watch over the ancient hills throughout the long summer. "The very glaciers will weep tears of joy at his coming. The ice will lose its iron grip upon the waters, and will let the wild waves play in freedom. The reindeer will skip gleefully over the mountains to welcome his coming, and will look longingly to him for the green pastures. The sea-fowls, knowing that he will give them a resting-place for their feet on the rocky islands, will come to seek the moss-beds which he spreads for their nests; and the sparrows will come on his life-giving rays, and will sing their love-songs through the endless day."

MOVEMENTS.

Now that the season was rapidly approaching, and that every day brought with it an increase of light, Dr. Hayes began to prepare for his northward explorations. The chief difficulty by which he found himself confronted was the want of dogs; and it became evident that unless the Eskimos came up with a fresh supply, the sledges would have to be drawn by men.

Towards the end of February, however, three Eskimos visited the camp; Kalutunah, Tattarat, and Myouk. By dint of some dexterous bargaining, Dr. Hayes obtained four of their best dogs. These visitors had scarcely departed before another batch arrived, from whom two more dogs were obtained, so that a full team was now made up.

Shortly afterwards Kalutunah returned, bringing with

him his wife, his four children, his dogs, and all his goods and chattels: namely, parts of two bear-skins, which constituted the family bedding; half-a-dozen seal-skins, or the family tent; two lances and two harpoons; some harpoon-lines; a couple of lamps and pots; a small seal-skin bag, containing the implements necessary for the repair of the family wardrobe; a roll of dried grass, which the Eskimos use as we do cork soles for the boots; some dried moss for lamp-wick; and, for food, a few small pieces of walrus-meat and blubber.

With Kalutunah Dr. Hayes concluded a friendly arrangement,—by which it was agreed that he and his family should live in the hut at Etah, do all the hunting they could, and lend their dogs to the expedition; while Dr. Hayes undertook to provide them with everything necessary for their support.

Another family arrived a few days later—Myouk, his wife, and baby; but as Myouk did not bear a savoury reputation, he met with a cold welcome from the “white men.”

Dr. Hayes was now the happy owner of seventeen dogs, and he waited only for the arrival of April, with its warm, vernal airs, to start on his journey northward. Meanwhile, he fed and strengthened his teams, and hunted the reindeer, and studied at his leisure the ways and manners of his Eskimo friends.

Before he left the ship he was desirous of recovering and decently interring Mr. Sonntag's body; and in order to secure Kalutunah's assistance for this purpose, he one day drove over to the little colony of Etah. The information thus obtained enabled him to despatch Mr.

Dodge, with a couple of teams, to fetch the remains of their unfortunate comrade; and on his safe return with the melancholy freight, a grave was dug in the frozen terrace which overlooked the little bay, and the body interred, with suitable Christian rites. A neatly-shaped mound was afterwards raised with stones; and at the head was placed a chiselled slab, bearing this inscription:—



AUGUST SONNTAG.

Died December 1860. Aged 28 years.

THE FIRST JOURNEY.

Preparatory to his more extended expedition, Dr. Hayes started on the 16th of March to survey the ground over which he was about to travel, and to determine whether it would be better to keep along the Greenland coast, or to strike across the sound, and make an effort to reach, on Grinnell Land, the starting-point for which he had striven unsuccessfully the previous autumn.

On reaching Sunrise Point, the headland previously described in our account of the return of daylight, he found the ice very rough and insecure, and his team floundered in a tide-crack. The point, however, was doubled at last, and he bowled merrily along the frozen road as far as Cape Hatherton, where he encamped for the night. Sleep and rest were difficult, for the temperature outside the tent was 40° below zero; and everybody was glad when morning rendered possible a resumption of the journey.

At the north point of Cape Inlet the attention of the

travellers was attracted by a conspicuous cairn; which, on being examined, proved to have been erected by Captain Hartstene, an officer despatched by the American Government in search of Dr. Kane. It was with much interest that Hayes gazed on the handwriting of his countryman, there, in the heart of the icy wilderness. The written record ran as follows:—"The U.S. steamer *Arctic* touched here and examined thoroughly for traces of Dr. Kane and his associates, without finding anything more than a vial, with a small piece of cartridge-paper, with the letters 'O. K., Aug. 1853,' some matches, and a ship's rifle-ball. We go from this unknown point to Cape Hatherton for a search. (Signed) H. J. HARTSTENE, Lieut.-Comdg. Arctic Expedition. Eight P.M., August 16th, 1855.—P.S. Should the U.S. barque *Release* find this, she will understand that we are bound for a search at Cape Hatherton. H. J. H." A reference to our narrative of Dr. Kane's adventures will show that he and his followers had left Cape Hatherton, on their return journey, before Captain Hartstene's arrival.

Climbing a hill in the neighbourhood of the point, Dr. Hayes obtained a good view of the sea for miles around, and observed that in every direction, except down the coast toward Cape Hatherton, the ice was piled up in great ridges which it was almost impossible for sledges to traverse. He resolved, therefore, that if he crossed Smith Sound he would start from Cairn Point; and he proceeded to remove all the provisions from his sledge not needed for immediate consumption, and to deposit them in a cleft in a rock, covering them over with heavy stones as a protection against the bears. Then, the day

being past, the travellers dug a cave in a snow-bank, and sought therein a little rest.

This mode of spending the night was so uncomfortable, that, after another day's journey, Dr. Hayes set his ingenuity to work to construct a more effectual asylum. Selecting a snow-bank with a square side about five feet high, and starting from the top, our wayfarers dug a pit about six feet in length, four and a half feet in width, and four in depth, so that between this pit and the square side of the bank intervened a wall about two feet thick. To the reader such an excavation will seem better fitted for the reception of potatoes than of human beings; but Arctic explorers are not fastidious! Over the top of the pit was placed a sledge; over the sledge one of the canvas coverings used to enclose the cargo; over that again a three-foot layer of loose snow. Then through the thin wall was dug a hole for entrance; the buffalo-skin bedding and cases of provisions were introduced; the wayfarers afterwards took up their quarters; the entrance was closed with a few blocks of hard snow; and all was comfortable for the night. The alcohol lamp was lighted, and the tin kettle exposed to its glimmering blue flame. A good strong dish of tea recruited the nerves of each weary wanderer, and the appetite was satisfied by substantial rations of preserved beef and potatoes. The pipes were then lighted, and everybody disposed himself for slumber.

Slumber! The air was so cold that it was with difficulty the adventurers by constant friction of their feet prevented them from freezing. Slumber! It was impossible, with the thermometer pointing to 31° below

zero. What could be the cause of it? Some mistakes, it was suggested, in the construction of Dr. Hayes' newly-invented refuge. The snow could not have been properly beaten down and solidified. The air must have entered through many a chink and crevice. The mystery was solved, however, in the morning; for when Dr. Hayes exposed his thermometer to the external atmosphere, it sank to $68^{\circ} 30'$ below zero, or $100^{\circ} 30'$ below the freezing-point of water! It is almost impossible for the reader to realize what is meant by such a frightful extreme of cold.

Dr. Hayes remarked as "a singular circumstance," that this great depression of temperature was not—in the open air, at least—perceptible to the senses. They gave no hint whatever that, in the blazing sunlight of the Arctic day, the thermometer indicated about the coldest temperature ever recorded. This was owing, we may conclude, to the profound calm that prevailed. Had the air been in motion, the travellers would have found such excessive cold not only inconvenient, but dangerous. Most of us will have experienced the distressing effects of a cold east wind, even when the general temperature has remained above freezing-point.

The influence of a low temperature upon the snow is very striking. It becomes hardened to such a degree that it is almost as gritty as sand, and consequently the friction to the sledge-runner is much increased. The sledge runs most easily when the snow is slightly wet, and therefore the native covers the sole of his runner with moisture. Dissolving in his mouth a ball of snow, he pours it out into his hand, and then over

the polished ivory sole, where it immediately forms a thin film of ice to meet the indurated crystals.

Continuing his journey, Dr. Hayes was much impressed by the extraordinary spectacle which the sea presented. Winter had closed in while the ice was crowding upon the land; and hence, owing to the tremendous pressure, the sea was one bristling labyrinth of ice-fragments, as if, during a storm, its whirling billows had been suddenly frozen, and had resolved themselves into a succession of rugged peaks and deep valleys. Such a route was necessarily very laborious; and as the dogs were growing weary, and that part of the coast had been explored by Dr. Kane's parties, he determined on returning to Port Foulke. He pushed onward, first, to Rensselaer Harbour, which was associated with so many painful memories, but discovered scarcely any vestige of the discovery-ship, the *Advance*, which had been probably carried out to sea, crushed in the ice-floes, and sunk.

THE EXPLORING-PARTY.

After his return to Port Foulke, Dr. Hayes occupied several days in preparing for the great expedition. The dog-sledges carried forward to Cairn Point such stores as were likely to be needed. Wardrobes were restored, and provisions collected. On the evening of the 3rd of April everything was ready, and the party, twelve in number, started off merrily in two sledges, "The Hope" and "The Perseverance,"—the former drawn by eight, and the latter by six dogs. A third sledge carried a twenty-foot metallic life-boat, in which Dr. Hayes had

visions of navigating the Polar Sea. The sun was shining brightly into the harbour, and every heart throbbed with enthusiasm.

This enthusiasm, however, received a severe check from the first day's march, which, being accomplished in the teeth of a strong wind, proved a serious trial. The second day was somewhat better; and when, on the 6th of April, they reached Cairn Point, and were comfortably housed, their spirits revived. We may well be indulgent, however, to men who worked hard in a frozen desert, with the temperature below zero, and ice and snow everywhere around them,—now plunging through a snow-drift four feet deep, now toiling across a ridge of lofty hummocks. The journey was so difficult, that Dr. Hayes was fain to leave the boat at Cairn Point, and to proceed with the two dog-sledges, and a foot-party dragging the other sledge, to form a depôt of stores and provisions on Grinnell Land. He could not carry out his design for nine or ten days, however, owing to a violent gale and snow-storm. Meantime, the position of the exploring-party was miserable enough; cooped up in a den in a snow-bank, and engaged in a twofold struggle—to kill time, and prevent the cold from killing *them*.

This den was a pit eighteen feet long, by eight feet wide, and four deep. Over the top were placed the boat-oars to support the sledge, which was laid across them; over the sledge was thrown the sail of the life-boat; and over the sail, a stratum of loose snow. In one end of this wretched "interior" a hole was formed for ingress and egress, but filled up closely with blocks of snow

when all the party were housed. The floor (if we may use the term) was spread with a strip of india-rubber cloth; above which lay a strip of buffalo-skins, all squared and sewed together; and, above this, another similar strip.

"When we want to sleep," writes Dr. Hayes, "we draw ourselves underneath the upper one of these buffalo strips, and accommodate ourselves to the very moderate allowance of space assigned to each person as best we can. The post of honour is at the end furthest from the door; and except the opposite end, this post of honour is the least desirable of all other places; for, somehow or other, the twelve sleepers below me manage to pull the 'clothes' off, and have me jammed against the snow wall, with nothing on me but my travelling gear; for we go to bed without change of costume, except our boots and stockings, which we tuck under our heads to help out a pillow, while what we call 'reindeer sleeping stockings' take their place on the feet.....This," adds Dr. Hayes quaintly, "can hardly be called comfort. I have a vague remembrance of having slept more soundly than I have done these last four nights, and of having rested upon something more agreeable to the 'quivering flesh' than this bed of snow, the exact sensations communicated by which are positively indescribable,—a sort of cross between a pine board and a St. Lawrence gridiron. And yet the people are merry and busy enough.....Several packs of cards are in requisition, and altogether we are rather a jolly party—the veriest Mark Tapleys of travellers."

All things come to an end—even Arctic storms; and

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AMONG THE HUMMOCKS.





on the tenth day the camp was broken up, and the passage of the sound undertaken. It was no easy task. The ice was heaped up on either hand in immense irregular hummocks; and between these lay gulfs of drifted snow, in which the sledges rolled from side to side, like ships in a billowy sea. At one time they clambered a lofty ridge, to descend on the other side a rugged precipice, which sent them flying headlong into the snow-drift at its base. Yet again, no gap existing, and the ridge being impracticable, a passage had to be dug with handspike and shovel. Occasionally the sledge would sink deep in the snow, and could be rescued only at the cost of several hours of labour; or it had to be unloaded, and its cargo carried on the drooping shoulders of the men. The dogs could not always pull their vehicles through such a succession of obstacles; and then the sailors fastened ropes to the sledges, and hauled at them with unconquerable good-humour, timing their efforts by monotonous nautical cries.

This extraordinary condition of the ice is thus explained:—

Smith Sound, which, as we have seen, was discovered by William Baffin upwards of two hundred and fifty years ago, is, in effect, a spacious sea, running almost due east and west, and measuring about one hundred and sixty miles in length, by eighty miles in breadth. Its entrance, however, between Capes Alexander and Isabella, is not above thirty miles wide. At the other end, where it opens into Kennedy Channel, the gateway is of ampler dimensions.

Now, into this great basin pours the current of the

Polar Ocean, through the gateway of the Kennedy Channel; and as the ice necessarily escapes much more slowly into Baffin Bay, it has accumulated within the borders of the sound for centuries. During the summer it undergoes a partial process of disruption; and the broken pieces, pressed together, heaped upon one another, crowd in a labyrinthine confusion towards the Greenland coast.

Much of the ice in Smith Sound is of very ancient formation, consisting of bergs discharged ages ago from the Humboldt Glacier. These huge masses, propelled by the current in early winter through the sea, as the new ice is rapidly forming, sweep onward like a tornado. The result is—chaos. Dr. Hayes speaks of an old ice-field which he measured while crossing the sound. It rose on an average twenty feet above the sea-level, and extended superficially about six miles by four. Its surface was exceedingly rugged, alternating between hillocks from sixty to eighty feet in height and deep tortuous valleys.

The sledge-passage of such a floe was an enterprise of which those who dwell at home at ease, and whose only idea of an ice-surface is derived from the winter freezing of pond, lake, or stream, can form no adequate conception. It was infinitely worse than a gallop across country. Hedges are trifles when compared with hummocks, and ditches not worth a thought when compared with deep chasms of frozen snow.

There is a certain grandeur and impressiveness about these immense plains of ice. The solid contents of the one we speak of could not be less than six thousand

millions of tons; its depth was certainly not less than one hundred and sixty feet! A mass of solid ice one hundred and sixty feet thick, six miles long, four miles wide—what an example is this of the slow but terrible power of Frost! It is formed, of course, by accumulation, —growing from above, layer upon layer, like a glacier, each recurring year marking a fresh deposit of snow and a new stratum of ice. In no other way could the mighty mass have come into being, for water does not freeze to a greater depth than eighteen feet. The ice is the shield and buckler of the sea, for the freezing air cannot pierce through more than a certain thickness.

The 24th of April found the gallant company of Arctic pioneers whose adventures we are narrating at a distance of only thirty miles from Cairn Point. They had been absent from the schooner for two-and-twenty days, and had worked so hard, endured so much, yet accomplished so little! Before them rose the elevated coast of Grinnell Land; but between them and it still intervened a dreary and almost impassable desert. Even those brave and hardy men began to despair—to feel that they had embarked on an enterprise in which the prospect of success was very uncertain; and their growing depression of spirits probably increased the physical weariness from which they suffered. One man was incapacitated from working by having sprained his back in lifting; another had sprained his ankle in falling; others suffered from frost-bitten toes and fingers; and the vital energies of all were so lowered by the terrible cold that they could scarcely attend to

their own immediate necessities, much less devote themselves energetically to the completion of a journey from which they no longer believed any result could be obtained.

So, when about midway across the sound, Dr. Hayes ordered his men to return to the ship; while he himself, with three noble-hearted volunteers—Knorr, Jansen, and Macdonald—and his fourteen dogs, made a further effort to reach Grinnell Land.

It was on the 28th of April this separation took place. Forward—forward—forward! Such was the motto of Hayes; and the energy and determination with which he met and conquered obstacle after obstacle, were truly chivalrous. Will no great poet ever write the epic of Arctic Discovery, and immortalize the names of such men as he? Baffin, Hudson, Parry, Franklin, Crozier, Bellot, Hall, M'Clintock, Collinson, Kane, Hayes,—what heroic spirits were theirs! What resolution, what endurance, what noble self-devotion! The best qualities of humanity have been displayed in the long, long warfare against the stern Genius of the North; in that persistent, laborious, deadly struggle which has brought the banner of Science to the threshold of the mysterious sea, and almost completed the conquest of the Pole!

The difficulties of the enterprise did not decrease as Dr. Hayes neared the opposite shore; but he was stimulated to confront and overcome them by his enthusiastic thirst for discovery. As he approached, the prospect that developed before him lent him new courage. The great wilderness of glittering peaks which stretches

along the whole extent of Grinnell Land, produced a profound effect on his imagination by its tranquil sublimity. There the mountains rise in range after range of isolated cones, "looking like giant stacks of cannon-balls, sprinkled with snow." The midnight sun streams across them from the north, and wreathes their colossal forms with many-tinted vapours.

On the 11th of May, the dauntless explorer succeeded in his aim. He reached the ice-bound shore of Grinnell Land, after one-and-thirty days of exhausting labour. But he found himself unable to do much more. He and his men were weary; the dogs were exhausted; and the supply of dog-food was reduced to about three hundred pounds, or twelve days' allowance. All he could do—and this he resolved to do—was to explore the route to the margin of the Polar Sea, as a basis for further exploration, in the event of his reaching the west side of the sound with his little vessel late in the summer.

The point at which he had touched Grinnell Land he named Cape Hawks. Thence he stretched across a wide bay to another headland, Cape Napoleon. Here the ice was so heaped up and jammed in upon the shore, that it became necessary to strike out into the sound, and plod on his weary way through a wilderness of hummocks. Next day he advanced to the north side of Cape Frazer, the farthest point reached by Kane in the expedition of 1854. There the explorers found themselves within the boundaries of Kennedy Channel, and with good heart and fresh courage they pushed across Gould Bay. The land at this point rises inland with a gentle slope, broken into steps of greater or less regularity,

and forming a series of terraced benches, the highest of which may be computed at one hundred and fifty feet above the sea-level. Here Dr. Hayes discovered the remains of an Eskimo camp; a curious circumstance, which may be regarded as confirmatory of the views of those who hold that Eskimo tribes inhabit the shores of the Polar Sea.

As Hayes advanced, he found that no land was visible to the eastward (from which it would appear that Kennedy Channel is of considerable and unexpected width), and that to the north-east the sky was dark and cloudy,—a “water-sky,” with the characteristic aspect of a sky above a great sea. The temperature was remarkably mild, not sinking below -20° , and at one time rising to the freezing-point. Signs of animal life cheered the onward path of the travellers; tiny snow-buntings chirped around them, and a burgomaster-gull flew over their heads on his way to the north. From a neighbouring cliff a raven croaked his note of welcome; astonished, perhaps, at the presence of man in a solitude so remote. In places where the wind had swept the land bare of snow, traces of vegetation were discovered.

On the 15th of May, Jansen, the strongest man of the expedition, broke down, and Hayes determined to leave him in charge of Macdonald, and to push on with Knorr for his companion. He had now reached a position somewhat beyond that attained by Morton in Kane's expedition (June 1854); and was “looking out upon the same sea from a point probably about sixty miles to the northward and westward of Cape Constitution, where, only a month later in the season, his further progress

was arrested by open water." His desire increased to push as far to the northward as possible; and, at all events, to reach the 83rd parallel.

The coast, as he advanced, presented the same general features: dark wall-sided cliffs on the left; a jagged ridge of broken ice on the right; and between them a kind of gorge, through which the two adventurers took their way. Occasionally the continuity of the coastline was broken by a bay; and as they kept to the westward, along its southern margin, a sloping terraced valley opened before them, rising gently from the ice-bound sea to the snow-shrouded base of the mountains. Dr. Hayes declares that he was never more impressed with the dreary desolation of an Arctic landscape. He had thought his situation on the summit of the Greenland *mer de glace*, in that adventurous journey of his which we have already described, could leave nothing unsupplied to the imagination that was needed to complete the picture of boundless sterility. But here the greater variety of forms seemed to magnify the mental impression, and to give a wider play to the fancy. And as the eye wandered from snowy peak to peak, and rested upon the dark and weather-worn cliffs, and traced the dull line of the everlasting ice-foot, and overlooked the mysterious distant sea, which no keel had ever ploughed, and in every object recognized the movement of the silent forces of Nature, through the summer sunshine and the winter darkness, constant, irresistible, unending,—the explorer felt how small indeed are all the works and efforts and thoughts of man!

His progress was checked at length by the rotten ice,

which proved to be impassable. Hayes had reached his *ne plus ultra*; he had not attained lat. 82° , but he had actually advanced to the shore of that northernmost gulf, into which Kennedy Channel opens through a broad bay. Here the ice was broken up, and water-ways ramified across it, and led into the free ocean which, it may be, lies beyond. Climbing to the summit of a rugged cliff about 800 feet in height, Hayes was rewarded for his labours and sufferings by a glorious prospect. Standing against the dark "water-sky" at the north, rose, in dim outline, the white sloping summit of a noble headland, the northernmost known land upon the globe. He calculated it to be in lat. $82^{\circ} 30'$, or about 450 miles from the North Pole. Nearer, another bold cape stood forth; and nearer, a third headland towered majestically above the sea, as if pushing up into the very skies a lofty mountain-peak, on which Winter had dropped its diadem of snows.

No land was visible except the coast which Dr. Hayes had so bravely reached. Beneath him spread the sea in a mottled sheet of white and dark patches; the latter being either pools of water, or patches of rapidly melting ice. They deepened in colour and increased in size as they receded, until they were blended in one uniform expanse of dark blue by the belt of the water-sky. Only the old and solid floes, some a quarter of a mile, and some several miles across, and the hummocks and ridges accumulated between them, or on their margin, preserved the whiteness and rigidity of winter.

A MEMORIAL.

Further progress northward was impossible, unless

Dr. Hayes had been provided with a boat. Nothing remained for him but to return as quickly as possible to Port Foulke; as quickly as possible, for the summer was rapidly approaching, the ice was yielding to the solar influence, and the open water was eating from Kennedy Channel into the ice-masses of Smith Sound in the north, as well as through Baffin Bay in the south. But before turning his back on the unexplored Polar Sea, he desired to erect some memorial of his adventures. Some flags which he had brought with him were suspended by a whip-lash between two tall rocks; and the following record, enclosed in a small glass vial, was deposited beneath a hastily-reared cairn of stones:—

This point, the most northern land that has ever been reached, was visited by the undersigned, May 18th, 19th, 1861, accompanied by George F. Knorr, travelling with a dog-sledge. We arrived here after a toilsome march of forty-six days from my winter harbour, near Cape Alexander, at the mouth of Smith Sound. My observations place us in lat. $81^{\circ} 35'$, long. $70^{\circ} 30' W$. Our further progress was stopped by rotten ice and cracks. Kennedy Channel appears to expand into the Polar Basin; and, satisfied that it is navigable at least during the months of July, August, and September, I go hence to my winter harbour, to make another trial to get through Smith Sound with my vessel, after the ice breaks up this summer.

I. I. HAYES.

May 19th, 1861.

It is due to the intrepid explorer to quote the words in which he describes his emotions at quitting the scene of his unprecedented achievement.

"I quitted the place with reluctance," he writes; "it possessed a fascination for me, and it was with no

ordinary sensations that I contemplated my situation, with one solitary companion, in that hitherto untrodden desert; while my nearness to the earth's axis, the consciousness of standing upon land far beyond the limits of previous observation, the reflections which crossed my mind respecting the vast ocean which lay spread out before me, the thought that those ice-girdled waters might lash the shores of distant islands where dwell human beings of an unknown race, were circumstances calculated to invest the very air with mystery, to deepen the curiosity, and to strengthen the resolution to persevere in my determination to sail upon this sea and to explore its furthest limits. And as I recalled the struggles which had been made to reach this sea,—through the ice and across the ice,—by generations of brave men, it seemed as if the spirits of these old worthies came to encourage me, as their experience had already guided me; and I felt that I had within my grasp 'the great and notable thing' which had inspired the zeal of sturdy Frobisher, and that I had achieved the hope of matchless Parry."

THE POLAR BASIN.

We may pause here to estimate the value of Dr. Hayes' observations, and to form a correct idea of the character of the Polar Basin.

A glance at the map will show the reader that the North Pole forms, as it were, the centre, or focus, of a sea or ocean with an average diameter of upwards of two thousand miles. This sea is entirely surrounded by land, except at its outlets into the North Pacific and

North Atlantic. Its shores, in truth, are generally well-known, and are laid down in our charts with much accuracy, except so far as regards the north coasts of Grinnell Land and Greenland. Their distance from the Pole is curiously uniform, and they all lie within the boundaries of the region of perpetual frost. They are everywhere inhabited by people of the same race, who gain a subsistence by continual hunting and fishing.

We have spoken of the outlets through which the Polar Sea communicates with the Atlantic and the Pacific. These are three: Baffin Bay, Behring Strait, and the broad but almost unknown channel between Spitzbergen and Novaia Zemlaia. They are also *inlets*, and enable the warm currents of the Equator to enter to the east of Spitzbergen, and force out the cold Polar currents; in this way effecting a constant displacement of the waters, which prevents those of the Arctic World from being chilled to 32°. Hence, the warm breath of this mighty ocean spreads a genial influence throughout the northern region, and rescues it from the blight of a perpetual winter!

Bearing these facts in mind, the reader will understand that it is only the surface-water which ever reaches so low a temperature that it is changed to ice; and he will also perceive (to adopt the language of Dr. Hayes) that when the wind moves the surface-water, the particles chilled by contact with the air mingle in the rolling waves with the warm waters beneath,—and hence, that ice can only form in sheltered places, or where the water of some bay is so shoal, and the current so slack, that it becomes chilled to the very bottom, or

where the air over the sea is uniformly calm. As storms are no less frequent or violent in the Polar seas than in other regions of our globe, it follows that the Polar ice can cover but a small portion of the Polar waters; that it exists in those localities only where it is sheltered by the land. It adheres to the barren Siberian shores, and springing thence across Behring Strait to America, it girds the coast of America, accumulates in the narrow channels which carry the Polar waters into Baffin Bay through Parry Archipelago, extends to Greenland, from Greenland throws its crystalline bridge to Spitzbergen, and from Spitzbergen to Novaia Zemlaia; so that the Pole is surrounded, at a nearly uniform distance, by an uninterrupted "land-clinging belt of ice,"—more or less broken in winter as in summer, and composed of masses which are in constant motion, though never far apart,—forming a barrier that seems to defy the science and the heroism of man.

In many places, however, human resolution has succeeded in penetrating into this formidable rampart, and its *southern* edge has been followed up throughout nearly its whole extent. It was in this way our explorers sought to discover a north-west passage into the Pacific, and it was in this way M'Clure and Collinson separately found it. Sir Robert M'Clure followed the coast-line from Behring Strait to Banks Land, and then pushed his way through the broken ice; not, however, completing the voyage in his ship, but travelling over the ice for three hundred miles to Wellington Channel, and thence returning home through Baffin Bay in a vessel that had come from the eastward. Collinson,

striking from west to east, reached within a few miles of the spot where perished Franklin, who had entered the ice from the opposite direction. And in the same way the Russians have explored the coasts of Siberia, baffled only at two points: Cape Jakan, where the ice is insurmountable; and Cape Ceverro Vostochnoi, which no adventurer has yet succeeded in doubling.

DR. HAYES' DISCOVERIES.

We now come to sum up Dr. Hayes' discoveries, which we shall do very nearly in his own words.

He came to the conclusion which Captain Inglefield, a previous navigator, had adopted,—that Smith Sound expands into the Polar Basin. Beyond the narrow passage between Capes Alexander and Isabella, the water widens gradually up to Cape Frazer, where it expands abruptly. On the Greenland side the coast trends regularly to the eastward, until it reaches Cape Agassiz, where it dips under the glacier and is lost to observation. Farther to the north, the *mer de glace* has poured down into the Polar Sea; and forcing its way onward through the water, it has at length reached Washington Land, and overflowed southward into Smith Sound.

Above Cape Sabine, Hayes discovered an inlet striking westward, which he named after his schooner, the *Advance*. The first conspicuous headland on its south side he designated Cape Seward; and the most distant point of visible land beyond, Cape Viele. The three last conspicuous capes on the north side are distinguished in the chart as Capes Baker, Sawyer, and Stetson; the

bold dips in the coast between them, Jay Bay and Peabody Bay. Two large islands lying off the mouth of the sound figure as Bache Island and Henry Island.

The coast-range of mountains which forms so bold and striking a feature of Grinnell Land, are named the Victoria and Albert Mountains.

The highest point to which Hayes attained, he christened Cape Lieber; and a remarkable peak towering above it, Church's Monument. The bay below is not inappropriately named after Lady Franklin. The noble headland which Hayes saw outlined against the dark "water-sky" of the open sea, he named Cape Union; the bay curving between it and another headland, more to the south, Wrangel Bay; and the lofty peak overlooking the Polar Sea from behind Cape Eugénie, Parry Mountain.

Finally: Hayes was of opinion that Washington Land was, in truth, an island in the centre of Smith Sound; Kennedy Channel separating it from Grinnell Land on the west, and Humboldt Glacier filling up what was once a channel on the east.

PLANS FOR THE FUTURE.

After a wearisome and difficult journey, which it is unnecessary to describe, as the reader now understands the character of Arctic travelling, Dr. Hayes regained his ship on the 3rd of June. He had been absent two months; for two months contending with obstacles and enduring hardships which might well have conquered even his chivalrous spirit, but served only to test the depth and overmastering power of his heroic

enthusiasm. In that period he had travelled not less than thirteen hundred miles; over ice and through ice, in the face of bitter winds, and exposed very frequently to all the rigour of an Arctic climate.

As soon as he had somewhat recruited his overtaken energies, he undertook an examination of the schooner, with the view of preparing her for the projected navigation of Smith Sound. But on clearing away the ice from her bows, it was discovered that her fore-timbers were seriously damaged, and that though it might be possible to render her seaworthy, yet she could not be trusted in among the ice.

What was to be done ?

Another attempt with boat and sledge was impossible that year, for the boat was too heavy to be transported across such ice as that of Smith Sound, and the terrible experiences of the recent journey had reduced the teams of dogs to four. In such circumstances, nothing was to be gained by wintering a second time at Port Foulke. The better, in fact the only plan, was to return home, refit, and, what was of great importance, add steam-power to the resources of the expedition.*

A wonderful change had by this time come over the spirit of the scene. Spring had returned with its blissful smile to the pale Arctic World. The temperature from 35° below zero had risen to 35° above. The cold white shroud which had lain so long upon the hills and valleys was folding up under the influence of the sun's warm rays. Down the wild gorges and from the brink

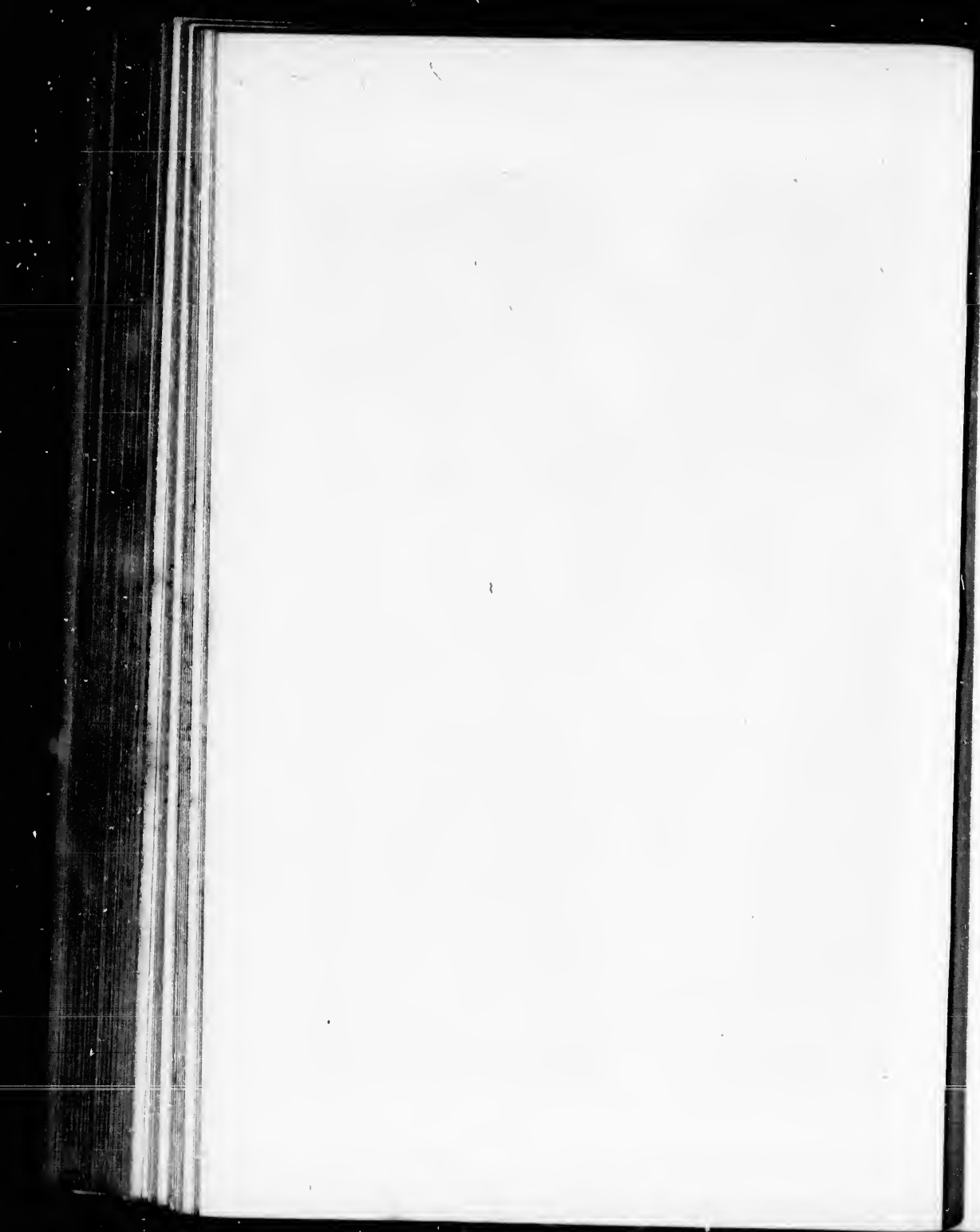
* The *whole* of this plan was never accomplished by Dr. Hayes ; but in a succeeding chapter we shall accompany him on a visit to Greenland.

of lofty cliffs tumbled the foam and spray of flashing cataracts; and the sound of water everywhere filled the air. Along the banks of pool and stream Nature wakened into life; the genial sap flushed the veins of the willow, though ice and snow yet lay around its roots. The mosses displayed their various and fanciful forms, and poppies and saxifrages revealed their buds in promise of good things to come. The cliffs were white with the wings of the little auks, which the approach of summer had driven from the southern lands. Squadrons of eider-ducks, in orderly array, sailed across the harbour, and round about the island shores. Over the surface of the sea swept the shadows of swift-winged terns. Burgomaster-gulls and ger-falcons roamed to and fro in quest of food; and where the ice was melting, from the fresh-water pools might be heard the snipe's repeated cry. Pleasant it was to hear again the chirp of the familiar sparrow; and to watch the long lines of cackling geese sailing to the remote fastnesses of the Polar Sea. From the ice-rafts drifting with the current came the deep bellow of the walrus; and the gentle seal dotted the surface of the bay and fiord, revelling, as lizards revel, and rejoicing, as almost all nature rejoices, in the glory of the sun. Winter had passed away, and in the soft bland smile of summer earth and sea stirred with the consciousness of life. Nowhere does Nature show herself insensible to this great change; but nowhere does she seem to feel it so deeply and to be affected by it so potently as in the Arctic World. It is a resurrection; a rising again from the bondage of the grave and the sleep of death.

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SPRING IN THE ARCTIC WORLD.





While waiting for the ice to thaw sufficiently to admit of the departure of the schooner, Dr. Hayes made another excursion to "Brother John's Glacier." Here, too, the influence of the great change was plainly visible. Huge blocks had broken loose from its rugged face, and fallen into the valley below; and from its solid mass issued innumerable rills and rivulets, tinkling in the air like so many silver bells. From observations carefully made by Dr. Hayes, it appeared that the centre of the glacier has descended six-and-ninety feet down the valley-slope.

Another occupation was auk-catching, which the Eskimos pursue in a novel and not altogether agreeable fashion. The apparatus used is a small net, made of light strings of seal-skin knitted into close meshes, and attached to a staff about ten feet in length.

Dr. Hayes set out in company with Kalutunah, and on reaching the hill-side frequented by the birds crouched behind a rock about half-way up to the base of the cliffs. The length of the declivity where the auks congregated was about a mile; and some idea of their numbers may be gathered from the fact that they swept across it in a continuous stream. After traversing the whole extent in their rapid flight, they returned, but higher in the air; and this circuit they performed over and over again. Occasionally, as if in obedience to some signal, a few hundreds or thousands would drop down; and, in an instant, the rocks, for the space of several rods, would swarm all over with them, the surface being undistinguishable beneath the mosaic of their black backs and pure white breasts.

The two fowlers having suitably ensconced themselves so as not to alarm the birds, Kalutunah prepared himself for the slaughter. When a particularly dense flock swept over his head, he raised his net: half-a-dozen birds flew right into it, and, stunned with the blow, were unable to extricate themselves before Kalutunah had slipped the staff quickly through his hands and seized the net. Then with his left hand he pressed down the birds, while with the right he drew them out one by one, and for want of a third hand made use of his teeth to crush their heads! The wings were then interlocked that the birds might not flutter away; and with a triumphant air Kalutunah looked round at his white companion, spat the blood and feathers from his mouth, and proceeded with the "sport," tossing up his net and drawing it in with much rapidity, until he had captured about a hundred victims. Dr. Hayes and he then returned to the camp, and a hearty meal was made on the game which had been obtained in a manner so novel and so unsportsmanlike.

A WALRUS-HUNT.

One of the latest experiences of our explorers was a walrus-hunt,—a sport more exciting and difficult than that of auk-catching!

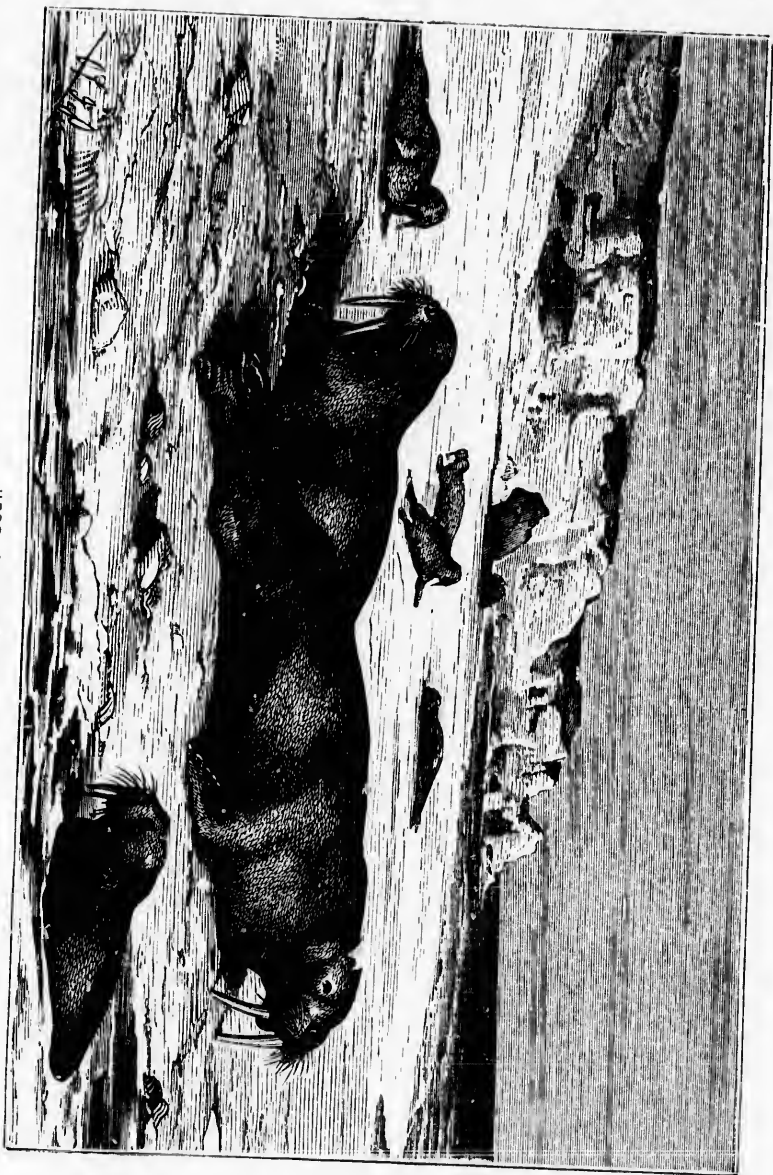
Looking out from the hill-top, in the sunshine of a July morning, Dr. Hayes caught in the distance the bellow of numerous walrus, and observed that the pack-ice drifting across the outer limit of the bay was literally "alive" with the beasts. Their numbers were beyond computation—and even conjecture, for they

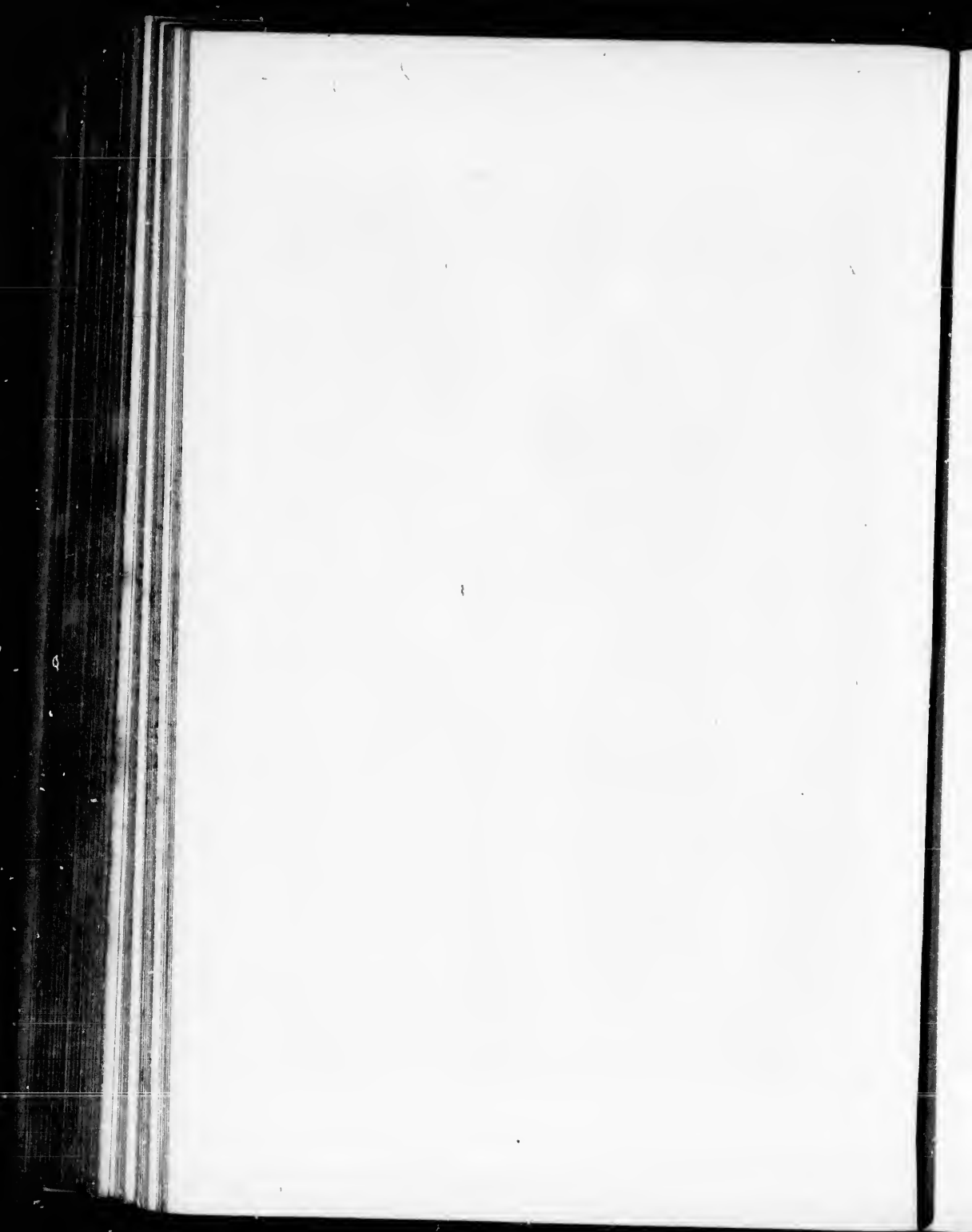
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extended as far as the eye could reach, and covered almost every piece of ice.

Dr. Hayes hurried down the hill, called for volunteers, and throwing a harpoon, three rifles, and a line into one of the whale-boats, he and his crew quickly dragged it across the ice and launched it into open water.

After a two miles' pull they reached the margin of the pack, and came to an ice-raft on which about two dozen unsuspecting animals were clustered. They covered it almost completely, "lying huddled together, lounging in the sun, or lazily rolling and twisting themselves about, as if to expose some fresh part of their bulky bodies to the warmth,—great, ugly, wallowing sea-hogs, they were evidently enjoying themselves, and were without apprehension of approaching danger."

The attacking party approached slowly, with muffled oars; and as the distance between them and the walrus decreased, became conscious of the fact that the latter might possibly prove formidable antagonists. Their aspect was not inviting, and Dr. Hayes and his men felt as young soldiers feel when they first come under fire. Their tough, nearly hairless hides, which are about an inch thick, had a "singularly iron-plated look" about them, suggestive of considerable powers of defence; while their huge tusks could not be regarded otherwise than as powerful and dangerous offensive weapons. The horrent ugliness of aspect, which the tusks render peculiarly forbidding, is completed by the broad flat nose, bristling with stiff whiskers,—the exact use of which our naturalists have not been able to determine.

In the herd now slumbering or basking on the ice-raft were two old bulls, who appeared to vary their naps by jamming their tusks into each other's face,—a strange kind of amusement, which both regarded with obvious indifference. As the hunters drew near, they raised their heads, took a leisurely and contemptuous survey of the foe, punched each other again in the face, and again fell asleep. The herd also contained several cows and a few calves, varying in age and size,—some without tusks, some with tusks just sprouting, others with tusks like ivory cones, fully three feet long. Like the bulls, they paid no attention to the approaching boat; probably they had never seen one before.

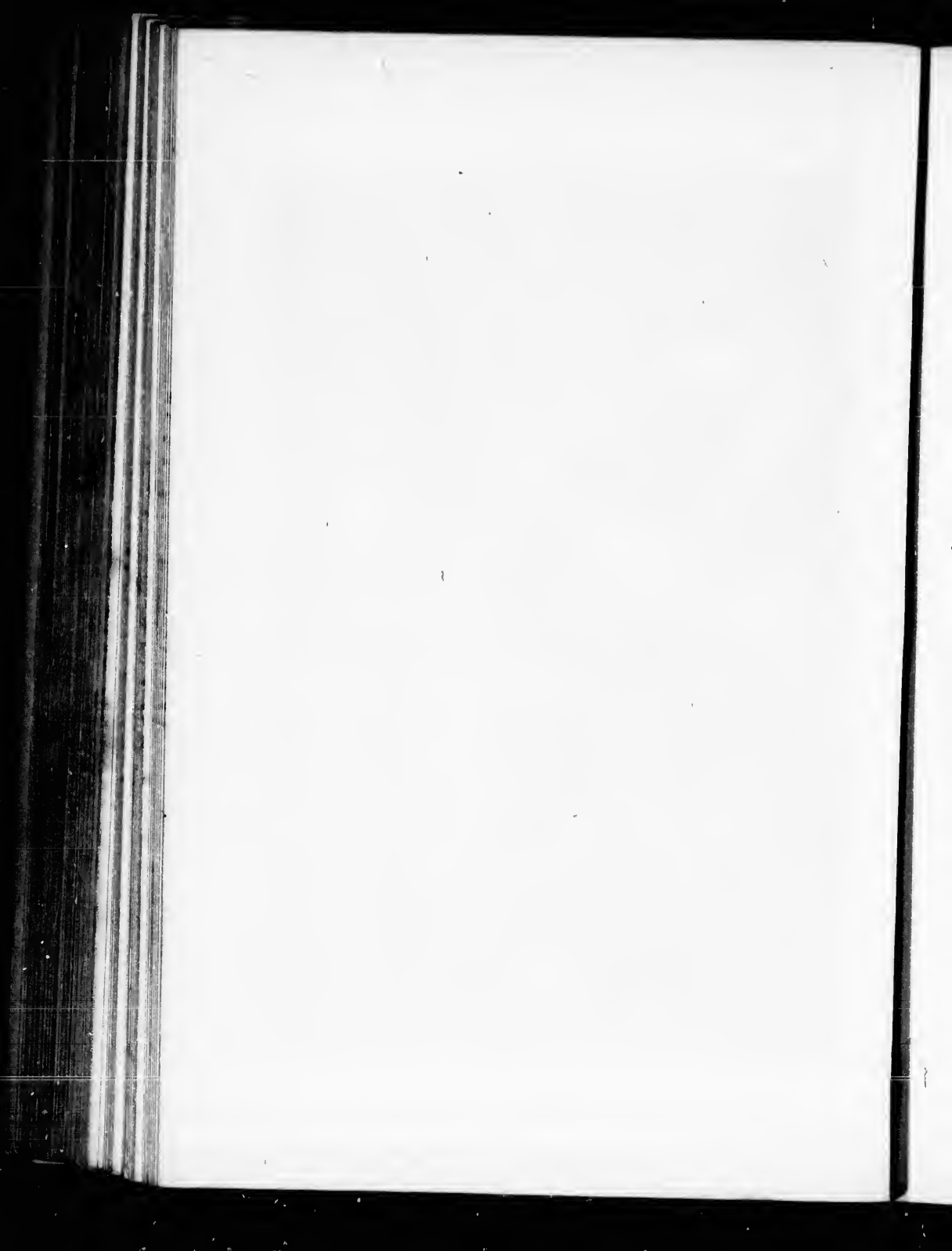
Preparations for the combat were hastily made. Miller, as harpooner, was stationed in the bows; Knorr, Jansen, and Dr. Hayes kept their places in the stern-sheets, each with his rifle loaded. When within range they fired together, aiming over the heads of the oarsmen; and then the boat dashed pell-mell among the terrified animals, as they rolled off the ice into the sea. Jansen had fired at one of the bulls, and hit him in the neck; Knorr killed a young calf, but in the *mélée* it was pushed off the ice, and sank; while Hayes sent his bullet into the head of the other bull, which, with a tremendous bellow, and a not less tremendous splash, went into the water, but, coming against the bows of the boat, was dexterously harpooned by Miller.

Then away with a rush under water drove the whole of the terrified herd, and when they rose again they were full fifty yards distant, with the harpooned bull amongst them. As they rose, they uttered one "wild

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A WALRUS-HUNT





concerted shriek, as if an agonized call for help, and then the air was filled with answering shrieks." Everywhere the loud savage *Huk! huk! huk!* of the wounded bulls seemed to find an echo, as the cry was taken up and passed along from floe to floe, like the report of musketry in platoon firing; and down from every piece of ice dropped the startled beasts, and, as if inspired by one simultaneous movement, made towards the boat. Quickly they surrounded it, and girdled it with a ring of furious animals, evidently bent upon an attack.

It seemed to be the purpose of the walrus, says Hayes, to get their tusks over the gunwale of the boat; and it was clear that if only one of them hooked on to it the boat would be torn in pieces, and its crew left helplessly floating in the sea. Such a peril could be prevented only by the greatest activity. So Miller, grasping his lance, laid about him lustily, and inflicted many a serious wound. The rowers staved off the angry animals with their oars; the three riflemen loaded and fired as rapidly as possible. The struggle was brief, but it was exciting. At last a monster animal, perhaps the leader of the herd, was killed; and as he went down like a stone, all the rest seemed to take a sudden alarm, and diving simultaneously, retreated out to sea. The victors, exhausted with their exertions, gladly made for the shore, carrying with them a couple of dead walrus as the prize of their prowess.

HOMeward-BOUND.

But the time had come when the schooner could be

released from her long captivity. The ice broke up all around; the sea poured into the harbour; and on the 11th of July the swell reached the vessel. On the following day she was fairly afloat, and it was no longer possible to leave her without a boat. Preparations were instantly made for a speedy departure, much to the regret of the friendly Eskimos. On the 14th a light breeze from the eastward enabled the explorers to spread their canvas, and, moving slowly at first through the broken ice, the *United States* sailed from Port Foulke.

Before quitting the field of so many adventures, the intrepid Hayes determined on one more attempt to reach the west side of the sound, in the hope of obtaining information that might be useful in the future. He steered, therefore, for Cape Isabella, but a heavy pack compelled him to take shelter for awhile under the lee of Littleton Island. As soon as it broke up he again put to sea; but experience soon convinced him that it was impossible, with his shattered little schooner, to encounter successfully the Smith Sound ice. His work was done; and there was nothing for him but to make the best of his way home, satisfied with the results he had achieved.

These results may be formulated in Dr. Hayes' own language:—

“1. I have brought my party through without sickness, and have thus shown that the Arctic winter of itself breeds neither scurvy nor discontent.

“2. I have shown that men may subsist themselves in Smith Sound independent of support from home.

"3. That a self-sustaining colony may be established at Port Foulke, and be made the basis of an extended exploration.

"4. That the exploration of this entire region is practicable from Port Foulke; having from that starting-point pushed my discoveries much beyond those of my predecessors, without any second party in the field to co-operate with me, and under the most adverse circumstances.

"5. That, with a reasonable degree of certainty, it is shown that, with a strong vessel, Smith Sound may be navigated, and the open sea reached beyond it.

"6. I have shown that the open sea exists."

At Cape Isabella Hayes landed, and was surprised by the romantic beauty of the scenery. A charming cup-like valley sheltered a little sparkling lake,—a diamond in a setting of emerald,—and above this opened a picturesque glen, terminated abruptly by the shining mass of a glacier. Here a kind of fretted Gothic archway opened into a fantastic cerulean grotto, decorated with pendent icicles, like crystals; an ice-cavern of rare and wonderful beauty, which might have afforded Coleridge a new suggestion for his strange fragment of *Kubla Khan*.

At length the discovery-ship quitted Smith Sound, crossed the North Water, and touched the Greenland coast at the Eskimo settlement of Itepiik. Afterwards it entered Melville Bay, and without let or hindrance accomplished the voyage to Halifax, touching at Uper-

navik and Godhav'n. At Halifax Dr. Hayes received intelligence of the outbreak of the American Civil War, which effectually checked the prosecution of Arctic exploration by American enterprise, and crushed out the hopes which Hayes himself had entertained. From Halifax he proceeded to Boston, and so completed a voyage of more than ordinary interest, and rich in important discoveries.

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CHAPTER V.

THE LAND OF DESOLATION: DR. HAYES' VOYAGE TO GREENLAND IN 1869.



VOYAGE, of which we propose to relate the most interesting incidents, was made in 1869, by Dr. Hayes, the American explorer, on board the steam-yacht *Panther*, belonging to Mr. William Bradford, an artist who has acquired distinction by his vigorous pictures of Arctic scenery. It was not, as Dr. Hayes remarks, a scientific, but rather a picturesque expedition. However, the voyagers profited by the numerous opportunities it offered them of examining the glaciers of Greenland and their icebergs. They also visited the ruins of the settlements of the ancient Norsemen, who occupied Greenland from the tenth to the fifteenth century. Finally, they skirted the coast for upwards of a thousand miles, until they reached the last outpost of civilization, in the midst of that vast and formidable ice-pack which loads the shores of Melville Bay.

JULIANASHAAB.

We take up the narrative when our voyagers had arrived at the settlement of Julianashaab.

The Land of Desolation, which we are about to describe, is the Greenland of yesterday and to-day. All the southern portion, as far as the 61st parallel, forms the district of Julianashaab, the capital, the most flourishing and probably the best situated town in the country. Its name is a compliment to Danish royalty. Its founders, a hundred years ago, christened it "Julie-Espérance" in honour of the then queen of Denmark.

In the morning, when its inhabitants saw some signs of life upon our decks, they expressed their satisfaction in the most amusing manner,—exchanging signs and calls and shouts, running from point to point, either singly or in groups. It was a scene of the most disorderly activity. The little huts from which they emerged could scarcely be distinguished from the surrounding rocks; the good people seemed to creep in and out of burrows, like the American prairie-dogs.

The agitation increased when Dr. Hayes put off in his boat and made for the shore. Ranged in two lines, men, women, and children, a hundred of them, laughed and chattered. All appeared full of joy. Some pointed at him with their finger; others criticized the "cut of his clothes;" all remained immovable, unwilling to lose the slightest detail of the feast so unexpectedly provided for their curiosity.

Julianashaab being a town of fishermen, we cannot complain (the reader will allow us to adopt the first person) that it smells of fish. Its rocks and quays are covered with fish, and the air is impregnated with the quintessence of fish. As for the inhabitants, they exhibit various shades of colour, from the tanned hide of

the Eskimos (or Greenlanders, as they are here called) to the nearly pure Caucasian, with rosy cheeks and transparent skin. We noticed particularly one young girl, standing somewhat apart from the rest, as if she considered herself their superior, but no better able than they to restrain her curiosity. We afterwards learned that her name was Concordia. Her chestnut ringlets, luxuriant and well kept, were bound up by a red silk kerchief; and an abundance of ribbons floated from the chignon that crowned her head. Obviously her toilette was a matter of thought and study. Her red boots were as trim as her pretty kerchief; and much taste was shown in her seal-skin trousers, embroidered with pearls, and her gay-coloured vest, bordered with a wide band of eider-down at the bottom, round the neck, and at the wrists: bracelets and a collar of glass beads sparkled on the soft white fur.

We paid a visit to the church, which is a small but picturesque edifice, built of wood brought from Denmark—as is the case with all the public buildings. The walls being double and well calked, the interior is easily heated. At no season of the year is the cold much felt in the public buildings; no fire is needed during the three summer months, and in winter the Danish Government supplies its colony with a liberal amount of fuel. The houses, all of one story, are covered externally with a thick coat of tar, which closes up every chink and crevice.

Notwithstanding the black tint which this useful coating communicates to the church, it is of a pretty appearance, and most reverently taken care of.

The fiord on which Julianashaab is situated stretches inland from fifteen to twenty leagues; but while the modern town stands absolutely alone, the country was formerly besprinkled with numerous villages. Cattle covered the pastures where now a few cows nibble the grass. Peace and abundance reigned in the midst of a Christian population; then, after five centuries of tranquillity, undisturbed by the storms which raged over Europe, this population gradually died out, leaving only the ruins of its last days to testify to long years of prosperous progress.

ERICSHIORD.

Igalicke, "the fiord of the desolate houses;" such is the modern name of the deep inlet on the picturesque cliffs off which rise the solitary remains of the work and energy of the Norsemen.

It was named Ericshjord by Eric Rauda, or Eric the Red, to commemorate his discovery of its waters [about 983].

Varying from a mile and a half to four or five miles in width, and resembling rather a majestic river than an arm of the sea, it is one of the numerous indentations which communicate to this coast so peculiar a character. Unlike the Norwegian fiords, those of Greenland are almost all invaded by the glaciers, whose continuous progress has largely modified the aspect of the country since the Norsemen bestowed upon it the suggestive spring-like name it certainly deserves no longer. The "Greenland" of Eric Rauda is now the "Land of Desolation" of the Elizabethan navigator.

A little above Julianashaab, the fiord separates into

two arms, one of which strikes inland to Brattahlid and Gardar; the other, in a northerly direction, to Krakortok. We resolved to visit the latter locality first, and Mr. Anthon, one of the missionaries, undertook to conduct us in his own boat.

A Greenland boat is a curiosity of naval architecture. Mr. Anthon took us to examine his, which rested on a platform, keel uppermost, so that we could inspect it from below,—or rather, could look right *through* it. For the Greenland boats are transparent as a bladder, and resound like a drum if they are beaten with a stick.

"There," said Mr. Anthon, "what do you think of it?"

"Think of it!" replied our captain, with ill-concealed disdain; "is it in such a craft as this you propose we should undertake a voyage?"

"And why not?"

Mr. Anthon, as he spoke, beckoned to three men, who in the twinkling of an eye removed the boat from its supports. When launched, it floated like a balloon disdainfully tossed about by the waves.

We could not deny that it was a marvel of skill and industry. Thirty-six feet long by six feet wide, it was two feet and a half in depth. Neither nail, screw, nor bolt was visible; at the first glance it seemed to be made wholly and only of leather.

The missionary inquired whether, when once in the water, the boat had not a very good appearance.

We asked him whether he would allow it to be rowed a short distance, so that we might see how it behaved in the water.

"Certainly," he replied; "I will call the crew."

And the crew appeared.

We must confess that never before had we seen mariners so bravely equipped. Very long boots, reaching above the knee, of various colours and elegant form, outlining the dainty feet; short breeches, descending no lower than the haunches; brilliant jackets, bordered with black fur, and allowing a morsel of white neckerchief to be seen around the neck; hair tied up with knots of red ribbon on the top of the head: everything, in a word, skilfully adapted to display the charms of these Polar mariners.

"Maria!" cried the missionary, "summon your companions, and row a little way."

"Catherine—Christina—Dorothea—Nicolina—Concordia!" cried the young girl; "come, make haste!"

Then, running and prattling as fast as possible, they all sprang pell-mell into the boat, with an absolute want of discipline, which brought a frown to their captain's brow. It was amusing to see the vivacity with which they strode across the benches into their respective places, sparkling with a mischievousness and a gaiety that seemed scandalous to persons accustomed to the gravity of our seamen when on duty. They calmed down a little, when a sober-faced personage, with short boots and seal-skin trousers, and a bonnet instead of ribbons, stepped on board, and taking the rudder, gave the signal of departure.

Every paddle was dipped in the water with promptitude and precision; the boat flew like an arrow across the little bay, vibrating to the measured cadence of the rowers.

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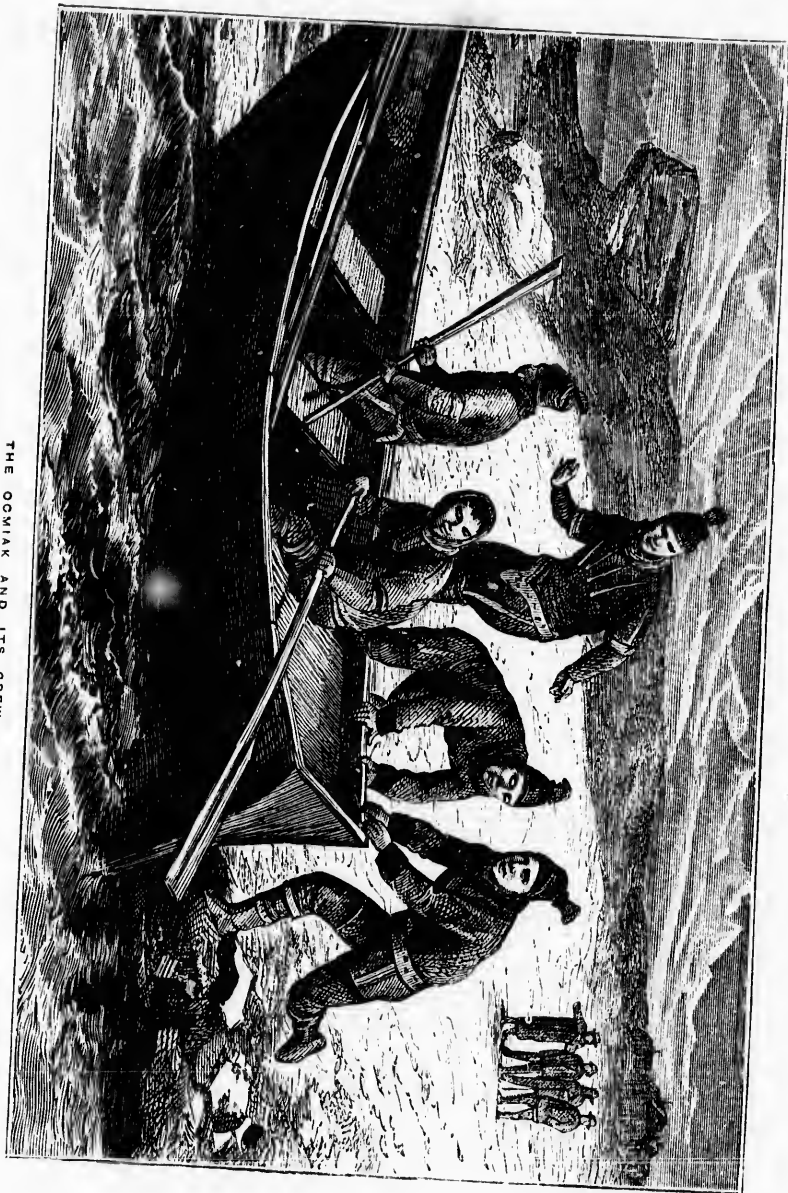
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THE OOMIAK AND ITS CREW





This is called an *oomiak*, or women's boat; in contradistinction to the *kajak*, which is rowed by men alone.

A TRIP IN AN OOMIAK.

Next day the morning was as clear and bright as the eyes of our pretty mariners, who, keeping time to their song with the regular beat of their oars, carried the good missionary and ourselves swiftly over the tranquil waters.

The *oomiak* is impelled by means of short oars with broad paddles, slung to the gunwale instead of acting in rowlocks; these oars are edged with bone to protect them from being broken by the ice. It carries a mast in the foresheets, and when the weather is fair a square sail is hoisted. A rich man buys the necessary materials from the governor; the poor man contents himself with seal-skin; but frequently, for at least a portion of the carcass, he is not obliged to have recourse to the official stores. The sea obligingly deposits at his feet some tree uprooted from Siberian forests, and brought to the shores of Greenland by the great oceanic currents,—a plank fallen from a ship, or a spar from some distant wreck. Those great "rivers of the sea," which carry heat and cold to the very confines of the globe, have also their benefits for men.

A more auspicious day could not have been chosen for our excursion. The lofty mountains which everywhere surrounded us towered into the pearly lustre of a cloudless sky, their snowy crests fading away into the soft, pure air. All was new and strange to us, from the boat and its crew to the shore along which we were gliding—to those borders, formed sometimes of huge, dark

cliffs, sometimes of verdurous slopes resting in a sunlit atmosphere.

There was not a living creature to be seen, except an occasional seal which raised its half-human head to gaze at us, or a few sparrows, or some stray butterflies which fluttered around us when we neared the shore, or here and there a flight of sea-birds.

The influence of the scene was contagious; and even our native crew were not insensible to the emotions it awakened. Encouraged by the missionary, the young girls chanted, with firm, melodious voices, and keeping time with their oars, an old Norwegian psalm:—

“O God, my Rock, to thee I cry;
Oh, do not thou my prayers deny!”

Five hours of this delightful voyaging brought us to the head of the fiord, where the water did not exceed three thousand yards in breadth.

Various episodes diversified our expedition, and we were all surprised to find ourselves nearly at its termination. The fiord now lost the appearance of a river, and assumed a lake-like character. A bold curve soon hid it from our sight; in front of us a beautiful valley stretched up to the very foot of Redkammen, one of the most magnificent of mountains, in the eyes of the artist as of the seaman: there are few bolder beacons in Greenland, remarkable as it is for the savage splendour of its scenery.

THE RUINS OF KRAKORTOK.

The declivity on which rose the ancient city of Kra-

kortok is very rugged, but at intervals occur some pleasant levels, still clothed with a vigorous vegetation, which seem to have been cultivated in days of yore, and undoubtedly might be so again. Tiny brooks wend their way across the slope; and on their banks the angelica grows fully three feet in height. The stem of this plant is the only spontaneous growth of the soil which the Eskimos utilize for food, except the antiscorbutic cochlearia; and this is held in slight esteem, and is not nutritious. According to tradition, the Norsemen cultivated barley: and to judge from the temperature of to-day, we should have thought that that cereal might even now be reared; but Mr. Anthon informed us that these bursts of fine weather are generally followed by terrible frosts, and that, in any case, the summer is too short to admit of the grain reaching maturity. Nowhere in Greenland—not even here, on the shores of the Ericsfiord—is there any attempt at cultivation, except of a few garden vegetables,—such as cabbages, radishes, and lettuces, which thrive admirably as far north as the Polar Circle. The agricultural products of the country, therefore, have no commercial value; though, if he be industrious and careful, each inhabitant of the fiord can secure himself a sufficient supply of vegetables. If they would take the trouble, I think they might grow potatoes. As for cereals, any labour bestowed on their cultivation would be lost labour. That such was not formerly the case, the appearance of Krakortok and its environs proves abundantly; each edifice, each habitation had its plot of tilled ground.

Round the church and two other ruined buildings may still be seen the remains of enclosures of masonry, which would appear to have been about five feet high.

In the church I was greatly interested. The walls are intact up to a height of fifteen or eighteen feet, and still indicate the form of the gable. The bays of the three doors are in good preservation, as well as those of the windows, except on the north side; the arched opening on the west side, above which is the sanctuary, is almost perfect. The minute exactness of the orientation of the church cannot be attributed to chance, for the same accuracy is noticeable in all the sacred buildings of the neighbourhood; the walls diverge fully one degree from the meridian line, though this may have been the fault of my instrument, which I had no means of regulating. The old Norsemen were close observers of the motions of the celestial bodies, and must have known the true north.

We afterwards visited other parts of the fiord. Houses would seem to have been very numerous; but, generally, the remains are covered with so luxuriant a growth of willows, junipers, and dwarf birches, that their traces are not easily discovered.

A SUNDAY AT JULIANASHAAB.

Our excursion to Krakortok took place on a Saturday. The next day we attended divine service at Mr. Anthon's little church.

Julianashaab is never very lively, but the moderate activity which prevails during the week is sufficient to bring out in contrast the profound peace of the day of

rest. How solemn this tranquillity appeared, as I ascended the course of the stream which traverses the settlement, and bent my steps towards the temple dedicated to the Eternal at the foot of the majestic mountains! Both the natives and the settlers, savages and civilized, had quitted their labours; the fishermen, their lines and nets; the hunters had left the game to the safety of their valleys.

As I drew near the church, the grand swell of the organ gradually prevailed over the voice of the tinkling brook. As in most churches, women preponderated among the audience; and they sang well. The Eskimo language, indeed, is not deficient in euphony. In the mouth of the natives, it has frequently a musical sound. Mr. Anthon has very completely acquired the accent and pronunciation. The whole service, sermon included, was in the native tongue. It was a native who presided at the organ.

A more attentive auditory I have never seen than this congregation of semi-savages. The homily I thought well adapted to the understanding of men who are continually exposed to the perils of the sea. Contemplating the dusky countenances raised towards the preacher, those faces expressive of such a keen desire for instruction, I reflected on the mighty change which had taken place in the midst of the nation which exterminated the Norsemen. Then, the Eskimos were plunged in the deepest darkness,—their superstitious fancy peopled sea, earth, and air with hideous demons; now, the love of Christ reigns in their hearts, and all profess the Christian faith.

The service over, we accompanied Mr. Anthon to the mission-house, and spent the greatest part of the day with his amiable family.

A GREENLAND PARLIAMENT.

Greenland is administered on a very simple system. The six northern districts are comprehended in the inspectorate of the north—chief town, *Godhav'n*; the six southern districts, in that of the south—chief town, *Godthaab*. From the decrees and decisions of the inspectors there is no appeal except to the Danish Government; but each district has certain privileges confirmed to it by royal charter. These are exercised by a "Parliament," based on the principle that every native is a subject of Denmark, and owes obedience to her laws.

A Greenland Parliament! No doubt the idea appears as ridiculous to the reader as it did at first to us; but we changed our opinion after being present at a single sitting. Nor would the world have much to complain of, if all legislative councils discharged their functions with the same honesty and equity.

The present population of Greenland may be estimated at 7000 souls, or a little less than 600 to each district. The district of Julianashaab has perhaps 800; distributed along a coast-line of sixty leagues in numerous little settlements, all situated on the shore or an island, wherever a convenient port occurs. All these little colonies are under the direction of the governor, or *besiyreere*, of the town; and over each is placed a Dane, or a half-breed, whose business it is to keep the books of the Company, to sell provisions, and collect

merchandise. The miscellaneous stores which a ship brings annually to Julianashaab are divided amongst the various settlements; which, in return, send their products to the chief town, to freight the ship on its home-voyage: these consist of stock-fish (cod dried, but not salted), furs, eider-down, and the fat and skins of seals. The last-named articles yield the largest revenue.

The Eskimos depend almost entirely on the chase and the fishery; and convey the results of their industry to the central depôt, which is opened by the bestyrere for commercial purposes at certain hours.

It must be owned that the Greenland legislature does not assemble in any palatial structure. The chamber, about twenty feet long by sixteen feet wide, is constructed of double planking, calked on the outside, and painted blue inside.

In the centre stands a table of pinewood, flanked by a couple of benches on which the deputies take their seats, clothed in seal-skin trousers and thick woollen blouses, embroidered with broad straps, sewn crosswise. The complexion of the honourable members is of a very dark tint; their black hair appears as little acquainted with brush and comb as their skin with soap and water. Yet they are not unattractive in expression; and, on my entrance, they received me with a genial smile, which revealed their fine white teeth.

But I have forgotten one portion of their costume—and the forgetfulness is the less pardonable because it shines with peculiar brilliancy: the official *toque*, a royal gift worn by each deputy during the parliamentary session. This cap is of dazzling red, and bordered

by a wide stripe of gold lace; in front are emblazoned the Danish arms, surmounted by the emblem of Greenland—a gilded Polar bear, a crown on its head, crouching piteously on its hind-quarters. At the end of the table, a thirteenth teque ornaments the head of Mr. Anthon, pastor of Julianashaab, and president *ex officio* of the district Parliament.

On the day of our attendance, the business before this tribunal consisted chiefly of distributing alms among the poor.

Among others, one petitioner, a living picture of wretchedness, explained that he had just lost his kajak, and was the sole support of his wife and children. The assembly voted a small allowance of provisions and clothing, and ordered the man to be employed at the government stores in melting seal-fat—for which he would receive fivepence halfpenny a day.

An old man came with a rixdollar to purchase a lance. Another, who had several daughters but no oomiak, received, for the purpose of building one, an advance of twenty-four rixdollars; of which he engaged to repay one half before the expiry of two years. A hunter received a carbine on similar conditions; an invalid female, flannel for a chemise; two orphans, some gifts of bread; and a widow, the means of burying her deceased husband.

Every case was dismissed with prompt decision.

Ordinary offences are punished by fines; or rather, by a tax of so much per cent. on the value of each article which the hunter brings to the depôt. This plan is found to work admirably well: if the delin-

quent refuses obedience to the parliamentary edicts, he is absolutely excluded from all the advantages of the community; that is to say, he can buy nothing—neither carbine, ammunition, flour, sugar, or tea—a penalty which induces a speedy amendment. Crime is very rare; in cases involving capital punishment, or the sentence of the courts of justice, the accused is sent to Denmark. But we heard of only one instance of this kind.

We cannot quit this interesting subject without a word or two in reference to a very prudent provision of the Company. That murderous "fire-water" is absolutely forbidden, which, in America, has contributed so largely to the demoralization and destruction of the Indians. Only once a year are the natives permitted to "quaff the flowing bowl;" namely, on the royal birthday. Every able-bodied man may then present himself boldly at the storehouse of his settlement; he receives a ration of *schnaps*. But the women do not share this privilege.

The Company dates from the year 1781, and was established on almost exactly the same basis as that of Hudson Bay. Commerce is a complete monopoly of the Crown; no stranger, not even for the value of a rixdollar, is permitted to trade with Dane or Eskimo: and it is this severe regulation alone which can prevent the introduction of spirits or any other prohibited merchandise.

SERMITSIALIK.

We next made our way to the fiord of Sermitsialik, or "the Region of Ice," where we might be witnesses of those majestic natural phenomena found nowhere on

a grander scale than in Greenland; phenomena far more impressive than aught else the globe exhibits, in its bosom or on its surface, without excepting even the earthquake and the volcano.

The fiord of Sermitsialik is of the same length as that of Julianashaab, but separated from it by a range of mountains whose culminating point is the summit of the Redkammen. This range strikes in a southerly direction, curving anew towards the sea, and enclosing Eric's gulf, and the little Earthly Paradise where the Vikings found a refuge. To the north a similar counter-chain runs parallel to these bold peaks, leaving between them and it a great valley which abuts on the fiord of Sermitsialik. Far from being verdurous and fertile, like that which the Redkammen shelters, it serves as the bed of an immense accumulation of ice, two miles and a half to four miles in breadth, and at certain points upwards of nine hundred and fifty feet in depth. It is a glacier, a "current of ice," as the Danes call it, to distinguish it from the *eis blinken* which our physicists name "sea of ice" (or *mer de glace*).

In our account of Dr. Kane's expedition we have already referred to that *mer de glace* which occupies the interior of Greenland; the Sermitsialik glacier is but an arm, or rather an outlet, of it. Hundreds of similar outlets, corresponding to the rivers of other countries, restore to the bosom of ocean the condensed vapours of the atmosphere.

How shall we describe the scene gradually unfolded to our gaze as the *Panther* steamed up the silent fiord?

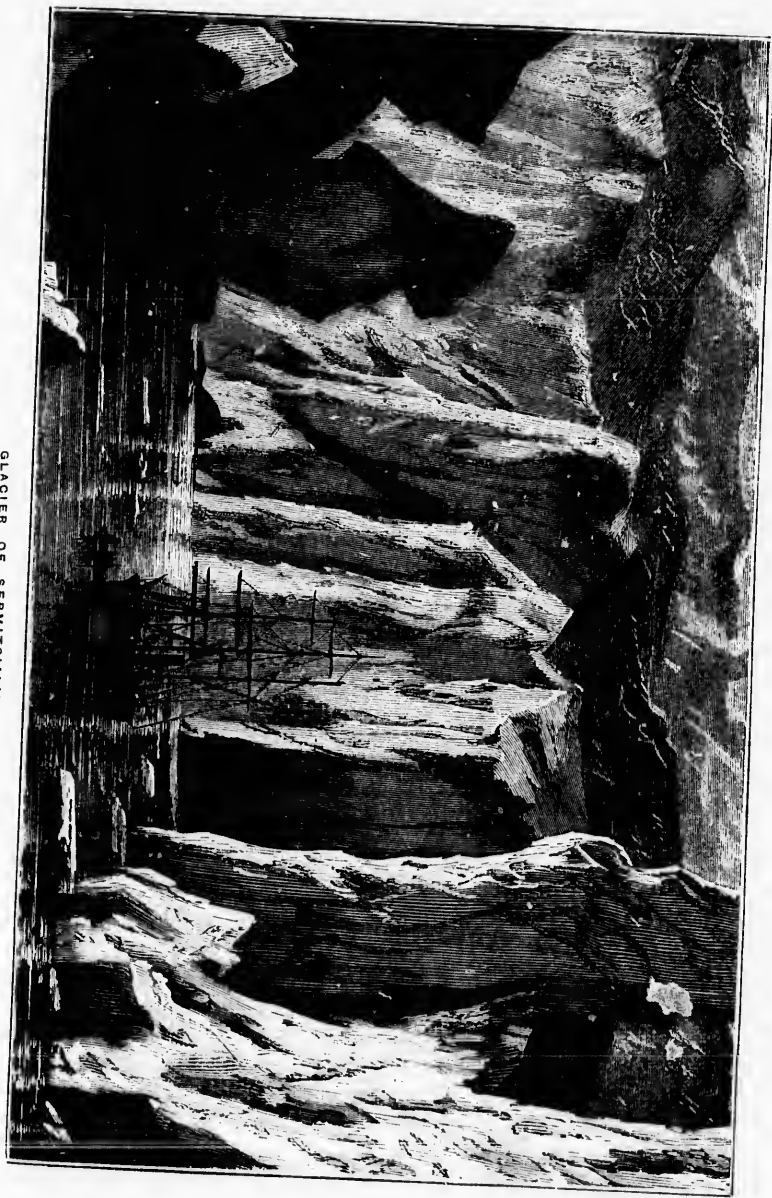
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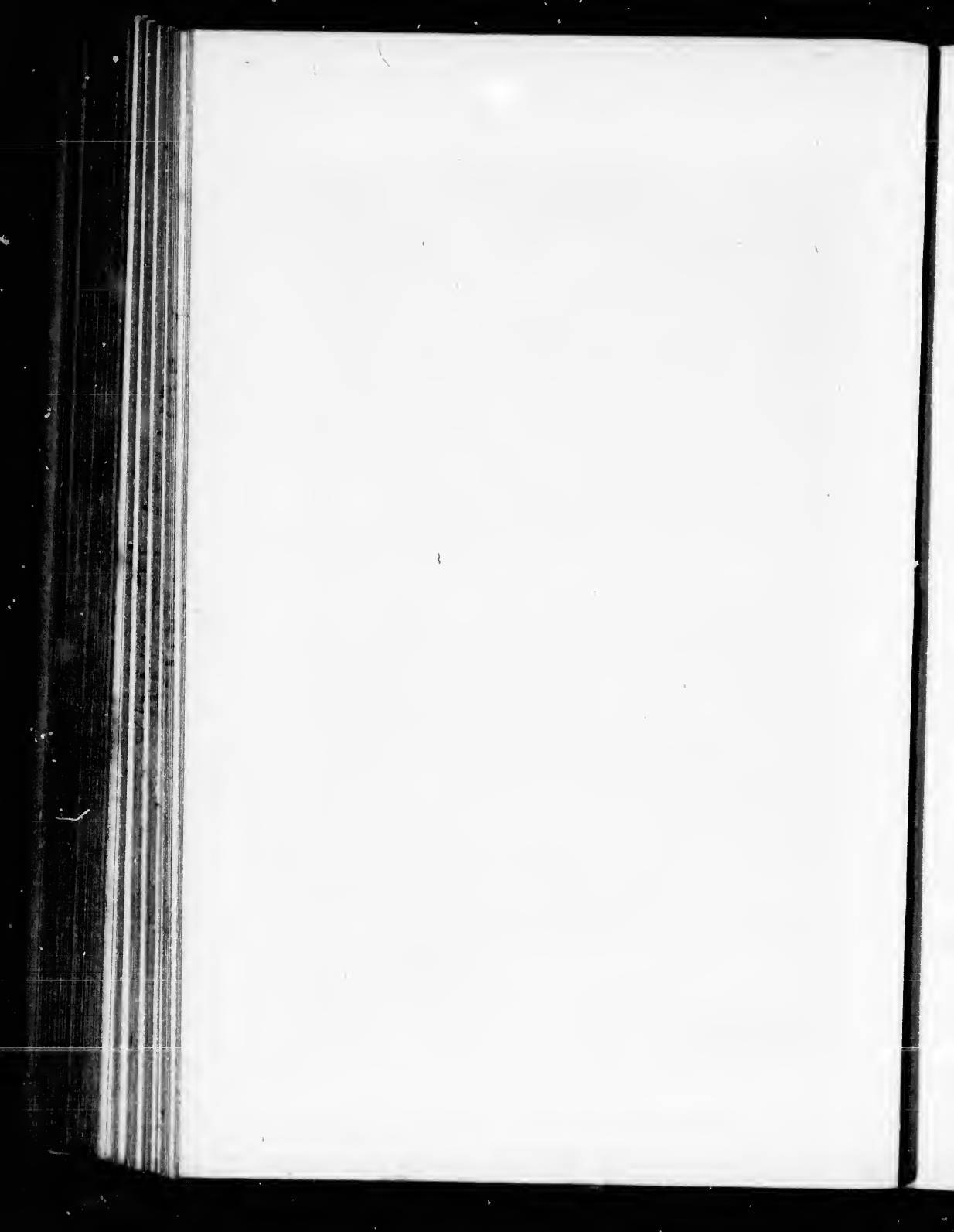
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GLACIER OF SERMITSIALIK.





This fiord is three thousand yards across; the valley occupied by the glacier is of the same width. And what is the depth of the glacier? Who shall say? We know it *must* be measured by hundreds of feet; in some places it probably exceeds a thousand. For a distance of nearly four leagues the shores of the gulf are those of the glacier itself; and terminating in the form of a wedge, they disappear in the vast ice-sea which stretches to right and left above and beyond the loftiest mountains—irresistibly drawing the eye towards its surface, boundless as that of ocean. Little by little we lost sight of the inclined plane, then of the white line of the ice-sea: we were in front of an immense cliff, varying from one hundred to two hundred feet in height, diaphanous as the purest crystals, and reflecting all the tints of heaven!

We felt ourselves shudder as we approached this vast domain of Frost. Uniting in broad streams, the ice and snow which have melted on the surface of the glacier spring from the brink of the precipitous cliff in clouds of foam and spray irradiated by rainbow gleams of colour. The air trembles with the din of these waterfalls; and at intervals the echoes seem almost rent by the thunderous reports of the internal explosions of the glacier.

The cliffs are perfectly vertical: but far from presenting a smooth surface, they are broken up into the most fantastic forms imaginable: unfathomable caves, symmetrical spires, arched vaults, and fissures and hollows where the eye plunges into an intense, transparent blue, which every moment changes its fleeting opalescent hues.

The light in the dark eye of woman is not more difficult to transfer to canvas. A deep green, less delicate but not less splendid, colours all the recesses where the ice impends over the waters. In the sunlight the surface of each huge crystal shines of the purest white, except at those points where a fracture has recently taken place; we might liken it to the soft shades and sheen of satin: this glimmer is due to the different angles under which the ice is reflected.

We landed after supper, and, climbing among the abrupt rocks, scaled a hill about three hundred and fifty yards in height. The sun set behind the mountains, and the great sea of ice, outlined upon the burning gloaming, was also empurpled with flames. The limitless desert, the hard cold surface of which sparkled with borrowed lights, was clothed with the splendours of heaven; and we forgot for the moment that we saw before us the only region in the world which can fitly be called "the Land of Desolation."

During the night we were disturbed by fears for the safety of our vessel; at intervals, our dangerous neighbour reminded us of its presence. We heard a dry quick crackling, followed by the noise of the fall of a heavy body; and we knew that another iceberg was added to the hosts of the sea. In the morning, the waters were covered with small fragments floating round the huge mountainous masses which were already drifting out to ocean.

Accompanied by the captain, we searched the fiord for some less exposed anchorage. The scene had com-

pletely changed since the preceding evening: the waters were strewn with blocks of ice; sky, earth, and sea were all of the same dull, melancholy colours. On reaching the northern shore, we fortunately discovered a little cove just large enough and deep enough to receive our vessel. Landing on a slope of verdant turf, we had the glacier on our right and the ice-cliff on our left. We struck inland, and after a short walk found ourselves in a deep gorge. The idea then occurred to us of *walking* back to the ship; and on communicating it to the captain, he received the bold suggestion with delight. So, having dismissed the boat, we began our attack upon the glacier at a slope of some thirty degrees. The ice was largely mingled with sand and stones, so that our feet did not slip, and in a few minutes we reached the summit.

Picture to yourself the rapids of Upper Niagara frozen even to their very depths; the falls, the river, the great Lake Erie everywhere converted into ice; the banks above the cataract equal in elevation to the lower shores; you yourself, O reader, erect upon the rapids, with the Erie so near that you can see its crystallized surface,—and you will have, on a reduced scale, that sea of ice which lay before us. The rapids will represent the glacier; the great fall, the wall which it projects into the sea (the curve of the “horse-shoe” being here turned outwards); the river which expands into the Ontario will become the fiord; and the Ontario itself images the ocean, whither slowly move the mountains of ice detached from the colossal cascade.

We must point out, however, one remarkable dissimilarity. From bank to bank a river-surface is always horizontal, but that of a glacier is slightly convex. **AS** thus:—



SURFACE OF A RIVER.



SURFACE OF A GLACIER.

Through the ravine formed by the curvature of the glacier and the escarpment of the soil, we arrived at the sea. The journey was not without its perils; for everywhere yawned crevasses separated by slippery projections. In some places these deep clefts were only a few yards apart: they continually crossed or ran into one another, though the general direction was easily distinguished. In these lay all the danger of our enterprise, for we ended always in arriving at some promontory where two precipices united; and then our choice lay between leaping across an unfathomable abyss, or retracing our steps to discover some safer path.

When once the border of the glacier was crossed, the road became easier; for a mile and a half it lay nearly on a level, and the ice offered few difficulties.

We have never trodden these frozen wastes without an almost solemn emotion. There is something terrible in the extraordinary desolation of this Sahara of snow.

One thing particularly impressed us: the continuous rumbling of this enormous mass, a thousand feet high at least; even under our footsteps, it seemed to tremble.

We should not have been surprised to see a gulf yawn before us.

The deep voices of the glacier were not the only sounds we heard. On all sides, brooks meandered over the crystalline plain; some of them mingling together swelled into a considerable torrent, which, seething and clashing, precipitated itself into a chasm that rent the entire mass of the glacier, and flowed into a muddy river that sullied the waters on one side of the fiord.

The sun ascended towards the zenith and penetrated the atmosphere with its rays. Even here, within the domains of Frost, the atmosphere was not disagreeable. The ice and snow melted rapidly, and we suffered more from damp than cold. We were often compelled to crawl on our hands and feet, or even sometimes on our stomach, and, consequently, our clothes were thoroughly soaked.

There were no difficulties in the mid-portion of the glacier; but they began again as we descended on the other side. After a laborious effort we reached a long point or tongue, flanked on either hand by a deep ravine, and formed by the intercrossing of two crevasses. But from this promontory to the opposite bank extended a bridge, or rather a kind of ridge, forming the summit of a great mass of ice loosened by some commotion, which, gliding into the abyss, had been caught between the two sides, like a rock in a narrow gully. We must either trust ourselves to this natural bridge, or, abandoning our object, retrace the perilous path by which we had so nearly attained it. We resolved on the former course; and, says Dr. Hayes, I led the way,—“creeping

on my hands and knees as far as possible, and then, sitting astride the dangerous curving neck which led to the bridge, I propelled myself forward with my naked hands, a few inches at a time. Suddenly my eyes fell upon the yawning abyss, with its intense azure gradually deepening into an awful obscurity; the roar of the waters rose to my startled ears. I turned giddy, and clutched convulsively at the sharp, slippery ridge. To go back was impossible. I could neither turn round, nor retreat backward to the promontory. At whatever risk, I must go forward; and I was encouraged by the voice of the captain, who cried to me not to break his bridge. At length the struggle was successful. I contrived to drag myself up the opposite side to a place where I could lie down and recover my energies. Our captain, after gallantly accomplishing the same feat, seated himself also, and contemplated for a moment the perilous pathway. "There," said he; "I have had enough!"

FALL OF AN ICEBERG.

Having regained the ship, we all assembled for dinner; but our attention being arrested by the fall of numerous huge blocks of ice from the glacier, we remained a while upon deck to survey the surprising scene. We noticed, among other phenomena, that the recent fractures were of a splendid deep blue, which, after a brief exposure to the sun, was transformed into a pure white, with soft satiny reflections.

After dinner the *Panther* got up steam, in order to proceed to the new anchorage we had discovered, but her movement was arrested by a continuous series of

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FALL OF AN ICEBERG





detonations. Enormous masses were almost simultaneously detached from the glacier, and their fall so caused the waves to swell that the ship rolled violently. The waves dashed furiously against the rocks. All at once an explosion, dry, sharp, formidable, suddenly alarmed us; we felt we were on the eve of some extraordinary cataclysm.

Looking in the direction whence the awful sounds proceeded, we could see that the projecting angle of the glacier was rapidly breaking up. This particular portion was specially picturesque. A labyrinth of more or less symmetrical spires and pinnacles gave it the appearance of an immense cathedral. Its mode of formation was easy to understand. The network of crevasses already striking up the glacier extend and enlarge; the intervening spaces, sharp at first, are gradually rounded by the sun's influence as the giant progresses towards the sea. Some of these monoliths are reared above ogival arches, of such perfection that it is difficult to imagine they were not the work of human architects. At the very extremity of the glacier, a tower, two hundred feet high at least, was wholly separated from it nearly down to the sea-level. A few hours previously, we had gone round it at no greater distance than a boat's length, suspicious of no danger, and had seen its base descending vertically through the clear green waters.

The last and loudest outbreak was caused by the collapse of this marvellous edifice. As if the sea-bottom were giving way beneath it, little by little it descended into the yawning abyss. It was not a fall, not a sudden demolition, but a crumbling process, which lasted fully

a quarter of an hour. It went to pieces as if it had been composed of shells, or rather of leaves, which detached themselves layer by layer. We had scarcely time to examine the phenomenon, for from base to summit the front of the glacier was veiled by an opaque cloud, through which we could dimly see the continual downfall of the masses of ice. We watched the phases of the spectacle with almost breathless admiration, and the danger must have been imminent and alarming which could have withdrawn our attention from it. Our enthusiasm reached its climax when the pinnacle of the spire gradually sank into the immense whirlpool of foam and vapour, where it speedily disappeared.

The most terrible thunder-peals are as nothing when compared with the awful voices of the glacier in its travail. It seems as if this ominous roar shook the very foundations of the globe. From the fall of the first few fragments, the din increased with perfect regularity; reminding us of the wind which wails in the trees before a storm, then raises its voice, and crashes through the forest with deafening outbreak.

THE KREKARSOAK.

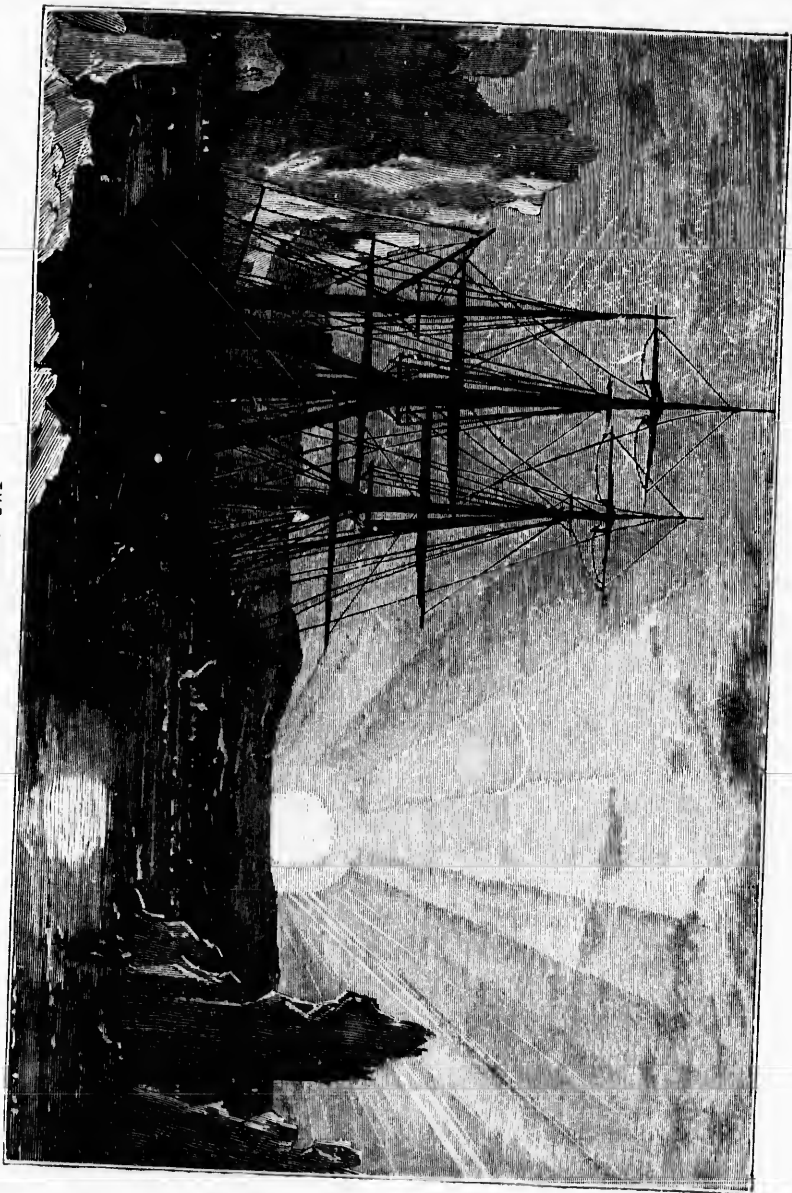
In due time we left the fiord of Sermitsialik, and continued our voyage to the northward. We crossed the Arctic Circle, and, through a sea literally sown with icebergs, skirted the romantic Greenland coast. So numerous were the floating mountains that sometimes the horizon entirely disappeared; we turned and returned, threading to right and left the channels which separated them; losing all consciousness of danger

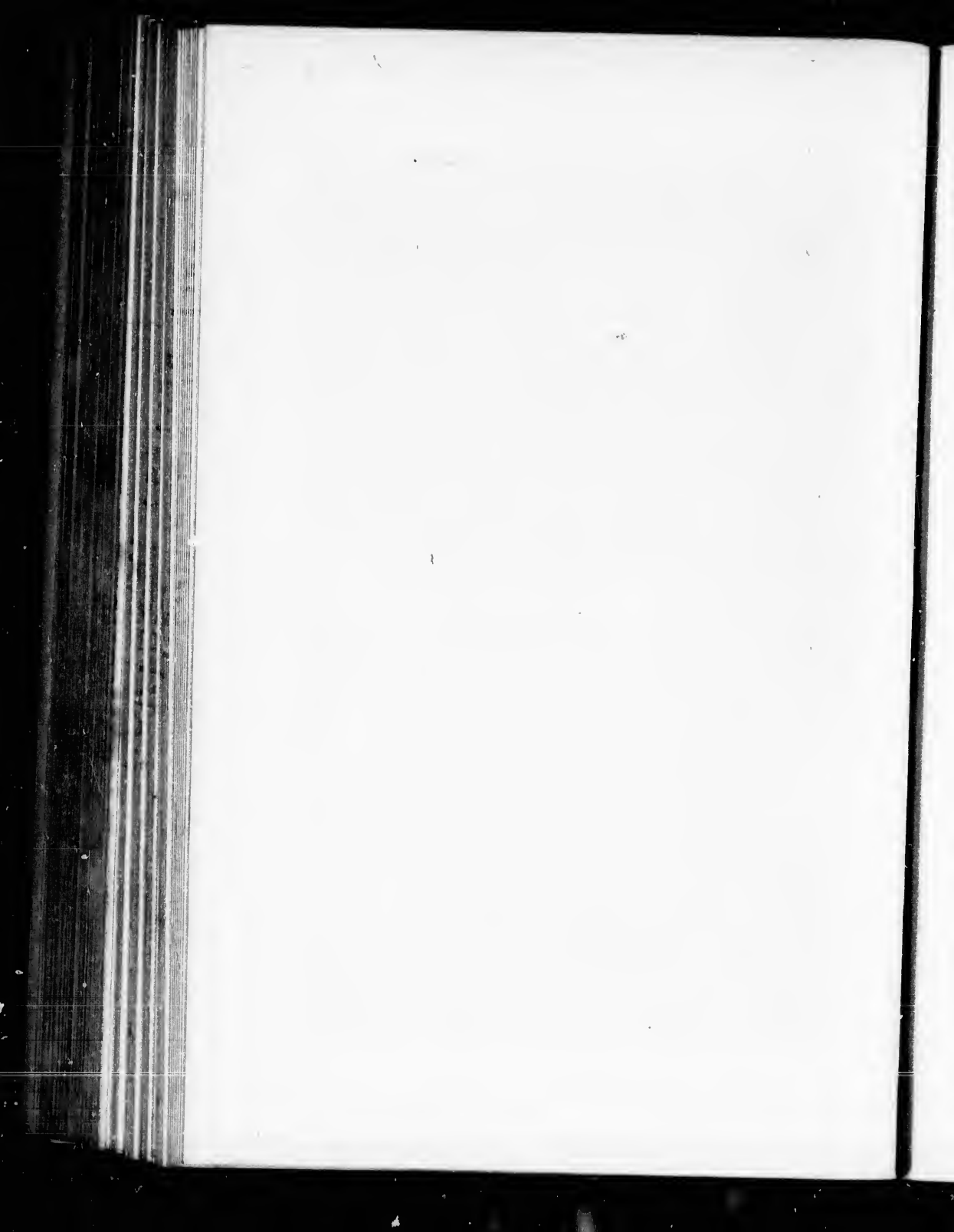
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THE MIDNIGHT SUN.





in the surprise and admiration which they continually excited.

It was near midnight; the atmosphere, entirely free from mist, shone with a soft splendour; the sun, approaching the north, plunged obliquely into the waves; little by little, it almost wholly disappeared; only a dazzling arc still rose above the water-line; the crimsoned clouds faded away; the sky glowed with gold; the motionless sea, unwrinkled by a single breath of air, reflected like a mirror the resplendent tints; and they brightened afar among the hills and mountains of ice, hills not exceeding a few feet, and giants towering some hundreds of yards; hills and mountains of every form, some like citadels with perpendicular sides, others like immense cathedrals crowned by a forest of spires.

There was a wonderful variety in the colour of the icebergs against the golden sky of the sunset. They seemed of a deep violet; on either hand they glittered with amethyst, sapphire, and emerald; then they paled into a pure pearly white; in our wake, against the sombre cloud-bank which rested on the waters, they changed to a burnished silver; but everywhere they arrayed themselves in the fires of the firmament.

Emerging at length from this realm of splendour, we continued our course along the picturesque and beautiful shores. First we passed in the shadow of the riven and cavernous Black Hook; then at some distance from the dangerous cliffs of the mainland: cloven by deep gorges, they resemble huge pillars, worn by time, and intended to support the vast alabaster entablature of

the great sea of ice. Soon we arrived abreast of a notable landmark, a conical mountain-peak rising sheer out of the dark-green sea. This peak is an island, in effect; measuring about ten miles in breadth from east to west, and six in length from north to south. It is fenced round by precipitous cliffs, above which the Krekarsoak, or "Great Mountain," rises to an elevation of 4500 feet. It is the "Sanderson's Hope" of John Davis, who discovered it in 1585.

Beyond it the fiord widens somewhat; we reach a less gloomy landscape; the cliffs disappear; the mountain descends to the sea by a continuous declivity. Here some signs of life were discernible. Up to a height of 450 feet we can see bright patches of verdure, heaths and mosses, and dwarf-grasses mingled with white and yellow flowers. The scene may be compared to a curtain stretched across the base of the peak to conceal the mouth of the vast cavern which, according to the Eskimos, occupies its whole interior, and is inhabited by the giants. Had we been less familiar with the grand aspects of the "Land of Desolation," we might have fancied ourselves in some realm of wonder and marvel, where supernatural creatures dominated over the forces of Nature: in front of the cliff, at the base of the Krekarsoak, our gaze rested on a host of undefinable beings moving to and fro upon the sea. We could hear the sounds of voices. Our captain "slowed" his engines, keeping up just speed enough, and no more, to avoid the icebergs, and in a few minutes we were surrounded by a troop of amphibious animals, the well-known people of the North. Spite of the severity of the climate,

they appeared no more sensible to it than our Juliana-shaab pilot, and disported in the icy waters with every sign of delight. A boat paddled by four of these shaggy Tritons approached our ship, and the white man who steered it announced himself as the "bestyrere" of Karsuk, an establishment at the foot of the green slope which had attracted our attention. He was named Esau. Having received him on board, we took his canoe in tow, until he found it necessary to return to his little kingdom.

Shortly afterwards we moored the *Panther* alongside an iceberg, on which we disembarked. It was about 330 feet broad, by 50 feet high; its surface was undulating; the sun's heat melted the new ice, and little pools of pure water dimpled in its hollows.

Near us rose an immense precipitous cliff, which we resolved to visit in the hope of finding there some birds. It towered above our heads, like a wall of shining silver, to an elevation of 2600 feet, and glowed reflected in the waters.

When within a thousand yards of it we caught sight of its feathered inhabitants; and, as we approached, they flocked round us in great numbers,—astonished, probably, at the sight of strangers in their far-off haunts. Like all the divers, those swimming on the water rose with great difficulty, beating their wings loudly close to the surface before they took flight. The flocks increased as we drew nearer. At first we thought we heard the distant sound of a waterfall; the murmur rapidly deepened, and, near the cliff, so rose, and swelled, and gathered, that we could not hear each

other speak unless we shouted. The din was produced by the stir of the wings and the shrill cries of birds posted on the rock or fluttering near it. Each ledge of the cliff, a few inches or from two to three feet wide, horizontal or sloping, level or irregular, was occupied by the lummes, sitting on the hinder part of the body, packed close to one another, with heads turned towards the sea. Ranged in compact order, they took up the smallest possible space, and at a little distance might almost have been mistaken for soldiers in white tunic and black kepi, shoulder to shoulder, drawn up for review. It was easy to count them on the lower benches; higher up, one could still make out the lines; on the summit of the rocks, nothing was distinguishable. At first we were puzzled by their strange attitude of immobility; but we soon discovered they were females, each sitting on its solitary egg.

The lummes do not build a nest. The hope of their race is simply deposited on the naked rock; the mother raises it with her beak, and balances it on one end; then seats herself upon it, as upon a drum.

Discharging our guns simultaneously, we brought down birds enough to supply our crew with a dinner. But what a change had taken place in the appearance of the cliff! Every voice was hushed; the birds leaped into the air; the wild agitation of their pinions was like the breath of a storm; so numerous were they, that as they flew over our heads they cast a shadow like a cloud. Some of the eggs, too hastily deserted, rolled over the edge and down the cliff, streaking it with white and yellow.

The birds, however, did not long remain on the wing; most of them swooped down upon the waters some four hundred yards distant, so that the surface became absolutely black. Others returned to their places, lest the egg should grow cold; and the rest began in due time to think of the safety of their treasures.

But all did not go smoothly. Numbers displayed a curiously violent irritation, like fishwomen in a rage; with bristling feathers they menaced one another, and screamed at one another, and tore out each other's snowy plumes, and pecked at each other's eyes. Oh, the din, the clang! There were thousands of them; all screaming, and pecking, and fluttering at once! The cause of the dispute was soon discovered: some of them were shameless thieves; without remorse, without a blush, they had seized on their neighbour's egg!

The mother is sometimes compelled to leave her rocky post; she cannot die of hunger while waiting for the emergence of her chick. Perhaps, in her carelessness, she topples down the egg in taking flight; perhaps, while quarrelling, her mates have accidentally pushed it over the brink of the cliff. She does not find it on her return. If she preserves an honest conscience, she will have no little lumme to show her friends; but, bless you! she does not hesitate to appropriate the first egg she can get at, and to seat herself upon it as if she were one of the most exemplary of mothers! The true owner, returning, discovers the scandalous intruder; she seeks some empty place; if none is found, she attacks anybody or everybody in her rage, and a general combat ensues. Sometimes, however, the precious deposit

is not left without a protector; the male discharging the duties of his spouse while she is attending to the demands of appetite. But as she knows him to be animated by no particular parental enthusiasm, she swallows hastily her repast of little crustacea, plunges into the sea to enjoy a morning bath, and returns on rapid wings to relieve her phlegmatic spouse; who celebrates his release by a cry of pleasure and a clapping of wings very amusing to the spectator.

A NORTHERLY COURSE.

Continuing our course up Baffin Bay, we soon came in sight of the pack-ice, the great barrier which is so familiar to every Arctic explorer, and of which we read so much in the narratives of Parry, Franklin, and Kane. Floating masses were all around us,—some of them tenanted by sleeping seal, some rugged with ridges of frozen snow; but threading our way through the labyrinth, we steered for Wilcox Point, a majestic headland which rises about fifteen miles to the north-east of the Duck Islands. There we examined the chart, to determine in what direction our vagrant fancy should lead us next. To the east of Wilcox Point the coast deploys for some miles before the well-known mountain which so strangely resembles the upright thumb of a hand placed flat upon a table, with the little finger underneath. The hand represents the island of which the "Devil's Thumb" is the centre.

No part of the great sea which bears the name of Baffin has more terrors for the mariner. The icebergs are so numerous, that it is called "Bergy Hole;" and

so violent the currents, that a ship under sail surprised by a calm off the Thumb is soon drawn as it were into a whirlpool, and forced to turn round as if a supernatural influence were at work on the waters: if she emerges safe and sound, without any disastrous collision with the icebergs, she may be congratulated on a marvellous escape!

The *Panther* proceeded bravely to encounter its first field of ice. There it lay before us,—a broad white and blue plain, stretching farther than the eye could see.

“What, is this all?” cried some disappointed passengers; for at the first glance it wears no very formidable aspect. But the ship strikes against a projecting tongue of crystal, and our novices are convinced that there is more in it than they suspected.

The *Panther*, however, treated it as an unimportant matter, and clove the clear waters until she had reached a new ice-field, which, at first, we had supposed to be an adjunct of the former one. But between the two stretched an open arm of the sea—what the whalers call “a pass;” and through this opportune channel we steamed northward, and northward, and still northward, among the floes.

Soon we could see no sign of water except in our narrow channel ice covered the sea afar; and only from the mast-head could we discover the “passes” that wound in all directions. The one we were following measured, at the opening, two thousand yards across; it gradually diminished, and then began to bend and curve, and detached blocks of ice showed themselves here and there.

The second officer, whose watch it was, kept the man at the wheel constantly on the *qui vive* with his "Port! Starboard! Just so! Starboard all!"

"What are you about, sir?" shouted the captain. "Why do you keep to starboard?"

"Way blocked on all sides; we must steam astern!"

"Is there no opening anywhere?"

"No; but on the larboard the ice seems tolerably weak."

"Steer for it, then, and charge full upon it!" roared the captain.

"All right, sir! Starboard a little! That will do. Go on!" And we pushed forward, the *Panther* raising her prow and her catheads clean out of the water, and looking as if she regarded with the utmost contempt the immense plain of crystal which stretched before us. She struck full against it, drove into it, and crushed the ice, as it were, under her iron feet. A quiver shot through her frame from stem to stern. Then she rose upon the floe, pounded it into fragments, and plunged deep into the water to which she had afforded an opening. Her impetus was not yet exhausted. Again she sprang upon the ice, which yielded anew beneath her weight; and then she stopped. On examination, it was found that she had sustained no injury. Her masts were as erect and her catheads as solid as ever; not a scratch on her iron-clad broadsides. The first struggle had been a victory.

"Turn astern!" shouted the captain. We retired nearly a hundred paces, then, with all steam up, dashed into the opening already made. The cutwater struck

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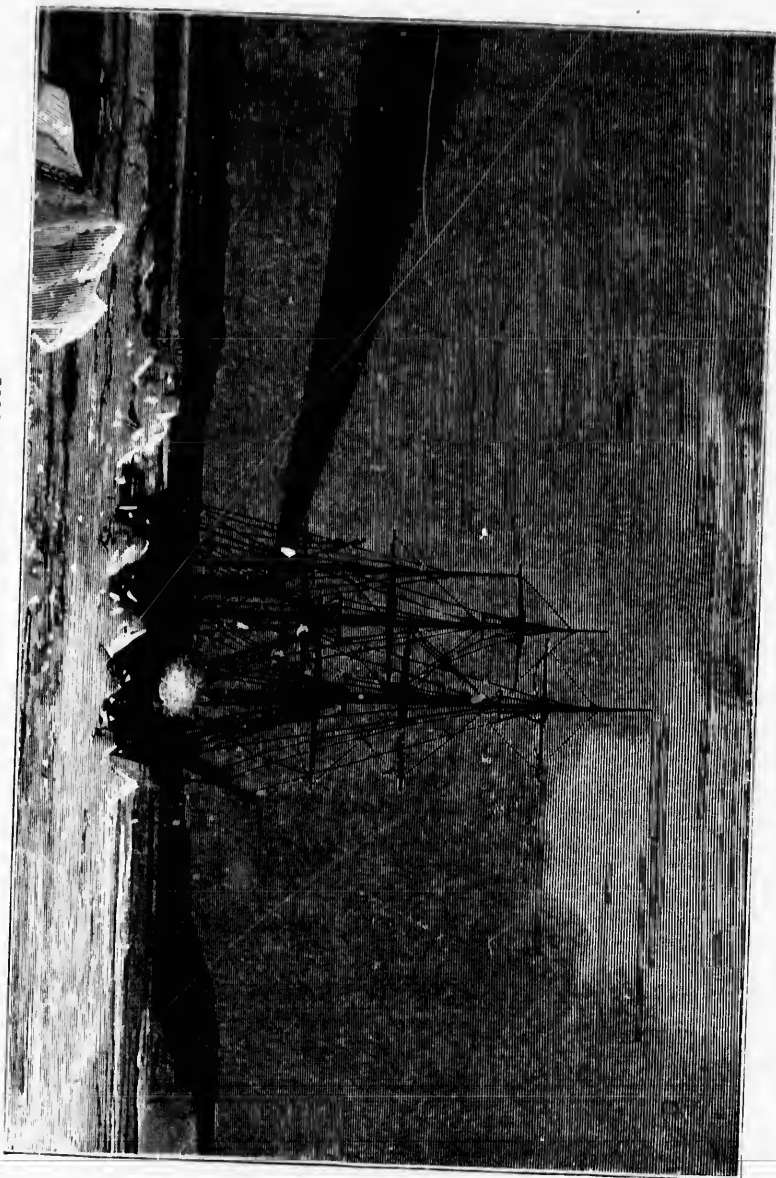
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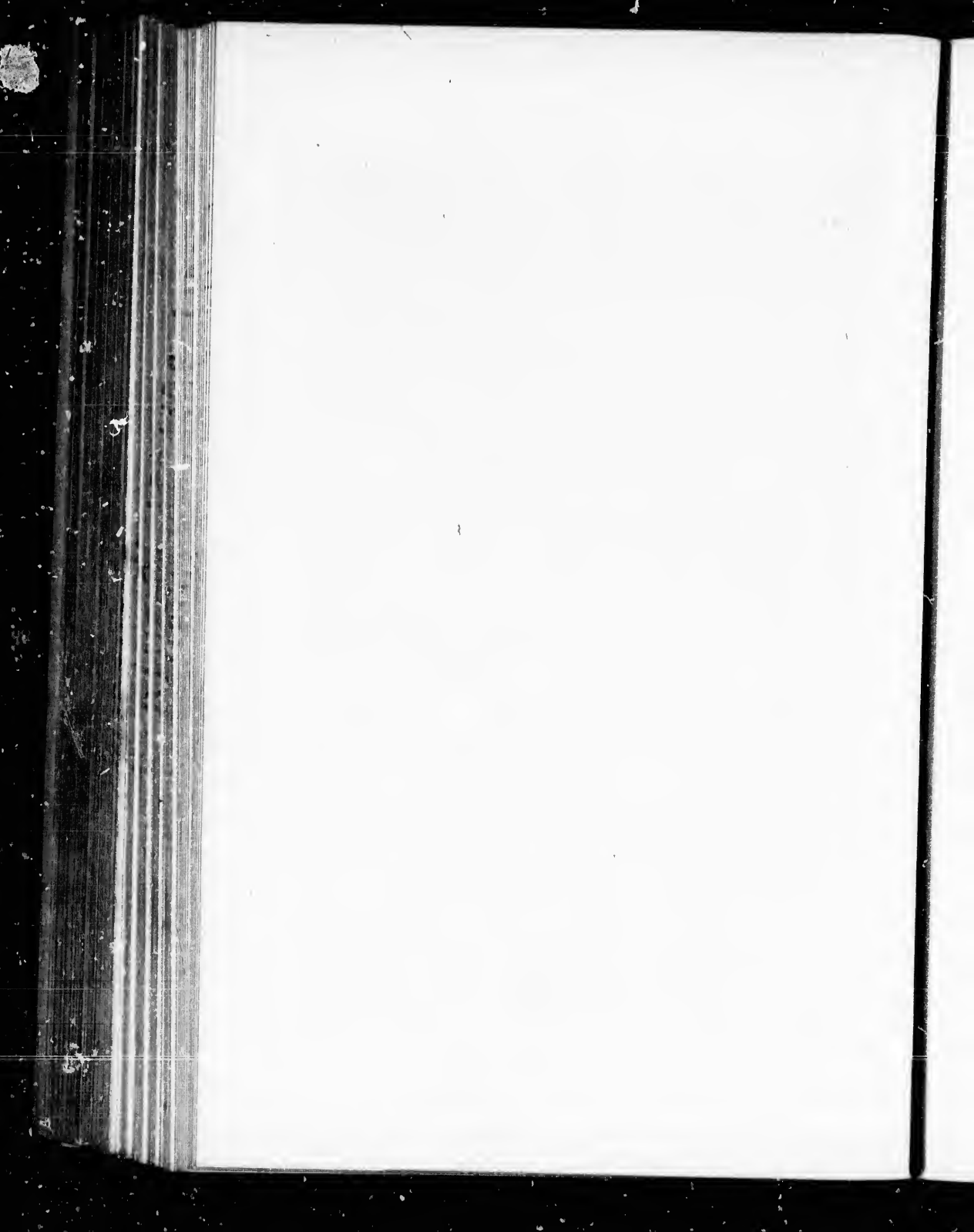
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FORCING A PASSAGE THROUGH THE ICE.





the ice; the *Panther* advances, falls back, rises up, plunges, and darts forward. In this way she charged the ice again and again, until a channel was opened up, which, as the ice-fields were gradually set in motion, widened considerably, and conducted us at length into open water.

A BEAR-HUNT.

As we clove our path through Melville Bay, the cry suddenly arose, "The bears! the bears!" and everybody rushed upon deck. And those much-coveted carnivores were, in truth, as close to us as we could reasonably desire. Undoubtedly *they* had sighted the *Panther* long before *we* sighted them; but they contemplated us composedly, with more curiosity than alarm. There were a mother and her two cubs; and they stood motionless, at a distance of three or four hundred yards, the only living beings in that apparently boundless solitude of ice. The mother stood between her little ones; an honest family, peacefully established on an old ice-field. We felt a pang of remorse at the idea that we were about, so cruelly, to disturb their repose.

The steamer was "slowed" as soon as possible, and the two parties considered each other, each endeavouring to divine what the other was about to do. The bears, of course, could see only the ship; for we took good care not to show our heads above the bulwarks, and as the wind blew from the north it could not betray us. Evidently, in the eyes of the bears, the steamer was a huge black phenomenon, with which, we were delighted to see, they soon showed a disposition to become more closely acquainted. The mother led the way, her

cubs trotting one on each side, and by a long and prudent circuit made towards the stern of our ship, with the obvious intention of coming to leeward of us. We did our best to conceal ourselves more completely, though holding it contrary to the laws of hunting to wait until our game got wind of us. But our captain, as chief hunter, insisted on patience; he knew his ship and what she could do. "They are ours," he said, "if only they advance a little nearer;" and he gave orders to move ahead at half-speed. At the same time the helm was put to starboard, and the steamer swerved round so as to face the bears, which advanced slowly along a projecting tongue of ice.

"What are you doing, captain? The bears will scent us, and decamp immediately."

"Bah! the *Panther* is ready to bar their way."

"But the ice—the ice, captain! You will not launch the ship against yonder floe?"

"Why not? I would charge an iceberg, if it were necessary."

So war was declared, between strength and skill on one side, and craft and nimbleness on the other.

The mother advanced, meanwhile, with the greatest circumspection, and as if she weighed the consequences of every step. She was a fine animal, in good condition; had just breakfasted, apparently, and displayed the leisurely apathy which generally accompanies the digestion of a very plentiful repast. She did not even traverse the little pools of water in her route, but calmly made their circuit, as if indisposed to wet her feet. Sometimes she turned her back upon us; some-

times she halted, stretching forth her long neck, and sniffing the air on every side—raising her nose as high as possible, then lowering it upon the ice, as if she had discovered something there. Meanwhile, the cubs frolicked around her; seeing that she was not afraid, they indulged their vivacious humour, and it was clear they looked upon the *Panther* as a marvellous spectacle which their mother had got up for their amusement. They were as full of play as a couple of kittens, entertaining themselves with hide-and-seek around their mother, and dealing each other an occasional pat on the back. They rolled in the water-ways, sending the water on high in crystal showers; in fact, no schoolboys out on a holiday were ever more bent upon innocent diversion.

The little family occupied half an hour in reaching the point where the mother learned at length the nature of her enterprise. For a moment she appeared undecided, stopped short, and turned round, as if to retrace her steps; then she changed her opinion. For some minutes she seemed to balance between opposing impulses; that which drew her onward prevailed. Having arrived at the point of the ice-field, she raised her head and sniffed noisily; light broke suddenly upon her mind; we saw her turn right round with a rapid movement, as if looking for some means of safety. After a moment's reflection, she proceeded anew towards the floe. The cubs, too, seemed to take alarm, and ran towards their mother, as if to ask what was the matter—if the spectacle were at an end—if they were to start on a new journey. It seemed as if she replied that there was no occasion for much alarm, but it was well to

make good use of their legs, and get away as quickly as possible. The little ones obeyed, wailing piteously, like children who have gone out a-fairing, and been overtaken by a storm. The mother watched their movements with the utmost solicitude, keeping close beside them, pausing when they paused, and always interposing between them and danger.

The *Panther* did not remain idle. As soon as the old bear got to leeward of us, and took alarm, our captain shouted, "Go ahead with full speed!" The screw began to revolve, and with all possible rapidity the ship made for the ice, to cut off the retreat of the unfortunate trio.

From the first this had been our captain's plan, and with him it was a simple question of time; while most of us, however, were asking one another whether the ship would be sufficiently strong to accomplish the work he required of her.

Hark, a terrible crash! We charged the ice where it seemed to offer least resistance; but it was more solid than that of the preceding day, and the shock was much heavier. However, our cutwater soon opened a passage, glided upon the floe, crashed it under its burden, and plunged again into the water. During this manœuvre, which was twice repeated, no one could stand upright. But our captain's expectations were realized: the vigour of the assault defined across the tongue of ice a crevasse which soon extended to the other side; and the unfortunate beasts found themselves at our mercy, on a raft floating separate from the body of the floe.

Soon afterwards, the captain, with three companions,

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disembarked; and it is needless to say that both the mother and her cubs fell victims to their rifles. They were quickly brought on board, and at breakfast next morning their flesh was greatly relished.

UPERNAVIK.

Our space does not permit us to dwell upon every incident of the voyage,—which, be it remembered, was a voyage of artistic investigation rather than of geographical discovery. The *Panther* visited Upernavik, where Dr. Hayes met once more with his old friends who have already figured in these pages, Hans and his family. In leaving this harbour, the *Panther* accomplished the daring exploit of charging an iceberg which lay across her course. Her iron spur struck the mountain of ice just in the middle. The shock was terrible; the men on deck were thrown off their feet, and the dishes and plates in the cabin lost their equilibrium. Fortunately, on the side it was struck the berg was cut like a bevel, and the ship glided over the thin edge, rising five feet out of the water. The force of the blow was, therefore, somewhat broken, and the steamer fell back into the water with masts standing. Her captain recommenced the manœuvre; the sea was strewn with the countless fragments detached by the collision, but the mountain remained firm. The captain remarked that in the centre the ice appeared thinner, and renewed his ram-like blows, three times, four times, five times. At the sixth, the mass of crystal split with a terrible crash; the two parts pivoted on their base, striking the sea with a sound of thunder. Then the *Panther* went on her way rejoicing.

THE ISLAND OF DISCO.

Continuing her southward voyage, she next put into the Moravian mission-station of Godhav'n, a rock-encircled bay on the coast of Disco Island.

Disco Island is one of the most remarkable localities of Greenland. The Eskimos have a tradition that a powerful sorcerer, or *angeikout*, long ago dragged it from the south to its present position; and in support of it they point to an enormous hole in a rock on the south side, through which the magician passed his rope.

An interesting feature of Disco Island is its extensive carboniferous deposits. These vast accumulations of vegetable matter date, in all probability, from a remote geological epoch, when the country merited the name of Greenland: a designation now as inappropriate as that of Achilles when applied to an aged wrestler.

These coal-measures, however, are not peculiar to Disco Island. Immense superficial strata are spread over the whole continent. To the north of Waigatz they are found in great abundance, as well as along the river-courses of the great fiord of Omenak. With the exception of Melville Bay, this is the point of the coast richest in icebergs and glaciers, the whiteness of which contrasts strangely with the black bands that tell of an epoch when Frost had not yet destroyed in these regions heat and life.

The island measures upwards of eighty-five miles in length, is everywhere exceedingly lofty, and exhibits a magnificent line of lofty trap cliffs. On the south, in lat. 69°, it projects into the sea a low spur of granite,

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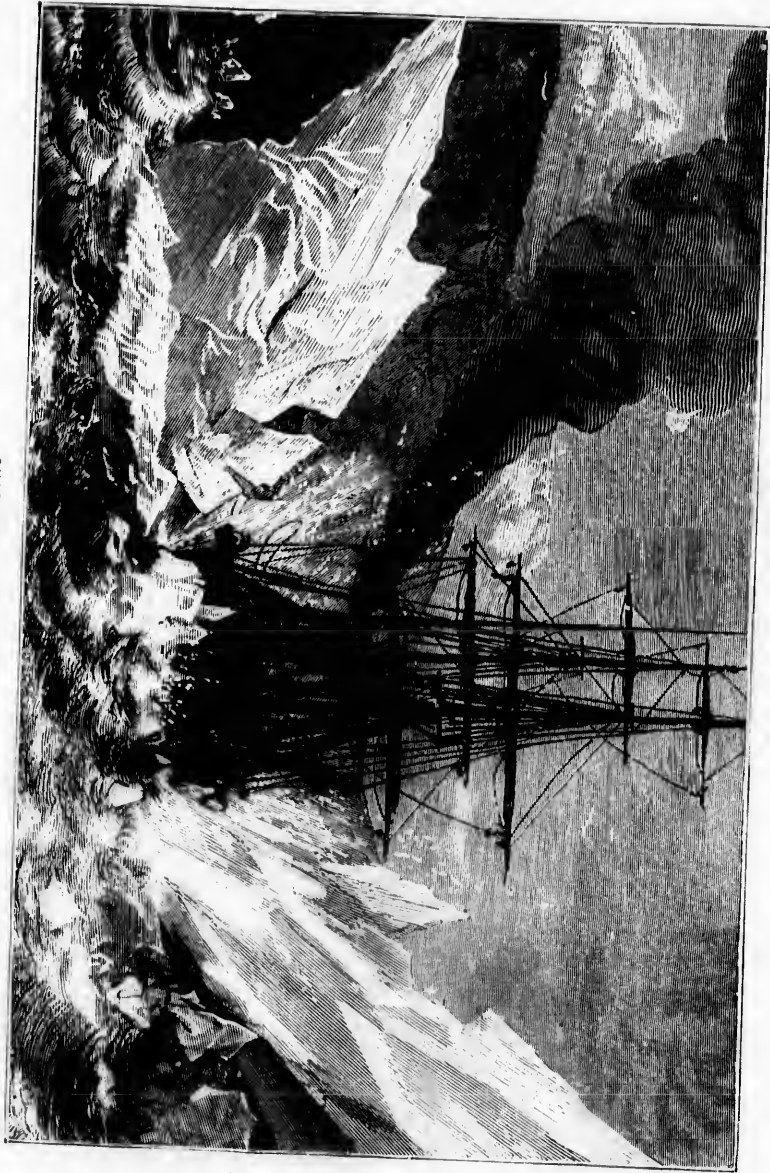
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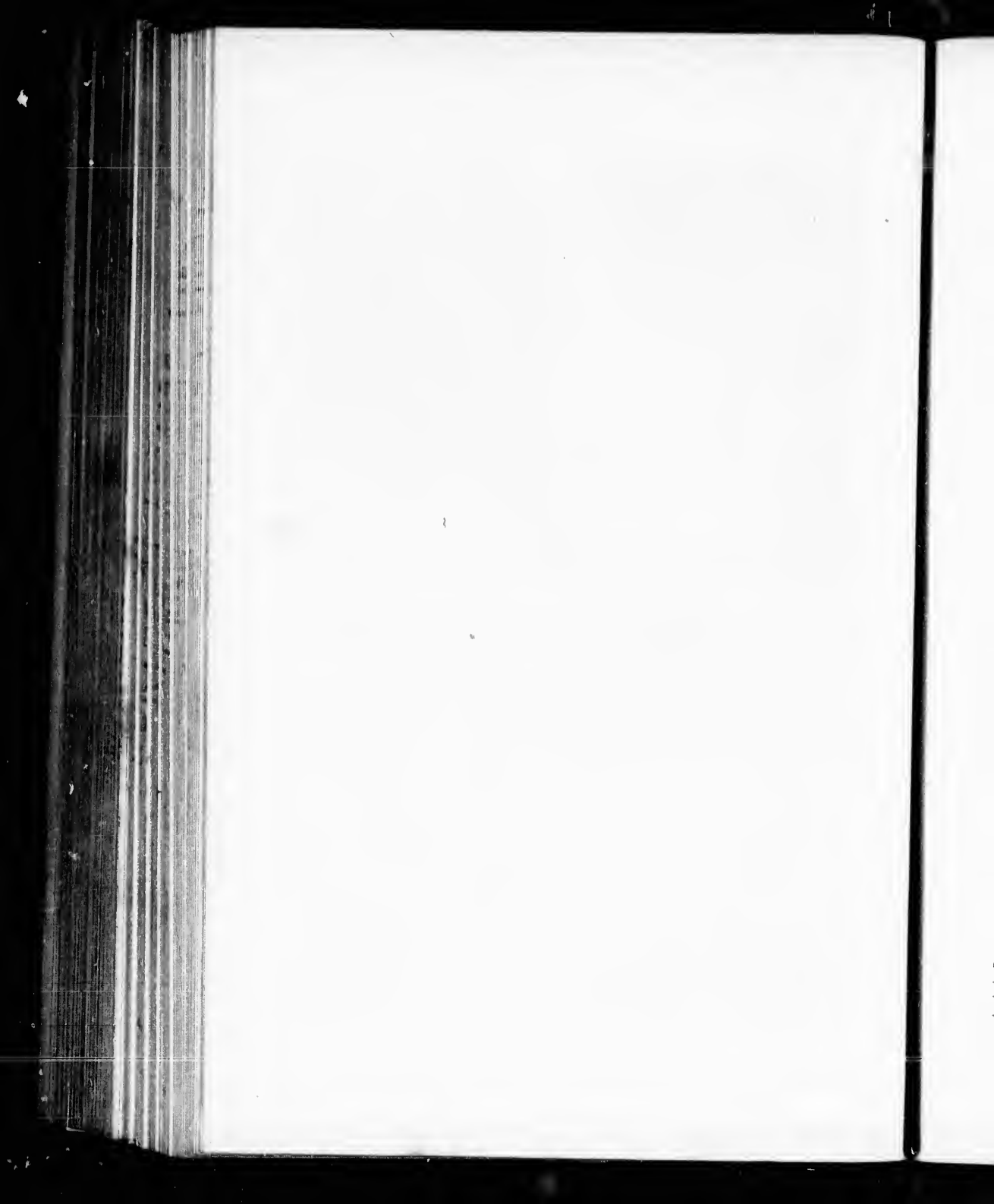
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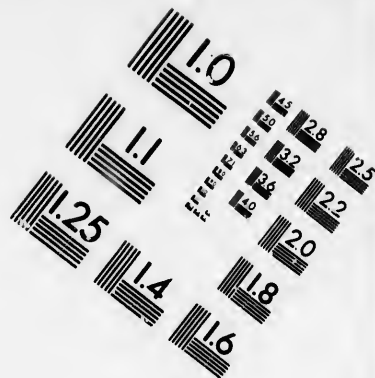
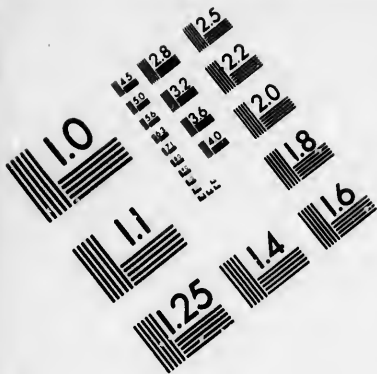


about a mile and a half in length—a peninsula at ebb of tide, and an island at high water—forming the most perfect little haven imaginable,—Godhav'n, or “good harbour.” To the north of the bay, and in face of rocks which rise perpendicularly from the sea to an elevation of two thousand feet, lies the town of the same name,—which our English whalers, however, more generally call *Lievely*; probably a corruption of the adjective “lively.” And as this little town is the metropolis of Northern Greenland, and the general rendezvous for whalers, fishing-craft, and vessels of discovery, no doubt it is “lively” enough in the season, in comparison with the frozen and solitary wildernesses beyond.

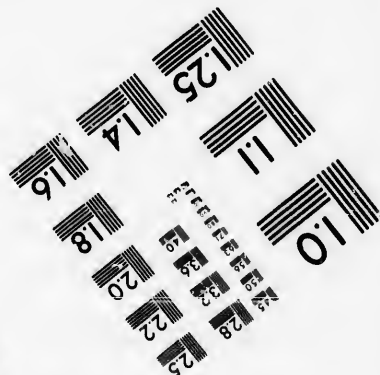
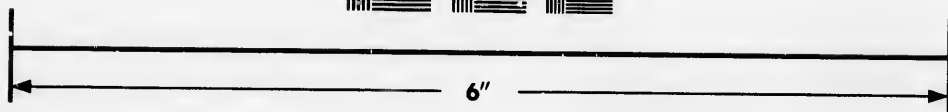
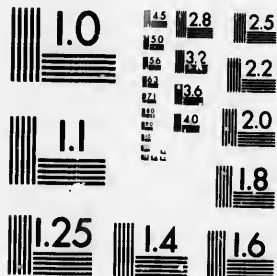
JACOBHAV'N.

The *Panther* proceeded next to Jacobshav'n, which is one of the oldest missions in the north of Greenland. It contains a church, and also a seminary for the education of young natives desirous of becoming catechists or teachers. Hence a woman who can neither write nor read is now a *rara avis* in Moravian Greenland. Until the epoch of the Danish colonization, the Eskimo language was entirely oral, and the natives possessed no other means of expressing the most elementary ideas than by speech; the picture-writing, or ichnography, of the North American Indians, was unknown to them. The missionaries, however, have taught the Greenlanders to write; and at Godthaab a printing-press, established by Dr. Black, has published some interesting historical narratives and native traditions, illustrated by wood-engravings of the quaintest character.





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The Eskimos are not deficient in aptitude and manual skill; and even in their savage state evince no ordinary dexterity, as is shown by Dr. Pfaff's collection of specimens of ancient Greenland art. Knives, lamps, pots, hatchets, spear-heads, harpoon-heads, needles, augers,—all of stone, and all wrought in a superior manner: the knives, well-sharpened at the edge, are, like the drills and needles, manufactured from chalcedony and other minerals of a similar character. Could our skilfulest lapidaries, with all their improved mechanical appliances, have polished them more brightly, or sharpened them more keenly?

As is the case with all the Greenland colonies, Jacobs-hav'n owes its prosperity to its seal-fishery. The right whale, in its annual migrations southward, visits these waters in September; the natives catch it, and dry its flesh. So, too, at Jacobshav'n they catch and dry a particular variety of *flütans*, which are found on a limestone bank deposited by the waters which fret beneath the neighbouring glacier.

Two years before our visit, Mr. Whympier, the artist, had examined this glacier, with the view of ascending by it into the interior of the continent; a thing which we believe to be impracticable, at least so far as all the glaciers known in Southern Greenland are concerned. Dr. Hayes' journey of upwards of seventy-five miles across one of these in the extreme north (see page 240, *ante*), is the only successful attempt of the kind on record; and this was accomplished at a point where, owing to the configuration of the soil, the ice was exceptionally smooth. Certainly it may be possible to

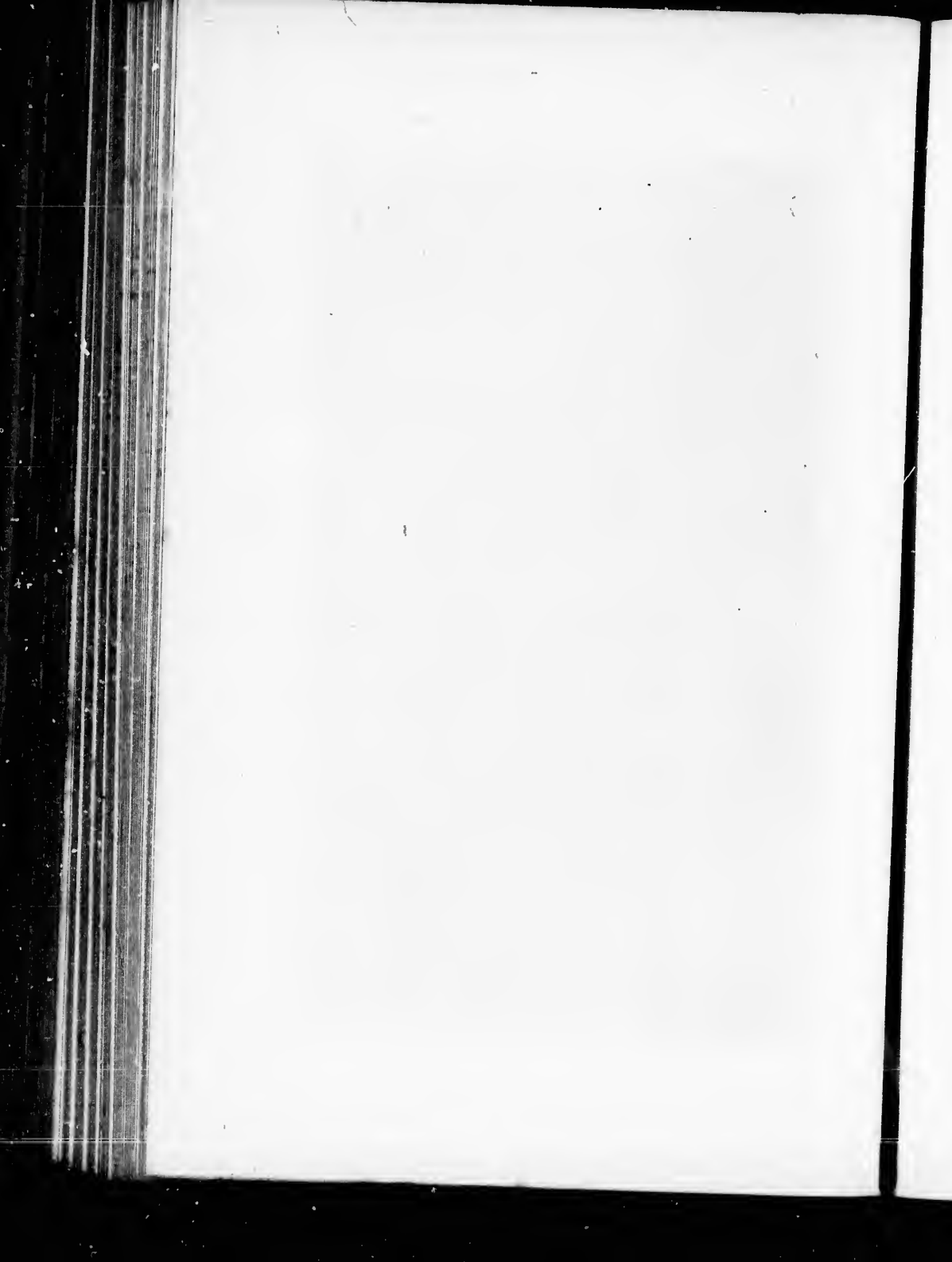
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DISCO ISLAND





achieve the traject of Greenland through these icy wildernesses, but the enterprise would be one of extraordinary danger. It is doubtful whether a single living animal would be found on the route. In our opinion, the ice-sea spreads over the whole of Greenland, except for a narrow belt along its coast, where the snow thaws to return to the bosom of its parent ocean.

To describe Jacobshav'n, would be simply to repeat our previous description of Greenland towns. It is a little larger than Godhav'n, and its climate is a little warmer.

During our stay at Jacobshav'n, the most memorable event, undoubtedly, was our ascent of the Lyngonarkens Fjeld; which we accomplished by the cliff in front of the town. The governor expressed his doubts as to our successful achievement of an enterprise so difficult. Our joyous company included two young lady-friends, the inspector and his secretary, and half-a-dozen of the *Panther's* people. Well supplied with provisions, we crossed the bay at nine A.M. A brighter sun never filled an autumn atmosphere with light and warmth; we descended on a broad verdurous slope, which we climbed to the foot of the first chain of trap. Here we indulged in a brief rest. We had followed up the banks of a torrent, which now emerged from a deep crevasse to form a magnificent cascade, partly veiled in an embrowned cloud. The steep ridge over which it flung its waters descends in a south-easterly direction, and gradually widens into a plain, which the laborious hand of Time has wrought in the most singular fashion. The softer portions of the rock have worn away, leaving the rest intact; over about two thousand yards its surface

resembles a clearing sprinkled with aged trunks. One of these stone shafts, about twenty feet high, is called "Lot's Wife."

After having crossed this ridge at a short distance from the cascade, we arrived at a vast abrupt decline, formed of masses of rock fallen from the cliffs which rose above our heads and seemed to touch the firmament. Then began the real labour and burden of the day.

Of all the feats accomplished by the ladies, this was the most difficult. It was impossible to plant the foot firmly on these angular rocks, heaped pell-mell one upon the other; it seemed as if the inclined plane of dry stones up which we dragged ourselves would crumble beneath us, and launch us in the midst of the terrible avalanche, in the black gorge yawning beneath us. To look down upon it turned us dizzy, to look upwards made us shudder; but the brave-hearted maidens were bent on success—always the last to halt to recover breath, they were the first to give the signal of departure. Their courage never wavered for a moment.

Along this rocky landslip we made our way for fully three thousand yards before reaching the base of the cliffs, which our barometer declared to be 1500 feet above the sea. We threaded a narrow ravine, and between the high rocky walls, of a reddish brown, we carefully followed up the torrent already spoken of; a less toilsome route, which conducted us to the everlasting snows that furnished its waters.

Here we enjoyed a cold collation; and after having quenched our thirst, we waded through the soft snow of the slope that still separated us from the glacier. The

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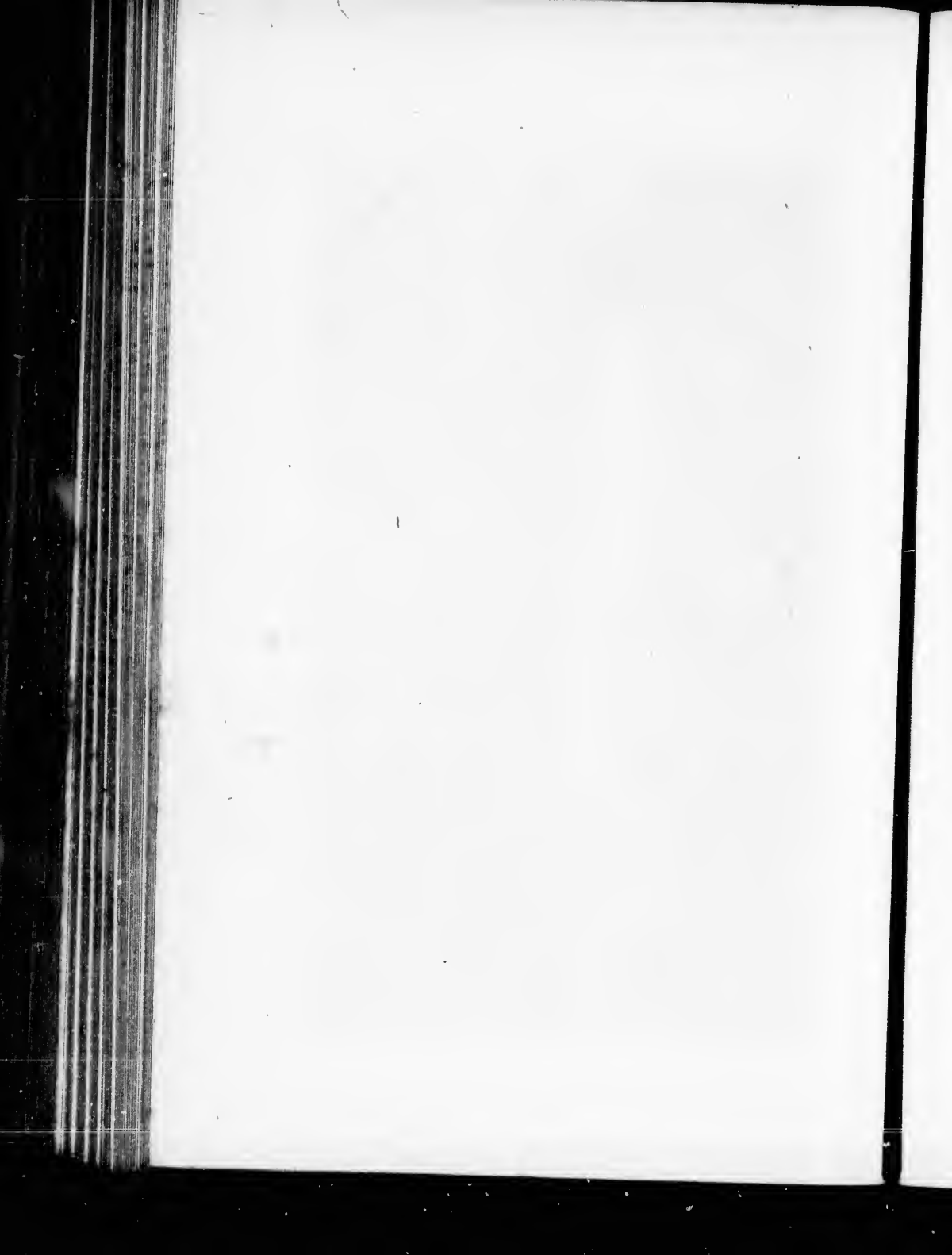
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fissures were not numerous, so without much difficulty we soon ascended above the rocks, and gained the summit of the fjeld—a word ("field") which perfectly describes its form; but nothing could be drearier or more naked than the great white plain which stretched before us, at an elevation of upwards of three thousand feet above the sea. Yet there was a certain grandeur in the scene: the atmosphere was very clear, except beneath, where wreaths of vapour clung to the sides of the cliffs; the gaze certainly included a reach of seventy to eighty miles. To the southward, beyond the town, could be seen the Prince Royal Islands, lying about seven miles off, like black spots on a silver surface; then the Dogs Archipelago, similarly formed in that shining sea. The lofty coasts and hills of Bunker Land, near Egedesminde, were outlined in the distance, and closed the field of vision. To the east, above the summit of the great Skarve Fjeld, the mountains of Jacobshavn pierced the sky with their snow-crowned peaks, between which the ice-sea shimmered, occupying upon the horizon an arc of 70° , and losing itself gradually in the pearly light; behind us, we could see the frozen cones and whitely-gleaming plains of Disco Island. The sea was more marvellous still. Thousands of icebergs floated in the bay, like a colossal armada. Distributed near us with greater parsimony, they multiplied rapidly, concentrated themselves around Jacobshavn, formed a dentilated barrier in front of the sombre rocks of the shore, and then disappeared between the lofty walls of the fiord. In this majestic panorama unfolded before our eyes, the immense glacier which empties its tribute

into the gulf seemed but a white line, and its giant sons but little specks upon the sea.

We spent an hour in wandering over the snow, which, in a temperature of 35° F., was still soft to the foot, though in some places it formed a tolerably solid crust. We saw no true ice, and for want of digging-tools could not ascertain at what depth it commenced. The scouts sent ahead to discover another route, that we might return to Godhav'n by the Red River, met with a single crevasse only, but then it was an impassable one. So that all we could do was to descend the mountain on the same side we had ascended it.

We had no American flag to unfurl to the wind, by way of saluting the port; but we improvised a Danish flag, in honour of the young ladies and of their country, the proprietary of this mountain: a red silk handkerchief served as the ground, and two pocket-handkerchiefs, twisted, as the cross.

After some joyous shouts, we resumed our journey; but during the return we were unsupported by ambition, and it appeared to us much more laborious and painful than the ascent. We were all the more pleased to find at the gorge of the cascade a messenger awaiting us with a hamper of provisions. We devoured them with enthusiasm and gratitude. Our hostess, Mrs. Smith, who thought of everything and everybody, reconnoitred the mountain with her telescope, and as soon as she saw us beginning our descent, hastened to prepare this graceful and acceptable surprise.

We had been afoot for eleven hours. The sun was

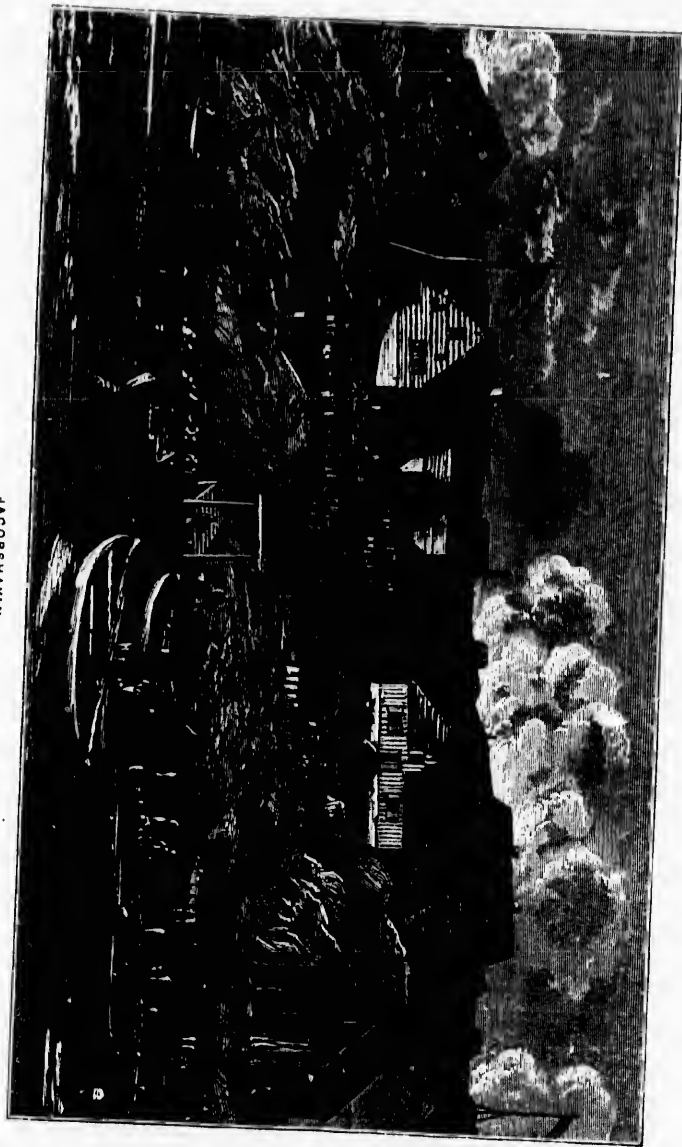
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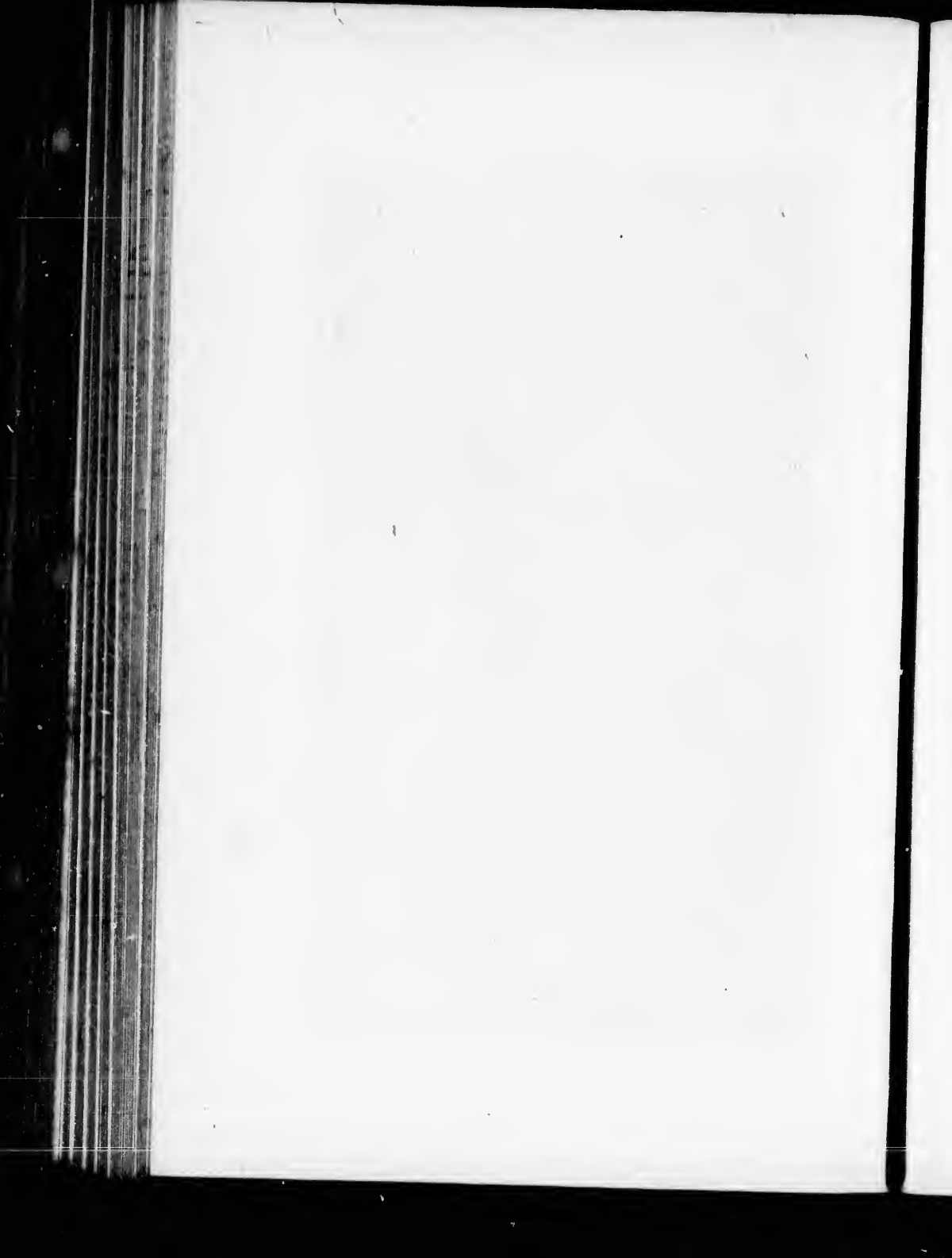
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JACOB SHAW'S



now behind the island, and the shadow of the cliffs fell upon the houses; but far above our heads rose the spotless crest of the Lyngmarken, all radiant in the gleams of gold and purple which the heavens poured forth upon it.

But here we must close our narrative. Next day, the *Panther* spread her sails to the breeze, and quitted the hospitable port. Standing out to sea, she soon lost sight of the bold rocky coast of Disco. In a short time even the lofty brow of the Lyngmarken was no longer visible; and she bade farewell to the romantic shores, with their varied and stirring memories, of the Land of Desolation.

CHAPTER VI.

THE GERMAN ARCTIC EXPEDITION OF 1869-70.

PRELIMINARIES.



GERMAN Arctic Expedition was undertaken in 1868; its commander being Captain Karl Koldewey, and its scientific originator, Dr. Augustus Petermann, the eminent geographer. It met, however, with very indifferent fortune. Baffled by the pack-ice of Greenland, it withdrew towards Spitzbergen, sailed along the west coast of that archipelago, and then, again pushing northward as far as $80^{\circ} 73'$, it accomplished several short excursions, which, though tending in no degree to solve the problem of a passage to the Pole, were valuable from their physical and hydrographical results. In August, the *Germania* sailed down Hinlopen Strait, sighting the "Swedish Foreland," and on the 30th of September she arrived safely at Bergen.

A month later, a number of gentlemen assembled at Bremen, to celebrate the happy return of the expedition; and in the course of their festivities the notion of a

second expedition was put forward, and favourably received. Conferences then took place between Dr. Petermann, Captain Koldewey, and others interested in Arctic Discovery, and before long the project assumed a definite shape and substance. When it was publicly announced, it met with a gratifying reception. To raise the necessary funds, committees were organized in the great commercial cities of Germany; and such was the enthusiasm of all concerned, that in May 1869 the central committee was able to announce its plans as follows:—

“On the 7th of June, the Second German Arctic Expedition, under Captain Karl Koldewey, shall put to sea.....

“It is our unanimous endeavour to render every part of the equipment as perfect as possible. After strict trial and inspection, the steamer *Germania*, the newly-built chief ship of the expedition, fulfils every expectation, as well as the sailors who conduct it and the men of science who accompany it. The steamer, like the convoy which accompanies her, will be equipped for two years.

“The *Germania's* size is expressly adapted for ice-navigation; the accompanying ship, the *Hansa*, of nearly the same size, will also be expressly adapted for the same purpose, and will be under the command of Captain Fr. Hegemann, of Oldenburg. If possible, the two ships will remain with each other, both on the outward journey, through the winter, and also on the return. Regard to the greatest possible security of the expedition has led to this extension of the plan.

"The plan of the originator of the undertaking, Dr. Petermann, of Gotha, which makes the eastern coast of Greenland the basis for advancing into the centre of the Arctic Region, is to remain the first aim of this expedition."

The scientific staff of the *Germania* were chosen and appointed by Dr. Petermann—namely, Dr. Karl N. J. Börgen, of the Gottingen Observatory; Dr. R. Copeland, a voluntary assistant at the same observatory; Lieut. Payer, a scientific topographer; and Dr. Adolphus Pansch, surgeon,—to whom were assigned the departments of botany, zoology, ethnology, and anthropology.

On board the *Hansa* were—Dr. Buchholz, surgeon, representing the departments of zoology, ethnology, and anthropology; and Dr. Gustavus Laube.

A few words as to the two ships. The *Germania* was stoutly built, with extra iron sheathing and strengthening; measured 90 feet long, $22\frac{1}{2}$ feet broad, and 11 feet deep, and 143 tons burden. She was a good sailer, but carried a powerful screw propeller.

The *Hansa* was a comparatively new schooner, of $76\frac{3}{4}$ tons burden, purchased and refitted expressly for this expedition.

The scientific equipment was particularly complete. It included a first-rate collection of astronomical and physical instruments, the greater part of which was generously lent by the Gottingen Observatory, or given by different professors or manufacturers. The ships also carried a small but well-chosen library. Many publishers presented the expedition with choice scientific

works, as well as with books adapted to amuse the leisure hours of both officers and crews.

These crews were composed as follows:—

The *Germania*: captain, two officers, engineer, boatswain, calker, cook, five seamen, fireman, surgeon.

The *Hansa*: captain, two officers, calker, cook, six seamen, surgeon.

An all-important but a difficult part of the preparations was the laying in of provisions and stores; and here a wise liberality prevailed. The ships carried but a small quantity of salt meat, which is a certain source of scorbutic disease; they were largely provided, however, with preserved meats. They took also a good supply of pemmican, which is indispensable on sledge-excursions, and a considerable stock of preserves of every kind. It was thought prudent to be furnished with a good "cellar;" and in addition to numerous presents of wines, and especially of French red wines, the two ships carried a capital assortment of spirits and liqueurs.

The necessities and luxuries of an Arctic wardrobe were also a matter of careful consideration. The *Germania* had on board quite a splendid collection of all kinds of the warmest furs and the best winter-clothing. In the preparation of these articles, nothing was neglected. Thus: all the seams were sewn with Angora woollen thread, because silk and cotton, under the influence of extremes of temperature, lose their tenacity. Then, as to the buttons, they were all of ivory; buttons of silk or bone not being regarded as sufficiently solid. Not a fragment of cotton thread was to be found in any

part of any article, while pockets and sleeves were snugly lined with wool. Caps were provided, shaped like ladies' hoods; they completely protected the head, neck, and shoulders of the wearer, and were trimmed around the face with a thick plaiting or border of fur. The gauntlets were from fifteen to sixteen inches long, by seven to eight inches broad, so as to fit easily to the hand when already encased in gloves of wool. The pelisses were made of sheep-skins or buffalo-hides; the latter, which are the lighter, being reserved for use in sledge-excursions. They were well-greased, not alone as a defence against cold, but to keep out moisture. Large sleeping-bags, in which the travellers could ensconce themselves if compelled to rest in the open air, were also made of buffalo-skins.

On the 13th of June, all the members of the expedition subscribed a formal engagement to obey unreservedly the orders of their leader, to devote all their efforts to the successful accomplishment of the enterprise, and to carry out with all possible fidelity the detailed instructions laid down by Dr. Petermann.

An understanding was also arrived at as to the means to be adopted to facilitate a search after the members of the expedition, in case they should be imprisoned or should perish among the ice.

It was agreed that, as near as possible to the point marked by each parallel of latitude or meridian of longitude, the expedition should erect—on an eminence, when possible—a cairn of stones or some structure easily distinguished. Documents descriptive of the movements

of the expedition were to be deposited, not in the interior of these cairns, but in a hole situated about twenty-five yards to the north. As the Eskimos show a remarkable degree of respect for the resting-places of the dead, information respecting the expedition, in case any of its members died, was to be interred with their corpses. In these sad receptacles would be found the record of their heroism and their sufferings, if they themselves were not destined to return to Bremen.

THE VOYAGE.

The *Germania* and the *Hansa* sailed from Bremen-haven on the 15th of June 1869, at three o'clock in the afternoon.

On the 17th and 18th they encountered much bad weather; the sea rolled heavily, and the *Hansa* was obliged to keep to leeward. In order not to be separated from her consort, the *Germania* was compelled each evening to lay-to until she overtook her. Hence, when any person went upon deck, his first glance and his first question were dedicated to the *Hansa*. And in this way originated a brief dialogue, which was adopted as a mild joke throughout the voyage:—"Where is the *Hansa*?" "Oh, to leeward!"

The wind sank on the 19th, and fine weather prevailed. North-west breezes afterwards blew almost uninterruptedly for a week, and the two ships were detained for some days in latitude 57° N., about the latitude of Skagen.

This protracted gale subsided on the 26th of June; and on the morning of that day, in lat. 57° N., and long. $24^{\circ} 3' E.$, they fell in with a fishing-smack.

"Boat ahoy! Have you any fresh fish?"

"Yes."

"Come on board, then."

Immediately all was activity on board the smack. Her crew lowered their tiny yawl, and quickly lay alongside the *Germania*. Two young seamen, Dutch to all appearance, sprang upon deck, with a basket full of their finest fish, large turbot and soles.

Profiting by a light breeze which now arose, the *Germania* slowly forged ahead, and about noon rejoined her escort.

Then for two days raged a hurricane, blowing obstinately from the north-north-west, and raising a heavy sea, which rolled its billows over the main-deck. But on reaching the 59th parallel, exactly two weeks from their departure, the evil influence of the winds of the north ceased, and the two ships could steer more directly towards the Pole.

On the 30th of June, a strong north-wester again retarded their progress, and the adventurers grew very weary of the inaction to which they were condemned. While the temperature of the atmosphere was still at 8° above freezing-point, a fog came on about noon, which gradually grew so thick that, to prevent separation, the gong was sounded on both ships for fully sixteen hours,—its dreary sounds, echoing through the dreary darkness, producing the most melancholy effect.

By making a succession of short tacks, the ships contrived to move ahead, though very slowly; and on the evening of the 1st of July the expedition joyfully crossed the channel which separates Norway from the rocky

Shetlands, in 60° of latitude. Thenceforward they were in that region of the Atlantic which is known more particularly by the name of the North Sea or Arctic Ocean.

They had occupied sixteen days in accomplishing this first stage of their voyage, which, with a fair wind, a ship will accomplish in ten days and a half.

Owing to the persistency of northerly winds, and the strength of the current which flows eastward, they were driven so near the Norwegian coast that, one evening, they thought they caught sight of it. When in the latitude of Drontheim, they resumed a north-west course.

The darkness of the nights had perceptibly diminished, and already at midnight, on the 1st to 2nd of July,—an epoch when the sun sets about quarter past ten,—no lanterns were needed upon deck, not even at the binnacle. The voyagers could see to read the finest manuscript.

During the day the ship was almost constantly surrounded by flocks of gulls,* numbering from twenty to fifty birds in each white-winged company. These swift and noisy troops followed the two vessels indefatigably, wheeling and whirling around them in every direction, marking their prey in the track of the ships, and seizing with the rapidity of lightning the smallest crustacean brought to the surface in the eddy of the churning waves. Already, in the Northern Ocean, some dolphins, or "blowers," had been seen; but now they swam lazily around the ships, and so close to them that the zoologist had the satisfaction of making an accurate drawing of

* *Larus tridactylus*.

their back, and particularly of their dorsal fin. The dolphins proved to be of the species * so well known to sailors as the *Nordcaper* or *Butzkopf*, one of the largest of the family, measuring on an average about twenty-five feet in length. It is distinguished by its straight, long, and rigid dorsal fin, which is discernible at a considerable distance, and has procured it the designation of the "sword-fish." The Americans call it the "Killer," and the Norwegians the *speckhauer* or "Whale-catcher," from a circumstance which was long discredited as a fable, but is now admitted to be a fact by the least prejudiced whalers; namely, that these dolphins are the most terrible enemies of the whale, which they follow and attack with equal perseverance and success.

Besides the "Nordcapers," the voyagers one day fell in with another species of dolphin, three or four of which gambolled under the *Germania's* bows. These were perfectly brown, without any upright back-fin, —having a thick head and abrupt forehead. It was a strange but interesting sight to watch these unwieldy and apparently awkward creatures, each nearly fifteen feet long, disporting themselves in the water so peaceably and with so much agility.

Meanwhile, several soundings had been taken on board the *Hansa*, with the following results:—On the 1st of July, in lat. $60^{\circ} 45' N.$, and long. $2^{\circ} 4' E.$, at a depth of 65 fathoms, a rocky bottom, Norwegian granite; July 7th, lat. $68^{\circ} 18' N.$, and long. $7^{\circ} 14' E.$, at 700 fathoms, hard sand.

About ten minutes before midnight, on the 5th of

* *Delphinus orca.*

July, the expedition crossed the Arctic Circle ($66^{\circ} 33'$), nearly in the meridian of Greenwich (long. $0^{\circ} 15' W.$).

The wind blew fiercely, and with a speed of nine knots an hour they entered the Polar Sea, which was to be their place of sojourn for upwards of a twelve-month.

The *Hansa* was some miles ahead; she hoisted at her maintop-mast-head the North German flag, and saluted it with a discharge of cannon. The *Germania* followed her example; and afterwards crews and passengers amused themselves by imitating the grotesque practices usual on crossing the Equator. Neptune came on board to welcome them on their appearance within that remote part of his dominions; and, of course, all who had not previously crossed the Arctic Circle underwent the rough shaving and christening which custom has duly sanctioned.

On board the *Hansa* the proceedings were of a far more elaborate character. Neptune came on board with a couple of followers, and addressed Captain Hegemann with the startling inquiry, "Do you carry any green hands?" The answer being in the affirmative, a strict search was made for the "green hands;" who proved to be Drs. Buchholz and Laube, and the seamen Max Schmidt and Konrad Gierke. Then came the christening. Dr. Laube writes as follows:—

"We entered willingly into the humour of the scene, knowing that our sailors were decent fellows, and would not carry their joke too far, even had we not entered on the ship's books with them at Bremen, and become seamen. Our carpenter went about the whole day with

a sly, laughing face, and towards evening had quite lost his wonted chattiness. We ourselves kept in the cabin, in order not to witness the preparations. At midnight we were called upon deck; a gun was fired; and as its thunder died away we heard the well-known cry, 'Ship ahoy!' Three wonderful figures climbed over the bowsprit; Neptune first, in an Eskimo dress, with a great white cotton beard, a seven-pronged dolphin-harpoon for a trident in one hand, and a speaking-trumpet in the other. A tarpaulin was spread on the quarter-deck, and a stool placed upon it. It resembled a judge's bench. Here each one of us was seated, with eyes bound, while the masked followers of the Northern Ruler went through the customary formalities. I was soaped and shaved, but Neptune dealt with me very gently; he can appreciate a good cigar, and greatly respects those who can supply him with the luxury. Then came the christening; not, on this occasion, applied to the head (as is usual), but to the throat and stomach. Neptune addressed some questions to me through his speaking-trumpet, desiring me to answer. I detected his object, answered with a quick "Yes," and closed my lips. The mischievous waterfall rattled over me, causing general amusement. They then took the bandage from my eyes, that I might see my handsome face in the glass; but instead of a looking-glass, it was the combing of the wooden hatchway, which the barber's assistant very gravely held before my face. I was now dismissed, and could laugh with the others, while I watched my comrades going through the same ordeal one after the other."

This time-honoured and laughable ceremony was

brought to an end on both ships by a liberal dispensation of grog.

The hours of the night now became perceptibly brighter and clearer. No longer was there any need to light the lamps between decks. And, as it happened, the first night on which the high latitude we had gained enabled us to see the sun at midnight, the clouds which had obscured the sky all day drew off towards the north; and the voyagers contemplated with delight, on the horizon of a boundless sea, the grand red orb of the sun, visible almost in its entire circumference, and surrounded by magnificent rings of gold and violet. Unfortunately, the spectacle was of short duration. A curtain of clouds veiled the heaven anew; and several weeks passed away before the midnight sun was seen again.

On the 7th of July a little snow fell; and from the 8th the voyagers were incommoded by a terrible fog, in the midst of which they were compelled to "suffer and grow strong" for four weeks, without relief—that is, until they made the land.

Though they were still at some distance from the ice, they began a regular series of scientific observations. The temperature of the surface of the water was noted every two hours; and after the 4th of July, in lat. 61° N., they observed, four times a day, the ocean temperature at great depths.

They found they were sailing exactly at the limit where the warm southern encounters the cold northern current. The warm current—that is, the Gulf Stream—was easily distinguishable by its higher temperature,

a more considerable proportion of salts, and the deeper blue of its waters.

The existence of the currents can be ascertained by means of floating fragments of wood. As early as the 6th of July they had picked up some pieces; two days later, they fell in with a large gnarled and knotted tree.

To ascertain with exactness the superficial currents, it has long been customary to throw overboard some empty bottles, tightly corked, and enclosing a paper on which are recorded the date when and the place where these memorials are committed to the deep. When a ship meets with one of them, it is duly picked up, the place and time of its finding are noted, and the written record is re-enclosed. Our voyagers from time to time followed out this useful custom, which has led to some interesting and even valuable results.

JAN MAYEN.

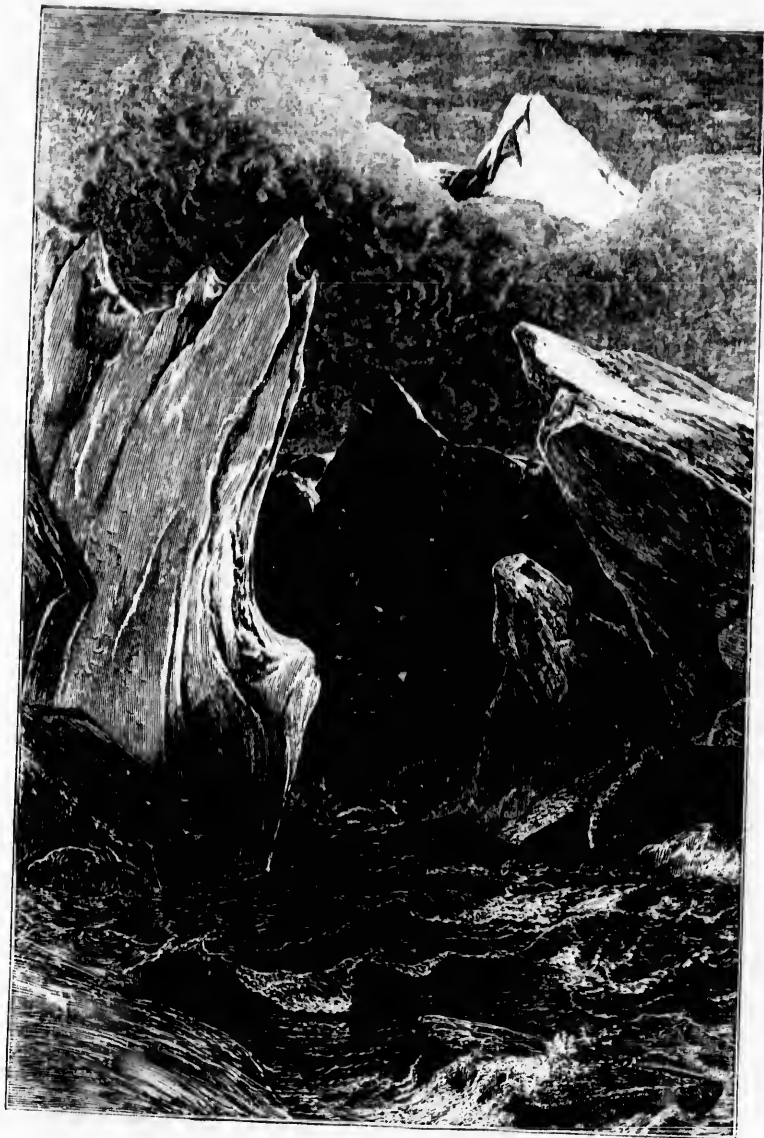
On the 9th of July they were in sight of Jan Mayen Island. The *Hansa* passed about a mile and a half to the westward of it. In clear weather it would have been possible to make out, long before, the loftiest summit of the island, the Beerenberg; but the sky was misty. In the morning, however, they could see in the distance some signs of its mighty glaciers. Keeping as near in-shore as was safe or practicable, when the fog temporarily lifted they could trace a tolerable extent of broken, rugged, and rocky coast. It must have been the north-east side of the island, just at the foot of the Beerenberg, whose dark rocks, alternating with long streaks of glacier-ice, descended to the water. The

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JAN MAYEN.

whole, however, was indistinct and misty, giving the impression of a blurred photograph; and soon the thick curtain of the fog once more descended upon the scene.

The island seems nearly always to be seen under similarly disadvantageous circumstances; though Lord Dufferin succeeded, in 1856, in catching a glimpse of the snow-shrouded crest of the lonely Beerenberg. "The heavy wreaths of vapour," he says, "seemed to be imperceptibly separating; and in a few minutes more the solid roof of gray suddenly split asunder, and I beheld through the gap—thousands of feet overhead, as if suspended in the crystal sky—a cone of illuminated sky." Then again the clouds closed over it; but separating a second time, they left "the mountain standing in all the magnificence of his 6870 feet, girdled by a single zone of pearly vapour, from underneath whose floating folds seven enormous glaciers rolled down into the sea!"

Jan Mayen was discovered in 1611 by a Dutch navigator, whose name it bears. It lies about sixty geographical miles from the Greenland coast; is nine miles long, and one mile broad; and is wholly of volcanic origin. An attempt was made to colonize it in 1633-34, when seven Dutch sailors passed the winter among its rocks. The severity of the winter had been successfully resisted, when scurvy broke out among them. This, as they could not procure the proper nourishment, mowed them down rapidly. The first died on the 16th of April, and the others shared the same fate one month later. Their diary ended with the 30th. When the

Dutch fleet arrived on the 4th of June, they were all found dead in their huts.

In August 1817, Scoresby visited the island; in 1856, as we have seen, Lord Dufferin; and in 1861, Dr. Berna, of Frankfort, landed, and spent two days upon it.

IN THE POLAR SEA.

The *Germania* and *Hansa* were prevented from approaching the glacier-burdened isle by the heavy sea and strong wind. At midnight, therefore, they resumed their northerly course. The fog was constantly increasing, so that the two ships could scarcely see each other, and in order to keep together were obliged again to have recourse to the dismal horn. The voyagers could now thoroughly enjoy the Arctic fog as "pictured in books," and appreciate the truth of the painful descriptions they so faithfully record. They thought of the "sea-lungs" of Pytheas; of the impenetrable chaos which, according to that writer, lies beyond Thule, and is neither land, nor sea, nor atmosphere; and of that passage in Horace,—

" Quod latus mundi nebula malusque
Jupiter urget."

They thought, too, of the terrible gloom with which the old Norse legends enshrouded the unknown ice-region; and began to believe in the dreary influence a long sojourn in such a climate would exercise upon mind and body.

Nothing could be more melancholy than that boundless, gray, uniform veil of fog. The very sea, as far as

the eye could reach, was monotonously sombre. An auk or a diver occasionally flying before the ship was the only object that attracted the gaze. Sometimes the gloom lightened sufficiently to enable the voyager to make out vaguely the position of the sun; but the orb of day was seldom so far visible as to afford an observation for latitude, or the sight of a fog-bow. But every hope of a change which might be cherished by such a momentary interval was at once destroyed by the rolling up of fresh and even denser clouds of mist. As in the North Sea over the persistent northerly gales, so here over the new enemy the voyagers sang one constant "doleful tale of wrong and lamentation." The burden of their cry was, "Fog! fog! the gloomy fog!" If it had stopped at *that*, it might have been endurable. But now the tiny globules condense and fall in a fine spray, and gradually gather into a heavy shower, though still the fog continues. The sails flap, the running-gear slackens, and the ship swings to and fro in the fresh cold breeze. What can be done? To stay below is an oppression and a misery. The voyagers don their oil-skin clothing, with high boots and serviceable sou'westers, and appear on deck. They pace to and fro with cautious steps; their eyes, as if open sea lay before them, constantly sweeping the horizon, and turning away in pitiful disappointment. The sight of the bending masts, and the roll of the untiring billows against the ship's side, dissipate for a time the influence of the melancholy spectacle. The mind turns inwards upon itself; and amidst all the thoughts of the grave but eagerly-coveted future, indulges thankfully in its

vivid memories of the past and of home. The voyager thinks of his last day on shore; perchance a warm summer day, with all the bloom of the rose, and all the music of the nightingale. Once more he sees the "dimples smiling on the cheek of home" (as old Catullus has it), and with the loved ones he wanders in the shadowy grove, or by the side of the murmurous stream. He sees the bright gleam of starlight in the heavens, and the rising of the golden moon above the far-off tree-tops, when—a heavy wave strikes the ship and heels her over to one side. He is thrown against the mast; icy spray splashes in his face; the water sweeps over the deck and over his feet. The summer-night's dream is at an end. The chill reality of a dreary, fog-shrouded day resumes its empire over the mind and heart.

By this time the supply of fresh water had decreased considerably, and it became necessary to put everybody on an allowance. Bread had failed from the 8th of July; but its want was not much felt, owing to the abundant provision of potatoes.

From the 9th of July, until midnight on the 10th, a strong easterly breeze carried the two vessels swiftly and steadily towards the Arctic ice.

Early on the morning of the 10th the *Germania* lost sight of the *Hansa*, and the hoarse sounds of her horn met with no response. But later in the day was heard the roar of a cannon, followed quickly by a second report. The *Germania* immediately replied; but, about midnight, firing in its turn a signal-gun, again received no answer.

For five successive days the weather did not improve. The fog deepened steadily; the mean temperature reached 36° ; rose on one occasion only to $39^{\circ} 30'$ and fell to $33^{\circ} 80'$. The only consolation was that nothing retarded the *Germania's* course; for on the open sea, with the aid of the compass, it is as easy to steer in the darkest night as in the full light of day.

On the 14th a calm prevailed, and the crew of the *Germania* profited by it to fish up drift-wood and hunt the gulls. At intervals the weather cleared, and it was possible to obtain a distant view; but no *Hansa* could be discovered. The signs were numerous now of the nearness of the ice. They could see, in the west or north-west, over the horizon, a white or yellowish gleam, springing from the ice, and known as the "ice-sky," but differing from the "ice-blink." Another indication was the presence of the ivory gull, which never strays far from the ice.

AMONG THE ICE.

It will be for the convenience of the reader, perhaps, if we henceforward consider ourselves as on board the *Germania*, and narrate the incidents of the expedition in the first person, as if we had been eye-witnesses of them.

Let it be understood, at the outset, that the Polar Circle is regarded geographically as the boundary of the Arctic Frozen Sea. In the first place, there is a physical cause for this; namely, that in winter, during a certain number of days, the sun does not rise at all within this circle, and his influence accordingly being

so rigidly restricted, the so-called "everlasting ice" is enabled to form. But, secondly, the Polar Circle is also a geographical boundary, as it cuts directly through Behring Strait and the narrowest part of Davis Strait, besides extending over both the Old and New Worlds; so that the entire area of the Polar Basin is enclosed within it. We have spoken already of the three approaches to this basin; only one is of a considerable width—that which lies between Scandinavia and Greenland. Here the Polar Circle is least satisfactory as a boundary-line, because here the arbitrary limit imposed by Science is encroached upon by the irregularities of Nature. From the west coast of Norway, to a point far beyond the North Cape, the waves of the Atlantic are never covered with ice; while on the east coast of Greenland, down to its southernmost point, the solid heavy stratum presses with a continuous pressure and an irresistible force.

Strictly speaking, the boundary of the true icy sea may be defined by a line drawn from Cape Farewell to Iceland, from thence to Spitzbergen, and lastly to Novaia Zemlaia. The cause of this appearance lies really in the existence of two great ocean-currents. From the coast of Norway up to Spitzbergen and Novaia Zemlaia stretches the north-easterly arm of the warm Gulf Stream, driving back all floating ice, and from the genial influence of its waters conducing to a liquefying process everywhere along the ice boundary.

On the other hand, on the east coast of Greenland the Polar current runs in a south-west direction to a great distance, sweeping along with it the congealed masses

formed in the remote north, and gathering in its course all the younger ice, the growth of the last winter; while, from the coldness of its waters, it prevents the melting of the same in a remarkable degree. Hence it is clear that from Davis Strait must likewise flow another cold, ice-charged stream; and thus the reader will understand why our steam-ships, on their voyages to and from New York, so often fall in with icebergs or drifting ice. This great Greenland ice-current forms the principal outlet for the removal of the superabundant Polar ice, and may be compared to a floating glacier, the farthest domain of which is the Polar Basin.

Some remarks on the nature of the ice in this Polar current may be useful.

At the beginning of the current, in the same latitude as Spitzbergen, and much nearer to the coast, as far south as Iceland, the largest ice-fields are to be found; tracts of enormous superficial area, and sometimes upwards of fifty feet in thickness. Between them, and arising from their disruption, are smaller fields called "ice-floes;" which, increased by thawing, by the surrounding pressure and constant collision, as well as by the waves, break up in small pieces—the real hummocks which prevail at the eastern boundary of the current, at the "ice-line," as well as at the southern extremity. As a final stage of the disturbing process, huge hummocks float about, or cover the broken ice or wide expanse of sea with irregular eminences. It is chiefly on the southern coasts of the Polar lands that real icebergs are met with. Such an iceberg, say the German physicists, is not formed in the sea, but is a broken

mass of glacier moving along partly submerged, and from which at different times large pieces have been disrupted by various causes. These float onward with the current.

The breadth of the ice-current, like the position of the ice-line, necessarily varies at different times of the year. While in the spring it strikes past Jan Mayen to the southernmost point of Spitzbergen, it flows much nearer to the coast in summer, and diverges to the north of Spitzbergen by way of the west coast of Iceland. But even at corresponding times of the year the ice-line may shift its position considerably. Much depends on the prevailing winds, and on the relative compactness of the labyrinthine mass of ice-fields, floes, and drifts.

As all ice rises out of the water, says Dr. Pansch, and presents an easy object of attack to the wind from its irregularities of form, so it is frequently diverted from the course of the water-current by a strong air-current, and either accelerated or delayed in its progress. An easterly and south-easterly wind impels the ice westward, and drives the masses more closely together than ever; while a westerly and north-westerly wind forces the boundary of the ice-world farther to the east,—dividing and separating the masses, and thus rendering the ice-stream much easier of navigation.

To sail across this ice-current or ice-zone was now the task that lay before us.

On the 15th of July a light southerly wind rose, early in the morning; our sails caught the favouring

breeze; the ship readily answered her helm, and pressed towards the north-west through a sea encumbered with fragments of ice. An experienced ear could already distinguish a distant murmur, which seemed to approach nearer and nearer: it was the swell of the sea as it broke against the still unseen ice-fields. We heard the sound with joy; the object of our desire was attained; and if the ice proved for us a veritable shore or coast-line, we might boldly, in the *Germania*, close in upon it, and examine it.

Nearer and nearer came the sound; everybody rushed upon deck, regardless of the demands of physical appetite.

Suddenly, as if by enchantment, the fog cleared away; and before us, at a distance of some hundred paces, rose the ice! It presented a long, long line, like a cliff-wall of rugged irregular rocks; its blue-tinted sides glittered in the sun; against their base rolled the sea in flashing columns of spray and foam. The summit was covered with a thick layer of snow of blinding whiteness.

In silence we admired this magnificent panorama. It was a grave and solemn moment; new thoughts and impressions crowded on the mind; the heart alternated between emotions of hope and doubt.

But almost immediately the fog closed in again.

In the interval, however, brief as it was, we had convinced ourselves of the absolute rigidity of the ice-masses in this locality. Had we conceived the design of penetrating that impregnable wall, we could never have accomplished it. It was clear, even to those who had but an imperfect notion of what ice-navigation

really means, that man could not triumph over such an obstacle; not even with the aid of gunpowder, or with the most powerful armour-plated and iron-cuirassed vessel.

Our first duty now was to look for the *Hansa* in lat. 75° ; but, on account of the east winds which had prevailed continuously for the last few days, the circumstances were not favourable for any speedy breaking up of the great ice-barrier.

The point at which the *Germania* struck the ice-line was situated in lat. $74^{\circ} 47'$ N., and long. $11^{\circ} 50'$ W.; and the impregnable threshold stretched almost due north and south. We afterwards learned that the *Hansa* had touched it on the same day in lat. $74^{\circ} 57'$ N., and long. $9^{\circ} 41'$ W.

On the morning of July 16th the air brightened; we could steer towards the ice, which soon became visible. On the north and north-east side extended a long chain of ice-floes soldered together; but in the west and north-west opened a large gap or inlet, into which we penetrated, that we might examine the disposition of the ice more closely. About eleven o'clock we reached a chain of floating ice which seemed to seal up this opening; but beyond it we could perceive another space of open water, surrounded by ice, and stretching westward. As it was not our intention to make any serious effort to penetrate it before we had rejoined the *Hansa*, we lay-to, waiting for fairer weather.

On the 17th we tacked in a dense fog, with a light wind from the south-west. After having run for some

time on the same tack, we again met the ice, and had to put about. It seemed to us that we were in a kind of chasm, surrounded by floating ice-fields. All around us floated freely small floes and islets, whose surface was covered with broken ice and snow. We collected a supply with our shovels, to melt it, and so renew our stock of fresh water.

Towards evening the ice accumulated more and more thickly around us; and during the night we were compelled to bear to the eastward, to prevent ourselves from being beset. For two hours in the morning we traversed the outer chain of bergs and fields; and we perceived from the swell that we had again entered the open sea, where we lay-to in hope of a "good time coming."

On the threshold, the ice-masses were sometimes so piled upon one another that the ship, impelled only by a very light wind, could not pass them. For the first time we had to make use of our long ice-poles, so as to fend off the blocks which lay in the ship's course; or, if their magnitude prevented this, to carry the vessel round them.

At length, on the morning of the 18th, the weather cleared, under the auspicious influence of a light southerly breeze; and, for the first time since we had quitted Jan Mayen, the horizon appeared in all its distinctness and radiance. We then ascertained that the *Germania* was sailing in an ice-bordered channel, which extended towards the south-east.

Meantime, we had seen nothing of the *Hansa* since leaving Jan Mayen. She could not be far off, however,

for we were rapidly approaching our rendezvous in lat. 75° N.; and it was desirable to find her before the fogs enveloped us anew. A bottle of wine was promised to the first man who caught sight of the truant.

There was great virtue in this promise; for soon after breakfast, to the joy of all on board, signal was made of a sail amidst the ice-floes in the east-north-east. It was a schooner; and as no whalers are ever schooner-rigged, it could only be the *Hansa*; and that such was the case, the experienced eyes of our seamen soon made sure from the nature of her rigging. The *Hansa* was under a cloud of canvas; she had evidently caught sight of us, and was struggling through the thick ice to re-join us. We began to hope that we should soon push forward in company. The fires were lighted, and we got up steam, so as to effect the junction of the two ships without unnecessary delay.

About eight o'clock we rejoined the *Hansa*. Both ships hoisted their flags; the *Hansa* honouring ours with a salute of cannon,—to which we replied, not being prepared for a ceremony so imposing, with volleys of musketry.

Taking the *Hansa* in tow, we began to retrace our course, until, some accident happening to the machinery, we were compelled to bring-to. The captain of the *Hansa*, and her scientific staff, came on board; and it was resolved that, in case of a new separation in the ice, the rendezvous should be Sabine Island.

Our usual occupations were steadily continued. By careful soundings we had ascertained the varying depth of the sea up to the very threshold of the icy desert.

While on the 14th bottom was found at 930 fathoms, on the morning of the 15th it could not be found at 1230 fathoms. The colour of the sea was generally a pure blue.

In the midst of these observations, and of various pursuits, midnight came upon us. At this moment our progress was arrested; the engines being stopped because the axle-bed was heated, and required cooling. The mists had passed away, and a favourable breeze having risen, the captain resolved to put out the fires; and both ships proceeded under sail. Our friends of the *Hansa* returned on board their own vessel, and we continued our route in company.

Who could have supposed that evening that we had been reunited for the last time,—that we of the *Germania* should never again see the sister-vessel,—and that we should not meet with our comrades again for fourteen months, and then only after they had miraculously escaped a terrible disaster, and successfully accomplished a series of remarkable adventures?

Our intention was to follow up, in the south, the boundary line of the pack-ice, seeking an opening which should promise a chance of penetrating into it westward. We tacked with adverse winds, following up the angular projections of the ice, which at this point extended in a west-south-westerly direction.

On the 19th of July we saw the first Polar bear; the animal was swimming. On the same day appeared for the first time at our table a specimen of Arctic fare. At breakfast our cook surprised us by serving up a

dainty dish of sea-calf's liver; and in the evening "tickled our palates" with an excellent ragout made with the flesh of the same animal. We rejoiced in the agreeable innovation of "fresh meat."

The reader will be pleased to understand that we continued a south-westerly course, closely hugging the impregnable rampart of the ice.

We came in collision, on the night of the 19th, with a part of the close-packed floes which had separated from the main body. The swell had entirely disappeared; and we moved towards the south-west among loose floating ice. At night the fog was almost always dense; but it cleared a little about eight in the morning. There was a strong breeze blowing from the south-south-west. In the south-west we found the ice sufficiently compact; and therefore, about eleven o'clock, we steered to the westward. The *Hansa* was a few miles to windward; and as both captains wished to confer together again, and Captain Koldewey to take coals on board the *Germania*, the approach-signal was hoisted. The *Hansa*, unfortunately, misunderstood it. We signalled, "Come within hail." She read it, "Long stay-a-peak." Thereupon she set more sail, and disappeared in the deepening, darkening fog before we could succeed in following her. Thus a fatal misunderstanding separated, and separated for ever, the two ships.

[We will now leave the *Germania*, under Captain Koldewey's command, to proceed to her destination, while we trace the unfortunate experiences of the *Hansa* in the report of Captain Hegemann and his companions.]

I.—THE VOYAGE OF THE "HANSA."

AMONG THE ICE.

On the morning of the 20th of July, Captain Kolde-
wey hoisted a signal which, in the hazy weather, we
unhappily misinterpreted. Captain Hegemann thought
it meant that the ships should go as far westward as
possible, and crowded on all the canvas his spars would
carry. In this way we lost sight of the *Germania*,
which we never saw again.

At noon we were in lat. $74^{\circ} 4' N.$, and long. $12^{\circ} 52'$
W., with the *Germania* about a marine mile astern.
The fog gathering in, we furled our sails, in the hope
the *Germania* would rejoin us. About half-past one
we perceived to windward, during a momentary lightening
of the heavy fog-veil, a ship, which seemed to be a
Greenland whaler, running before the wind. We put
about in order to hail her, and give her our letters and
despatches; but in half an hour she disappeared.

On the morning of the 21st, as we lay quietly in the
pack, M. Hildebrandt, who had planted his photographic
apparatus on the ice, took a good photograph of the
Hansa. The dazzling effect of the sunlit snow pro-
duced the first case of snow-blindness in one of the
sailors, Philip Heyne, and snow-spectacles were im-
mediately issued. Seal and narwhal were seen near
the ship, and some fell victims to our prowess. An
attempt to attract the bears by a fire kindled on a block
of ice, and fed with seal-blubber, proved unsuccessful.

July 28th.—We caught sight to-day of the dreary,

rocky coast of East Greenland, stretching from Cape Brøer-Ruys to Cape James.

July 29th.—To-day we caught a young sea-calf; which we called Jacob, and kept on board ship for a week. Our skill as marksmen was exercised also on a bearded seal, about seven and a half feet long, and on a hooded seal; and for the first time and the last we caught sight of a Greenland whale. On the same day we succeeded in killing a Polar bear, which supplied us with some capital hams. This animal measured about nine feet in length, from the nose to the tip of the tail. As for the little seal, it refused to eat, and we landed it, therefore, on an ice-floe; but Jacob, instead of immediately scuttling off, kept following up the ship, swimming and diving, as if to thank us for having given him his liberty.

The weather was now serene and bright. By the lustre of the midnight sun, which illuminated the crystal summits of icebergs and ice-peaks, we hunted the narwhal. It is impossible to conceive of anything more extraordinary than the effect produced by the light of the midnight sun as it falls upon an ocean loaded with masses of ice. Warm and cold tones commingle and cross each other in every direction; the sea shines with gleams of orange, leaden gray, or dark green; the ice-ridges blush with soft rosy tints; vast eëry shadows spread over the silent snow, while the most various mirages glimmer in the waters.

As we could no longer advance in the direction hitherto adopted, we were obliged, in conformity with our instructions, to steer to the eastward, in order to

escape from the ice-pack, and resume the work of exploration anew.

On the 29th and 30th of July we sighted two vessels, tacking with a north-east wind, at a distance of about twelve miles. As we afterwards learned, one of them was the steam-ship *Bienenkorb*, Captain Hagens, of Weser. More to the northward it had fallen in with the *Germania*, which we were to see no more.

As yet we were not actually beset in the ice, but to approach the coast at once was impossible, on account of the compactness of the floes.

On the 31st we lost sight of the ships; on the 1st of August they seemed to reappear—though this proved to be nothing else than a mirage, caused by refraction. The *Hansa* slowly and with difficulty went on her way. At two o'clock we broke through two gigantic floes. At the first shock the ship's bow rose two feet on to the ice, and rolled as if her keel touched the bottom. The masts reeled under the force of the blow, but the *Hansa* successfully withstood it.

On the 3rd of August a fine snow fell.

On the 5th, the day when the *Germania*, as we shall see, was already lying at anchor off Sabine Island, the *Hansa* found herself once more in open water.

From the 5th to the 11th, we experienced an alternation of foggy and fair weather, with a temperature ranging from 29° to 36° F. We sailed northwards along the ice boundary until the 10th. Troops of seals surrounded us, varying from ten to twenty in number, and displaying the utmost liveliness, sometimes leaping clear out of the water. At eight o'clock we thought

we saw a vessel, and the hope of rejoining the *Germania* once more revived within us; but the inevitable fog closed in, and our signal-guns met with no response.

A severe frost occurred on the night of the 10th, the ice being an inch and a half thick. We steered in a north-westerly direction, and at seven in the morning were twenty-five miles nearer the coast; but the compactness of the ice prevented us from profiting further by the auspicious south-west wind.

For the next few days our task was exceedingly laborious. The wind was contrary, and the attempt to sail through the opposing ice impracticable. But by hauling the ship along for twelve hours by means of a cable attached to a small anchor, we contrived to reach navigable water on the 13th.

But again our hopes were baffled. On the morning of the 14th the ice was all around us, as it was all around the ship of the "Ancient Mariner" in Coleridge's ballad. Fresh ice had formed in the little channels separating the ice-floes, and the *Hansa* was completely hemmed in. From this day until the final blocking up of the *Hansa*, we encountered a succession of reverses, fatigues, and dangers.

On the 14th, the monotony of our labours was slightly interrupted; we shot a white bear.

On the 15th, we were nearer the coast than we had yet been. Shannon Island was forty-eight miles distant, and Pendulum Island, fifty-nine. The ice was thick. On the 16th, the thermometer marked 25° F.; weather beautiful. Stuck fast to the floe, we drifted steadily

southward. On the 18th and 19th we resorted again to the hauling process, and advanced a few ship-lengths.

On the 23rd we reached the open water, and contrived to make some slight advance in a westerly direction, but in the evening were again set fast.

The carcass of a *Phoca Greenlandica* had drawn together, we observed, a numerous phalanx of ivory gulls. Two birds (*Strepsilas interpres*) were whirling round and round, according to their wont, on the newly-formed ice.

On the 24th we undertook a boat-excursion to the shore: the captain, two officers, Dr. Laube, and two sailors. We left the ship at two, and pushed forward until within sixteen miles of the land. Passing a curious icy formation, we named it, appropriately enough, the "Flower Basket." From a tall hummock, which we climbed, and adorned with the German flag, we could see the coast very distinctly; but we could not approach closer, on account of the compactness of the ice. We returned, therefore, to the ship; reaching it about half-past twelve at night. The position of the ice was considerably changed, and a dense fog closed in, so that we could scarcely find our way, and more than once were obliged to haul the boat over the floes. W. Bade's diary describes, with rough nautical humour, our frugal evening meal, on the cold ice, and under the cold sky, during this excursion. In the hurry, we had brought with us only hard bread and some cocoa, and a few bottles of sherry and brandy; but cigars were abundant as "leaves in Vallombrosa." At first, owing to the lowness of the temperature, the water would not

boil, and in order to concentrate the heat we had to lay our sou'-westers over the coffee-machine; a proceeding of doubtful wisdom, as it was with much difficulty these oilskin coverings were saved from the flames, which readily caught them.

On the 25th, we profited by the calm to warp the ship in the direction of the ice; and this was the day on which the *Hansa* approached nearest to Sabine Island.

On the 26th and the 27th, the ice pressed us forcibly; but our stout schooner bravely resisted. According to the observations taken on board the *Germania*, we now know that the two ships, at this time, were not more than thirty-four miles apart!

On the 28th, for the first and only time, the wind blew strongly from the north-west. We drifted perceptibly southward, along with an enormous ice-field.

Taking into consideration the formidable ice-pressure to which the ship was now subjected, we got our boats ready, and distributed the fur clothing. We could not but recognize the imminent prospect before us of being obliged to winter on the coast; and began to talk seriously of using our coal-bricks for the construction of a hut upon the ice, in case we were obliged to abandon the ship.

September 2nd.—Rain, and a south-easterly gale.

On the morning of the 5th the weather was fair, with a light breeze blowing up from the south-east. We made twenty knots under sail in a north-westerly direction, skirting an ice-field about fifteen miles in

length, until eight o'clock; then the wind fell, and we were once more arrested in our progress by the combined influences of the fog and the ice.

This was the last time that we were under sail. Had the *Hansa* been a steam-ship, we should probably have gained the coast, for we could see before us much open water.

On the day following, we moored our schooner between two promontories of a large ice-field, which eventually became our raft of deliverance. Now began the complete blockade of our ship in the ice.

It froze visibly; and the fresh ice uniting, the floes were soon thick enough to bear a man's weight. "We remained," says Dr. Laube, "with every sail set, between the great dense ice-packs, having advanced upon the whole three ship-lengths westward. In the evening we distinctly saw land towering above the ice, the refraction showing us a solid barrier to the north. To the east the ice was just as thickly packed. Two-thirds of the way happily lay behind us, but the last third seemed to be beset by insurmountable difficulties. To what purpose was all our labour? I thought of those at home, who only admit imaginary difficulties in the ice; and who, perhaps, doubt our good-will, our self-sacrifice, and our sincere endeavours. I did not go to rest that night with the best and quietest of thoughts. We were in the ice; but whether, or how, we should ever come out again, God only knew."

As late as the 7th of September, the voyagers still flattered themselves that they might reach the coast.

It was distant only five-and-thirty miles; and at noon, in clear weather, its outlines could be distinctly traced. To the west of the ice-field (the *Hansa* lay to the east of it) was visible a wide area of open water, white with foam, which seemed to extend quite to the coast. A pedestrian excursion westward upon the ice-plain, following up its southern boundary, would show us whether the channel on that side was navigable throughout, and communicated with this open water. Marching through thick and frozen snow, we reached a huge block of ice, which we christened the *Devil's Thumb*; from its summit we could command an extensive prospect. Seated astride of it, we warmed ourselves with a little of the liquor Bade had been thoughtful enough to bring with him. Two other enormous masses, enclosing a narrow and picturesque passage, were called the *Brandenburg Gate*.

We contrived to escalate one of these masses by mounting on one another's shoulders, and then cutting steps in the ice with a knife. Hildebrandt made a sketch of the little scene. Unfortunately, the canal we had seen proved too narrow for the vessel; and soon the ice in it and on the other side of the field set firmer together.

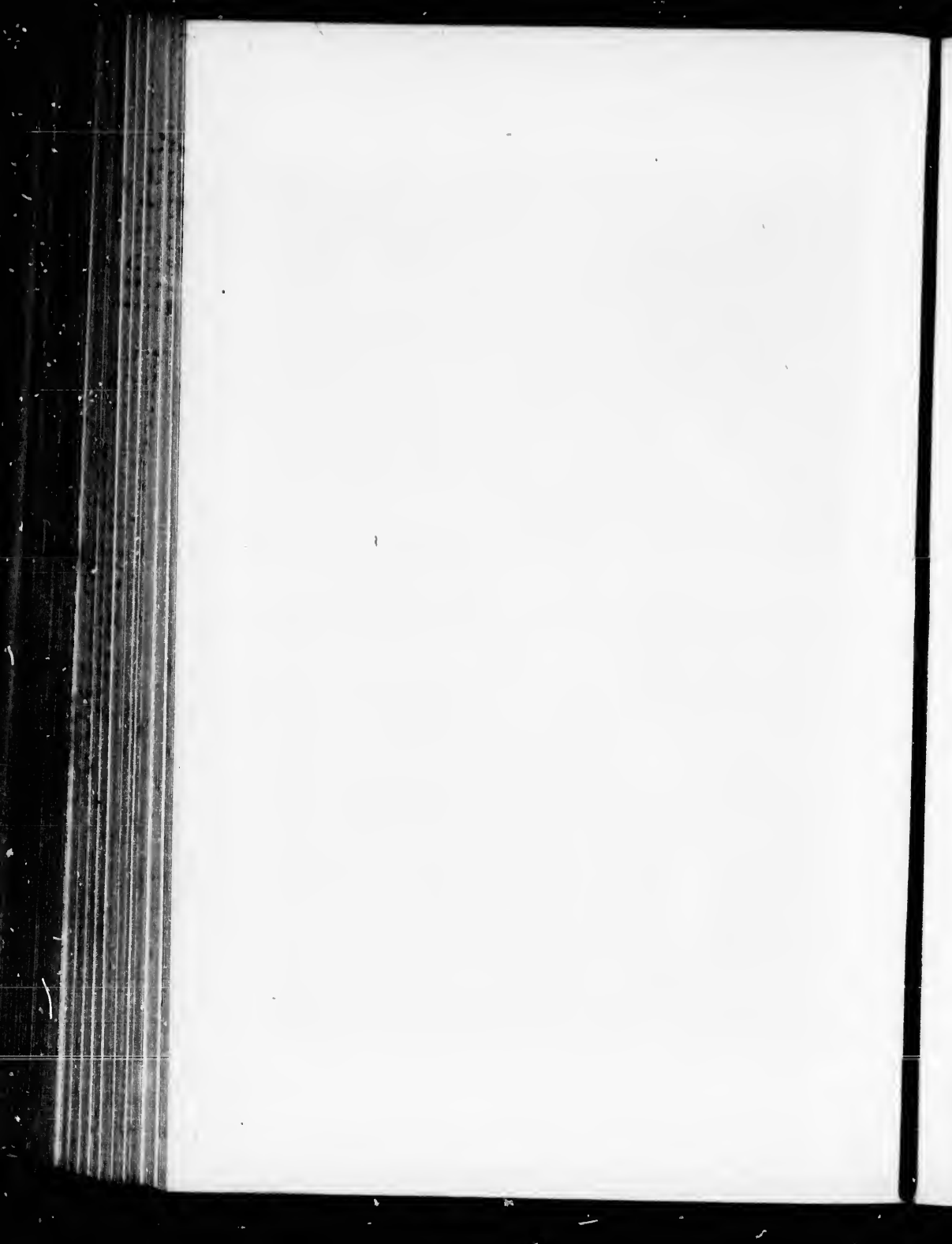
On the following days the cold was very keen, sinking from 23° to 5° ; and at last, on the 14th of September, the *Hansa* was completely blocked up by ice, in lat. $73^{\circ} 25' 7''$ N., and long. $18^{\circ} 39' 5''$ W. The south-west drift, aided by the wind, which blew continuously from the north, carried the ship southward along with the ice; and in this way we traversed thirteen miles from the 12th to the 14th.

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THE SHE-BEAR AND HER CUB.





On the 9th, a great ice-floe closed up the channel by which the *Hansa* had entered; and we made it fast with cables to protect ourselves from the floating masses. Some days later, a north-north-west gale set the ice again in motion, and broke our hawsers. The ice accumulated behind the ship, raising it a foot and a half.

On a neighbouring "field" we caught sight of a she-bear and her cub. A boat at once put off in pursuit. The two animals soon caught sight of us, and began to trot along the edge of the ice, by the side of the boat—the mother grinding her teeth, and licking her beard. We fired as soon as we could take a steady aim, and the bear fell upon the snow, mortally wounded. We repeatedly cast a noose over the young one, which continued to lick and caress her mother in the most affecting manner; but each time she contrived to extricate herself, and at last she took to flight, groaning and crying. Though wounded by a musket-ball, she succeeded in effecting her escape.

BUILDING THE HUT.

On the evening of the same day (the 9th of September 1869), at ten o'clock, some aurora gleams appeared in the west, shooting towards the south. Radiant sheaves and phosphorescent bands mounted towards the zenith; but the phantasmagoria quickly vanished. At the same time we heard the young bear howling dismally on the spot where it had lost its mother. The fresh bear-meat proved most opportune, and tasted excellent either as a roast joint or in chops. On the 12th, from the east, as before,—leaving the land behind them,

—came another couple of bears. The old one met the same fate as the previous wanderer; the cub was caught, and chained to the ice-anchor. Its alarm was great, but it eagerly devoured its mother's flesh, which we threw to it. We raised a snow-house for its accommodation, and provided it with a couch of shavings; which, however, the young bear, like a true native of the Arctic seas, treated with contempt, and preferred encamping in the snow. A few days later it disappeared, along with the chain, which must have become loosened from the anchor; and no doubt the poor creature perished. The weight of the iron in itself was sufficient to sink it.

The *Hansa* was visited by other Arctic guests. With a brisk wind came a couple of snow-white foxes; a proof that the ice had formed a continuous bridge to the shore. With tails high in the air, they trotted or galloped across the ice-fields like small craft sailing before the wind. One of them was shot by Mr. Hildebrandt, and the next day "smoked upon the board."

Our leisure was now considerable, but we did our best to fill it up with various and varied occupations. We skated; we indulged in gymnastic games: the crew found amusement in football; and in spite of twelve degrees of frost, might be seen, on a fine sunny day, stripped of their jackets, and their foreheads covered with sweat.

Our ship had been constructed with all the improvements, suggested by experience, that could insure the safe accomplishment of our enterprise. It would not have been prudent, however, to place implicit confid-

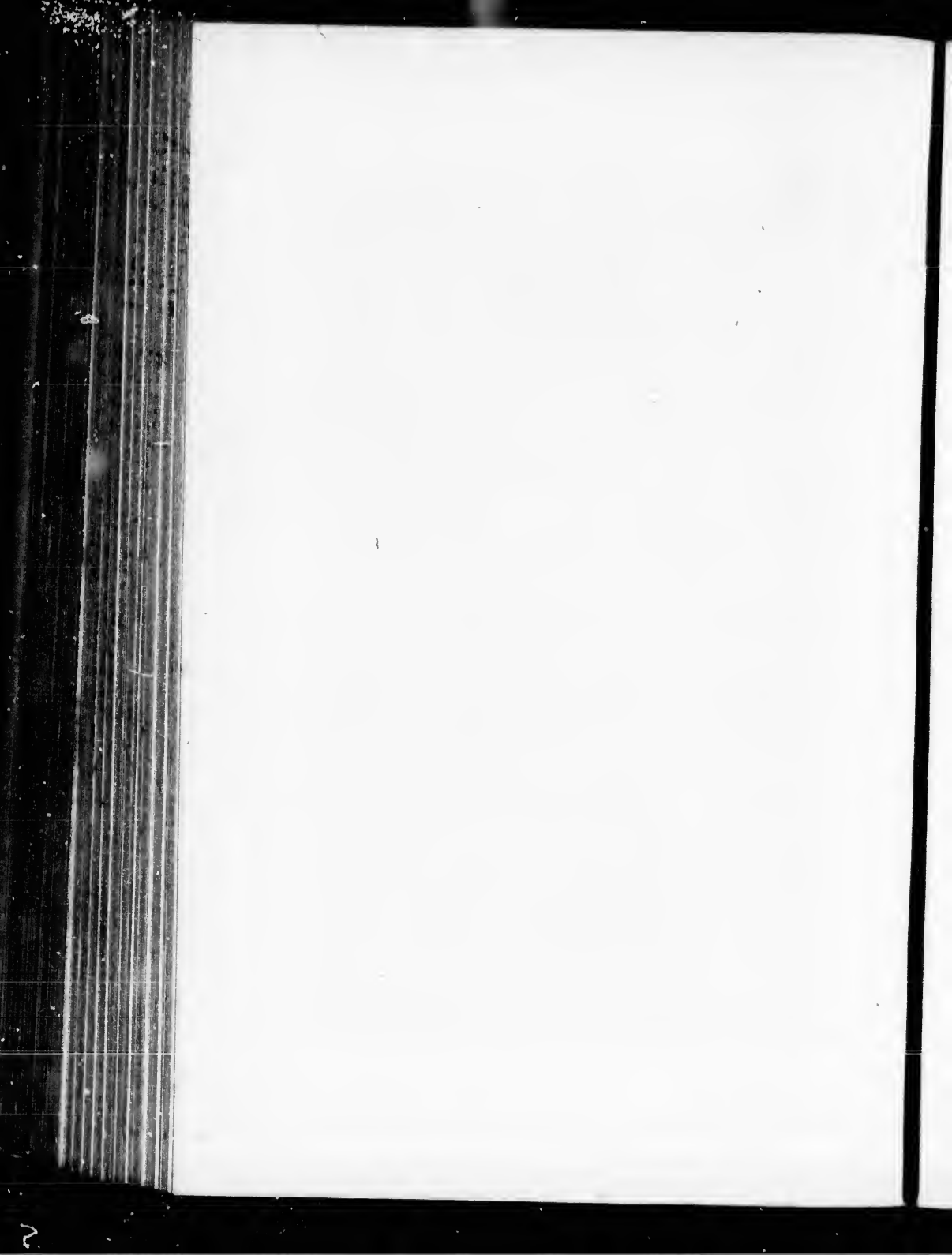
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A BEAR AT ANCHOR.





ence in these precautions; and we were at once warned and threatened by the strong pressure of the ice, which became more and more frequent.

We thought, at first, of wintering on the ice in the boats, covered in with sails; but this sort of shelter would not have afforded a satisfactory guarantee for health and life. How would it defend us against the wind, the severe cold, the hurricanes of snow, with which we were certain to be assailed throughout the winter? How could we have prepared in it that warm nourishment which is absolutely indispensable to existence during an Arctic winter? We returned to the idea of constructing a hut upon the ice-field, and without delay proceeded to build the house of coal which had already been proposed. Bricks made with coal are excellent material, because they absorb the moisture, and reflect the warmth back into the interior. For mortar we used water and snow. For the roof, we agreed to take, in case of a final establishment on the ice through the loss of the ship, the covering which protected the deck of the *Hansa* from snow.

As a preliminary precaution, however, we turned our attention to the preservation of our boats; and over these we erected sheds of frozen snow.

The plan of the coal-house, or house of coal, was designed by Captain Hegemann. Its dimensions were twenty feet long by fourteen feet wide, eight feet and a half high at the ridge-pole, with walls four feet eight inches high.

The site was carefully selected: a smooth part of the ice-field, free from fissures, and about four hundred

yards from the schooner. Had it been situated at a much greater distance from the ship, the difficulty of transporting the materials would have been materially increased. All hands set to work on the 29th of September. The foundations were dug out and hewn out by help of spade and hatchet; then a layer or course of snow, a foot and a half in thickness, was built up, which covered the ice. For want of sufficient materials, we could raise the walls two bricks (or nine inches) thick only to a height of two feet; above that, we had to be content with a single row.

A well which we excavated in the ice close at hand, not only furnished us with a supply of beautiful crystal water, but at the same time with a capital cement. Thus, while on land the frost would have compelled us to cease our operations, here it absolutely facilitated them. We had nothing to do but to fill in the joints and chinks with dry snow, and pour water over it; in ten minutes we had a compact mass, from which it would have been exceedingly difficult to extract a solitary brick. A temporary roof was formed with the sail-cloth and matting which had remained on board the *Hansa* since her last voyage to the West Indies (reed-matting, with which the hold had been lined before the cargo was put on board). Canvas and mats were nailed to the ridge-pole; and to give this fragile construction more thickness and solidity, we laid a layer of snow upon it. A double door, two feet and a half wide, was made on board expressly; and we laid down a flooring of coal-bricks. Then we transported into this house, which was designed and erected

in a week, provisions for two months—consisting of four hundred pounds of bread, two dozen cases of preserved meat, a cask of lard, of coffee, and brandy; besides wood, and some tons of the compressed coal. At the same time we constructed on board ship a roof of timber, in case we should finally winter in the vessel.

On the 7th of October, the fresh ice opened anew in front of the schooner. The men were engaged in sweeping clean an area for a party of skaters, when a peculiar noise, and a violent movement of the ice, which was twelve inches thick, announced a coming gale from the north. At the same instant the ice began to bend and crack, and isolated masses were lifted up. This tumultuous agitation lasted for nearly an hour.

On the 8th, after the works necessary for the construction of the hut were completed, a storm of snow arose, which, if of earlier occurrence, would certainly have rendered them impossible; and in five days both house and ship were entirely buried. Such piles of snow were accumulated between the middle of the deck and the ship's stern, that the sailors could with difficulty make their way to their cabin. The new ice which surrounded the *Hansa* was so loaded with snow that it yielded under the weight, and fell away from the sides of the ship, so that the sea-water penetrated between the ice and snow.

On the 13th the storm subsided; the weather again became calm and serene, and we found ourselves fifteen miles north-east of the Liverpool coast, which appeared like to a rocky mountain, with shining ridges and precipitous walls thinly covered with snow. But in the

valleys and gorges the snow lay in heavy masses. We could clearly distinguish the north point, Cape Gladstone, and Murray and Reynolds Islands, as well as a great part of the coast stretching southward until lost in the misty distance.

From the 5th to the 14th of October the drift had been very great. In that period we had fallen back, as it were, seventy-two miles towards the south-south-east.

We frequently saw flights of crows, which seem to sojourn all the winter on this coast. Once only did we catch sight of a gull and a falcon. The narwhal also made known their presence in the ice-covered channels by their occasional "blowing."

On the morning of the 17th, three of the crew—namely, Bove the carpenter, and the seamen Büttner and Heyne—undertook, in the fine weather, to gain the land, which was only ten miles distant. They started at seven o'clock, the weather being very calm, and the temperature at zero. After crossing some dangerous places in the newly-formed ice, they arrived at some continuous fields which enabled them to approach within four miles of the shore. After a three hours' journey they were constrained to halt, because a belt of water, about two miles wide, parallel to the coast, and skirting the "ice-foot" or shore-ice, which was of nearly an equal breadth, obstructed the route. About one o'clock, when snow had begun to fall, and the wind to blow from the north, they returned the ship; we were growing anxious for their safety, and welcomed them gladly on their return.

DANGERS.

October 18th.—Three words will describe the state of the weather,—cold, calm, and clear; but about eight o'clock in the morning the ice began to drive and press around the ship. This unpleasant agitation lasted until the afternoon. At regular intervals, underneath, the ice, like rolling waves, groaned and cracked; now with a sound like the clang of doors, now like a contention of human voices, and now like the shrill creak of a drag on the wheel of a locomotive. The obvious immediate cause of the pressure was, that our field had turned in drifting, and had come into collision with the littoral ice. The two floes in front of the vessel received the chief momentum; so that for a time the *Hansa* was safe, though trembling violently, and though her masts swayed to and fro, like reeds in a wind. As the field underwent some long and dangerous fissures, the whale-boat seemed in danger; and we brought it, therefore, alongside the ship. Towards evening the weather cleared; but our presentiment that this day was but a precursor of evil to come proved on the following day only too correct. We made our preparations, however, for either event—that is, for wintering in the house in case the ship was destroyed; or for remaining in the ship, if she escaped. We completed the provisioning of the house, especially in bread and fuel. We collected the fur clothing, and carried upon deck the remaining stores. In removing these, we discovered a numerous colony of rats, which, finding themselves very well off, had not yet thought it necessary to abandon the vessel.

By evening the pressure had ceased, and the air was calm, though foggy; a halo formed round the moon, which was then at its full, and illuminated with a pale and fitful light the mountains and plains of ice. In the cabin, and in the crew's lodging, we amused ourselves by playing at cards.

The catastrophe we feared was preceded on the morning of the 19th by a hurricane from the north-north-west, accompanied by a fall of snow, and much severe pressure from the ice. So thick was the air, we could not see the coast. The first heavy shock occurred at ten in the morning, but we felt no particular alarm until noon, when the constantly approaching and heaped-up masses of young ice, about four feet thick, had broken up on the starboard side of the vessel, and drove heavily against the outer side. The stern of the schooner rose slightly, and but for the high ice-blocks would have risen higher; she had to bear, therefore, the entire pressure. But so far she was water-tight, as we found on trying the pumps. Shortly before one o'clock, the deck-seams amidships gave way. Then came an interval of quiet, during which we took our mid-day meal on deck. Between decks it was very uncomfortable. Before long some massive blocks of ice forced themselves under the ship's bow, and, though crushed by it, raised her up, slowly at first, and then more quickly, until it was fully seventeen feet out of its former position upon the ice. We sought to ease this movement as much as possible by shovelling away the ice and snow from the larboard side. A strange and awful, yet splendid spectacle, of which all the crew were witnesses from the ice, was

this upward movement of the ship! With all due speed, the clothing and nautical instruments, journals and cards, were landed on the ice. Unfortunately, the stern part of the ship would not rise; and the conviction was, therefore, forced upon us that the schooner must soon be rent in twain.

About five o'clock the pressure temporarily ceased, and the raised ice retreated; so that, in the course of an hour, the ship, lying on her starboard side, glided into open water. The hawsers, which had been cast loose, so as not to check her movements, were again made fast; after which we went to the pumps, and found seventeen inches of water in the hold. All hands set to work; and about seven o'clock the ship seemed nearly clear, and we ventured to enjoy our evening meal. Alas! in a quarter of an hour's time the water had increased to two feet, and, in spite of all our efforts, continued steadily to increase. The position of the leak could not be ascertained by the most careful search; no sound of water could anywhere be heard; and the conclusion was, that some part of the ship's bottom, under the coal, had been stove in. The fate of the *Hansa*, at all events, was sealed; the good ship was sinking! Our emotion was great; but we endeavoured to face the melancholy fact with calmness. The house of coal on the drifting ice-waste was destined to be, throughout the long and dreary Arctic winter, our sole asylum, and perhaps our grave! In such reflections, however, we had no time to indulge. Our work was steadily prosecuted. By nine in the evening, the snow had ceased to fall; a clear, starry heaven shone above

us, and over the deary ice-desert spread the calm lustre of a cloudless moon. Ever and anon the firmament glowed, and the scenery was lighted up, by the ever-changing glories of the aurora.

It was now freezing sharply, with the thermometer at 13° below zero. One half of the men were kept at the pumps; the others, until midnight, were occupied in removing from the doomed vessel the most necessary articles. "As to sleep," says Dr. Buchholz, "it was not to be thought of, for the idea of our terrible position whirled through my brain in the wildest manner. What would become of us when winter really set in, if its approach were heralded by such bitter cold? In vain I attempted to think of any means of safety. It was useless to dream of reaching the land. It might, indeed, be possible to force our way through great dangers, and across the fields and floes, to the inhospitable coast; but at the utmost we could provide ourselves with only a few days' food. Eskimo settlements, from Scoresby's experience, were not to be expected; so that death by hunger seemed not very distant from us. We could do nothing, then, but endeavour to save ourselves in the coal-hut on the southward-drifting ice-field; and if it held together, we might hope to reach a South Greenland Eskimo settlement in the spring, or (which was somewhat improbable) get across the icy belt to Iceland."

One serious mishap attending the pumps was, that the water poured out upon the deck could not run off through the scuppers, because they were filled with ice; therefore it froze between the provision-chests. The

whole after-deck was soon blocked up with ice; the water pumped up stood round the pumps, and the men who worked them stood in tubs to keep themselves dry. We made holes in the bulwarks to let it escape; but not with much advantage, as, from the intense cold, the water came out in a semi-congealed condition. At the same time, the ice settled so over the cabin skylight that the water oozed through its chinks. During the night our weary and exhausted men gained a few hours of refreshing sleep; then they all drained gladly a cup of coffee, and once more set to work. The catastrophe, however, was close at hand. At eight in the morning, the men who were busy in the fore-peak, getting out the wood, came, with dismayed countenances, to announce that it was already floating below. Captain Hegemann, when convinced of the truth of this statement, ordered the pumps to be unshipped, and the vessel, which was visibly sinking, to be abandoned.

All hands were at once engaged to transport to the ice the various articles of utility collected on the deck—bedding, clothing, provisions, and fuel. In silence were all the heavy chests and barrels lifted over the hatchway. First, the cook's iron galley; then, two stoves were happily saved: these insured us a supply of warm nourishment, an endurable (if not a genial) temperature in our coal-lut, and some other advantages during our winter captivity. For fear of falling short of fuel, we laid our hands upon every loose piece of wood. Meantime, the vessel was rapidly settling down; but we succeeded, nevertheless, in saving some objects which were incalculably precious in our situation: a

small medicine-chest, our lamps, books, cigars, boxes of games, and the like.

But our work was far from ended. There, on the ice, everything lay in a heterogeneous heap. It was a complete chaos, in the midst of which some shivering rats struggled for life. For greater security, we removed the whole baggage thirty yards farther, across a crevasse. We had also to deal promptly with one of the seamen, Max Schmidt, who was ill with fever; we wrapped him up in furs, and carried him on a plank to the coal-hut.

At nine in the evening we were all gathered together in our new asylum, which, feebly lighted by a lamp, resembled a capacious vault. Satisfied with the labours of the day, though anxious about the future, we prepared our beds. Planks were laid upon the ground, and covered with sailcloth; then each of us wrapped himself in his furs, and took his rest. One man remained on guard to keep watch over the stove, which eventually raised the temperature of our chamber from 2° to 27½° F. Our couch was exceedingly hard, and decidedly cold; but we were so exhausted and weary that we quickly fell asleep.

In the morning we hastened to the ship to see what more could be saved. But the coal-hole was already under water. We cut down the masts, and, with their rigging, dragged them over the ice; a task which occupied us the entire day. The mizzen fell at eleven o'clock; at three, it was the turn of the main-mast; and the *Hansa* presented the appearance of a miserable wreck.

For the last time the captain and steersman went on

deck, and about six o'clock loosed the cables, which, by means of the anchor, still moored the ship to our ice-floe: for there was reason to fear lest the latter, which bore nearly all the treasure we had saved with so much difficulty, might break up when the ship sank.

The poor battered carcass of the *Hansa* disappeared in the night of the 21st, in lat. 70° 52' N. and long. 21° W., about a German mile and a half from the Liverpool coast. We could distinctly trace its cliffs and mountains, which, according to Dr. Laube, closely resembled the chalk-hills of Munich; we could distinguish Glasgow Island and Holloway Bay; but there was no means of opening a road across the labyrinth of floating ice.

The largest of our three boats was lying loose on the deck of the *Hansa* when she went down, and accordingly floated. The weather being very favourable, we were able to haul up on the ice, near the hut, this third hope of safety.

IN THE COAL-HUT.

The following days were occupied in making ourselves as comfortable as possible in our black-looking hut. Owing to the comparatively high temperature in its interior, the sailcloth roof permitted the water to trickle through the snow which covered it, so that we passed a very bad night. We remedied this inconvenience by substituting a roof of planks, covered with sails. To provide for light and ventilation, we inserted a couple of windows in the roof; but, in spite of this provision, were unable to dispense with the lamp for the greater part of the day. Along the entire length,

on both sides of the room, we raised a tier of boards about six inches above the ground, and laid our mattresses upon it. To prevent the pillows from freezing to the wall, we lined it, where necessary, with double planking. The cooking-stove was placed behind; the smaller one in front. Along the walls, which were hung with sailcloth, shelves were placed, and on these we disposed our books, instruments, and cooking-utensils. The ship's chests, planted in front of the bed-floor, served for table and seats. The gilded looking-glass from our old cabin adorned and brightened the interior of our new one; underneath it hung a splendid barometer; and the ticking of the clock cheered us with its accustomed sound. By all these little arrangements, our residence in the coal-hut was rendered comparatively endurable. A good night's sleep recruited our weary frames; and, thanks to our capital preserved meats, we gained fresh strength from the marvellous soups and stews prepared by our cook.

We were no longer threatened by any imminent danger; so our melancholy gave way a little, and it was even with jests and laughter that we recalled some of the humorous scenes of the 19th. In the evening we resumed our whist-club, playing on a volume of the ship's journal, as we had no table.

The greater portion of our supplies of fuel and provisions, as well as the boats, lay still upon the ice in the neighbourhood of the scene of disaster. The work of transporting it was accomplished chiefly by means of the sledges, and occupied several days. For the time we piled it all up beside the house. As the layer of

snow outside rose as high as the walls, we dug around the hut a trench four feet wide, which we covered with an awning of sailcloth, increasing the protection it afforded by a roof of snow. This kind of corridor furnished a convenient place for stowing away our provisions, and there we deposited the greater portion; the remainder, which would serve for about two months, was carefully deposited in the boats. The small quantity of fuel procured by cutting up the masts and yards, we threw together in a heap.

Sometimes the boats were stationed in one place, sometimes in another; we extricated them at intervals from the snow, and transported them to some more sheltered locality.

We put up the ship's hatchway before the door of the hut, to catch the wind. A man-rope helped us to descend into our "fox's hole," the roof of which scarcely rose above the level of the snow.

We had saved the large flag, and on a snow-hill at the rear of the house we raised the topgallant-mast as a flag-staff. In fine weather we hoisted the flag; partly for our amusement, and partly in the hope of attracting the attention of any Eskimo settlement on the coast.

At last we succeeded in introducing order into our chaos. The confused heap of individual belongings was portioned out among its various owners. The warming arrangement was excellent, for though the temperature of the external atmosphere had sunk to -13° F., the thermometer inside the hut marked 72° 30'. Often the fuel necessary for preparing our meals proved sufficient also for heating purposes; and, in

order to spare the wood, we seldom used the second stove. The damp was remarkably diminished, for it escaped easily through the dormer-window, which also admitted a supply of fresh air.

DE DIE IN DIEM.

Slowly but uninterruptedly our ice-field drifted southward. We skirted the Liverpool coast as far as Scoresby Sound,—sometimes approaching, sometimes receding from the ice, with a uniformity of movement which was probably due to the flux and reflux in that large deep sound. We could perfectly distinguish the outline of the coast bristling with rocks; and in two valleys, lying between abrupt precipitous mountains, we fancied we saw huge glaciers covered with snow.

We often contemplated with melancholy feelings the spot where the *Hansa* went down. Now there was space enough for her between the ice-field and the land-ice.

At the end of October the sun rose at half-past nine, and about three o'clock sank behind the rocky coast. In the hut we had but a few hours of daylight for reading and writing.

We endeavoured, by every possible means, to maintain a constant activity. We skated; we made snow images. The order of the day's proceedings was always observed to the letter.

The last night-watch woke us at seven. We rose, dressed ourselves in our woollen clothing, washed in melted snow, and took our morning's coffee with a ration of hard bread. Then we betook ourselves to our

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AN ARCTIC SKATING-RINK



various avocations. Some acted as cabinet-makers and carpenters; some plied the useful needle; some chopped wood; others kept the daily registers. If the weather were clear, we took our astronomical observations, and recorded all useful and necessary calculations. At one o'clock, dinner. Strong meat-soup was the *pièce de résistance* at this meal; and as we had an abundance of preserved vegetables, our cook had every opportunity of displaying his fertility of resource. We were careful to eat but little of salt meat and bacon. Nor did we venture to indulge in alcoholic liquors,—confining ourselves to one glass of good port wine on Sundays. Throughout the winter, owing to these precautions, our health was good. We had no cases of sickness or of physical discomfort, except the sailor Schmidt's attack of fever when the ship went down, and a frost-bitten toe of the sailor Büttner. We were always on the alert, and dissension was prevented by the maintenance of a strict discipline.

By degrees we completed a thorough exploration of our floe. We made short tours, and cut roads in every direction. We ascertained that it measured about seven nautical miles in circumference, while its average diameter was two miles.

The landscape surrounding us was dreary from its monotony. It presented a uniform plain, or field, covered with the frozen, glittering snow.

The term "field," we may here explain, signifies a vast and continuous floating mass of ice. Smaller pieces are called "floes;" and still smaller ones, "drifts."

Now, the ice-raft, on which, as Dr. Laube happily

remarked, "we were as the Lord's passengers," was a solid field, fully forty-five feet thick—five feet above, and forty feet below, the water-level—composed of drifts and floes frozen into a compact mass.

By the beginning of January, the accumulated snow, often eight feet in height, had filled up every fissure and crevasse in the dreary, far-spreading plain; so that the eye wandered dissatisfied, without finding a solitary resting-point, over the wearisomely blank waste of whiteness! When at any distance from the hut, it lay so deeply embedded in the snow that we could distinguish nothing but the dark spot or line of the chimney, the boats, and the flag-staff, with its fluttering banner—a sign of civilization, which was duly unfurled after every passing whirlwind. Later in the spring, when the process of liquefaction and disruption had greatly reduced the size of our raft, it appeared, owing to the heaped-up blocks of ice and snow-wall, almost like "animated blocks of ice." On examining them more closely, these "ramparts" were found to be "the pushed-up walls of small ice-masses, to which our field had been knitted by the frost." At intervals rose mounds of snow, which the change from thawing weather to frost had almost converted into glaciers, into a solid and homogeneous whole. The western and north-western borders of our field were dreary in the extreme. The collision and almost constant friction of the driving ice-floes had raised up walls ten feet in height, embellished with snow-crystals, which radiated in the sun like innumerable diamonds. In the auroral displays at morn and eve, the white flakes turned to pale green.

A beautiful radiance pervaded the night, for moonlight poured fully and freely from the unclouded heavens; and so strong and keen was the reflection from the snow-mirror, that it was easy to read the minutest handwriting, and to discern remote objects.

Nights such as these, moreover, were always illuminated by the glories of the aurora borealis. For example, on the 5th of December it shone with a splendour so intense as to pale the starlight, and shadows streamed across our monotonous ice-field. The coast, according to its varying distance, was distinguishable as a dark, vague streak, or in all the details of its rocky configuration.

Early in November our attention was attracted by two natural phenomena. From the Liverpool coast we lay about eight nautical miles. When out walking, we observed a number of willow-like leaves whirled past us, which had evidently been carried from the land by some eddying breeze. At another place, the snow over a considerable area was strewn with red dust. This was thought to be of volcanic origin; and Dr. Laube surmised that it had been borne through the air from Iceland, which was about one hundred and eighty nautical miles distant.

In the same month, on a neighbouring floe, we saw the shapeless bulk of a walrus lying motionless as a rock. Hildebrandt and Bade, the steersman, with some of their comrades, started for the chase as soon as the boat could be launched—a task of some difficulty, as it had to be carried for some distance over the

young ice. Here, as on more terrible fields, was shown the efficacy of the needle-gun,—the ball passing through the creature's thick hide. In his fury he endeavoured to smash the young ice on which the hunters stood, and to seize them when once in the water; but the combat was unequal, and after a few shots he gave up the ghost. To remove his colossal carcass to the hut, was a terrible task. And though ten men were set to work, with the help of a powerful pulley, it was several hours before the huge animal could be hauled up on the ice.

Nor was it found easy to skin the victim. The temperature being 20° below zero, the body froze into a hard stony mass, almost as impenetrable as granite. Under the skin lay a coating of fat, three inches thick, which afforded us excellent fuel. The tongue proved a much appreciated dainty; and among the whale-fishers of Behring Strait, salted walrus-tongues form a favourite dish. Late in the evening a white bear made his appearance, attracted by the appetizing smell of our cookery, and was received with three guns,—a salute the result of which we could not ascertain until daybreak. Then, at a distance of about one hundred yards, we found our visitor, hit in the side by a bullet, and lying dead upon the snow. He proved to be a noble animal. His well-developed head rested on his fore-paws, as if in sleep. Distinctly upon the white frozen surface stood out the few red drops of blood. We hailed the prize as a gift from Heaven; for in our position an addition of fresh meat was peculiarly valuable. The four hams, weighing about two hundred pounds,

would provide "roast meat" for several Sunday banquets. At the same time, the skin was turned to useful purpose, as an additional covering to the still leaking roof. A few days later, another Bruin paid a hasty visit. As we left the house on the 23rd of November, we noticed several indications of his presence. He had found out one of the boats, and standing on his hind feet had "sniffed" at the provisions it contained; but falling through the tightly-stretched, stiffly-frozen sailcloth, his investigations had been arrested by his alarm. Afterwards he had turned towards the house; but the brightness of the lamp, which we kept constantly burning in the snow-path, appeared to have terrified him.

Up to the beginning of January, our drifting ice-raft had undergone no damage. On the 14th of November we passed Cape Barclay, the southernmost point, according to Scoresby, of this stretch of coast (lat. $69^{\circ} 14'$ N., and long. $24^{\circ} 30'$ W.). Thence, to the most northerly point of Graah's coast-journey, Cape Dan, in lat. $65^{\circ} 37'$ N., and long. $37^{\circ} 20'$ W., we skirted the comparatively unknown shore of the so-called Egede Land—approaching at times within four miles of it.

On the 16th of December, the appearance of a white Arctic fox made known to us the fact that the ice must extend continuously to the land. He was attired in a coat of spotless white, with a black-tipped tail. Great was his familiarity. He snatched up the bear's flesh buried in the snow, and carried it off to eat as we approached him. Then, in the coolest possible manner, he promenaded the roof of our house, and watched our proceedings through one of the dormer-windows. Such

was his fearlessness, that we could not make up our minds to shoot him.

Christmas now came upon us—a lonely Christmas, in the heart of a solitary and dreary wilderness of snow and ice. On Christmas Eve the snow fell so heavily as to bury our house; and soon afterwards fell showers of rain, and a south-westerly wind blew; and then came another whirlwind of snow, against which it was almost impossible for a pedestrian to make head.

But the inclemency of the weather could not affect the spirits of men who had resolutely determined to "keep Christmas." In the afternoon, while we were taking our "constitutional," the steersmen reared on high the Christmas tree; and on our return we were surprised by the bright interior of our lonely hut. Fancy, reader, if you can, the novel experience of keeping Christmas on a Greenland floe! Made of pine-wood and birch-broom, the tree was a skilful construction. Some wax-candles furnished the illumination; and paper festoons and home-baked gingerbread contributed to its good effect. The men had made a knapsack and revolver-case for the captain; and for themselves was a rare assortment of Christmas gifts, thoughtfully provided by kind friends at home.

After the distribution, we enjoyed a glass of port wine; and in the evening, chocolate and gingerbread-nuts.

"In quiet devotion," writes Dr. Laube, "the day passed by; the thoughts which rose to our minds (they were much alike in all) I will not attempt to record. Should this be our last Christmas, it was, at all events, bright

enough. Should we be destined to return home safely, the next will be brighter. May God grant it!"

AN ALARMING INCIDENT.

Early on the 26th, the watch awoke us with a loud shout. We were drifting to land! An island lay right ahead of us! The terror was universal; we all rushed out. The air was obscure, but at a distance of about three nautical miles we could make out a large mass, looking like an island. The steersmen rushed ahead to estimate the distance, and gain some idea of the nature of the situation. We soon discovered that the cause of our alarm was an iceberg. As it drifted much more slowly than our ice-raft, we passed it on the following day, and soon lost sight of it. The feast of St. Sylvester was then observed, just as it is at home; firearms were discharged, and libations of punch poured out. At midnight we exchanged our "New Year" good wishes, with a merry clink of glasses.

New-Year's Day brought us the first clear and bright weather we had seen for a considerable time. The land between north-east and south-west was distinctly visible; against the blue sky could be traced the sharp outlines of lofty mountains, their sides loaded with small glaciers. On the following day "a change came o'er the spirit of the scene;" a storm came crashing and clanging from the north-east, and brought with it a continuous drift of snow. In the morning we thought we heard a peculiar rustling noise, as if some person were shuffling his feet on the floor; but as it was quickly at an end, we paid no particular attention to

it. In the afternoon, the same sound broke upon us suddenly, and much more loudly—a scraping, sawing, grinding, crackling, jarring sound, as if some unhappy ghost were moving perturbedly underneath our floe. We sprang to our feet in alarm, and rushed out, thinking the storehouse must have fallen in. Some of the sailors went in advance with the lamp, to trace out the path. But wherever the light sparkled on the radiant crystalline walls, we could see nothing. The rigid icicles, some of them a foot in length, hung immovable; obviously all was safe. Then we groped along the snow-path before the house, but in vain; only, in the pauses of the storm, we could detect the same grinding and rubbing. We threw ourselves flat on the floor, and could then hear a noise like the “singing of ice” when close-pressed, and as if water were running beneath our floe. We were forced to the conclusion that it was in great danger of being broken up,—either from drifting over sunken rocks, and coming in collision with them, or from dashing against the shore-ice, or from both causes combined.

We packed our furs, and filled our knapsacks with provisions; though, if the floe were destroyed, our position seemed hopeless. It was true that ropes were carried from our house to the boats lying about fifteen paces from us, so that, in case of any mishap, we might be able to reach them; but so fierce was the beat of the pitiless drifting snow that we could not have moved them from their resting-places, and in the attempt would certainly have perished. At eight we stationed two men in the pathway to watch, while the others lay

down to sleep, as the grinding noises were no longer heard. Sleep, however, refused to visit us throughout that dreary, stormy, awful night. How thankful we were when the gray dawn appeared, and the wind abated somewhat of its violence!

Some of us went out in the direction of the quay; for so we had named the spot, five hundred steps from the house, where the *Hansa* had gone down.

There we discovered a new wall of ice, and were horrorstruck to find that it formed the boundary of our floe; that on all sides of it large pieces had been broken off, and rose in fantastic masses out of the drifted snow.

Until two in the afternoon the storm continued. Then it subsided slightly; and by the morning of the 4th of January it had completely worn out. The air was clear, and the prospect stretched right away to the coast. Our floe had lost considerably in dimensions, and from a circular form had changed to an oblong. The diameter did not now exceed one mile. On three sides the distance from our house to the edge of the floe was only two hundred steps; on the fourth it was about one thousand, instead of three thousand as before. To the coast, the distance was scarcely two nautical miles.

Besides the island seen on the 1st of January, we now sighted several others rising like pyramids in the north-west. We named them New-Year Islands, because we had discovered the first on the opening day of the year. They were situated near the east point of a bay which, from the danger we had incurred, we named Bay of Horrors. Snow-shrouded mountains, which

the rising sun robed in pale rosy tints, towered in the background; and small glaciers were visible here and there in the bay. To the south-west projected a headland, which we called Cape Buchholz; another, Cape Hildebrandt, was the point of land nearest to us.

After the narrow escape we had undergone, and considering the evident insecurity of the ice-raft, we proposed to make an attempt to reach the coast, with the view, in the following spring, of doubling the southern point of Greenland, and gaining the settlements on its south-west coast. But we found it impossible to get beyond the edge of our field, owing to the broken ice, covered with snow, which lay between it and the shore.

An observation on the 8th of January revealed to us that we were in lat. $66^{\circ} 47' 2''$ N., and long. $34^{\circ} 1' 5''$ W. In other words, since the 27th of December, or in twelve days, we had drifted fifty-two and a half nautical miles in a south-westerly direction.

The following day one of the seamen made an entry in his journal, which is thus rendered in the English edition of Captain Koldewey's narrative:—

“ Thursday, 9th of January 1870—Northern Hotel.

“The weather in the past night was calm and clear. The moon shone brilliantly; the northern lights and the stars glittered upon the dead beauty of a landscape of ice and snow. Listening at night, a strange, clear-sounding tone strikes the ear; then again a sound as of some one drawing near with slow and measured steps. We listen. Who is it? All still! not a breath stirring! Once more it sounds like a lamentation or a groan. It

is the ice; and now it is still—still as the grave—and by the pale glance of the moon the ghastly-outlined coast is seen, from which the giant rocks are looking over to us. Ice, rocks, and thousands of glittering stars. O thou wonderfully ghost-like night of the North!"

Our trials seriously increased from the 11th to the 15th of January.

At six o'clock, on the morning of the 11th, Hildebrandt, whose watch it was, alarmed us with the cry—"All hands turn out!" The cry was seconded by the terrible chaotic noises which raged outside. Forth we rushed, clad in our furs, and provided with our knapsacks. But the outer entrance was blocked up with snow, and we had to force our way through the snow-roof of the corridor. What a scene presented itself to our astonished eyes! The elements seemed to be let loose; a driving wind blew from the north-east; the snow fell in blinding showers; the floe around us was crashing and splitting, and the sea rolled heavily upon it. The ice-raft which had been our safety threatened to become our destruction. Between our hut and the wood-pile, a space of about twenty yards, opened a huge chasm, through which the waves poured in furious tumult; and our floe, now greatly reduced in size, rocked to and fro like a small skiff. It was with difficulty we secured our boat *Bismarck*; and even the whale-boat we saved only by hauling it up into the middle of the floe. The large boat, being beyond our strength to manage, was lost.

We could not but believe that our end was come.

We grasped each other's hands, and uttered a sad farewell. Then we sought the shelter of our boats, and while the cold snow fell around us, and the wind hurtled through the air, we waited patiently and sadly. Our little raft of ice was as an island tossed about in a boisterous sea.

But towards evening the billows seemed to subside, and the ice closed in together, and became packed again. Once more we seemed to have escaped death. With thankful hearts we took a little food, threw ourselves on our beds, and endeavoured to find strength in sleep. Soon after midnight a cry of terror again aroused us. The voice of the sailor on watch proclaimed that an iceberg was drifting down upon us. We burst open the roof, and descended upon the ice. What a spectacle! Close upon us, apparently hanging over our heads, and prepared to fall, towered a colossal mass of ice! "It is past!" exclaimed our captain. So sudden was the alarm, that to this day we know not whether it was really an iceberg that menaced or a mirage that deluded us.

We availed ourselves of a partial cessation of the storm during the 12th and 13th to get our boats in order, and take an astronomical observation, which showed us that in four days we had drifted southward fifty-six miles.

At ten o'clock in the evening of the 14th, the storm-blast once more arose, and the watch again brought the appalling intelligence that the ice was in motion. The floe broke up in the immediate vicinity of our hut, so

that fragments of ice flew around us, like the effects of an explosion. We brought our two boats for the second time into the middle of the floe, though it was with difficulty we moved or worked, the storm rendering us almost breathless. About eleven, a fissure suddenly opened which threatened to rend our house asunder. God only knows, says the chronicler, how it chanced that, in our flight into the open, none of us came to harm. But there, in all the pitiless fury of the tempest, we huddled together on the ice, houseless, roofless, yearning for the daylight, which was still two hours distant. The *King William* boat lay on the brink of the floe; and had it floated off, we could not have rescued it. Happily, the fissure did not widen.

At midnight the weather grew calmer, and some of us took refuge in the hut, others in the captain's boat, over which we drew the thickest sail we could find. This was the most terrible of all the nights we passed upon our precarious ice-raft. The cold was $-9\frac{1}{2}^{\circ}$ F. To sleep soundly was impossible, but our intense weariness lulled us into a kind of unquiet, confused, half slumber; while beneath our furs and coverings our limbs shook with involuntary tremors.

The cook, with admirable energy, roused himself in the morning to make a dish of coffee, which seemed to inspire with fresh life our exhausted frames.

But, for the whole space of another dreary, desolate day, the tempest continued to howl and rage. We lay in the boat, in a mixture of snow and water, which chilled our very life-blood; shivering with the keen frost, wet to the skin, our limbs stiff from want of move-

ment: we lay there all the day, and all the following night; nor was it until the morning of the 16th that an improvement in the weather enabled us to quit an asylum which was also a prison.

We now turned our attention to the boat *King William*, which we brought to the flag-staff, near the other boats; and erecting over it a roof of boards, covered with sailcloth, it furnished sleeping-accommodation for six of the men, until the house could be cleared of snow.

For five nights we slept in the boats; employing the days in rebuilding our shattered homestead, on the same site, but on a smaller scale. We reared a wooden kitchen. The house itself measured only fourteen feet in length, ten feet in breadth, and six and a half feet in height in the middle; but it was comfortably fitted up with store-room, wooden beds, stove, and window, and other appliances. As it did not allow of more than six persons sleeping in it, the others, thenceforward, were compelled to rest in the boats.

Throughout all these bitter experiences, the men, we are told, exhibited the most admirable good-temper, much patience, and the highest courage. The cook, even in the most critical moments, attained to the ideal elevation of the popular conception of a British tar. So long as he had tobacco, he made light of everything: *ex fumo dare lucem*. On one occasion, when the floe had broken up, and the destruction of the hut seemed inevitable, he chanced to be repairing his coffee-kettle. "Ah," said he, "if the floe will but hold together until I have mended

my kettle! I do so want to make the evening tea in it, that, before we go, we may have something warm!"

It will be supposed that, under the circumstances we have described, the poor storm-beaten adventurers had paid but little attention to cleanliness and the cares of the toilet. Washing was a luxury which the men of science had entirely renounced, and in which the men of no-science indulged only twice a week. Yet it was as much of a necessity as of a luxury, for what with the coal-damp from the walls of the house, the smoke from the lamp, and the dust from the stove, we were as black as the blackest Eskimos. Our hair and beards were dishevelled and unkempt; since we left Bremen we had allowed Nature to have her own way. As for changing our clothes, such an experiment was not to be attempted in a temperature several degrees below zero.

We derived some comfort, on the 23rd, from the appearance of a hawk and a raven; we welcomed them as harbingers of a good time coming! About this time we observed a curious phenomenon in the snow-walls built up around our floe. During the calm, the floating ice had separated, and the fissures and intervening spaces had filled up with driven snow in huge glittering powdery heaps; and these, on the 25th, when the ice closed in again, were forced up into walls or ramparts of twenty to twenty-five feet in height, so that our settlement seemed to lie in the heart of a profound ravine. They did not last, however; breaking up on the 1st of February, as soon as the spring-tide set the ice again in motion, and quickly melted away. On this occasion, a piece of our floe broke off and drifted down the current.

This enabled us to calculate the strength of our ice-raft, as the water was very transparent, and the glittering material was perceptible at a depth of thirty to thirty-five feet. We came to the conclusion, therefore, that, unless some fresh catastrophe occurred, the floe was of sufficient solidity to carry us into a southerly latitude; from which, by the boat, we might gain the nearest West Greenland settlement.

INCIDENTS AND ADVENTURES.

On the 1st of February 1870, the seals reappeared; we caught also a raven, and some various kinds of sea-gulls. The former came from the land, the latter from the sea. One morning we also surprised a fox near our house. He remained with us several days, and grew so familiar that he would fetch the meat which had been thrown to him in the kitchen, and allow us to caress him. He amused us exceedingly, and it never occurred to us to capture him.

During the following days we drifted at the rate of a mile an hour through a labyrinth of bergs, some of which exceeded one hundred feet in height, without experiencing the slightest injury to our raft. When it fell in with one of these floating mountains, it slackened its course more or less, according to the nature of the current,—the water dividing, and flowing on either side. It then executed a sidelong movement, to right or left, some twenty or thirty paces from the monster, and in this way escaped the danger.

Bade and Hildebrandt attempted to climb one of these huge bergs, but got only half-way up, and that not

without the greatest difficulty; the smooth white walls rose so abruptly, that it would have been easier to scale the bare masonry of a church-tower. These enormous masses, detached from the glaciers of Greenland, and carried into the sea, resemble basaltic rocks, and are curiously tinted with white patches and veins of azure.

Our calculations led us to believe that on the 6th of February we should be near the Dan Islands. However, we could not catch sight of them; whence we concluded that they do not exist, and that Graah, in laying them down in his chart, was misled by the icebergs so numerous in these parts, and so frequently mistaken for islands.

We enjoyed an interval of rest in the early part of February. The weather was continually fair. The icebergs and drifting masses of ice, though constantly increasing in number, left our raft untouched. We were able to complete our domestic organization, and our hopes of ultimate safety daily grew stronger. We had grown profoundly indifferent by this time to the so-called rights of property. The most precious books were destroyed on the slightest pretext. The gilded frame of our chimney-mirror was used for firewood, and the plate-glass thrown aside. Petroleum and brandy were poured lavishly into the stove, to keep up the necessary heat. For this purpose we utilized everything,—even tobacco. Of what value was gunpowder? So we expended it in fireworks, just *pour passer le temps*.

An incident which occurred at the beginning of

March moved us, however, more seriously. Dr. Buchholz, who, in the hour of greatest peril, had reassured us by his heroic composure, fell into a fit of despondency, and was attacked by a nervous disease from which he did not recover until his return home. We did our best to take care of him; but deprived of medical assistance, situated as we were on a lonely ice-raft, or afterwards in leaky and uncomfortable boats, we were unable to employ the means which might more quickly have restored him to health.

In mid-February, when in lat. $64^{\circ} 40'$ N., and about twenty miles from the land, we perceived in the west, at a distance of eight miles, a belt of open water parallel to the coast. Evidently it was of considerable breadth, and it appeared to reach almost to the shore; for the west wind raised a strong swell, while it was quite calm when the wind blew from the east. We concluded, therefore, that in the east the ice was not yet solidly packed.

The sun, which at noon now rose seventeen degrees above the horizon, made its genial influence felt. We began to dream of summer. Our fur clothing we flung aside, and our men marched about with their throats bare and chests uncovered.

The nights were gorgeous with the auroral splendours. The luminous sheaves developed themselves against the sky like the ribs of a fan or the petals of a flower; the magnetic zenith seemed to lie exactly above our house.

Snow fell heavily in the month of March, and bright, calm days were few. We drifted past a small iceberg, the

summit of which, about sixty feet high, accommodated a family of seals. The mother, apparently, had profited by its solitude to bring forth her young on its dreary crest.

On the 4th, at a distance of twenty-five miles, we caught sight of the glittering glacier of the Kolberger-Heide. On approaching it, we could see from thence, down to Cape Moesting, an uninterrupted series of glaciers descending to the sea. Huge masses of rock rose between them, like gigantic towers, to an elevation of 3000 feet. In the vicinity we fell in with numerous icebergs, some of which were motionless, as if fast to the ground.

After safely passing through the midst of them, we were rapidly driven, one day, under another floating mountain, about six miles from the shore. When within twenty-five yards of the immense mass we were checked in our onward course, and for nearly three hours remained motionless; then the ice-masses separated, and the drift resumed its original rapidity. A general convulsion—perhaps the rupture of our own field—was felt immediately afterwards; for twenty minutes we incurred the greatest danger, and, breathless with anxiety, watched the terrible spectacle before us. That part of the mountain of ice which was nearest to us formed a huge overhanging mass; its central bulk, by the combined action of sun and water, was fantastically moulded into archways and magnificent portals. On the south side yawned a cavern wide enough and lofty enough to receive a ship like the *Hansa*. As we drew nearer we could see directly above us numerous points and jagged spikes; and, indeed, one projecting angle we were able

to grasp. "We are lost!" such was our simultaneous thought; but, strange to say, our floe remained intact, and, protected by the pieces floating around it, did not even graze the tremendous mountain. The berg once left behind, we drifted awhile in open water, which had formed as in the wake of a ship.

On the 18th of March we calculated our latitude and longitude—the former, lat. $64^{\circ} 2' N.$; the latter, long. $40^{\circ} 44' W.$

On the 29th, our delight was great to find ourselves in the latitude of Nukarbik. It was upon this island that Graah wintered from the 3rd of September 1827 to the 5th of April 1830; and from thence he set out on his perilous and difficult boat-voyage. We had long indulged the hope that from this point we too might undertake with our boats the traject to Friederichsthal, the most southerly establishment on the west coast. However, the ice as yet was so compact that two of our seamen asked leave to make an attempt to reach the shore across it. Fortunately the captain refused, for a few hours later some changes occurred which would have exposed these men to terrible dangers.

In the evening we thought we perceived a fire on the coast, which we set down as a sign of the presence of the Eskimos. We fired off our muskets, therefore, and on the following day hoisted our flag. But we saw no signs of life except some crows and snow-buntings. The former came regularly from land every morning, and returned in the evening at sunset.

In Nukarbiik Bay we were detained, much against our will, for four weeks. We were not more than two or three miles from the shore; while outside the floes drifted continuously towards the south, our own, on the contrary, veered sometimes to the south, sometimes to the north. This was due to the peculiar movements of the littoral under-current; the wind could not oppose it; often, indeed, we drifted *against* the wind. In this vicinity the coast is broken up by three deep inlets: at high water the tide rushed into them, and carried us with it; when the tide ebbed, we receded with it. At the next flow the same movement was repeated; and so for some weeks we continued to be the plaything of the antagonistic currents.

Singular to relate, the great tide of the 3rd of April had no influence upon us.

On the 12th the weather was clear, and we could observe the flux and reflux. We found ourselves near an iceberg which measured nearly one hundred and twenty feet in height, and one hundred and eighty feet in diameter, with a length of two hundred feet. From ten in the morning until four in the afternoon we slowly drifted past this island, sometimes so near that we attempted to fend off our raft with our ice-poles. Meantime we observed that the tide rose two feet, and reached the high water-mark on the berg, where it could easily be traced. About four the tide began to ebb, and we resumed our course. We could distinctly hear the sound of the waves on the shore, and the clash and clang of ice-floes driven one against the other.

We were now visited by small troops of linnets and snow-buntings. We threw them some oatmeal, which they ate very greedily. So tame were these birds, that they allowed us to catch them with our hands. In the month of April our carpenter had an attack of scurvy, and his legs swelled. We employed the simplest means to cure him—making him take very frequently a little gentle exercise in the open air—and he soon recovered.

Easter arrived while we were still detained in Nukar-bik Bay. We were all cheerful, and most of us in good health, and sanguine that we should soon be delivered from all our dangers and anxieties. For us, indeed, it was a true resurrection festival! We had seen death before us so often, and in so many forms! Already Nature greeted us with fresh and abundant signs of spring: the air was much milder—the lowest temperature, even at night, did not exceed 23° F.; in the sunshine, which we often basked in, lying full length on the sails of our boats, it rose to $54\frac{1}{2}^{\circ}$ F.

On the first day of festival, April 17th, we enjoyed a good meal: preserved meat made into savoury soup, ham, pease, kidney beans, and a bottle of sherry which had been carefully reserved for the occasion. Next day a gale from the north drove our floe out of the bay, and it resumed its southward drift. For three weeks we moved onward steadily, so that on the 6th of May we had reached lat. $61^{\circ} 4'$, or almost the latitude of Bergen.

On the morning of the 7th, great was our delight to see open water in the direction of land. Should we not

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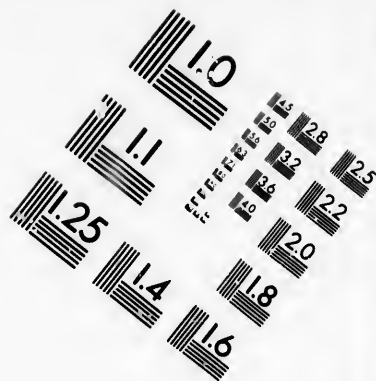
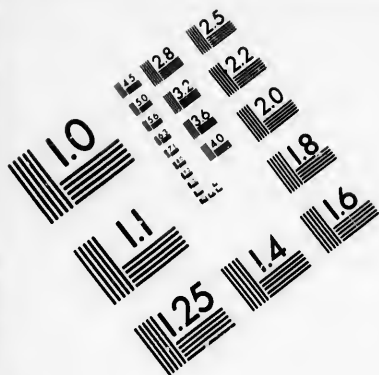
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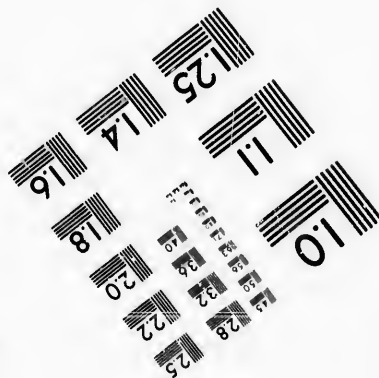
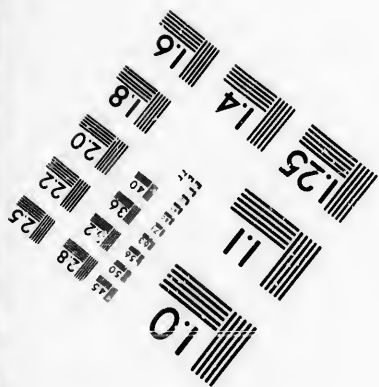
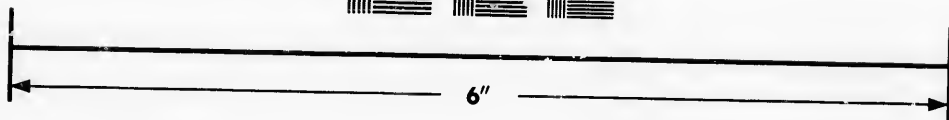
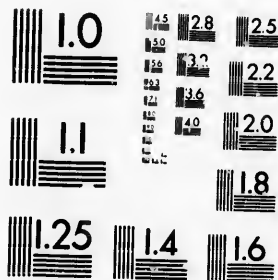
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take advantage of it? Had not the time come for abandoning our raft? The wind was favourable, the sky clear. The captain consulted us, and all agreed it was well to make the attempt.

Observations taken at noon showed that we were in lat. $61^{\circ} 12' N.$, or 8' more to the north than on the preceding day.

After a hasty meal, we set to work to unload the boats—a long and a painful task. At first we removed the provisions, clothing, sails, masts, oars, astronomical instruments; then we hauled up the boats on three pieces of ice, and their cargoes, carried on our backs or upon sledges, were placed on board.

We accomplished this labour with a feverish anxiety, and at the end of three hours all was ready. Then we cast around our ice-raft a last glance of gratitude. Through dangers and sufferings innumerable it had carried us, for two hundred successive days, from the regions of terror and death to more hospitable latitudes, where we had gained a new courage, and found strength to hope for speedy deliverance.

It was nearly four o'clock in the afternoon when, with loud hurrahs, we hoisted sail. We had distributed our company in the three boats. In the whale-boat, led by Captain Hegemann, were the two scientists, the cook, and the sailors Philip Heyne and Bernard Gatjen. A second boat, commanded by chief officer Hildebrandt, carried the sailors Paul Tilly and Heinrich Büttner. In the third, Bade, the second officer, was accompanied by Wilhelm Bowe, the carpenter, Fritz Kewell, Max Schmidt, and Conrad Gierke.

THE BOAT-VOYAGE.

We kept under sail till nine o'clock, moving slowly at first, but more quickly when we got the boats into trim, so that when we made fast to a floe for the night we were nearer the shore by seven miles.

We underwent considerable trial in climbing upon the floe. After having found a convenient place, the boats were unloaded and hauled up one by one. The provisions and fuel of each boat were piled beside it, and covered with oiled sailcloth; then, by way of a roof, we covered the larger of the two small boats with the sails of the other, and thus provided an imperfect defence in case of bad weather.

These arrangements occupied us for some hours. We supped upon bread and coffee, which the men prepared in the boats with the spirit-of-wine lamp.

It was half an hour past midnight when we wrapped ourselves in our furs, and laid down to rest. Our sleep was not very long; at half-past five we resumed our voyage.

Steering towards the west, we arrived within four miles of the shore. But about noon the ice became so compact that we were again compelled to make fast to a floe.

Until five in the afternoon we remained ensconced in our boats, on this mass of ice which was slowly drifting southwards. The sun cheered us with its rays; but it had the inconvenience of producing that peculiar effect on the sight which is due to long gazing on the snow. The eyes of the look-out men, incessantly turned to windward to make out some navigable channel, could

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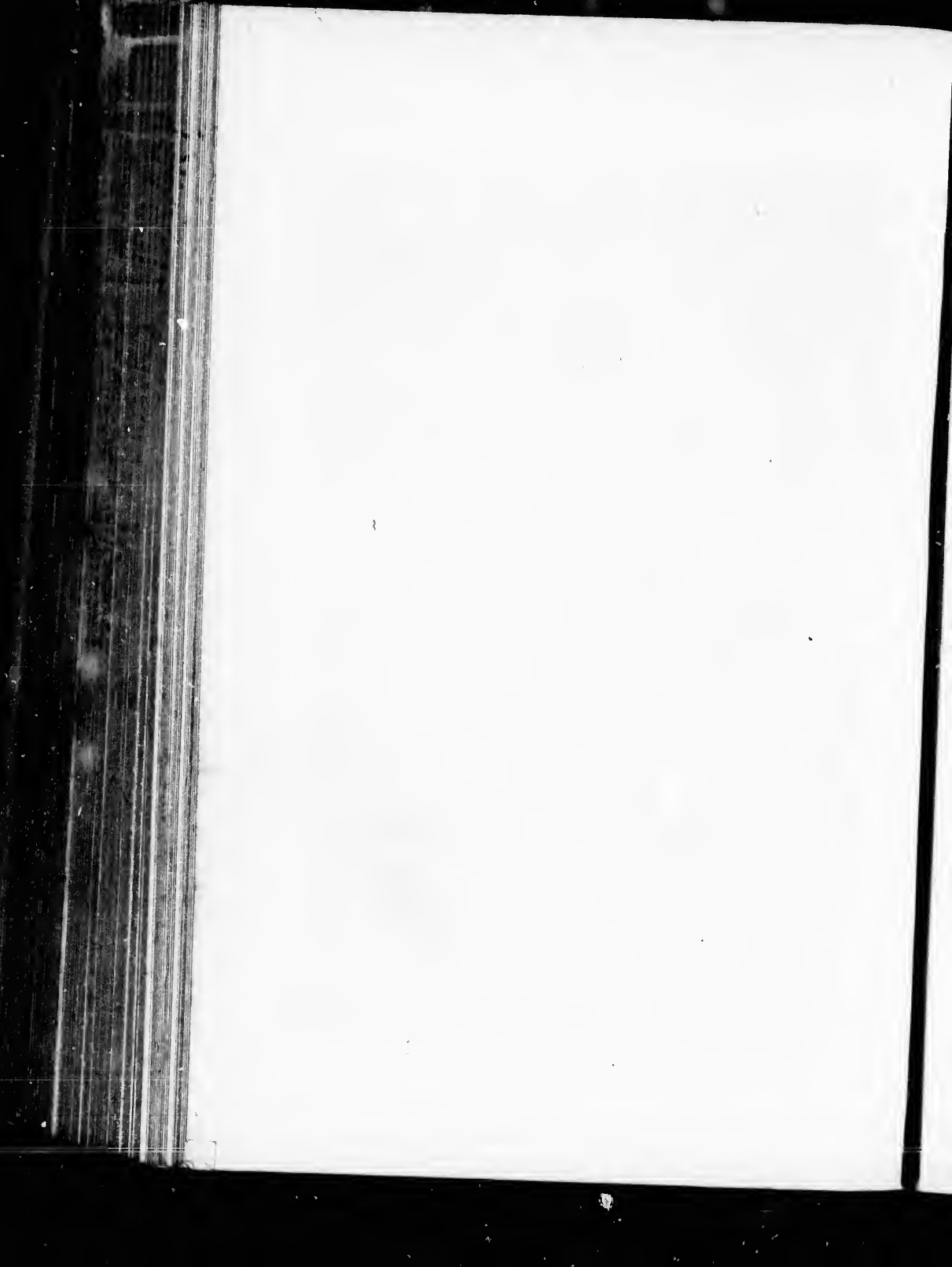
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no longer bear the dazzling splendour of the sunshine-flooded plains of ice. At first they were sensible of a painful weariness; then an inflammation of the eyes came on, which caused an agonizing pain; they shed tears abundantly; their minds wandered. All they could do, however, was to endure patiently, while protecting themselves from the action of the light with a thick bandage. The attack did not last above a day and a half or two days, but it was necessary to guard against its return. The disease, moreover, has many stages. Some of us suffered severely and suffered often; others escaped with only a slight feeling of fatigued vision. Later on, we attempted to preserve our eyes by constructing spectacles out of the green-coloured lenses of the instruments of refraction; and by means of this ingenious device, each person was provided with what is an indispensable article in the equipment of an Arctic voyager.

Pressing forward, under canvas, we made our way through the thick floating ice until within about a mile and a half of the promised land. Then our course was suddenly checked by the solid heaped-up masses before us, which formed an apparently insurmountable barrier. The painful work of hauling the boats had exhausted our strength; and after a ration of bread, with a little coffee, we fell, exhausted, into a deep lethargic slumber.

Bad weather, snow, and tempests detained us for six days upon the ice-floe. The temperature varied from $36\frac{1}{2}^{\circ}$ F. by day, to 21° F. by night.

On the 10th of May, in the afternoon, we enjoyed our customary game of whist in the whale-boat.

The sail of the large boat, which served as a roof during the night, did not protect us very sufficiently from the damp, on account of its comparative tenuity and its transparency; and the rain which soon came on, and fell unintermittently for twenty-four hours, sprinkled us as abundantly as if we had been exposed to a shower-bath. The two other boats were better off in this respect, for they had capital coverings of oiled canvas.

During the day, Mr. Hildebrandt came with his crew into the large boat, to bear us company, and to spare their own brandy and provisions, with which they were but ill-supplied. Eight of us then sat down to meals in the large boat.

In the morning, we feasted upon warm coffee with a crust of dry bread. At noon, we dined upon soup and broth. In the evening, we were content with a few mouthfuls of cocoa—of course without milk or sugar. We were compelled to economize our supply of food; for otherwise, in case of a protracted delay, we must have been exposed to the ravages of hunger. Our appetite was exceedingly keen; a circumstance easily explained, for we were very sparing of the nourishment indispensable in the Arctic climate,—meat and fat,—weighing them out most scrupulously in our scales. The supply of bacon was reckoned at six pounds per head; and there were, besides, a couple of hams.

On the 14th the bad weather cleared off, and the ice giving way towards the south, we dipped our oars and accomplished a slight trajet; but the ice closing in again, we found ourselves condemned to another captivity on the floe. It lasted five days.

Here is an extract from the journal of the pilot Bade. "Each one of us passes the time," he writes, "as well as he can. Mr. Hildebrandt makes sketches of our boats on and among the ice; Fritz, as cook of the large boat, experiments with his cooking apparatus so as to secure the greatest economy; Konrad composes poems; the carpenter relates Vegesack stories, and describes how as captain of a gun-boat he sailed by help of a Mediterranean chart from Bremen to Hull, and how by means of soundings he found himself at Ramsgate; I myself studied the poems of Heyne, or took to carving boats; Max essayed drawing.

"Yesterday the snow ceased: we took stock of our provisions, and divided them equally. We have about twenty-seven pounds of bread per man, five pounds of bacon, and some coffee and cocoa which, we hope, will last a month. Our appetite is unlimited; and the scantiness of our rations prevents our ever feeling satisfied. I have made a small pair of scales, in which I weigh the bread to my crew; the bacon I cut by my eye in tolerably equal pieces, and then give it out in due order. What an exciting moment is this! How every eye brightens at the sight of the bacon, while a piece of bread is regarded as lovingly as the daintiest confection! Fritz pretends to have discovered that he is much more satisfied when he simply swallows his little ration, not masticating it much: it seems to last longer! We almost wear out our eyes in looking for a seal. Oil and fresh meat would, indeed, be a most welcome addition to our stock. It is a strange and very mixed feeling, to reflect that in six weeks we shall

have nothing to eat; that if by that time we have not reached the land, we must drop off, one after the other: but serious as is the thought, sometimes we seem to find it wonderfully humorous. Of tobacco we have a fair supply, and a good portion is consumed daily. Fritz is making himself a new pipe.

"To-day, the 19th of May, the weather is again most beautiful. I am writing at 9.30 A.M., and the temperature is at $72\frac{1}{2}^{\circ}$ F.; the heat oppressive, the air calm, but the ice quite compact. In such weather, however, it should soon break up. With the telescope we can see the torrents falling from the steep cliffs of the rocky coast; fresh water we find everywhere on the floe.

"Our health is good; only Dr. Buchholz, unfortunately, is still a sufferer. During the last few days our eyes have grown stronger, as we have used them carefully. The temperature of the sea-water is 31° F.; that of the fresh water on the floe 32° F. At this moment, I hear expressions of astonishment at the appearance of a fly which has perched or settled on the sails; in truth, a hopeful sign! The month of May, however, is no month of pleasure to us in our captivity. With the exception of the brightness and the mild temperature, it differs in nothing from January; resembling it in its continuous northerly gales. Real night we have now no longer; the sun rises at three, and sets shortly before nine o'clock; the intermediate period is half-twilight. The time must be at hand for the birds to choose their quarters and lay their eggs. This east coast of Greenland is, indeed, a deserted, dead, and dreary region; and one may judge how difficult it is to approach, for,

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AN ARDUOUS EMPLOYMENT.



had our lives depended on the issue, we could not have reached it with the boats."

No change taking place in the situation of the ice, we resolved, hard as the work would be, to drag our boats to the island of Illuidlek, which lay distant about three nautical miles. We began on the evening of the 20th, making use of the cables we had prepared during the winter; and harnessed ourselves with a strap fast across the shoulders. We did not accomplish more than three hundred paces, however. The snow fell in thick-coming flakes, and melted almost immediately; so that in our night-encampment in the boats we suffered much from the damp.

On the 21st, in the afternoon, the weather cleared. The captain and Mr. Hildebrandt then undertook an excursion towards the land. They found the ice ill-adapted to their project—many floes being intersected by wide crevasses, the ice being piled up in enormous blocks, and few of the fields exceeding one hundred paces in length. It appeared to us impossible to haul the boats through such a labyrinth; and we resolved to await the effect of the spring-tides, which would flow in a few days.

The time seemed to us dreadfully long. Some of the men amused themselves with carving; and we ourselves undertook to fashion the pieces for a game of chess. Bade made a king in full regal attire, and crowned. Others undertook more useful tasks, and wove some lines, eighty fathoms long, in the hope of catching a few fish to vary our scanty bill of fare.

The weather, on the 24th of May, was splendid. The sun shone in a cloudless sky, and the thermometer, when exposed to its rays, marked 95° F. We gladly availed ourselves of such an opportunity of thoroughly drying our clothes and linen, which had long been in a wretchedly damp condition. The boats were uncovered, and smoked bravely in the hot sunlight. Everybody was on the alert. Mr. Bade, accompanied by some of the men, went hunting for a dinner. An unsuccessful hunt! The seals would not show; the fish would not bite; and the silly divers were wise enough to keep out of the range of shot. Mr. Hildebrandt, with the sailors Philipp and Paul, succeeded, however, in reaching the island of Illuidlek, which lay three miles distant, with an elevation of from one hundred and forty to one hundred and fifty yards. They landed at one; and were back with us by four o'clock.

This rocky island-desert measures about ten nautical miles in circumference. Our men landed on the north-east side, at a spot from which, in boats, it would be easy to reach the south coast, where we might expect to be sheltered from the wind and the ice-drift. There was also a chance of adding to our provision-store by hunting sea-birds.

Such was Mr. Hildebrandt's report, and it confirmed us in our resolve to make for the island. As the heat of the sun was fatiguing, and the glare of the snow blinding, we agreed to travel by night and rest by day; and we calculated that the journey might be accomplished in eight days.

On the first night we succeeded in advancing five

hundred and thirty paces. Then we enjoyed the day's rest, and at seven in the evening resumed our painful toil. That night we made seven hundred paces. The 27th was Konrad's birthday; and to keep up the spirits of the men, we served out to each a glass of sherry. The work increased in difficulty as we advanced. First, the boats had to be emptied, and dragged to the spot where we purposed to rest for the day. Then we had to return across the broken ice to fetch our stores; and, loaded with these, to regain the boats. As each person's burden was one hundred to one hundred and five pounds, the labour we underwent is more easily imagined than described. But it is useless to dwell on details: suffice it to say that on the 4th of June we succeeded in landing on Illuidlek; and we felt we had cause for gratitude to an all-merciful Providence.

ON THE ISLAND OF ILLUIDLEK.

This small island stretches in the direction of south-east to north-west. On the north-west a steep, dome-shaped eminence, and in the south-east a sloping mountain, are surrounded by clusters of barren and rugged cliffs. From a small island, Ivimiut, lying in front of it, and from Cape Discord on the mainland, it is separated by a narrow channel. On the side which faces the mainland extends the formidable barrier of a long chain of rocks, beyond which lies a low island: probably that which, in Graah's map, is named Omenarsuk. These rocks are of the most fantastic outline, and entirely devoid of vegetation. A couple of solitary gulls, perched in a crevice of the rock, regarded our arrival

with curious eye; while a legion of guillemots screamed and fluttered in the open waters of the pass.

We were between the south-east shore of the island, Cape Discord, and the little island of Ivimiut. Towards ten o'clock we entered a bay sheltered by high cliffs from the north; we christened it Hansa-Hafen (or Hansa Harbour). There we designed to pass the night, and with this view had already carried ashore our stores; but the tide falling, our boats grounded, and therefore, about midnight, we left the bay, and made fast to a piece of ice lying close in-shore. It was now exactly four weeks since we had left the floe in the hope of gaining the mainland in a few days.

On Whitsunday the weather was beautiful. Messrs. Hildebrandt and Bade took the small boat, and went hunting. The spoils they brought back were scanty; consisting only of twenty-two divers—the flesh of which, however, prepared as a stew, furnished us with a couple of capital dinners. Our provisions were now reduced to a fortnight's supply.

The hunters had wandered into the higher grounds, and had discovered along the coast, in a southerly direction, a narrow strip of water. They found themselves in the midst of bare rocks, the more sterile as they were more elevated, and bearing only a few mosses and some creeping willows. No trace of man was discernible. Illuidlek, where Graah had found a small native population, seemed to have been long uninhabited.

On Whit-Monday, the 6th of June, we resumed our enterprise. Our destination was Friedrichsthal, the nearest settlement on the south-west coast of Green-

land. However, we hoped to encounter, long before reaching that far-off point, some fishing-party of Eskimos in search of seals. We painfully followed up the Kangerdleck fiord, sometimes pushing and sometimes swimming; then with oars and sail we made head against a violent south-west wind from six o'clock, when the ice had become more broken up, until eleven at night.

Omenarsuk Island rises scarcely one hundred and thirty feet above the sea, and yet on the north side is found a spot, only a few yards square, covered with fresh-water ice, which has all the appearance of a diminutive glacier. From its situation it cannot be an isolated block of ice detached from the heights, but rather a patch of fresh-water ice, caused by the melting of the snows, which would be frozen in the ravines of the island. This formation of land-ice in so small a quantity, in the very neighbourhood of those mighty ice-currents, appeared to us an interesting phenomenon.

A mile from the headland of this strait, which we named Cape Pentecost, we hauled up our boats on the firm and even coast-ice.

On the 7th of June, the weather was all that could be desired. We proceeded very pleasantly under sail, enjoying the rays of the sun along a precipitous coast, and doubled Cape Pentecost, which raises aloft into the air its rocky crest. Gloomy and wild was the aspect of the shore. The dark-coloured rocks were relieved by narrow streaks of snow which descended them about half-way down; and sometimes also we remarked the green tint of a few wretched mosses

creeping over the hard surface. At noon we encamped on a small island—Kutek of Graah's map. In the hollow of its rocks we found some fresh limpid water, excellent for culinary purposes, and of which we drank heartily a delicious draught. The rocky shores of Kutek must have been frequently in collision with the ice-masses descending from the north; and, indeed, in many places they had been plainly worn down and levelled. On these rocks, which were covered at high water, we saw the shining fragments of floes which had been driven against them and shattered in pieces.

In the evening we hauled up our boats for the first time on the rocks of the Greenland continent, about five miles to the north of Cape Valloë. And as there we were safe from all contact with the ice, we gave ourselves up to complete repose. At daybreak, the light of a glowing sun revealed the scanty vegetation of the soil. There were sorrel, dandelion, and cinque-foil, which we sought for eagerly in the hollows and crevices of the rocky ground. With the help of a little pickle, we improvised a salad, to eat with the remains of our divers.

Again we set sail, and by the evening had traversed twenty miles. This time our encampment was made on the south point of Greenland (lat. $60^{\circ} 34' N.$), in front of the fiord of Lindenow.

On the following day we doubled Cape Hvidtfeldt, which rises in the form of a majestic pyramid to a height of several thousand feet. Before it lay a group of rocks, at one of which we checked our course, in order to find the best channel.

The colour of the mountains from this point contrasted

absolutely with those we had hitherto seen. They looked like melted copper. The intensely blue atmosphere in which they raise their magnificent forms, enhances the richness of the hues of this picturesque coast.

The rocks lying almost immediately under the cape are washed perfectly round, and may be compared to gigantic ramparts, polished and smooth on every side. The sea and the ice have done their work. These dome-shaped rocks and rocky cupolas continued visible along the whole line of coast; thousands in number, forming a complete bulwark of stone, and serving to defend the land against the encroachment of the ice.

But as we continued our voyage we were greeted by shores of a brighter aspect. To the north of the promontory of Igalalik, we perceived, at a great distance, some "spots of greenery" covered with a short crisp herbage. Unfortunately, a thick fog prevailed, and in threading the labyrinth of islands at the mouth of Prince Christian Strait we missed our goal. The weather had become very bad. But the south-west wind, blowing straight in-shore, drove us, just when we were seeking shelter, into the first and best of the fiords so numerous in these parts. We had entered into it for some time under full sail, when the waters became singularly smooth; we were probably in an inlet, and we supposed it must be Prince Christian Strait.

We continued our course perseveringly until two in the morning. A plateau of granite, sloping gently to the sea, furnished us with a capital site for our encampment, and the boats, after our usual custom, were soon arranged so as to serve for tents.

In our secure asylum we could comfortably abandon ourselves to a sound sleep. We had been successful in gaining, as we supposed, the south point of Greenland, and a few days ought to bring us to Friedrichsthal. The dread of death by starvation, the terrible spectre which had steadily confronted us for the last four weeks, was gradually passing into the shadow of oblivion; and so, at breakfast, we made an heroic attack on our fat and ham.

But it was desirable we should ascertain as accurately as possible our exact geographical position. We deferred our departure, therefore, until after the noonday-meal. After our morning toilet, which a small stream tumbling down the mountain-side enabled us to perform luxuriously, we climbed the height to obtain a view of the surrounding landscape. How novel was the scene on which our gaze rested! No longer masses of barren rocks alternating with the everlasting ice. Soft carpets of verdant mosses sparkled in every direction, and the dwarf willows put forth their young and tender sprays. And yet no long time had elapsed since the disappearance of the snow. We did not need to climb very high to come upon vestiges of the winter still. The channel beneath us had almost the appearance of a lake; and from our elevated position we could see another opening southward, which seemed to be bounded in the distance by an island. Eastward the land rose with a gentle inclination; while westward, where the channel disappeared behind a rocky promontory, swelled a sea of lofty mountains. All was calm and desolate, except for the occasional flight of

a white-winged gull, or the piping of a lonely snow-bunting.

The captain and chief officer had raised their temporary observatory on a broad platform of granite. Their observations showed that we were in lat. $60^{\circ} 4'$ N. We were not in Prince Christian Strait, therefore, but farther to the south.

Thanks to a fair wind, we sailed a dozen miles in this supposed strait; but found it entirely surrounded by rocks, and ascending the high ground, we convinced ourselves that our boats had entered a bay and not an arm of the sea. We had to retrace our path, accordingly, and take to our oars. On both sides the landscape was picturesque and majestic. The sombre rocky walls, their summits white with snow, rose to an altitude of several thousand feet. Out of their fissures and crevices sparkled foaming torrents, fed by the melting snows, which fell into the waters of the bay with a pleasant din. Here and there soft beds of moss were visible, and the birds made their appearance more frequently.

At six in the evening we had regained our original starting-point. We did not rest, however, and until midnight continued our course under sail, advancing four miles farther to the south, where we put into a small but sheltered inlet. From some traces found upon the shore, and more particularly from the seal-bones scattered about, we concluded that the Eskimos had, in passing, resided there for some time. Small squares of stones, and fragments of earthenware, mixed with the bones of seals, confirmed us in this conclusion.

The landscape was indescribably grand. A chain of hills, clad in verdurous mosses, bounded it on the left; while to the right rose a mighty rampart, twelve hundred feet in elevation. A rocky pyramid reared its bulk on high; and copious torrents, flashing over the ridges, dashed headlong upon the wreck and ruin accumulated at the base of the cliffs, to join together in a noble lake. The bottom of the bay was picturesquely shut in by mountains, whose frozen rivers poured their shining waters also into the lake; which, in its turn, descended into the sea, forming a cataract of rare magnificence.

SEDLEVIK.

At eleven o'clock in the morning we resumed our voyage, with a fresh northerly breeze. About noon we doubled the point of Christian IV. Island, and then rode between the islands situated to the north of Cape Farewell, so as to gain the much larger island of Sedlevik,—which braves the sea with several conspicuous promontories. As yet we had not fallen in with a single Eskimo, although it was generally believed that they came to fish in these waters. At a later date we learned that the seal-fishery, which is of so much importance to the Greenlanders, is carried on chiefly to the south of Cape Farewell.

We spent Sunday, the 12th of June, on the island of Sedlevik. Some of us went out on a hunting expedition. What a difference between these mossy lawns, so thick and elastic, into which we sank knee-deep, and the sterile, rugged rocks we had hitherto trodden! At the foot of the one lofty mountain, rising in the centre

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of the isle, Summer had lavished all her wealth. Among willows and flowering birches, the rich greenness of which rose like embroidery-work upon a ground of moss, the sweet-smelling angelica and smooth-leaved sorrel pushed their way; tall and graceful ferns developed their finely-wrought fronds; and the rocky slopes were adorned with the violet-tinted flower-beds of the low-lying *Sibbaldia*. Below, at our feet, lay blue reaches of sea, branching off in various directions, and stretching their long, deep arms far into the heart of the mountains, which, with azure ravines and whitely-gleaming glaciers, bounded the view. Small icebergs, drifting on the waters, lent life to the glorious picture; fancy thought of them as of the last ships of Winter's formidable armada. Ah, what a different impression the landscape made upon us now, to what it did but a few days before, when we were all uncertain as to our fate, and almost afraid to hope!

On the 14th of June, we set out at four in the morning. We crossed between floes until we had doubled the north point of the island; ran before the wind through Torsukatek Strait; and then, as the wind fell, rowed westward, keeping as near the coast as possible, and steering for Friedrichsthal. And behold, after rounding a low headland, the long-desired haven opened before us!—It was a moment never, never to be forgotten! With a wind in our favour, we hoisted sail, and, the German flag fluttering at our masthead, careered along right merrily. A few hundred steps from the shore, on the green ground, stood a tolerably spacious red house, crowned by a small tower. This was the

mission-house. More to the side, and somewhat nearer to the bank, stood a similar building; and near it a cluster of gloomy-looking stone huts, which we supposed to be the dwellings of the Eskimos. To the left opened a spacious bay, striking inland towards the north. The landscape was set, as it were, in a frame of lofty mountains, terminated in the distance by chains of dim blue peaks.

AT FRIEDRICHSTHAL.

Can the reader imagine the emotions which animated the hearts of the castaways of the *Hansa*? The Moslems who, after their long pilgrimage, descry the white walls of Mecca; the Christian votaries who see the towers of Jerusalem rising before them,—can scarcely experience such feelings of delight as thrilled our bosoms when we beheld the little colony of Friedrichsthal. He who for long days has lain upon the bed of suffering, abandoned even by the physicians, convinced of their powerlessness to save him, but who suddenly regains his health, and enjoys for the first time, under the influence of a beneficent sun, the life given back to him,—he alone can comprehend the sentiment which filled our grateful souls on the 13th of July 1870.

Friedrichsthal is one of the latest establishments of those devoted servants of Christ, the Moravian missionaries. It dates from 1827. It is situated in lat. 60° N.; that is, with Pamiädluk, which lies a few miles farther south, and is the residence of a small Danish trader, it is the southernmost part of Greenland inhabited by Europeans.

Its population, including the Eskimos scattered about its vicinity, numbers 837 souls. The natives call the mission *Narsak*—that is, “the flat land;” a sufficient distinction in mountainous Greenland, where level country is so rarely found.

The verdurous fields of Friedrichsthal descend gently to the sea. On either side high mountains stretch inland to the north. On the left the chain is separated from the settlement by a bay or fiord, running parallel to it—the Narksamiut. On the right, a bright stream, which the missionaries call *Konigsbach* (or King’s-back), flashes from the ridge. The shore, smooth and level throughout its entire extent, terminates with a natural mole or pier of granite—the “Look-out” Hill.

These details we necessarily learned at a later period. We were thinking of other things, when a fair wind wafted us gently into the bay of Friedrichsthal, our sails swelling, and the national flag fluttering at the fore. At the door of the mission-house a blue dress was visible for a moment, and then disappeared. Soon afterwards, quite a throng of people pressed down to the shore; they had seen us. The slopes of the Look-out Hill were also crowded. An European moved to and fro like a man charged with authority. Had they then, even in Greenland, a local or maritime police, or what? Where at first we had seen but a heap of stones, all was now alive. There stood a group of human forms, strangely attired—the natives of the country, who, huddled one against another, with their dress of skins and their tawny faces, could scarcely be distinguished from the rocks. A man in a *kajak* put off to meet us; but,

as soon as he had examined us, was on the point of returning. Some words spoken by the European official seemed to check him, and give him courage; he paddled again towards us, saluted us with friendly gestures, and finally conducted us into the harbour.

As soon as we reached the land, everybody would fain have been the first to disembark. On all sides we were welcomed with embraces and hearty hand-shaking. Words died away in the throat; voices trembled. The man from the cliff, and the natives, hastened to greet us. The supposed guardian of the public safety proved to be Mr. Starick, the missionary; who, with Mr. Gericke, superintended the affairs of the colony. Both opened wide their eyes when we briefly related the chief incidents of our voyage. Mr. Gericke desired the women who were present to prepare coffee for us; and leaving our men to moor and unload the boats, we followed the good pastor.

The mission-house is a timber building of one story. Like most of the European dwellings in Greenland, it was made in Denmark, brought out in pieces, and then put together on its present site. It is no larger than the huts of the Erzgebirge or the Hartz, and in its coat of red paint resembles the Swedish peasant-houses. Its foundations are laid on moss-covered rock. The erection of this modest edifice, and of a plain wooden church, cost more trouble than the building of many a palace in Germany. It was necessary to transport each piece by water from Julianashaab, about eighty miles distant, in boats rowed by women.

In the interior everything seemed very comfortable.

The rooms were painted in oil, and neatly furnished. A few flowers in the windows supplied imperfectly the place of a garden, which the rigorous Greenland climate renders impossible; or, at least, the little plot in front of the house looked dreary enough, and the turnips, its only vegetation, scarcely showed their first green.

We were soon seated round the hospitable board of Mr. Gericke, who, as well as Mr. Starik, was very anxious to hear the story of our adventures. The women of the house did not keep us waiting long. They spread a white cloth upon the table, in the middle of which stood a mighty pile of rusks, and near it some delicious butter. Then our amiable hostesses dispensed the contents of a huge can of smoking coffee; and to the good things set before us we hastened to do justice. We ate, we drank, we talked. Great was our confusion when the pile of biscuits disappeared with indecorous rapidity! We looked at one another astonished; but, lo! another pile stood before us, demanding and receiving our attention. Captain Hegemann felt it incumbent upon him to offer some excuses for the voracity of our appetite; but our hosts refused to listen to them, declaring that the more we ate the better they were pleased. Our men, meantime, seated at a table in the church, fared sumptuously on crisp sea-biscuits made of excellent rye-flour.

After the repast was at an end, the missionaries eagerly offered to supply us with whatever we stood in need of. Our shoes were in a sad condition, so each accepted a new pair. For this purpose, a contribution was levied on the boot-store, and we merrily ensconced our feet and legs in solid boots of seal-skin.

It was arranged that we should sleep in a small chamber used as a school, near the church, on the forms, placed one against another.

Properly speaking, the church is nothing more than an oratory. A table covered with a black cloth indicates the place of the preacher; and a harmonium—for this instrument has travelled as far as Greenland—stands near the table.

DAYS AT FRIEDRICHSTHAL.

The impression at first produced upon us by the natives was not unfavourable. Undoubtedly, those rather ugly and inexpressive physiognomies,—those broad, flat faces, with little sidelong black eyes, the whole framed in stiff bristle-like black hair, did not create any very strong prepossession in their favour; but our sympathy was conquered by their air of candour and goodwill. As soon as they found that we were peaceable people, and, above all, the countrymen of their beloved missionaries, they became confidential. The man whom we had seen first was the chief of a Greenland village, Igalorsoeitsiak, situated near Cape Farewell, and was named Jonathan. The missionaries described him as a skilful hunter and a brave man. We were in urgent want of a pilot to take us from Friedrichsthal, and no one seemed better adapted to the post. He expressed himself willing to accept it, and asked only for time to arrange his domestic affairs before setting out; which, of course, was granted.

We learned that a vessel of the Danish navy, engaged on colonial service—the brig *Constance*, Captain Barry—

was momentarily expected at Julianashaab, and that it was the single opportunity we should have that year for effecting our return home. We resolved, therefore, to leave Friedrichsthal as soon as Jonathan was ready.

About three o'clock we sat down to a comfortable repast, composed of wine-soup, roast kid, potatoes, pancakes, and pickles; the whole washed down with some weak sherry.

In the evening we conceived the idea of visiting the Eskimo village. All the huts were empty, the windows carried away, the interiors full of uncleanness. Heaps of ordure and refuse, formed of animal remains, spread abroad a pestilential odour; thousands of flies swarmed about them, and literally set the piles of filth in motion. There were no men, but there were goats, and a large herd soon gathered round us.

For supper we had a gigantic dish of porridge and a vast mountain of omelettes, seasoned by lively conversation. We learned that, miraculously,—for we had no landmarks or indications,—we had discovered the best route for East Greenland. The missionaries told us that Prince Christian Strait was completely blocked up with ice-floes, through which it was difficult to force a passage: our bay was a genuine discovery. We learned, too, the reason why we had not fallen in with a solitary native. All the Greenlanders cherish a profound dread of the races dwelling farther north, believing they are cannibals; a belief originating in some of the old legends of the Norsemen. The reader may understand, therefore, the feelings with which they watched our arrival on their coast in our three boats,—crafts such as they

had never before beheld in these waters! What terror our appearance must have produced in the hearts of these poor, timid, superstitious Greenlanders! So they made all haste to escape as soon as they caught sight of us. We must have passed, said the missionaries, many of their settlements; and it was possible that at Sedlevik, for example, we had sailed, during the night, close by a Greenland village. But even by day it is not easy to distinguish their little turf-roofed huts, unless you are right above them, or your eye is accustomed to look for them.

The inhabitants of East Greenland are, as a rule, stronger and taller than those of West Greenland; and their hair is of a light-brown colour. When they migrate to the west, it takes them some time to grow acclimatized, and they suffer much from a cutaneous disease.

It was late when we retired to our sleeping-quarters in the schoolroom. What a satisfaction we found it, to be able, for the first time since the 2nd of January, to undress before we went to bed! And then, too, we could sleep without any anxiety. What terrible nights of anguish we had undergone! And now all was, happily, at an end.

We had just finished our night toilet, when the door opened and M. Starik entered with a jug of beer. Who could resist the temptation? The foaming liquor, which did honour to the Greenland brewery, soon sparkled in our glasses.

Early next morning friend Starik reappeared with an ample breakfast. The massacre of the biscuits was re-

peated. Then we attended to our toilet, and each in his turn sallied forth, as clean and trim as possible. Our men had done the same.

Meanwhile, our linen had been washed by the Greenland women.

Our attention was constantly engaged by the new scenes unfolded before us. Some kajaks had arrived in the gray of the morning, and their owners approached our boats with wondering curiosity. We took these little swarthy men for lads about fifteen years of age; but learned that they were all husbands and fathers. Naturally, they were much in want of everything we could give them, and it was not long before they struck up a warm friendship with our men. It was not without some degree of pride each brought from his kajak his carbine and powder-flask; but they were overcome with astonishment when they saw the skill and rapidity with which our seamen handled the needle-gun. Our musical-boxes did not less astonish them: nothing could be more amusing than to observe the stupefaction with which these little men and women listened to the tinkling, silvery sounds; and had not M. Starik been present, they would probably have thought of their long-forgotten demon Cornik, and have taken us for sorcerers. On the shore our officers and the missionaries amused themselves with firing at a target, and many of the natives gathered round them. Others paid a visit to the servants, who were actively engaged in manufacturing boots for those of us whose wants had not yet been supplied. They gave them some sewing-needles, and

received in return a grateful "*Kojunok*" ("I thank you"). Both the married women and their daughters, eight in all, had an air of great mildness. M. Laube wished to sketch them. We made them also write their names in our memorandum-books. Our friendly attentions they received with all the little coquettish graces of the beauties of our own country, whispering and bending down their heads; it was even with a blush that the respectable maiden, Sibylla, aged fifty, inscribed her name upon the leaf.

We visited this morning another curiosity—a Greenland cellar; that is, a cavity in the rock, shaped like a swallow's nest, where the inhabitants stow away pell-mell their stores for winter,—dried fish, the blubber and flesh of seal; and when the space is filled, they close up the entrance with a stone.

Generally speaking, no one is the least afraid that his cellar will be plundered by his neighbour. The missionaries eulogized most warmly the honesty of their parishioners, and assured us that they would endure the cruelest sufferings of famine rather than rob their fellow-countrymen of their food.

Another fact may be recorded to the credit of the Greenlanders: we met with scarcely one who could not write his name. They are musicians. The musical services in the church are conducted by a band of wind instruments; a genuine Greenlander officiates at the organ—and, what is better, composes the hymns and sets them to music.

We must also refer to the remarkable skill in leather-work which the women exhibit. There is something

wonderful in the care and patience with which they execute the prettiest mosaics imaginable, for the adornment of their chausses and other articles of clothing, with tiny pieces of leather of various colours, not bigger than a pin's head. Nor must we omit to praise the taste which, if guided by a good housewife, they soon acquire for the proper management of their houses, with a due regard to order and cleanliness.

At table our hosts informed us that the natives had acknowledged to them that for some days they had been apprised, by their compatriots of the east coast, of the approaching arrival of strangers from the east. At first they were grievously alarmed, but they recovered their composure on seeing us. The news of our voyage, therefore, had circulated among the unseen natives, who had seen us from the distance threading our weary way through the islands.

Afterwards we heard, at various places, that our ice-raft had been fallen in with by some natives whom we had failed to see; and, later, we convinced ourselves that the rumour was not without a foundation of truth.

Yielding to the pressing entreaties of our hosts, we abandoned our design of setting out on the following day. They forewarned us, moreover, that at Cape Egede, which we should have to double, much ice would still be collected; and gave us to understand that the northerly wind, then blowing, would open up a passage, if we delayed another day.

In the evening, Messrs. Starik and Hildebrandt made a boat-excursion on the Narksamuit. They sailed as far as a point of the bay where eighty women and chil-

dren were engaged in the herring-fishery. Herrings are scarcely less valuable to the Greenlanders than seals, and form a principal part of their food-supply. When the fish fail, hunger sets in. Like our own herring, this little fish, the *mallotus arcticus*, bearing a close resemblance to the sprat, is accustomed to show itself in the bay every evening, towards the end of May or the beginning of June, in shoals of great compactness; and women and children catch them with a kind of dragnet. When taken, they are neither gutted nor cleaned, but simply laid out upon the grass until the sun has dried them sufficiently. Then they are collected and stowed away for winter consumption, in old seal-skin bags or other receptacles, and are eaten with fish-oil.

As soon as the boat came in sight of the fishers, the women began to utter cries of terror, and some of them took to flight; but they grew calm on recognizing their friend Starik. By degrees they were completely reassured; and even the youngest, in their kajaks, strove to keep up with the boats. They promised to bring us, on their return, some fresh herring; and they kept their word. On the following morning, in fact, two great heaps of fish did arrive; and being carefully cooked by our hostesses, proved a very agreeable dish at breakfast. They had a capital flavour; and we did them justice.

During the day some kajaks appeared, and some of our men attempted to paddle these fragile boats, which are very difficult to manage when one is not accustomed to them. It is not an easy thing even to keep them upright on the water; and one finds it very troublesome

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The females of the household and ourselves were thoroughly familiar and cordial. Konrad was promoted to the post of precentor, and conducted the choral practice of the young girls; and we could not but admire the firmness and correctness with which they chanted. The sole fault was, that they accented every melody with too much emphasis.

In the evening we visited the graveyard. The graves of the natives are arranged round those of the Europeans, which are much fewer. The Christian mode of interment has been adopted, but the ancient custom is retained of raising above the grave a pile of stones.

On the Look-out Hill we saw some graves which belonged, we were told, to the days of paganism; but, in the opinion of the missionaries, they are not above a century old. They are so constructed, that through an aperture in the stones it is possible to see the bones which they enshrine.

On the following day, the day fixed for our departure, when we reached the shore, we found it swarming with men, women, and children, who, in their uncleanness and disorder, contrasted disadvantageously with the people of the mission.

The boats were loaded, and the sails hoisted. It was not without emotion that we poured out our grateful thanks to our hosts. We also took leave of the women and the natives. The good people of Friedrichsthal had overwhelmed us with supplies of fresh bread, butter, sugar, and coffee. At last the oars were dipped, and, in the midst of a triple hurrah, we set out on our new voyage. Soon the Look-out Hill hid from sight the roofs of the hospitable Friedrichsthal.

We were attended by a magnificent convoy. M. Guericke, with his grand-daughter, accompanied us as far as the next station, in an *oomiak*, or woman's boat, filled with the members of his household; and fully a dozen of the natives escorted us in their kajaks.

THE VOYAGE.

On the opposite coast of the Narksamuit, under the lofty headland of which we have already spoken, lies Igikait,—the *Herjulfnäs* of the old Norsemen. We landed there. Some remains of stone walls indicate that it was once occupied by Europeans.

Afterwards we halted for a while at a little island with a long, sonorous, and unpronounceable name,—Kikertarsocistak. Some white partridges stimulated the ardour of our hunters.

About four o'clock we arrived off Nennortalik, otherwise called the Island of Bears. There we found a small Danish trading-settlement, a kind of factory. We were now about half-way between Friedrichsthal and Lichtenau. We had been discovered from the shore, and, to our great surprise, were welcomed with salvoes

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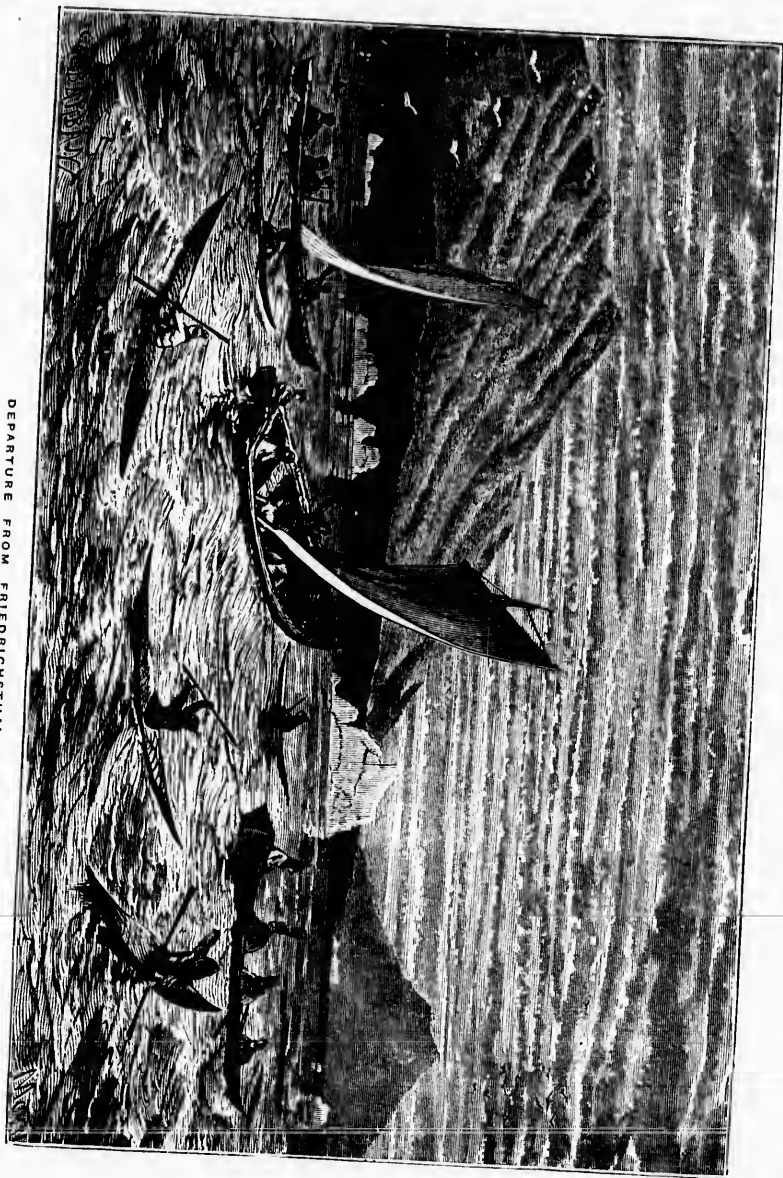
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DEPARTURE FROM FRIEDRICHSTHAL.





of artillery by the Danes. The environs of the little harbour were thronged by upwards of three hundred natives—men, women, and children.

An European forced his way through the press; M. Rosing, a merchant, who gave us a friendly invitation to his house, and informed us of the arrival of the brig *Constance* at Julianashaab. But he cautioned us not to be too sanguine that she could embark us; because, as she had to make a second voyage to Greenland that summer, she would only discharge her cargo, and put to sea again immediately. We could not reach the colony in time, he thought, to return with her. He endeavoured to console us by advising us to make for Ivikät-Zeltplatz, a station twenty miles to the north of Julianashaab, in the Bay of Arsut, whither several ships repair every summer to load with the mineral abundant in that locality, chrysolite. But the prospect of another long boat-voyage was not particularly seductive. What should we do? After a brief deliberation, we resolved on persisting in our first design; and begged M. Rosing to write to the governor, inviting his good services to secure our passage on board the *Constance*. Notwithstanding his doubts, M. Rosing showed himself desirous to facilitate our object, and Jonathan was despatched to Julianashaab. We waited for the reply at Lichtenau.

Nennortalik we found to be one of the best settlements in Greenland. The governor's house, with its tarred timbers, white window-frames, and well-ordered gardens, produced an agreeable impression; the buildings adjacent, used for commercial purposes, are clean, neat, and well kept. The huts of the natives, as usual,

are built of stones and turf. A few are provided with roofs of timber. The interior arrangement is of the customary Greenland character: a low narrow vestibule opens into a small chamber, with a wainscoting all round. The greater part of this room is occupied by the wooden benches on which the numerous tenants take their rest. The walls are adorned with a few lithographs, and some looking-glasses in gilt frames; a small table stands near the window, and two or three chests supply the place of chairs.

To an European, a protracted residence in one of these houses would be a severe punishment. The evaporation from, its occupants, the smell of the fish-oil used in the lamps, the half-putrid food, and the decayed skin clothing, so poison the atmosphere, that it is almost impossible to breathe. Ventilation might be effected by means of the large window on the south side; but it is so besmeared that it admits only a scanty and gloomy daylight,—and it never occurs to any person that a supply of fresh air is necessary or desirable.

The island is flat and barren. Strewn with erratic blocks, it rises on the west side into a mountain-mass, the outer promontory of which is the formidable Cape Egede. Mosses, lichens, cranberries, and bilberries cover the rocks with luxurious vegetation,—if the word “luxurious” can fitly be applied to scenes so barren.

The evening was spent with our host; and we were accommodated for the night in a house built by the colony especially for the entertainment of travellers.

Next day we set sail early, favoured by a strong fresh breeze.

Igdlopäit, the most recent of the mission-stations founded by M. Warmow, stands upon an island. Its inhabitants appear remarkably squalid and oleaginous. The men wear skin "vestments" in a sadly tattered condition; and the women go about with their hair loose and unkempt.

We re-embarked at four in the afternoon, and in three hours reached Lichtenau.

AT LICHTENAU.

Lichtenau, the oldest of the Moravian missions in South Greenland, was founded in 1772. It lies about four miles inland, on the Bay of Lichtenau, which stretches thirty-two miles beyond it. On a small peninsula, crowned by a rocky plateau, rises the mission-house; as well as the native village, the huts of which are grouped around the rocks in the form of an amphitheatre.

As we drew near Lichtenau the land-fog cleared away, and the inhabitants, descreying our approach, hastened in all directions to the shore. The features of the young girls and women are, according to our esthetic principles, far from agreeable; but it is their bodily mien which is more particularly repellent. In general, the costume of the Greenland women differs little from that of the men. They wear boots, gaily decorated with embroidery, which reach to the knee; short trousers of seal-skin, hung around the hips without straps, but fitting closely to the body; and, finally, a kind of tunic, pointed both before and behind. The narrow drawers compel them to walk with knees bent

and body leaning forward, shuffling one foot after the other, so that they look somewhat like apes. If this in itself is not attractive, imagine thus curiously equipped a pair of old beldames, with broad faces tanned and wrinkled, noses besmeared with snuff, eyes red and bleared, and fluttering gray hair like Medusa-locks!

Making our way through the crowd gathered on the shore, we reached Mr. Spindler, the missionary; who, with his wife, pressed forward to give us a hearty welcome, and to express their pleasure at so unexpected a visit from their countrymen. Mr. Spindler is a man in the prime of life, but apparently not quite acclimatized, is very intelligent and well-informed, and supplied us with many interesting facts in illustration of the life and manners of the Greenlanders. Mrs. Spindler, who is as vivacious as she is affable, devoted herself to the task of making us comfortable. Mr. Spindler was alone in the mission-house; his two colleagues having gone down to the bay to purchase wood.

While the northern coasts, and more particularly the neighbourhood of Lichtenfels, are supplied every year with a considerable quantity of drift-wood, brought down by the Polar current, the missionaries in the south are compelled to import their fuel from Europe, or to bring it from the interior, often from a great distance. Like the firewood, winter fodder for the live stock—and Lichtenau possesses three oxen and some goats—can be procured only with considerable difficulty. The few small grass plots which yield a scanty crop of hay lie miles apart, and often at a great distance from the mission. The missionaries and their wives per-

sonally attend to these important matters, and are absent in turn, several weeks at a time, throughout the short summer. Mr. Spindler wished to send for his colleagues from the fiord; but as we intended leaving next day in the hope of reaching Julianashaab before the *Constance* sailed, we would not allow him.

At length Jonathan returned. The missionaries considered he had lost no time, but had accomplished his journey with great rapidity, though much hindered by fogs. He brought the good news that the Danish captain had willingly consented to take us on board his ship. Unfortunately, the good news was followed up by a very laconic letter to the contrary effect from the governor of the colony:—"The German voyagers to the North Pole cannot embark on board the *Constance*, because she is about to set sail on her second voyage to Northern Greenland. The German voyagers should go to Ivikät, where perhaps they will find another vessel."

Mortified by this frigid communication from the Danish official, we held a council, and deliberated what course to adopt. A voyage to Ivikät in our boats was a difficult enterprise, and, according to our calculations, would occupy fully ten days. Besides, we had no certainty that we should obtain a vessel when we arrived there.

Our deliberations were protracted. At last we resolved on asking the advice of the missionaries, who immediately sent for their chief.

Next day the boat returned with M. Warmow; who gave it as his opinion that the best thing we could do was to seek a passage home from Ivikät on board one

of the mineral ships. At the same time, he proposed that we should rest ourselves thoroughly at Lichtenau, and delay our departure for a week. These friendly counsels we accepted, of course, with much gratitude.

On the following day we made an excursion to the island of Unartok, situated about twelve miles from Lichtenau; it is remarkable for a hot-water spring. Isaac Barson, the old Norse chronicler, who described the establishments of the Northmen in Greenland early in the fifteenth century, makes mention of it. According to him, a Benedictine cell existed in its vicinity, and the virtues of the spring were already known to the colonists.

Like all the island-system of Greenland, Unartok is cold and desolate, comparatively flat on the north-east side, but mountainous on the south-west. We could discover no traces of ancient buildings; and yet it is not easy to believe that a monastery could disappear entirely from the surface of the soil, even in the course of four centuries. The story of the old chronicler can be accepted only on the supposition that the ancient Norsemen must have constructed their edifices of timber, like our modern missionaries; and that these, when abandoned by their inhabitants, were destroyed by the natives, who would utilize the materials in various ways.

As for the thermal spring, it is a reality, not a fiction. On the west side, scarcely a gunshot from the shore, is found a small level basin, about three feet deep and twenty feet in diameter, covered with a remarkably

fine granitic sand. According to an alcohol-thermometer, its temperature is about 96°. Twenty paces farther westward, and a little higher, wells up another tiny spring, which is very deep, and filled with stones. The surface of the water is covered with a yellowish brown mucilaginous matter, evidently of vegetable origin. The temperature of this second fountain is 102°. The water has a slight alkaline flavour, and deposits a white incrustation. The high temperature of the soil, caused by these warm springs, is shown by a flourishing vegetation growing luxuriantly round their basins, and contrasting agreeably with the desert appearance of other parts of the island. Indeed, this oasis of verdure almost reminded us of our own green fields. Water-cresses, orchids, buttercups, and other meadow-flowers, display their elegant corollas; and on the very edge of each basin flourishes a species of reed like those which grow in the marshes and morasses of Europe.

Now-a-days the spring is but little used. The natives are by no means solicitous to secure for themselves the physical comfort of a good bath, and the missionaries seldom have occasion to visit the shores of this lonely isle. And, besides, one would find little pleasure in bathing in the springs, because no protection is available from the keen air constantly blowing towards their basins.

After examining these fountains, we left the island, to make another visit to Unartok, to see the so-called "soft-stone" mineral, which is found in the interior. This is a kind of talc, which plays an important part in the domestic economy of the Greenlanders. Formerly

it was the only material which they employed for their pottery: and even now, though Denmark supplies them with copper and iron utensils, they still use it for making their pans and saucepans; but more particularly for their lamps, which are simply crescent-shaped stones hollowed out, and supported on a wooden tripod. The hollow part is filled with fish-oil in the following manner:—They take a piece of blubber in their mouth, out of which they press the oil with astonishing skill, and squirt it into the lamp. Some dry moss is then strewn over as a wick, pressed tight to the concave edge, and lighted. This lamp, which gives both light and heat,—for they prepare their food by it,—is found in every house: it is, so to speak, the symbol of life of a Greenland family; and they gather round it, as Englishmen round their fireside. The weights of their fishing-lines are also made with this stone; and it is a curious fact that the old Norsemen employed it for the same purpose. In the north of Greenland it is found in large quantities, but it is almost a rarity in the south.

The bay does not stretch as far inland as its neighbours, but is surrounded by mountains which form a magnificent panorama. At its extremity opens the mouth of a valley which penetrates far inland. By following it the traveller will come right down upon Friedrichsthal; but it is so obstructed by heavy masses of rock that the water-way is preferred.

Scarcely had our boat shown itself in the interior of the bay than its desert shores became suddenly alive. The inhabitants of Lichtenau and Igdlopäit are stationed there for the herring-fishery; and as there were no fish

just then to catch, the fishers were indulging in their customary idleness. But our arrival startled them all into activity; everybody shouted and made signs that we should find here or there, at half-a-dozen different points, a good landing-place. It was with the greatest difficulty in the world we kept them off our boat, which they wished to drag, with us in it, along the stony beach. As we proceeded to the "soft-stone" rock, the crowd pressed closely in our rear; with the exception of two old women, who, being unable to bear the rocky surface, stayed behind to prepare for us a savoury repast. When we reached the rock we found nothing to see; the natives had worked at the rock so long and so assiduously that scarcely a trace remained on the surface of the soil. We resolved, therefore, to continue our excursion without waiting for the delicate cookery of the two respectable Greenland housewives,—who were not the least affronted, and quietly ate themselves the dish they had cooked for us.

It was not so easy to get out of the bay as into it. A strong wind blew right in our teeth; we were forced to take to our oars, and had a long pull before we came in sight of Igdlopäit. We arrived there in the evening. For supper we were entertained with a dish quite peculiar to Greenland,—consisting of young shoots of the angelica steeped in vinegar and sugar. This piquant aromatic food, which would be relished at every table, was gratefully appreciated by us; as was also some capital beer, which we could never have expected to find in a rocky and sterile island.

Next morning, almost before we had finished break-

fast, came a kajak from Lichtenau, with a letter which compelled our immediate return. A message had been received from Julianashaab: the *Constance* was waiting to take us on board! Who or what, in such circumstances, could detain us a single moment?

On arriving at Lichtenau, we found our companions in a state of great excitement. The despatch which had been forwarded to us at Igdlopäit had been confirmed by a second, in which Captain Bang informed us that, detained by the ice, he had only got as far as the island of Pardläd, near Julianashaab, where he at first thought of waiting for us; but had now gone on to Julianashaab to take on board provisions, and by unloading some oil to make room for us. How we embraced one another; and what congratulations we exchanged, at the good news which assured us of a speedy return to our native country!

HOMEWARD BOUND.

M. Warnow now made haste to provision our boats, and added many souvenirs which, in after-times, might remind us of our absent countrymen. We did our best to acknowledge his generosity. As we should have no further need of our boats after our arrival at Julianashaab, we gave one of them to the missionaries of Lichtenau. We had already distributed our musical-boxes, which, in spite of so many accidents, we had preserved in good condition. We also left with our kindly Greenland hosts those of our weapons which were no longer wanted.

It was past noon when we took leave of our friends.

The whole population of Lichtenau had assembled on the shore; the men saluted us with incessant discharges of musketry; others, in their kajaks, made ready to act as our escort. The flotilla started amidst a hurricane of hurrahs and a storm of farewells!

However, we were fated to have one more encounter with the formidable icebergs of the Polar World.

Opposite the port of Lichtenau drifted a considerable number of these mountains, undermined by atmospheric influences and the action of the waves. The concussion of the firing moved one of these to do us a mischief. We had already passed it in the whale-boat; following us came the smaller shallop, with M. Hildebrandt and its crew of natives; the large boat was far in the rear. Suddenly the huge mass burst, and hurled its ruins upon this tardy-sailing craft. Fortunately it escaped; the blocks of ice fell around it without touching it, and raised enormous billows, which propelled the boat violently forward. For a moment we were alarmed, but our alarm changed to mirth when we saw the little craft dancing on the water safe and sound, and the natives, soaked by the spray which had flooded them, spitting and spluttering, and drying their faces—which certainly had not been so well washed for a long time.

Soon Lichtenau disappeared for ever from our gaze. At the mouth of the bay is situated the factory of Südpöven. We halted a moment to salute the factor and his wife. Our escort then bade us adieu, and in our three boats we continued our voyage towards Julianashaab.

We reached the island of Karsok in the evening.

The natives at first concealed themselves ; but discovering M. Warmow, they came forward, and accepted very willingly a present of bread and meat. They locate themselves on the summit of a rocky acclivity rising from the shore.

We continued our course through a labyrinth of channels, straits, and islands. It was now the 21st of June, and hardly dark at midnight. We doubled the island of Omarsuk and its great heart-shaped mountain, which the Greenlanders named the "Mountain of the World" (*Berg der Welt*). We were rapidly approaching the territory of Julianashaab.

About five in the morning we found ourselves at the entrance to its bay, and made a short halt under the cliff.

Our men were exhausted with the fatigue of this long voyage, during which we had been unable to use our canvas. We had suffered greatly, also, from the cold and damp, against which we were very insufficiently provided. But a hearty meal of bread and meat, with a good cup of hot coffee, prepared in our old and faithful kettle, recruited us satisfactorily, and we resumed our route with new ardour.

We wound our way among the islands strewn in front of the settlement, and of which the largest, exactly opposite Julianashaab, is named Storö. Two hours later, and we were at Julianashaab !

Here the narrative of the *Hansa* expedition virtually terminates. Embarking on board the *Constance*,

Captain Stegemann and his companions soon reached Copenhagen; whence, in a few hours, they crossed to their own country.

AT JULIANASHAAB.

However, before taking leave of Greenland, and quitting Julianashaab, they undertook some useful excursions; of some of which we may record the results, as a supplement to the narrative of Dr. Hayes in the "Land of Desolation."

They visited, among other localities, the Bay of Igalliko; and the following notes of Dr. Laube add some interesting facts to those related by the American explorer:—

The oldest settlement of the ancient Norsemen is identified with the modern Igalliko. Brattelid is supposed to be the camp of Erik Rauda, the first emigrant, as the Bay of Igalliko will be the Bay of Eimar. The arm of the sea situated at a short distance from the northern point of Julianashaab, and easily reached through the land of Brattelid, may be identified with the Erik Fiord of the Norsemen. We leave it to the archaeologists to discuss the truth of these conjectures; what is certain is, that in this neighbourhood exist abundant traces of the old Norse occupation.

First, we find a large area or chamber, forming a square, enclosed with massive stones, placed side by side, and close together, but not joined by mortar. Formerly these were arranged in several courses; but now only one is extant, and the stones of the others lie scattered all around.

In the re-entering angle of this courtyard lie the ruins of a house, which, if ever used for residential purposes, must have been of very moderate dimensions. The area enclosed by walls measures from twenty to thirty paces in length by ten in width. These walls are made of low blocks of stone, fitted in to one another, but not set with mortar; exactly like the Cyclopean masonry in the south of Europe. None of the blocks are hewn. The smooth side is that where the block was separated from the parent rock. The interstices are filled up with small stones. In the south front of the building two entrances occur. One opens into a room which the Egedes had used as a storehouse; the other was open. Both were about six feet high; so that a big man could not have passed through upright. On the slab above the door lay some earth, in which grass was growing; and as this layer of mould was tolerably thick, while, owing to the climatic conditions of Greenland, it could not be the result of vegetation or of the decomposition of the stone through atmospheric influences, we came to the conclusion that the builder, like his descendants in Iceland, had covered his roof with sods. The whole area inside the enclosure of masonry is covered with fragments of rock. If the Arctic climate has not tried in vain its teeth upon these ancient walls, the Greenland population have also contributed largely to their destruction; for all the stones which the inhabitants of Igalliko use in the construction of their houses, have been hewn by the sons of the North with so much skill and labour as to form most admirable materials. A Greenlander will take no such trouble. He plunders

the old Norse edifices of whatever can easily be rendered available, and leaves only those immense blocks which cannot be removed without considerable effort.

About a hundred paces beyond, we come to the ruins of another building, much smaller, and unenclosed. Farther still, we observe a simple rampart of stones; and on the grassy slope at the extremity of the bay lie some blocks of hewn masonry, which can only be the result of human labour. On a small flat island, situated near the harbour, are the foundations of another Norsemen's building. It is possible that these edifices may have been used as storehouses and servants' residences. The one on the island may have been designed as a refuge in case of danger. The early settlers had their building materials close at hand.

While the voyagers waited until the channel was sufficiently free from ice to permit of their departure, they found time to make another interesting exploration:—

The journey to the lake situated near Julianashaab is agreeable and instructive. It lies surrounded by magnificent rocky cliffs, from which leaps a foaming torrent, to empty itself into the sea after a short and wild career. In the background rise picturesque mountain-heights, mirroring their bold crests in the glassy surface of the tranquil waters. The banks are carpeted with soft mossy lawns, into which the wayfarer sinks knee-deep. The majestic calm of the high northern solitudes broods over the landscape.

We also climbed the Storefjeld, a mountain about

1200 feet in height, and the loftiest in the neighbourhood of the settlement. We reached its dome-shaped summit by crossing ravines and scaling precipices; it was an Alpine excursion on a small scale, and an excellent gymnastic exercise for all of us. Only we could have wished to be delivered from the gnats, that plague of the Greenland summer. These little mischievous insects harassed us incessantly: in vain we hunted or smoked them; their swarms infested the heights as well as the valley, and they gathered about the traveller from head to foot. If their sting did not produce upon our bronzed and hardened skin the effect which a mosquito bite has on the delicate skin of ladies, yet the tiny but continuous pricking eventually became perfectly intolerable.

The prospect from the crest of the Storefjeld is not less beautiful than extensive. It stretches far across the bare summit of the mountain, strewn with rugged rocks, and beyond that of its neighbours, till it is terminated by the inland chains of heights, crowned with glaciers and eternal snows. Below lies the lake, with its sapphire waters; and, beyond, the islands and the strait, and the blue sea sprinkled with shining blocks of ice. So gorgeous a view fully recompensed us for our fatigue, and while engaged in contemplating its various aspects we forgot even the annoyance of our insect-plague. Our officers, it is true, were not quite so satisfied with the spectacle of the masses of ice still floating on the sea; for they were a sign that the hour of departure was not yet come.

The bay of Julianashaab seems tolerably full of fish. One of the boats of the *Constance*, sent out to catch some cod, returned, after a very short absence, laden with booty. The fish was cut up and salted. They hooked also a shark, nine feet long; and immediately a host of natives made their appearance, who seized on the "hyena of the sea," carried it ashore, cut it up, and then deposited the pieces on the heaps of refuse in front of each house—a process by which they acquire the flavour approved of by the natives.

THE HOME-VOYAGE.

At length, on the 3rd of July, about eleven A.M., the *Constance* set sail, with the happy company of German voyagers on board. She made but slow progress, however, and did not reach Kaksimuit (the Kraksimuet of Dr. Hayes) until the night of the 15th. On the 19th she resumed her voyage, and on the 22nd came in sight of Frederikshaab. Here the voyagers were entertained by the gambols of a herd of whales, who approached the ship so near as to cover her deck with water. The evolutions of the cetaceans were very interesting. It was like a submarine explosion when any one of them leaped from the water; then they swam on the surface, beating it with their fins so violently that the sound was like a succession of cannon-reports.

In the evening, the *Constance* dropped anchor off Frederikshaab, where she remained until the 26th.

The ice-floes were still so compact out at sea as to compel the *Constance* to keep a northerly course. Otherwise, wind and weather were favourable. In the

evening the voyagers passed at a short distance the second of the great glaciers of South Greenland,—the Jisblink, near Fiskernaes. The portals and arcades excavated by the ocean-waters in this huge mass of ice glowed with an emerald radiance; and the wash of the waves, sometimes feeble and sometimes violent, fell on the ears of the listening explorers. The day closed up with a glorious sunset. They were still attended by those luminous splendours which had moved their admiration during their sojourn among the ice on the east coast of Greenland, and of which the dweller in temperate regions can form no idea. But the clouds streaked with lurid red were no good sign, and the following day a storm blew up, and heavy fogs prevailed.

On the 30th, the *Constance* turned her prow westward. Towards evening, says Dr. Laube, the well-known sound of the sea dashing against the ice saluted our ears. It was not long before we saw the redoubtable barrier, but the floes were now scattered and broken up: ah, how different from the spectacle they had formerly presented! Now they were worn, shattered, reduced in size,—the very playthings of the waves,—and the vessel continued her route without finding them any impediment.

Towards evening they formed behind us only a rim or belt of dazzling white; and in their rear the mountains of Greenland, gilded by a setting sun, seemed to bid us a last farewell. Gradually they disappeared in the gloom. Night drew her veil over the scene; and on the morrow, when we ascended upon deck, we found

ourselves in lat. $65^{\circ} 11' N.$, in free and open waters, in Davis Strait.....

"*July 31.*—More ice. Our course lies due south, and—words full of a celestial harmony!—is directed towards our fatherland.

"A few weeks more, and our troubles will be ended, our sufferings forgotten; yet how long it seems to wait for that happy moment!

"After a voyage of about four weeks' duration on the lonely waters of the North Atlantic, we come in sight of the Shetland Isles. Soon we reach them, and a fair wind carries us into the German Sea. We survey the horizon with watchful eyes, in the hope of discovering some homeward-bound German vessel, which may carry the good tidings of our safety. But none is seen; the Doggerbank is occupied only by Dutch and Norwegian fishermen. At length we gain the mouth of the Cattegat. The sea around us grows more and more populous with vessels. In the latitude of Skagen, upwards of three hundred ships sail with us towards the Baltic, and yet we do not perceive a solitary German barque. What can be the cause? During our absence has Germany lost all her fleet? But soon a pilot comes on board, and informs us of the grave events transpiring in Europe [the Franco-German war]. The explanation is sufficient. We understand why we have met with no German ship, and why hundreds lie at anchor in the roads of Elsinore."

We arrive at Copenhagen on the 1st of September; and the appearance of that beautiful city, with its groves of beech-trees, agreeably impresses us. What a differ-

ence between its laughing landscapes and the desert shores of Greenland! With what joy we contemplated the shores of the Sound, its neat, trim villages, its stately trees, that fresh green foliage which we have not seen for so many months! At Copenhagen, we are once more in the world of civilization. The two captains go ashore; we remain on board, and the *Constance* is taken into dock.

For the first time we bestow a thought on the wretchedness of our personal appearance, and each bursts out into laughter at the tattered condition of his companions. It was impossible for us to quit the ship until rehabilitated—at least by day; the police would certainly have followed us. On our heads, seal-skin caps; on our feet, sea-boots, which displayed our toes; our trousers in rags, and our coats threadbare,—such was our costume! Our first proceeding, therefore, was to repair to a clothing-store; and we could not feel angry when the proprietor closed up the doorway with his body until the consul's certificate convinced him of our respectability.

Here we may close our narrative. The voyagers reached Schleswig in safety on the 3rd of September, after a series of adventures almost unparalleled in the history of Arctic discovery and enterprise.

II.—VOYAGE OF THE "GERMANIA."

We have devoted a considerable space to the record of the loss of the *Hansa*, and the experiences of its people on their raft of ice, because the circumstances

were unusual, and characterized by a special interest. Over the voyage of the *Germania*, however, we shall pass much more rapidly, and content ourselves with particularizing its results; the incidents which attend an expedition into the midst of the Arctic ice, and a winter-encampment, being now familiar to almost every reader, from the narratives of various explorers.

It was on the 20th of July that the *Hansa* and the *Germania* so unexpectedly parted. The latter looked wistfully around and about for her comrade, but no signs of her being visible, determined to make for the rendezvous which had been agreed upon. Continuing her course to the north, she fell in with several whalers, but none of them had seen the missing ship. Yet how near to each other lay their respective courses, may be inferred from the fact that the *Germania*, on the 1st of August, lay-to in nearly the same spot as the *Hansa* had reached on the 22nd of July, when ice-blocked, and drifting to the south.

The monotony of the voyage was relieved by watching the malle-mucks, or auks (*Mergulus alle*), which attended the ship in immense flocks, and exhibited an extraordinary voracity. If a large piece of fat, which they cannot swallow at a gulp, is thrown into the water, they fight desperately; sometimes two or three begin at different points, working both with beak and claw. The bird is not ugly; its colour is variable; the young ones are grayish, but the old, with the exception of the wings, almost always white; its head is highly arched, with a strong bluish beak bent like a hook.

On the 5th of August we reached the group known as the Pendulum Islands, discovered by Captain Clavering in the year 1823. We dropped anchor on the south side of the largest isle, where we were sheltered by a small isle in front; to which, from the number of walrus congregated there, we gave the name of Walrus Island.

After a few days' rest, our northerly course was again resumed, though we met with frequent obstructions from the ice. On the 14th, an enormous ice-field appeared right ahead of us, extending eastward as far as the eye could see, and apparently joining the land-ice to the west. We were forced, therefore, to put about, and take refuge on the south side of Shannon Island, where we might pursue our scientific investigations, and watch from its hills for a favourable opportunity of renewing our expedition. We dropped anchor in six fathoms of water, and between some stranded blocks of ice, on the 16th of August.

On the shore we found some remains of Eskimo summer-huts, with a great deal of moss and weeds; and succeeded in shooting a musk-ox, which proved a welcome addition to our bill of fare.

Shannon Island stretches from lat. $74^{\circ} 56'$ to lat. $75^{\circ} 26'$ N. In the north it attains the considerable elevation of 940 feet; but to the east and south its hills seldom exceed 500 feet. Nearly the whole of its mass is of volcanic origin. Close to its coast, on the north-east, extends a fine range of basaltic columns.

On the 27th, after consultation with his officers and scientific staff, Captain Koldewey came to the conclusion that a northward advance was impossible. He

determined, therefore, to return to the sheltered anchorage on the south side of Pendulum, from which it might be practicable to organize a sledge-expedition to the mainland. At four P.M., therefore, we raised anchor, and steered southwards. The sea was now everywhere frozen over, and mostly covered with ice an inch thick, through which we could force a passage only with steam-power up.

From Klein Pendulum, however, we shifted our quarters to our old anchorage off Sabine Island; and as the ice had gathered in all around in solid masses, there we resolved to winter. Signs of that dreary season were, indeed, coming fast upon us. The earth was frozen on the surface; the streams ceased to flow; heavy winds blew from the inhospitable North. So we set to work to make everything snug for the approaching time of trial. The ship was hauled into a safe and sheltered spot, where she was moored with ropes to the ice and neighbouring rock. She was then unfitted; even her lower masts and shrouds being taken down, and carried ashore. Thus the ship was disburdened; and, at the same time, a considerable space was gained both on deck and in the cabin, which in every respect was, in winter, of the greatest importance.

"First," says our chronicler, "the sails were taken down and rolled together, then the yards and the maintop-mast, and the sails and all the rigging dismantled. The foretop-mast we purposely left standing, that we might have a lofty point, which, in the course of time, might be useful for observing the air-currents and electricity. Then the deck was cleared, and the

long-boat hoisted from its place. The spare spars and all utensils and chests were brought to shore. The same thing was done with all provisions which the frost could not destroy; except, of course, what we needed for use during the half-year. The two largest boats we laid with the yards, &c., on the flat shore at the end of the harbour. For the provisions, however, we erected a depôt, half-way to the observatory on the peninsula. On a layer of planks we closely packed our chests and vessels, covering them with sails, the edges of which were kept down by heavy stones. Thus buried, our belongings seemed able to defy both storms and bears. But other things remained to be done. One or two men had to help to build the stone houses; and the engineer and the stoker were busy taking the machinery to pieces. One of these stone houses was intended for an observatory. It was built on the corner of land lying near to the ship, upon the steep edge of the bank; for the other, as a magnetical observatory, a more north-west position seemed preferable."

As a protection against the icy blasts, a strong sailcloth tent was stretched over the ship; and, finally, a three-inch-thick layer of moss completed the roof erected above the deck. The wooden walls of the cabin were lined externally with felt, and on the inside with the thick woollen stuff known as "coating." The floor was partly covered with a carpet, and partly also with felt and sailcloth. The iron stove was placed so that its radiation should warm every corner. In short, everything was done that the ingenuity and scientific skill of man could suggest to ward off the rigour of the Arctic winter.

At the beginning of November they were deserted by the sun, and the three months' Arctic night set in. Drearier and drearier grew every day; but as we have already described in these pages the principal features of a winter in the Polar Regions, we need not now enter on any minute details. Cold and darkness—cold and darkness—what more can we say? These are man's two greatest enemies, against which even Science itself can make no very successful struggle.

CHRISTMAS-TIME.

We resolved, however, to keep the Christmas season. We were the first Germans who had wintered in the realms of ice and snow, and we all felt that a Christmas-tree must bloom on board the *Germania*. The wish, however, seemed fruitless, for Greenland does not bear fir-trees. But Nature took pity on our distress; scanty as was her growth, she offered us a helping hand, as if in recognition of Christmas. Even in winter the stalks of the andromeda retain their leaves, and these, though of a dark greenish brown, are still fresh. The carpenter made a pedestal, on which stood a three feet stem, with its branches so disposed as to represent a fir-tree. These were covered with the andromeda shoots, and smaller sticks were attached to imitate the natural branches. In this way we achieved a magnificent tree! The overhanging slope of the adjacent hill was one of the few spots where the andromeda grew abundantly; our botanist knew how to find it under the snow, and at dark the plants were raked up and brought home in triumph.

The fir-tree was built up, so to speak, in the warm after-cabin, every man on board contributing something towards its completion. It was gaily decorated with a variety of offerings, and even golden-nuts and small wax lights were not wanting. At four o'clock the managers of the show cleared the cabin, whose walls were afterwards embellished with flags and foxes' skins, until the general effect was really imposing. All was ready by six; the ship's bell rang out a cheerful summons. Under the ventilator a small coloured transparency was arranged; and from the fore-castle rose the welcome strains of a Christmas hymn. Then all the company entered the cabin, and took their places round the table.

"German Christmas in East Greenland ice! There stood the powerful forms of big 'children,' serious but cheerful; and the finest Christmas-tree rose on deck, glittering with lights and gold and silver; and on the fresh white table-cloth lay the plates with the gifts upon them: they were but trifling things, but they gave much pleasure—small books, letter-cases, and so on. Near the tree lay a large harmonica 'for the men;' this, with some balls of cord, in which were enclosed different small articles, was a present from the ladies of Kiel. On the other side stood the complete model of a full-rigged ship, just finished by P. Iversen.

"Somewhat later followed a hot supper, in which the cook astonished us with some delightful cakes. Healths were drunk in foaming wine of the Neckar; and at dessert a large chest, which had taken its place in the cabin since yesterday, was opened. It contained a valu-

able present from Mainz: a number of bottles of excellent Rhine wine. You should have seen the men of the *Germania*! Heart and mind were in a glow; they joked and chattered, speeches were made and healths drunk, and the ship resounded with many a hearty cheer. We thought of our loved ones at home, our brothers on the *Hansa*, and our ever dear country.

"It was not long before we had a song.....And as it was a wonderfully warm, soft air, the suggestion of a dance on the ice received universal approbation. Soon we were dancing merrily on the white snow, whilst the boatman, wrapped in a reindeer-skin, played the new harmonica with an artist's hand.

"More bottles were opened, more healths drunk, and midnight had passed before we retired to rest."

THE NEW YEAR.

We now come to the year 1870. New-Year's Day was greeted with general pleasure, for it was a proof that half the formidable Arctic night had passed away, without producing any evil influence on mind or body; and though the coldest time was still to come, it no longer seemed so dreadful.

There is something, however, in the absolute silence of the Arctic winter which oppresses every heart; and the spirit shrinks from the gloom and the shadow constantly brooding over the scene. All the sweet voices of creation are hushed; the brooks have ceased to ripple, and the cascades to plash and clang; the waves no longer murmur on the shore. Life, too, is almost utterly wanting; the scanty vegetation of the North

sleeps under a thick shroud of snow, and the bears have retired to their winter recesses, the seals to the outer edge of the pack-ice, and the birds have winged their way to milder latitudes. No glow of sunlight flecks the distant heights, or pours its golden colours on the glassy sea or the shining masses of ice. Everything and every place are tinged with gloom; nature is wrapped in a rigid cerecloth or funeral pall, over which the profound Night broods immovable; in the intense blue of the heavens the stars glitter keenly, and it is easy to realize the force of the poet's expression, "the cold light of stars;" like colossal phantoms rise the shadowy, snowy walls of the mountains; and the universal melancholy of the landscape is reflected in the mind of the observer.

Our ship presents no cheerier sight externally, for its deck is laden with snow; masts and yards stretch spectral arms in the gloom; the ropes are wound about with frosty webs of crystal, and the helm lies buried deep under heavy blocks of ice.

No wonder that, with such surroundings, we almost succumb to a feeling of utter desertion, or that our spirits are prostrated by the darkness which weighs so heavily on nature animate and inanimate. It needs a strong effort to conquer and put aside such sensations; and we should scarcely be capable of it, if we did not remember that every day brings us nearer and nearer to the spring.

Work is an excellent safeguard against a sentiment of melancholy which, if indulged in, might become dangerous. And, accordingly, a constant activity pre-

ailed on board ship; all hands were engaged in one or other avocation,—reading, writing, registering observations, tailoring, shoemaking, carpentering, and learning or teaching in the “school of navigation.” The clothing also came in for a share of our attention. For the degree of cold we had hitherto experienced nothing was better than our woollen garments, but only when the air was still; if the wind blew, our bodies, even if kept in motion, became cold and rigid in a very short time. As we contemplated a sledge-journey, however, we began to make ready our fur garments,—cutting up our long and useless fur coats, which reached to the feet, and transforming them into short, close-fitting surtouts, lined with wool. The boots, hard and unmanageable, were replaced by chaussures of original design, made of sailcloth, lined with woollen stuff, to which leather soles were attached. The tent was enlarged, so as to accommodate all the sledge-travellers, and the fur sacks and coverings for the sleeping-place duly prepared.

AN ADVENTURE WITH A BEAR.

On the morning of the 13th, one of the seamen, Theodor Kleutzer, ascended the hill we had christened the Germaniaberg, in order to view the landscape in the increasing daylight. Having gained the summit, he seated himself on a rock and gave expression to his joyous feelings in a song. “Music hath charms,” as he discovered on looking round; for a huge bear, a few paces off, was intently listening to his vocal exercise! Had Theodor, a strong, ready, and capable man, been armed, such a rencontre would not have disturbed him in the

least; but it so happened that he had not even a knife upon his person. He was unarmed, alone, at a distance from his companions, and face to face with a Polar bear!

His only chance of safety lay in flight, and he began a tolerably rapid descent of the mountain. Upon looking back, after a time, he saw, much to his discomfort, that Bruin was trotting behind him, like a dog. In this way they continued the descent of the mountain. If Kleutzer halted, the bear halted; if Kleutzer went on slowly, so did the bear; if Kleutzer ran, the bear trotted. Thus the two had gone some distance, and Kleutzer began to feel uneasy, fearing the bear might grow weary of a long stern-chase, and press closer upon his heels. He uttered, therefore, a loud shout, which disconcerted the bear for a moment, but afterwards seemed to have angered and irritated him, for he quickened his pace, and rapidly drew nearer. In this dilemma the sailor recollected some stories he had read of ursine curiosity, and while continuing his flight he pulled off his jacket and threw it behind him. The device was temporarily successful; the bear stopped to examine the strange article, and Kleutzer dashed ahead, with a shout for help that resounded far and wide. But soon the bear was on his heels again; and cap and waistcoat had to be offered up. Kleutzer now saw some of his comrades hastening towards him: the sight renewed his energies; he shouted, and ran with all his speed. Unfortunately, the bear ran too, and Kleutzer was obliged to take the last thing he had,—his shawl,—which he flung across the creature's snout. But, excited by the

shouting and the pursuit, the bear tossed it aside contemptuously, and pressed the fugitive so closely that he touched his hand with his cold black muzzle.

Kleutzer thought all hope was at an end; but suddenly the idea occurred to him of garotting his enemy with the leathern belt which he wore round his body. Steadily he gazed into the creature's cruel eyes; a moment of hesitation; the bear was startled; his attention was arrested by the shouts of the many who were hurrying to the rescue,—some without coats or caps, others without boots,—and he darted off at a gallop! Fleeing across the ice, he received a cross fire, and several bullets struck him. He contrived to recover himself, however, after a momentary collapse, and striding across the frozen snow, made his way to the sea. With glad and thankful hearts the people of the *Germania* were soon afterwards seated at the mid-day meal, and reverently praising the merciful Providence who had delivered their comrade from a dreadful death.

THE SUN AGAIN!

On the 3rd of February the imprisoned explorers greeted once more the welcome rays of the sun. Its reappearance was quite an event in their history; and the feelings with which they contemplated it can be imagined only by those who, like them, have passed through three sunless, gloomy, shadowy, dreary months.

“It was a joyous and a glorious sight. Invigorating were the effects of its first rays as they fell upon us, as were also the effects upon the landscape. For us, until now, the whole mountain panorama lay in one uniform

coloured dark mass; except now and then, in the bright moonlight, when some glaring lights and shades stood out; and even the brightest twilight could scarcely individualize an object. Now every part and outline of the mountain-chain stood prominently forward; the projections were elevated, and the distant points receded; and this fresh, beautiful, living landscape was flooded with the softest colours,—red, violet, blue, and green, in all shades, according to the strength of the light, the kind of ground, and the nature of the surroundings. But our pleasure was destined to be of short duration, for the sun soon disappeared again behind the jagged horizon of ice, and the gloomy, uniform grayish blue shadows descended one after the other on the wintry landscape.”

From this time forward, however, each day grew brighter, though the cold increased; and increased to such an extent that on the evening of the 21st of February, for fully one hour, the thermometer marked -40° ! This was the lowest point it reached during the captivity of the *Germania*. Winds were frequent, and during their prevalence the rigorous cold, as all Arctic voyagers have observed, was very hard to bear. It seemed almost impossible to obtain any protection against it.

On the 6th of March, Dr. Børgen, when within about fifty paces from the ship, was seized by a bear. Happily his cries were heard, and he was rescued, but not before the animal had inflicted upon him some severe wounds.

Two days later, Captain Koldewey, Lieutenant Payer, and a carefully selected party, set out on a long sledge-journey in a northerly direction. They followed the

coast-line very closely, and discovered and named various headlands and bays lying beyond the northernmost point attained by Captain Clavering—namely, Mount Haystack, near Cape Oswald Heer. A beautiful bay, opening to the south, stretches from Cape Heer to Cape Seebach; and, north of lat. 76° , lies another noble bay,—named after the great German astronomer Bessel,—which abounds in picturesque fjords. Here the travellers, to their infinite astonishment, came upon some Eskimo buildings.

In a third bay—Roon Bay—the icebergs were very numerous. Straight to the north rose an imposing wall of gneiss, fully 3280 feet in height, which was strangely designated the "Devil's Cape." Lieutenant Payer is inclined to believe that behind it the Greenland coast, trending towards the north-west, was probably connected with Smith Sound.

On the 9th they reached an island-group, East Island, 650 feet high, in the middle of Dove Bay.

Here the view from the heights showed them that the westerly background of the bay, which is filled with numerous moderately high-lying islands, formed a high mountainous country, separated by a large fjord, and bristling for sixty miles with huge glaciers and mountain-tops—the latter attaining an elevation of 6500 feet. On all sides the chain was of wonderful beauty. Frozen cascades and rivers of ice, more than a mile broad, fell from a snowy plateau 4800 feet high, in the north-west. Icebergs of monstrous height were shut up in the interior of the bays.

In lat. $76^{\circ} 47'$, they reached Cape Bismarck. A vio-

lent snow-storm then detained them within their tent for three days. On the 15th, though exhausted and weary, they pushed forward some thirty miles, and crossed the 77th degree of latitude.

“Like so many of our predecessors,” says Lieutenant Payer, “we too longed to lift the veil hanging over the whole of the Arctic World, so opposed to the mandate, ‘Thus far shalt thou go, and no farther;’ and, like so many others, found that our object gained fell far short of our bold flights of fancy; and that, resting after endless troubles at the end of our journey, we still looked in vain for the solution of the many riddles which Science expected of us. The conjecture once broached [by Kane and Dr. Hayes] of an open Arctic Sea, we could, from our stand-point, only reject as idle. To the farthest point of the horizon the sea was covered with a solid covering of ice, over which, had it not been for the want of provisions, we could have continued our sledge-journey. The outer coast-line stretched in an almost northerly direction; to the north-west, the prospect was closed in by lofty ice-covered mountains, only a few miles distant.”

The sledge-party having accomplished this much, which, though of a negative rather than a positive character, was still important, were compelled to retrace their steps; and after enduring great hardships, regained the ship. They had no dogs, and the labour of drawing the loaded sledge had, therefore, to be sustained by men. With rations steadily lessening, and strength as steadily decreasing, chilled to the bone by exposure to the cold, and worn with want of sleep, it is no wonder

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DANGERS OF SLEDGE-TRAVELLING





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that they could achieve only a few nautical miles daily. Great was their thankfulness when, on the 27th of April, they greeted the friendly shelter of their comfortable cabin, and saw the old familiar faces smiling round them.

During their detention in the ice, they undertook five sledge-journeys in all; and the advantages derived were by no means inconsiderable. Was Science, it may be asked, in any way the gainer? The following summary affords a satisfactory answer to the question.

The discovery of a land extending over several degrees of latitude and longitude; the reaching the most northerly point ever yet attained in East Greenland; the conviction that the land was curiously broken up, and might yet prove to be a large group of islands; the knowledge that a future measurement of degrees would meet with no impediment from climate, configuration of soil, or atmospheric condition; the addition made to the geological lore of our terrestrial globe, and the confirmation of the conjecture that the most recent geological formations occur in the remote North; the discovery of enormous glaciers; the proof that the Eskimos must long since have deserted the north-east coast, and that the land is completely uninhabited; observations on the diffusion of certain plants and animals, and on the extended range of the kingdom of the north wind; lastly, the experience that the navigability of the so-called coast-water is greatly impeded by the ice-masses in the Arctic current, amongst the local islands. Results like these must not be undervalued.

THE POLAR BEAR.

Some of the facts stated by the chroniclers of the expedition in reference to the Arctic bear are of interest. Their conclusion is, that he deserves our compassion. His life is one long uninterrupted hunt after food, though he is protected from the cold by a layer of fat several inches thick. He suffers often and suffers much from hunger. In the stomach of one was found nothing but a flannel lappet, which our tailor had thrown away; in the case of many others, it was quite empty. Sometimes it contains nothing but water and large pieces of sea-weed; a proof that the bear is sometimes forced by hunger to eat herbs. In the dreary Polar World of frost, cold, and darkness, with its violent gales and sweeping hurricanes of snow, the mountains alone can arrest his wanderings for food amidst the chaotic and towering ice-fields, surrounded by fissures, or when floating out to sea on an ice-floe. His brown cousin in Europe undoubtedly lives a much easier life.

They are attracted from considerable distances by the smell of burnt fat, and the Eskimos often entrap them through it. But the stratagem requires much skill and self-possession. An encounter with an Arctic bear is usually a serious matter. His strength is immense; he is capable of great exertion; and he does not yield until completely disabled. His constant hunger makes him a troublesome neighbour, for he contrives to get at the most cunningly-concealed deposits of provisions, and to dig out almost anything that has been buried. The best way is to suspend a sack from an inaccessible wall of rock.

RETURNING SOUTHWARD.

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The bear has a strong affection for his native ice-fields, and does not willingly part from them. The whaler *Bienenkorb*, which the expedition visited in 1869, had one upon deck; and when, from the strong rolling of the ship, he caught sight of the ice, he raised a despondent howl. Indeed, the sight of the drift-ice so powerfully worked upon him, that the men were at last compelled to hang a veil of sailcloth before the cage.

HOMeward BOUND.

Part of the month of June, and the opening days of July, were devoted to excursions to Sabine Island, Klein Pendulum, and Clavering Island; and to a close examination of their tent-circles and graves and huts, all testifying to the former existence of an Eskimo settlement.

On the 22nd of July, the ice having considerably broken up, the *Germania* got up steam, left the harbour in which it had been imprisoned for ten months, and once more steamed to the northward. But after reaching as high as lat. $75^{\circ} 29'$, it found itself, when off Shannon Island, confronted by a solid barrier of ice. No signs of water could be seen. The frozen surface stretched far away in every direction, rugged and motionless. Progress was impossible; and on the 30th Captain Kolde-vey abandoned the fruitless attempt, and again steamed southwards. He determined upon exploring the southern coast so long as the weather permitted, and then making the best of his way back to Europe.

One of the first places we touched at was Jackson Island, where we found a pleasant variety of vegetation.

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Then we doubled Cape Franklin, and penetrated into the romantic recesses of an arm of the sea, which we christened Kaiser Franz-Josef Fjord. It was covered with numerous icebergs, from 95 to 190 feet high, and enclosed within mountainous shores, which threw a deep shadow over the restless waters. One of its principal arms curves in a south-westerly direction, at the foot of a mountain-chain about 8750 feet in height.

"We had entered a basin," says Lieutenant Payer, "with its shores formed by rocks unequalled for glorious form and colour. Here were assembled all the phenomena of the Alpine World: huge walls, deep erosion-fissures, wild peaks, mighty crevassed glaciers, raging torrents, and waterfalls.....all these grand and magnificent features united in one panorama. To me the impression given by the high, towering, rocky mountains of the basin, was that of some fairy tale. A colossal cubic rock on the small basis of a tongue of land extended far into the fjord, towering above the blue water to a height of fully 5600 feet; regular reddish yellow, black, and light stripes showing the different layers of the stone. The terraces and towers on its edges resembled a ruined castle; we therefore called it the Devil's Castle. Never in the Alps have I seen anything approaching this in grandeur. Here a diminutive Matterhorn rose straight from the waves; there a huge cascade from some glacier rushed over the giant walls, deep down into the clear, quiet water below."

Lieutenant Payer, Dr. Copeland, and Ellinger climbed the immense glacier which opened upon one side of the fjord. From its summit they could see a monster

pyramid of ice to the west, rising about 4850 feet above a high mountain-ridge. It was named after the great geographer, Petermann. Along the horizon extended a world of snowy summits, exceeding 9700 feet; and the shining surface of the fjord could be traced for about forty miles towards the south-west.

After this excursion, the prow of the *Germania* was turned towards the European shores, with a south-easterly course; and with some difficulty finding her way through a labyrinth of floes, she got out into the open sea at last on the 26th of August. The ice was behind us, and we could breathe freely! We accomplished the rest of the voyage, however, under sail, the boiler having given way. But the wind was favourable, though violent, and we ran at a rapid rate past Iceland, and between the Faroe and Shetland Isles, after which we made for the mouth of the Weser. On arriving in the roads, we fell in with several large vessels, and were saluted with the astounding information of the war between Germany and France, the capture of Napoleon, the downfall of the French Empire, the proclamation of a republic, the siege of Paris! Ah, what wonderful events had transpired during our lonely captivity in the ice! While we had struggled and endured for the sake of adding a few additional facts to the stock of scientific knowledge, a new chapter of European history had been written in blood, and the fortunes of empires decided, perhaps for generations.

On the 11th of September, at six P.M., we safely entered Bremerhaven.

An impartial review of the voyage thus happily terminated, proves, we think, that the German flag suffered no disgrace in the hands of the intrepid explorers who carried it into the frozen solitudes of East Greenland, and planted it on the northernmost point which, in that direction, had been reached by civilized man. They did not succeed in discovering the North Pole; but they showed that to reach the North Pole from the basis of East Greenland is virtually impossible. Their researches have opened up, however, a wide and interesting field for further exploration, which cannot fail to assist very materially in solving the various problems still connected with the natural conditions of the Arctic World.

CHAPTER VII.

THE "POLARIS" EXPEDITION.

1871-1873.



ONE of the most indefatigable of recent Arctic explorers was the American navigator, Charles Francis Hall; and a brief sketch of his career before he undertook the command of the *Polaris*, and proceeded on the expedition in which he lost his life, can hardly fail to interest the reader.

It was in 1860 that he first visited the Polar Regions, though from boyhood they had been the subject of his dreams and the goal of his desires. On this occasion, by means of dog-sledges and an "old, rotten, leaky, and ice-beaten boat," which he obtained from a whaler, he made a careful and complete examination of the shores of Frobisher Bay and Countess of Warwick Sound; discovering numerous memorials of the visit of Martin Frobisher, and proving that the inlet named by that old seaman a strait, and designated as such on the maps for two hundred and eighty-four years, was really a bay. He brought back with him to the United States two of the Eskimos, Ebierbuig and Tookoolito, —who figure in the *Polaris* expedition as Joe and

Hannah. These had previously visited England—in 1853—and had acquired many of the habits of civilization. The woman could read a little, and spoke English well enough to act as an interpreter. Joe was a good pilot, and could also speak some English.

His explorations among the Eskimos,—or Innuits, as they prefer to call themselves,—convinced him that they knew the secret of Sir John Franklin's fate; and that it was only to be learned by living among them long enough to acquire their confidence.

All his energies, therefore, were addressed to the task of raising the funds for a suitable expedition; and he was so far successful that, in the summer of 1864, he was enabled to take his passage for Repulse Bay, along with Joe and Hannah, on board the bark *Monticello*. They were landed on Depôt Island, August 21st. Thenceforward he pursued his investigations among the Innuits with indefatigable energy, and ascertained, from evidence furnished by the natives, that one of Franklin's vessels had actually accomplished the North-West Passage while five of her crew were still on board; further, that, when abandoned by the crew, she was found by the Eskimos, in the spring of 1849, near O'Reilly Island, lat. 68° 30' N., and long. 99° 8' W., imprisoned in the ice.

Captain Hall, in his published narrative, informs us that the bones of Franklin's gallant but unfortunate followers were scattered over the snowy wastes of King William Land. The Eskimos of that region are a more churlish and savage race than those of Repulse Bay; and instead of rendering the lost explorers the

little assistance that would certainly have saved their lives, they gladly saw them perish, and plundered them of every article on which they could lay their hands. Captain Hall, however, seems to us to place too implicit a reliance on the statements of the natives; and we see no grounds for believing that some of Franklin's men had been reduced to acts of cannibalism. He collected some hundred and fifty relics of the expedition, in the shape of articles which had belonged either to the ships or their officers.

At various times, during his long absence from the United States, he sent home notes of his progress and experiences through the captains of the whaling-vessels he fell in with. In 1865 he had learned that Captain Crozier of the *Terror*, with Parry, Lyon, and one other whose name he could not obtain, had survived their companions, who yielded without any very protracted struggle to the effects of cold and starvation. One Inuit had taken pity on a wanderer, and sheltered and fed him until he died. It would appear that Crozier and a companion were living as late as the autumn of 1864. The natives affirmed that the white men had fought with an Indian tribe near the estuary of the Great Fish River, and that many of the latter were slain; that, afterwards, Captain Crozier and two companions had started in a south-westerly direction for Fort Churchill, or York Factory, and that at that time they were supplied with food, and with either skin or india-rubber boats.

In 1866, Captain Hall wintered on Repulse Bay; and in the course of the winter accomplished a six weeks'

journey with dog-sledges to the north-west, in order to purchase dogs for the work of the next season. On this journey he was accompanied by five white men, volunteers from whalers lying in Repulse Bay, his Eskimo followers, Joe and Hannah, and about thirty dogs. They met with some rough experiences, and endured very considerable hardships; but succeeded in purchasing no fewer than forty dogs. Hall was told by the natives that some of the white men had been among them, and that one had died, and was carefully buried.

On his return to Repulse Bay, the indefatigable explorer declared his conviction that some of Franklin's party were still alive, and offered five hundred dollars in gold to each white man who would accompany him in a further search during the season of 1867-68. Five seamen from the whaling-ships again volunteered; and after employing a couple of months in the chase, so as to lay in a sufficient stock of provisions, the little company started on a journey which finally convinced even Hall himself that his sanguine anticipations were groundless. Abandoning, therefore, all hope of rescuing the unfortunate men, who had undoubtedly perished two or three years before, he returned to the United States, his sanguine mind intent on a new object—the discovery of the North Pole.

An American writer speaks of Hall as well-adapted for his self-imposed work. He was a well-proportioned, powerfully built man, muscular rather than stout, and measuring about five feet eight inches in height. His powers of observation were considerable, as is shown

in his descriptions of Eskimo life and manners; he was energetic, persevering, courageous; but he was unable to command men, and the failure of the *Polaris* expedition, which we are about to relate, was undoubtedly due to his want of firmness and decision as a leader. Moreover, in his all-absorbing desire to carry out his project, he was apt to lose sight of the difficulties that lay in the way of their realization, or to conceal them from himself and others.

These qualities, however, stood him in good stead while he was engaged in securing the support of the Government and people of the United States for his contemplated expedition. None but a man of buoyant temperament could have endured the labour which its preparation entailed upon him. He succeeded, however, in enlisting the public sympathy on his side, and Congress then voted a grant of fifty thousand dollars to defray his expenses.

So in due time the *Polaris* was fitted out; officers and men were engaged—though, unfortunately, without sufficient inquiry or discrimination; and Hall, after the American manner, was presented with a flag which De Haven, and Dr. Kane, and Dr. Hayes had successively carried nearer and nearer to the coveted terminus of discovery. Hall, in accepting it, declared his belief that this flag, in the spring of 1872, "would float over a New World in which the North Pole Star is the crowning jewel;" and the *Polaris* sailed from New London at four P.M. on the 3rd of July. Her commander was accompanied by Dr. Emil Bessel, as chief of the scientific corps; by Mr. Meyers, as meteorologist; R. W. D. Bryan, astronomer

and chaplain; Sidney O. Buddington, sailing-master, Emil Schuman, chief engineer; Hubbard C. Chester, first mate; and William Merton, second mate. The last-named, as the reader will remember, figures prominently in the record of Dr. Kane's expedition. It was he who crossed the great Humboldt Glacier, and looking forth upon a channel afterwards visited by the *Polaris*, made the mistake of supposing that he had discovered the open Polar Sea.

THE VOYAGE OF THE "POLARIS."

Touching at Holsteinberg, one of the Greenland settlements, Hall fell in with a Swedish exploring-expedition, under Captain Von Otter, which had got no farther than Upernavik, and was then homeward bound.

On the 4th of August the *Polaris* entered Godhav'n, where it took on board a supply of coals and other stores. While lying in this sheltered port, she was joined by Captain Tyson, a man of considerable Arctic experience, as assistant-navigator.

Upernavik was reached on the 18th; and here the services of Hans, the well-known Eskimo hunter, were secured.

Captain Hall, says his American historian, appears to have had very decided premonitions of disaster, from the fact that he left here, in charge of Inspector Smith, a quantity of valuable papers relating to his second expedition, and particularly to his search for Sir John Franklin; an extraordinary step to take under the circumstances, as his object in carrying them with him

was to write them up for publication on his return. Why Captain Hall so carefully avoided all allusion to the dissensions which had already taken place on board the *Polaris*, can be explained only by his sanguineness of temperament, which induced him to overlook all impediments and disagreeable incidents in the overmastering desire to push onward to the far North. There was nothing which he dreaded so much as the delay or abandonment of the expedition. To give up, was an impossibility; but he could willingly die if his object were achieved, or in achieving it.

On the 21st of August the expedition left Upernavik, and on the 24th sailed from Tossar. Soon afterwards they entered Smith Sound, and through icebergs and ice-floes steamed past Port Foulke, the scene of Dr. Hayes' adventures. On the 27th they reached the point where Kane, in 1855, abandoned the *Advance*. Still they steamed onward, and onward, sailing round obstructing ice, and making their way with so much rapidity, that, on the 28th, they gained lat. $81^{\circ} 35' N.$, and afterwards entered Kane's "open sea," which proved to be a land-locked bay, now named in the charts after the *Polaris*. It proved to be about forty-five miles wide, with high land on each side.

Still sailing on, they found themselves in a channel similar to Kennedy's, which was much obstructed by heavy ice. The prospect now began to grow gloomy, and some of the faint hearts on board would fain have been content with the discoveries already made. Hall and Tyson and Chester were anxious to go forward

without delay, as the channel still lay open to the north-east; but having arrived in lat. $82^{\circ} 16'$, they so far compromised with Buddington and his party as to agree to lay up for the winter. On the 7th of September, therefore, the *Polaris* steamed in nearer the land; and, in lat. $81^{\circ} 38'$, was successfully carried into a tolerably sheltered cove, about twelve miles long and nine miles wide, which Hall appropriately named "Thank God Harbour."

WINTER-QUARTERS.

The coast-hills here attained an elevation of from 900 to 1300 feet; and the great scars and fissures in the rocks looked as if wind and weather, frost and ice, and sudden changes of temperature, had done their worst with them. At their base lay a great quantity of débris; stones and sand, and rocky boulders, which had been disintegrated and broken up by the frost. To the south, a great glacier came down from the heights, and sweeping round in a wide circuit, fell into the bay northward of the *Polaris*. At various points traces of an Eskimo settlement were discernible; the circles of stones showing where the tents had been erected. There were also some spear-heads made of walrus-teeth, some pieces of bone, and other articles of Eskimo handiwork.

While preparations for "wintering" were being made, Captain Hall started on a sledge-journey, which occupied from October 10th to October 24th. On his return he was suddenly taken sick. At first it was supposed to be only a temporary bilious attack, but on

the following day the symptoms became alarming, and he was frequently delirious. His illness continued, and gradually assumed the appearance of paralysis.

Early on the 8th of November, the heroic explorer's adventurous career was terminated. "Last evening," says Tyson, "the captain himself thought he was better, and would soon be around again. But it seems he took worse in the night. Captain Buddington came and told me he 'thought Captain Hall was dying.' I got up immediately, and went to the cabin and looked at him. He was quite unconscious—knew nothing. He lay on his face, and was breathing very heavily; his face was hid in the pillow. It was about half-past three o'clock in the morning that he died. Assisted in preparing the grave, which is nearly half a mile from the ship, inland; but the ground was so frozen that it was necessarily very shallow—even with picks it was scarcely possible to break it up."

In Captain Tyson's diary we find another entry, under the date of November 11, which closes this strange, eventful history:—

"At half-past eleven this morning we placed all that was mortal of our late commander in the frozen ground. Even at that hour of the day it was almost dark, so that I had to hold a lantern for Mr. Bryan to read the prayers. I believe all the ship's company were present, unless, perhaps, the steward and cook. It was a gloomy day, and well-befitting the event. The place also is rugged and desolate in the extreme. Away off, as far as the dim light enables us to see, we are bound in by huge masses of slate rock, which stand like a barricade,

guarding the barren land of the interior; between these rugged hills lies the snow-covered plain; behind us the frozen waters of Polaris Bay, the shore strewn with great ice-blocks. The little hut which they call an observatory bears aloft, upon a tall flag-staff, the only cheering object in sight; and that is sad enough to-day, for the Stars and Stripes droop at half-mast.

"As we went to the grave this morning, the coffin hauled on a sledge, over which was spread, instead of a pall, the American flag, we walked in procession. I walked on, with my lantern, a little in advance; then came the captain and officers, the engineer, Dr. Bessel, and Meyers; and then the crew hauling the body by a rope attached to the sledge, one of the men on the right holding another lantern. Nearly all are dressed in skins; and, were there other eyes to see us, we should look like anything but a funeral cortege. The Eskimos followed the crew. There is a weird sort of light in the air, partly boreal or electric, through which the stars shone brightly at eleven A.M., while [we were] on our way to the grave."

Thus ended Hall's ambitious project of conquering the secret of the North Pole; and thus was quenched the enthusiasm of a singularly ardent nature. Though better fitted for a volunteer than a leader, to act alone than to govern others, he undertook his work with a boundless energy and an untiring perseverance; and had he lived, it is certain he would have advanced as far to the northward as man is able to go. We cannot but regret so sudden and disastrous a termination of a chivalrous enterprise. Yet there is something appropriate

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FUNERAL OF CAPTAIN HALL.



in his place of burial; and that lonely grave amid the peaks and icebergs of the Polar World is surely a more suitable sepulchre for such a dauntless explorer than one in the crowded city cemetery, or even the village churchyard. On no man was the strange magical spell of the North more powerfully laid than on Charles Francis Hall; and it is well that he should sleep where the cold Northern winds blow across his grave, and the weird radiance of the aurora falls upon it.

AN ARCTIC WINTER.

The command of the expedition now devolved upon Captain Buddington; one of whose first and most regrettable acts was to discontinue the Sunday service that had hitherto been held, and held with a good effect upon the men.

On the 20th a violent hurricane arose, and continued for many hours. It was accompanied by a heavy snow-drift, and attended by much breaking up of the ice.

The nights were frequently illuminated by auroras, and their radiance was a welcome innovation on the dreary winter-darkness. Dreary indeed! It was almost impossible to tell night from day, and to go out of sight of the vessel was dangerous in the extreme. It was not alone the darkness that was found oppressive, but the silence. When out of hearing of the din and clamour of the disorderly and ill-disciplined crew, the gloom and silence of everything, says Tyson, settled down upon one like a pall. As there were no trees, there was no welcome whistling of the wind among their branches; and out on the open plain the wind buffeted the way-

farer without giving him the slightest warning. Nothing existed that could be ruffled by it, or ever so gently swayed or disturbed, so that the wind was felt before it was heard; unless the traveller chanced to be near a gorge in the hills, down which it would come with a sufficiently formidable roar.

One evening, when Captain Tyson had wandered from the ship, he found that, out of the range of the men's voices, no other sound prevailed. It was quite calm; no wind, no movement of any living creature; only the leaden sky above, only the gray cold ice beneath, and *silence everywhere!* It hung like a shroud over the rigid, stiffened forms of Nature. So painfully oppressive did the wanderer find it at last, that he was frequently tempted to shout aloud and break the spell. At last he felt constrained to do so; but no answer came, not even a responsive echo.

"The space was void; and there I stood,
And the sole spectre was the solitude."

In February the day began to gain a little on the night, and the men began to recover their strength and spirits. Such is the common experience of all Arctic voyagers. There can be no doubt as to the ill effects of long-continued darkness on the mind and body of man; and the explorer of the North, during its terrible winter, is frequently tempted to re-echo the aspiration of Goethe for "Light! more light!" The night of the 21st was distinguished by the appearance of a beautiful paraselene, when four false moons were visible beside the true, or five in all. The true orb of night was sur-

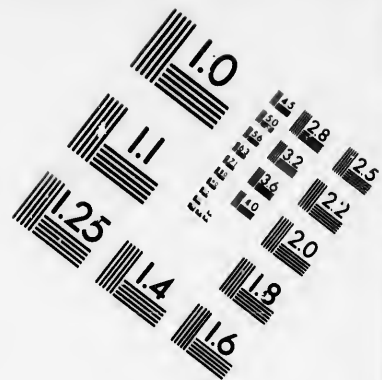
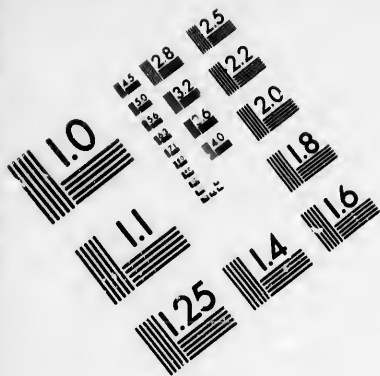
rounded by a halo which also embraced two of the false ones; while the other two had a separate halo, forming a large circle concentric with the first. The two mock moons nearest to the true were fitfully lighted up with prismatic colours, a sight not less beautiful than curious.

It was on the 28th that the sun reappeared, after an absence of one hundred and thirty-five days; but the cold was still exceedingly severe,—the thermometer marking 37° below zero.

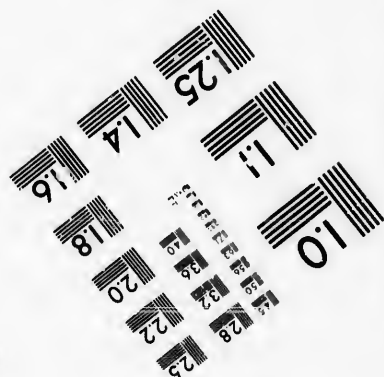
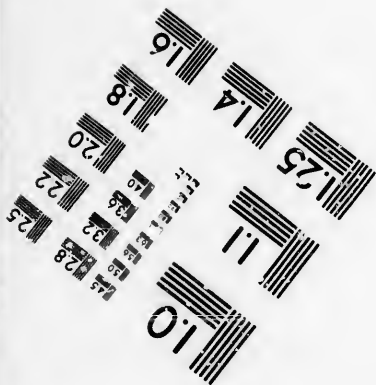
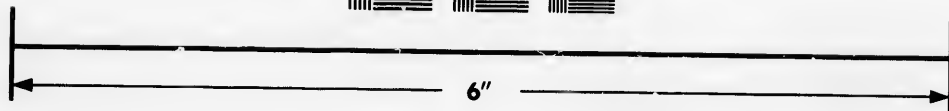
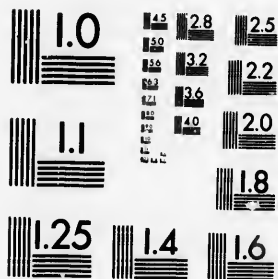
In March and April several short sledge-excursions were made, with the result of correcting numerous errors in Dr. Kane's chart. The coast-line for some fifty or sixty miles was closely examined, as well as its fiords, with their respective glaciers and icebergs.

On the 9th of May, Tyson, Meyers, Joe, and Hans started on a sledge-journey which occupied six days. They struck inland to the east-north-east, and succeeded in reaching Newman Bay; thence proceeded in the same general direction as high as lat. $82^{\circ} 9'$. One day they came upon a herd of musk-oxen, of which they slaughtered twelve. These cattle develop their enormous bulk, as whales do, on what seems to be very slender and insufficient diet. Their food is the moss and lichens which grow on the rocks; and to get at it they must first scrape away the snow with their hoofs. There were some calves with the herd, and three of these were killed. At first the hunters failed to see them, for at the approach of danger the young ones take shelter under the body of their parents; and such is the length of the hair of the musk-ox, that, as it nearly touches the ground, it hangs like a curtain before the calves, com-





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pletely concealing them from view. The musk-ox is a bulky animal, weighing between five hundred and six hundred pounds. But their legs are very short in proportion to their weight and size, so that their appearance is the reverse of graceful. Hunting the musk-ox is not very exciting sport, for it is as easy to hit as the side of a house. When the herd have been checked by the dogs, and have arranged themselves in a circle, the hunter has nothing to do but to walk up and shoot them.

A few lemmings (*Myodes torquatus*) were seen. One of the men caught a live lemming, and the carpenter found a dead one. These lemmings are small rodent or gnawing animals. Though sometimes called the Arctic mouse, it differs considerably from the common *mus*; its claws are sharp and sickle-shaped, and the two middle claws of the fore feet are remarkably long for an animal whose entire length does not exceed five inches. It inhabits the southern as well as the north Polar Regions, but is not found elsewhere. During the summer it burrows in mossy swamps, and in winter between stones and rocks. Its food is exclusively vegetable. When it travels it follows a perfectly straight course, and nothing but an absolutely insurmountable obstacle can turn it aside.

Early in June a formidable leak was discovered on the starboard side of the stern of the *Polaris*, two planks being badly split. The warm weather now began to act on the ice, which broke up sufficiently to allow of boat-excursions. Two were planned; one under the direction of Mr. Chester and Mr. Meyers, the other under

that of Captain Tyson and Mr. Bessel. The former came to nothing, the boat being crushed by the fall of an iceberg. The latter proceeded to Newman Bay, but was recalled, for some unexplained reason, by Captain Buddington.

The summer passed away in a very unprofitable manner; the want of discipline and obedience among the crew, and of energy and zeal on the part of the commander, proving fatal to all attempts to accomplish the objects of the expedition. The *Polaris* weighed anchor on the 12th of August, and steamed slowly in a southerly direction. But being caught in the ice, she was moored to a floe, and in this way she slowly drifted down Kane Basin into Smith Sound, and on the 4th of October passed Rensselaer Harbour, where Kane had spent the winters of 1853, 1854, and 1855.

ADRIFT!

During the night of the 15th of October, the ship was "nipped" in the ice; and so terrible was the pressure, that all on board thought she would be reduced to a wreck. In a moment of panic, the captain, who would seem to have been totally unfit for his responsible position, shouted to his men to "throw everything on the ice;" and immediately the direst confusion prevailed. The men seized upon the stores, which had previously been brought up from the hold in anticipation of a catastrophe, and flung them overboard indiscriminately. As the vessel, by its rising and falling motion, was constantly breaking the ice, and no care was exercised where or how the things were thrown, Tyson, with

some of the men, got upon the floe, and endeavoured to introduce a little order into the chaotic confusion. While they were thus engaged, the ice began to crack; shortly afterwards it exploded under their feet, and shivered into many pieces; the ship broke away in the darkness, and was out of sight in a moment!

It was a terrible night,—deep darkness, the snow falling heavily, the wind blowing violently. “We did not know,” says Tyson, “who was on the ice, or who was on the ship; but I knew some of the children were on the ice, because almost the last thing I had pulled away from the crushing keel of the ship were some musk-ox skins; they were lying across a wide crack in the ice, and as I pulled them toward me to save them, I saw that there were two or three of Hans’ children rolled up in one of the skins. A slight motion of the ice, and in a moment more they would either have been in the water and drowned, in the darkness, or crushed between the ice.”

When morning came, Tyson found that, fortunately, two boats were lying on the floe to which he and his companions were committed; a nearly circular floe, about four miles in circumference, and diversified, like a small island, with hillocks and ponds, or lakelets, the latter formed by the summer melting of the ice. The ice was very various in thickness. Some of the mounds, or hills, were as much as thirty feet thick, others did not exceed ten or fifteen feet.

The little company, thus strangely brought together on a floating piece of ice, numbered nineteen and included—Captain Tyson; Meyers, meteorologist; Her-

ron, steward; and Jackson, cook; Kruger, Jamka, Lindermann, Anthing, Lindquist, and Johnson, seamen; Joe, and his wife Hannah, and their child Puney; Hans, his wife Christiana, his children Augustina, Tobias, and Sucri, and his baby Charlie Polaris (so called because born on board the ship in Polaris Bay), Eskimos.

The supply of provisions for these nineteen men, women, and children consisted only of fourteen cans of pemmican, eleven and a half bags of bread, one can of dried apples, and fourteen hams; so that if the ship did not return for them, the prospect was dark enough—and its solitary feature of hopefulness lay in the possession of the two boats.

And it soon appeared as if the ship did not mean to return for them—as if, indeed, she purposely designed to abandon them. It is difficult to read Tyson's narrative without coming to the conclusion that Captain Buddington might have regained the floe if he had chosen to do so, and re-embarked the unfortunate castaways. As this is a serious reflection on his humanity and good faith, we shall adopt the language which Tyson himself employs in reference to the captain's conduct:—

The boats had been got off the floe and partly loaded, and the men were pulling towards the shore, intending to come back for what was left, when the loose ice rendered progress impossible, and they were compelled to haul up on the ice. Soon after, says Tyson, I saw the *Polaris*! I was rejoiced indeed, for I thought assistance was at hand.

She came around a point above us, eight or ten miles distant. We could see water over the ice that had

drifted down, and we could see water in-shore. I wondered why the *Polaris* did not come and look for us. Thinking that she did not know, perhaps, in what direction to look, though the set of the ice must have told which way it would drift, I set up the colours which I had with me, and a piece of india-rubber cloth. Then with my spy-glass I watched the vessel, which was under both steam and sail. She kept along the coast, and then, instead of steering toward us, dropped away behind Littleton Island. Our signal was dark, and could not but be seen at that distance on a white ice-floe.

I wanted poles with which to build a house or tent, and sent some of the men to the other side of the floe for a supply. I knew they must be there, belonging to a house I had built of poles in which to store provisions. On their way the men saw the vessel behind the island, and so came back and reported; they described her as "tied up.".....

And now our piece of ice, which had been stationary, began to drift, and I could not understand the vessel not coming for us. She could not be disabled, for we had recently seen her steaming; so I told the men we *must* cross to the other side of the floe, and then make for the land, perhaps lower down than the vessel was, in order that we might eventually reach her.....

There was a great deal of murmuring, for the men did not seem to realize the crisis, and thought more of saving their clothes than of saving their lives. But I seemed to see the whole winter before me. Either, I thought, the *Polaris* must be disabled and cannot come

for us, or else Captain Buddington does not intend to rescue us; and then flashed through my mind the recollection of a scene and a fearful experience which had happened to me before, on which occasion his indifference had nearly cost the lives of myself and all my crew. The thought came to me, What, in such a case, am I to do with all these people, without ship, or shelter, or sufficient food, through all the long, cold, dark, and dreary Arctic winter?

Such is Captain Tyson's statement, somewhat condensed, but virtually in his own words.

During the night of the 16th, another disruption of the floe occurred, and Tyson and his companions found themselves adrift on one part, with one of the boats, while the other boat, part of the provisions, and the house of poles, remained on the main body of the floe. On the 21st, however, they succeeded in recovering these precious and necessary articles; and, afterwards, in removing to a larger and firmer floe which lay much nearer the shore. Then they built up their snow-houses, forming quite a little encampment: one hut for Captain Tyson and Mr. Meyers; another for Joe, Hannah, and Puney; a third for the men; a fourth for Hans and his family; a store-hut for provisions, and a cook-house,—all united by arched galleries or corridors made of snow.

These were true *igloës*, and made in the regular Eskimo fashion. First, the ground was levelled off, and then one-half of the floor towards the end farthest from the entrance was slightly raised above the other or front half. The raised part was parlour and bedroom; the

front part, workshop and kitchen. The walls and the arched roof were composed of square blocks of hard snow, and a square of about eighteen inches of thin compressed snow or ice served for window. The low entrance was reached by a gallery, in which it was impossible to stand upright. At night the entrance was closed up by a block of snow.

In a hut of this construction there is scarcely room to turn round, and a white man of ordinary stature can but just stand erect in the interior. From its form, however, it is well adapted to brave the Arctic climate. It cannot be blown over, though it is frequently buried beneath the snow-drift; and when there is a sufficiency of oil to burn in the lamps, it can be kept comfortably warm. But, from its arched construction, and the material employed, it cannot, of course, be made spacious enough to accommodate properly a large number of men. And it is only in the centre of the dome an upright position can be maintained, as from that point the walls slope gradually to the ground.

Towards the end of October Captain Tyson took stock. The inquiry showed that the provisions consisted of eleven and a half bags of bread, fourteen cans of pemmican, fourteen hams, ten dozen cans of meats and soups, one can of dried apples, and about twenty pounds of chocolate and sugar mixed. The pemmican cans weighed forty-five pounds each, but the meat and soup cans only one and two pounds. The hams were small; of dried apples there were twenty-two pounds. But clearly this supply was utterly insufficient for the support of nineteen persons during six months of winter.

Their hope was to get to the shore, where their ammunition might provide them with some species of game.

On the 30th of October the day's allowance for the whole company consisted of two pounds of pemmican, six pounds of bread, and four pounds of canned meat. On such scanty rations everybody's strength rapidly declined; and though the natives continued hunting, no success attended their efforts. In fact, it is very difficult to find the seal in winter. They live principally under the ice, and can be seen only when the ice cracks. Being warm-blooded animals, they cannot long continue under the ice without breathing. Consequently, for the purposes of respiration, they make air-holes through the ice and snow; but at the surface these holes are so small—not more than two and a half inches across—that they are scarcely distinguishable, especially in the dim uncertain light of an Arctic winter-day. A native will sometimes remain watching a seal-hole for thirty-six or forty-eight hours before getting a chance to strike; and if the first stroke misses, the seal is gone for ever. Barbed spears are used by the hunter; and as the seal's skull is exceedingly thin, a well-aimed blow is sure to penetrate, and then the prize can be held securely until the hole has been sufficiently enlarged for the body to come through.

Two seals were captured on the 21st of November, and proved a temporary alleviation of the distress of the castaways. All the dogs but four had been sacrificed, and everybody was suffering pitifully from weakness. The ice-floe, meantime, continued to drift to the southward. And so the dreary record continues day by day:

the darkness and the cold increasing; the provisions rapidly lessening; and the miserable condition of the little company intensified by the insubordination and misbehaviour of the German sailors.

On the 29th of December a seal was caught, and divided amongst the rejoicing party. According to Captain Tyson, when a seal is properly divided there is but one way of doing it. First, the "blanket" is taken off—that is, the skin, which includes the blubber; it is all "one and inseparable" as it comes from the creature. Then the body is opened carefully, in such a way as to prevent the blood being lost. It is placed in such a position that the blood will flow into the internal cavity; this is carefully scooped out, and either saved for future use or passed round for each to drink a portion. The liver and heart are considered delicacies, and divided as equally as possible, so that all may partake. The brain is also a dainty, and either reserved or equally divided. The eyes are given to the youngest child. Next the flesh is equally apportioned. Sometimes the person who distributes it cuts it up as fairly as he can, and then, standing with his back to the pieces, another person calls out the names of the company in succession, and each receives his portion, without the distributor being able to display any favouritism. The entrails are usually scraped, and allowed to freeze before they are eaten. The skins are generally saved for clothing, and also for many other domestic purposes such as the construction of kajaks and oomiaks, the reins and harnesses of dog-sledges, and for tents. In fact, to almost everything which the Eskimos use or wear the

seal furnishes something. Even the membranous tissues of the body are frequently stretched and dried, and made into semi-transparent windows for the snow-huts.

The small Greenland seal (*Phoca vitulina*) is a very pretty creature in the water; its fur is a shiny white, beautifully variegated with black and obscure dark spots on the back and sides; weight, about fifty or sixty pounds. Members of this species appear singly or in families, but never in shoals, as is the custom of the "springing seal" (*Phoca hispida*). The latter is more frolicsome than the former, and plays with its comrades in the open water very much like the porpoise, except that there is more of springing and less of rolling in its movements. Largest of all the species is the hooded or bearded seal (*Phoca barbata*), and very ponderous of action. When assailed, it makes a revolution, and goes down like a whale, head foremost; while the small seal drops backward, tail down, the head disappearing last.

FURTHER EXPERIENCES.

By the 9th of January the floe had carried them as far south as 72° , and they had reached about the middle of Davis Strait. The cold was now intense; 40° below zero, and ranging thence up to -17° or -15° . A seal was captured on the 16th. The seamen had given Captain Tyson great anxiety through their lawlessness, but the approaching failure of provisions subdued them to some extent, and they showed themselves more willing to obey orders. A gleam of hope was afforded by the reappearance of the sun on the 19th, after an absence of eighty-three days. In the preceding year he had been

absent from the crew and staff of the *Polaris* for one hundred and thirty-five days; and his quicker return was, of course, a sign that they had drifted rapidly to the southward.

Day after day the weary voyage continued,—the rapidly-diminishing supply of provisions being eked out by the skill of the Eskimo hunters, who frequently brought in a seal. It is a remarkable fact that, on the whole, notwithstanding the rigorous temperature and the scanty rations, our castaways enjoyed good health, with scarcely an exception, until towards the end of January. Tobias, one of the Eskimo children, then showed symptoms of illness, and gradually grew very weak.

In February the ice-floe carried them into a part of the strait thronged with icebergs of every form and size. They presented a strange and beautiful spectacle. When the sunlight fell upon them, and lighted up their fantastic masses, all the prismatic colours, as in a rainbow, flashed through their crystal spires and pendants. Their history is very various. Some run aground within a few paces of their birthplace; others travel on until they come in contact with a floe, and being stranded upon it, keep it company for hundreds of leagues; others pursue a lonely and majestic course towards the open sea, and gently melt into the warm waters of the Atlantic; some, like pirates, make straight for the goodly barque, and send her, with all her precious freight of human lives, to the bottom. And as they are various in their history, so are they in their appearance: some being wall-like, solid ramparts, with square and

almost perpendicular faces, two or three miles in length, by half as many in breadth; while others present the outlines of a stately palace, a Moorish mosque, or a Gothic cathedral—

" Whose spire
Chines out to the breezes a song,
And glows in the sunset like fire."

Occasionally a berg wears away at the water-line, while the base below the water is intact, and supports an extended surface on a comparatively narrow pedestal; others are arched or tunnelled; and, indeed, there is no limitation as to size or bulk. The most beautiful and the most grotesque may sail side by side; one may measure a mile square, another may not exceed forty or fifty feet. Whether they are large or small, we see only a small proportion of their bulk; the main body is always below water.

We have described in a previous chapter the voyage of the *Ha...sa's* crew on an ice-raft, but it must be remembered that they were much better supplied with necessaries and comforts than the castaways of the *Polaris*. The former had time to make abundant preparations, were conveniently housed, and had no lack of provisions; the others went adrift unexpectedly, in the most unfavourable circumstances, and ill-provided against the severities of an Arctic winter.

In February the pressure of hunger was less felt by Captain Tyson and his companions, as seals were occasionally caught, and now and then a dovekie; yet things were bad enough, and the prospect of ultimate escape seemed very uncertain. Matters would have gone more

smoothly, had the German seamen been amenable to discipline, and allowed an equitable distribution of rations. But they laid violent hands on everything they could get at; and when a seal was caught refused the Eskimos their proper share, though they were indebted for it to the skill and patience of the native hunters.

MAKING FOR THE SHORE.

At length, on the 3rd of March, the floe approached Cumberland Gulf; and Captain Tyson determined, as soon as the weather proved favourable, to take to the boats, in the hope of falling in with some of the whaling-ships. Or, if they drifted past the gulf, he resolved to try for Hudson Strait; and landing on Resolution Island, to wait there in safety for American whalers or Hudson Bay vessels. But for some days the wind blew steadily from the north-west, bringing with it pitiless storms of frozen snow.

On the 7th of March another experience awaited these sorely-tried men. For some days past the ice had cracked and snapped under them, with a sound like that of distant thunder. On the 7th the noises increased, and grew so violent as to betoken an early disruption of the floe. They are described as very various in character, and as producing a most peculiar effect upon the listener. Captain Tyson found himself unable to distinguish their diversities in plain prose, and has recourse to a poetical quotation, which partially gives an idea of their variety and freshness:—

“Hark! a dull crash, a howling, ravenous yell,
Opening full symphony of ghastly sound;

Jarring, yet blunt, as if the dismal hell
 Lent its strange anguish from the rent profound.
 Through all its scale the horrid discord ran;
 Now mocked the beast—now took the groan of man."

But even these emphatic lines, he adds, convey no full idea of the overwhelming *power* of the pushing and grinding ice-masses.

The threatened catastrophe took place on the 11th, in the midst of a formidable gale. The ice-raft broke up into hundreds of pieces, and the castaways found themselves afloat on one which measured no more than seventy-five by one hundred yards. Their alarm was great lest this also should be disrupted, in which case their destruction seemed inevitable. But, happily, it was of immense solidity, and the icebergs around it protecting it to some extent from collision with the surrounding floes, it drifted along very quietly.

By the 25th of March they had reached lat. 61° 59' N., and were close upon the waters where the hooded seals are always numerous. Some captures were made; and the more abundant supplies of food induced a more cheerful and energetic spirit in Captain Tyson's companions. A bear was killed on the 28th. Shortly after dusk a noise was heard outside the huts. Joe reconnoitred, and discovered Bruin near his kajak, which lay within ten feet of the hut occupied by Joe and Tyson. Both their rifles were outside; one in the kajak, the other lying close to it. Tyson and Joe crept out very stealthily, and when at the outer entrance could hear the bear engaged in a repast at their expense. Seal-skins and pieces of blubber were lying

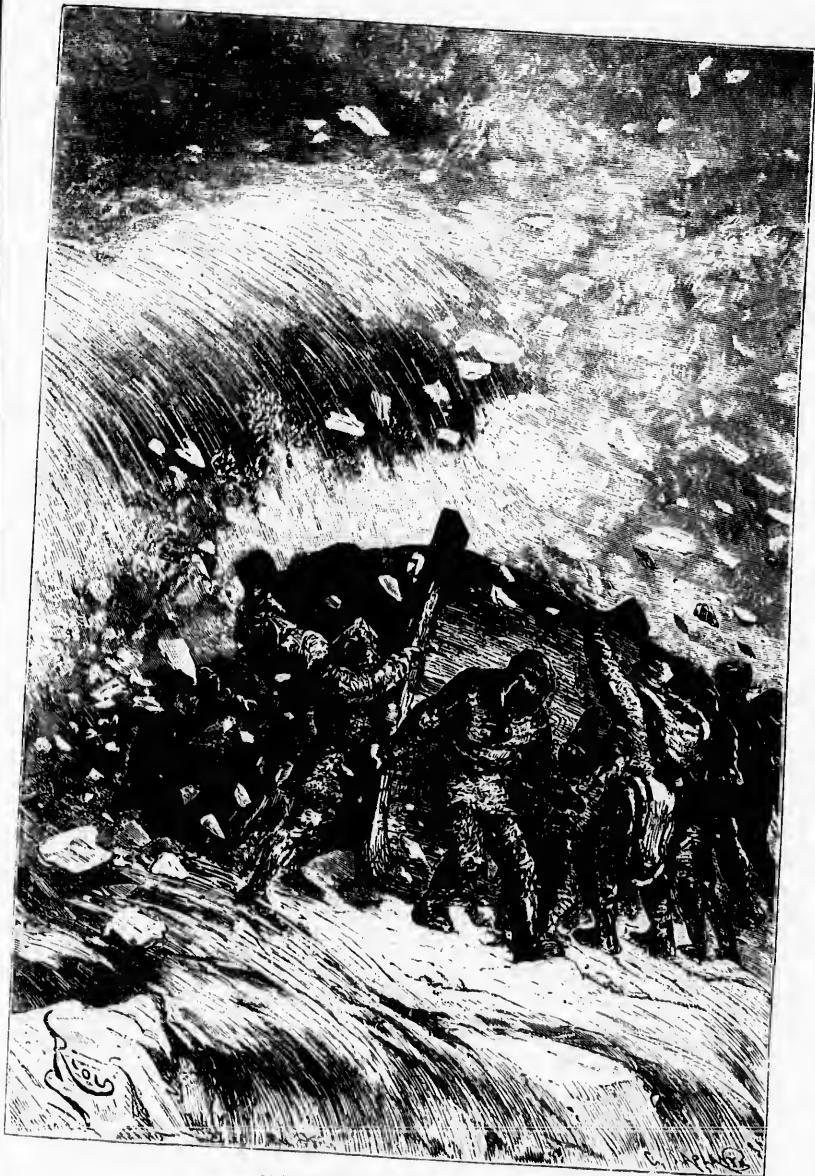
about in all directions, and some of these the bear had hauled about thirty feet from the kajak, and was leisurely devouring. While Joe stole into the sailors' hut to alarm them, Tyson crawled forward to reach his rifle; but in doing so knocked down a shot-gun, which aroused Mr. Bruin's attention. The captain levelled his rifle; he growled; the trigger would not go off; a second and a third time it would not go off: but the captain did, for the bear made at him. Getting within the hut, Tyson reloaded his rifle, and crept out again; taking up a position where he could see the animal tolerably well in spite of the increasing darkness. The bear saw his enemy, and faced towards him; but this time the rifle-ball went straight to its mark. The bear ran about two yards, and fell dead. On skinning him next morning, it was found that the ball had entered the left shoulder, passed through the heart, and out at the other side.

ON THE PACK-ICE.

The small ice-raft which carried the castaways of the *Polaris* and their fortunes began to wear away very rapidly, and Captain Tyson determined on taking to the boats, with the view of reaching the main pack. As the boat was intended only to hold six or eight men, and had now to embark twelve men, two women, and five children, with their tent, and necessary wrappings of seal-skin, it was a dangerous attempt, and much of their provisions and ammunition had to be abandoned. There was no other alternative, however; and fortunately, though the boat was overloaded and leaked con-

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siderably, the traject was safely accomplished, and all landed on the pack-ice.

Scarcely was this enterprise successfully accomplished before a violent gale arose, which continued, with but little intermission, for several days, and reduced the storm-beaten company to great distress from the impossibility of capturing any seals. They began to suffer the pangs of hunger, and at one time it seemed as if death by starvation would be the termination of their miseries. Nay, worse results were to be apprehended. "Some of the men," wrote Tyson, on the 15th of April, "have dangerous looks; this hunger is disturbing their brains. I cannot but fear that they contemplate crime. After what we have gone through, I hope this company may be preserved from any fatal wrong. We can and we must bear what God sends without crime. This party must not disgrace humanity by cannibalism." Fortunately a seal was killed on the 18th, and this supply came like a direct blessing from Heaven to recruit their strength.

Just as it was needed! For at night, on the 20th, a heavy sea suddenly arose, and sweeping in violent billows over the ice-floe occupied by the castaways, carried off their tent, their skins, most of their bed-clothing,—everything, in fact, that was movable,—and plunged them into destitution. Only a few articles were saved, which they contrived to stow in the boat; the women and children were already in it, or the little ones must certainly have perished. It required all the efforts of the men to save the boat. They knew that their lives depended on its preservation, and this know-

ledge inspired them to exertions which, in their enfeebled condition, were almost superhuman. For twelve hours they held on to it, "like grim Death;" scarcely a sound was uttered, save and except the crying of the children, and Captain Tyson's orders to "Hold on," "Bear down," "Put on all your weight," and the responsive "Ay, ay, sir," which, in this terrible crisis, came readily enough. Discipline was temporarily restored under the influence of danger.

We find them, on the 22nd of April, half drowned, half frozen, without shelter, and without food! Had the end come? Not yet: Heaven again came to their rescue; a bear was sighted, pursued, killed, brought back to the "camp" in triumph, and speedily devoured. On the 28th, three young seals fell to the hunters' rifles, and abundance reigned. On the same day they were cheered by the appearance of a steamer working her way through the ice to the south-west; and though she did not see them, it infused new hope into their hearts, as it was a sign and a token that they might now expect to be relieved. And, indeed, on the following day another steamer was seen. Then volleys were fired; colours were hoisted; loud shouts were raised; but these combined efforts failed to draw her attention to the little company on the ice-raft. A third steamer afterwards came in sight, but did not bring them deliverance.

SAVED!

However, it was not far off. On the 30th, a fourth steamer was discovered through the fog, and so near them that Hans leaped into his kajak and paddled to-

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wards her. Meantime, she perceived Captain Tyson's signals, and, to the intense joy of all these storm-beaten, wan, attenuated, suffering castaways, bore down upon them. In a few minutes she was alongside of their piece of ice.

"On her approach, and as they slowed down," says Captain Tyson, whose words we shall here adopt, "I took off my old Russian cap, which I had worn all winter, and waving it over my head, gave them three cheers, in which all the men most heartily joined. It was instantly returned by a hundred men, who covered her top-gallant-mast, fore-castle, and fore-rigging. We then gave three more, and a 'tiger;' which was appropriate, surely, as she proved to be the sealer *Tigress*,—a barquentine of Conception Bay, Newfoundland.

"Two or three of their small seal-boats were instantly lowered. We, however, now that relief was certain, threw everything from our own boat, and in a minute's time she was in the water; while the boats of the *Tigress* came on, and the crews got on our bit of ice, and peeped curiously into the dirty pans we had used over the oil-fires. We had been making soup out of the blood and entrails of the last seal which Hans had shot. They soon saw enough to convince them that we were in sore need. No words were required to make *that* plain.

"Taking the women and children in their boats, we tumbled into our own, and were soon alongside of the *Tigress*. We left all we had behind; and our all was simply a few battered, smoky tin pans, and the débris of our last seal. It had already become offal in our

eyes, though we had often been glad enough to get such fare.....

"We had been sitting talking of our 'wonderful,' or, as the captain called it, 'miraculous' escape, some half an hour. I was very hungry, having eaten nothing since the night before, and I wanted a smoke so much; but I saw no signs of either food or tobacco. So I finally asked him if he would give me a pipe and some tobacco.

"He said he 'did not smoke.'

"However, I soon procured both from one of his officers, and had a good long smoke—the first I had had since Joe gave me the two pipefuls, one of those dreary days in our snow-hut. In course of time breakfast came along—cod-fish, potatoes, hard bread, and coffee!

"Never in my life did I enjoy a meal like that; plain as it was, I shall never forget that cod-fish and potatoes. No subsequent meal can ever eclipse this to my taste, so long habituated to raw meat, with all its uncleanly accessories."

HOMeward BOUND.

The *Tigress*, with her passengers, arrived at St. John's, Newfoundland, on the morning of the 12th of May. Intelligence of the rescue of Captain Tyson and his party having by this time reached the American Government, the United States steamship *Frolic* was despatched to St. John's; and arriving there on the 27th, embarked the survivors on the following day, and conveyed them to Washington on the afternoon of the 5th of June.

A Board of Inquiry having investigated the circumstances under which Captain Tyson and his companions

had been sent adrift from the *Polaris*, exonerated the captain from all blame. It was decided to despatch an expedition in search of the *Polaris*, and the fourteen persons on board of her at the time of her separation from Tyson's party. For this purpose the *Tigress* was purchased, and properly equipped; while the steam-launch *Juniata* was sent forward to establish a depôt of coal and stores for her use at Disco Island.

SEARCH FOR THE "POLARIS."

The *Tigress* was placed under the command of Captain Greer, with Lieutenant White as his chief-officer, and Captain Tyson as his ice-master. She carried, in all, eleven officers and forty-two men, including Eskimo Joe as interpreter. Hans and his family, and the other Eskimos, were taken on board, in order to be conveyed, at their own desire, to Disco.

The *Tigress* steamed out of New York Harbour on the 14th of July, and at once proceeded on her northerly course. As it was marked by no interesting incidents, we need not delay the reader by detailing its various stages. Suffice it to say that the expedition reached Littleton Island, where the separation from the *Polaris* had taken place, about the middle of August. As they neared the shore, two tents were discovered, and on the mainland, close by the island, some human figures! It was at once supposed that the missing crew were found; but on a boat being sent ashore the human figures proved to be Eskimos. A discovery was made, however. The Eskimos wore the clothing of civilized men, which they had obtained from Captain Buddington's party;

and were able to give much interesting information to the eager inquirers. Captain Buddington, it was ascertained, had abandoned the *Polaris* on the day after she had broken away from the floe. His men had built a house on the mainland, where they had wintered; had fitted it up with sleeping-berths for fourteen persons (a proof that no deaths had taken place), and furnished it with a stove, table, chairs, and other articles taken from the *Polaris*. During the winter they had built and rigged two sailing-boats, with wood and canvas from the doomed vessel; and that "about the time when the ducks begin to hatch," Captain Buddington and his company had sailed southward in these boats.

The chief man among these Eskimos added that Captain Buddington had made him "a present of the *Polaris*;" but that, soon after his departure, the vessel broke loose from the ice in a gale of wind, and, after drifting about one mile and a half towards the channel which separates Littleton Island from the mainland, had foundered. The chief described in pathetic terms the emotions with which he had watched her sinking, sinking, until she disappeared in the great deep for ever.

Captain Greer took possession of all the articles left behind in the winter-camp of the *Polaris* crew—the manuscripts, the medical stores, and the instruments; as also of the log-book—out of which had been torn, it was remarked, every passage having reference to the death of Captain Hall.

The *Tigress* then went southward, in the hope of falling in with the two boats, or of obtaining some in-

telligence concerning them. She reached Upernavik on the 23rd, and Godhav'n on the 25th; but at neither place had the missing crew been heard of. It was ascertained, however, that the whaler *Arctic*, of Dundee, and eight others, had gone to the North, all expecting to sight Cape York; and it seemed certain that, if Captain Buddington had kept to the east coast, he must already have been rescued by one or other of those ships.

As the whalers on their return would certainly follow the west coast-line in working down from the north water, Captain Greer, at Tyson's instigation, resolved to strike across to the west, in the hope of intercepting them, and gaining some information.

In his voyage he fell in with several Scotch whalers, but they knew nothing of the *Polaris*; and coal running short, he was compelled to put back to Ivgitut, on the Greenland coast, to obtain a fresh supply. Here he found the celebrated little steamer *Fox*—which, under Captain M'Clintock, did such good service in the search for Franklin.

Putting to sea again, the *Tigress* encountered a terrible storm on the night of the 6th and 7th of October. "Towards evening"—so runs the record—"the wind increased to a gale, accompanied by squalls of snow. Shortened sail, and hove the vessel to on the starboard tack. Through the night the gale increased to a hurricane; the sea was very heavy, breaking over our little barque, and keeping her deck continually flooded with water. Not only the deck, but the ward and engine rooms were flooded. The fire-room took so much water, that there was danger of the fires being put out;

but, fortunately, nothing more serious occurred than the carrying away of the lower bobstay to the bowsprit, and everybody getting thoroughly soaked. About seven A.M. the gale abated, and the wind hauled to the westward some four points; its former course was south-east. Wearing ship; we are now standing off-shore, as we are not more than fifteen miles from the Greenland coast. The weather is not pleasant yet; a heavy sea is running, but not so bad as last night. It is impossible as yet, however, to get anything to eat. Tables think nothing of turning over; the sea gaily indulges in the pastime of extinguishing the galley-fires, keeping the cook and steward in a chronic state of exasperation; and such was the power of the seas which broke over us, that even the anvil and iron covers to the coal-bunkers—the latter weighing about seventy pounds, and the former two hundred—were found floating around the deck, driven hither and thither by the force of the descending waves." A fact like this is better than volumes of description.

All Captain Greer's efforts to obtain tidings of the *Polaris* crew were in vain, and he determined, therefore, on returning to St. John's. When they arrived at this well-known harbour, the first words they heard were: "The *Polaris* party are safe." Nothing remained for the *Tigress*, therefore, but to make the best of her way back to New York; and landing there on the 9th of November, Greer and Tyson had the satisfaction of learning that Captain Buddington and his party had been picked up by the *Ravensraig* whaler three weeks before the *Tigress* was ready for sea!

THE FATE OF THE "POLARIS."

We return now to the *Polaris*. On the night that she broke away from the ice, she had on board fourteen officers and men—namely, Captain Buddington; Chester and Morton, the first and second mates; Schuman and Odell, chief and assistant engineers; Campbell and Booth, firemen; Coffin, carpenter; Sieman, Hobby, Hays, and Manch, seamen; Dr. Bessel, chief of the scientific staff; and Bryan, the astronomer and chaplain.

Leaking heavily, and with her anchors gone, the *Polaris* was driven by the wind in a north-easterly direction. At length steam was got up, and the vessel got under some degree of control. A look-out was kept, it is said, from the mast-head, for the two boats and their companions; but as they could not be seen, and it was supposed they would accomplish their voyage in safety, Buddington put the vessel in-shore, and moored her off Kane's Life-boat Cove (lat. $78^{\circ} 23' 30''$ N., and long. $73^{\circ} 21' W.$). She had sustained such serious injuries, that the wonder was she had kept afloat so long; and as it seemed impossible to repair her, Buddington resolved on permanently abandoning her, and on conveying to land all the food, fuel, and the articles most necessary for building a house, and supporting himself and companions during the winter. Some days were occupied in the work of unloading, and the *Polaris* was then abandoned to her fate. In the following summer she was presented to an Eskimo chief, in return for assistance rendered to the "white strangers;" but soon afterwards she drifted out of the cove, and, as we have

already stated, foundered in the sight of her last proprietor. Such was the melancholy end of the *Polaris*, which Captain Hall's fond imagination had destined to be the first keel that navigated the unknown waters of the Pole.

A WINTER-ENCAMPMENT.

The house erected by the survivors of the *Polaris* was constructed with the ship's spars, bulk-heads, and sails. It measured twenty-two feet in length and fourteen in width, and was surrounded by a bank of snow to protect it from the Arctic winds. A stove ensured its warmth; and comfortable sleeping-berths for fourteen persons were built up around its sides. Implements for cooking were brought from the *Polaris*, as well as a table, lamps, and other conveniences.

In the course of a few days, a party of native Eskimos arrived in five sledges. They proved of great assistance to the white men, and rendered any services that were required of them, in return for a few knives, needles, pieces of wood and iron, or other trifling articles. Some of them built their huts in the vicinity, and prepared to winter there. The women were of great utility—making and repairing clothing, and “performing other feminine courtesies for the men;” while the native hunters, as the season advanced, brought to the house a plentiful supply of fresh meat. In these circumstances, it is not astonishing that Captain Buddington and his party experienced but few of the severities of an Arctic winter.

When fairly settled, the whole party fell into a regular daily routine of the easiest character. Dr. Bessel

and Mr. Bryan continued their scientific observations; the others whiled away the time in reading, writing, and playing at chess, draughts, and cards. There was also the house-work to be done; ice-blocks cut for melting, fire replenished, lamps trimmed, the meals cooked; and when, in February, the coal-supply became exhausted, wood for firing purposes had to be cut from the *Polaris*, and brought ashore. When the mild light of spring broke over the far Northern seas, there were many opportunities for going in search of game, or seal-hunting, or setting traps for foxes. Happily, as their historian remarks, food was never wanting, nor even scarce; they were well-fed, well-clothed, and well-sheltered. How striking a contrast to the wretched condition of their comrades adrift on the raft of ice!

They had no boats, however, and they set to work to supply this deficiency. Materials were abundant, and they enjoyed the advice and assistance of the ship's carpenter. Each boat was twenty-five feet in length, square fore and aft, and five feet beam—capable of carrying seven men, with provisions for about two months; in which time, it was supposed, they would undoubtedly reach a latitude where assistance would be obtainable. The timber used was chiefly taken from the *Polaris*—such as the ceiling of the alley-ways and after-cabin. The difficulties of the work were great, but not insurmountable. The two boats were finished; and also a third and smaller one, which was presented to the friendly natives.

A little after one o'clock, on the morning of the 3rd of June, the boats received their cargo of provisions

and other necessary articles. The party was equally divided—seven in each boat; and bidding farewell to the Eskimos and their winter-home, they launched out into the free waters of Smith Sound, and turned their prows southward.

With the exception of slight scorbutic affections in a few of the men, they had enjoyed wonderfully good health throughout the Arctic winter and spring. It was now summer, and the sun was constantly above the horizon. Neither against cold nor darkness was it necessary now to struggle. The voyage before them, except for occasional interruption from the pack-ice, was a pleasant excursion. Wherever they put ashore they found sea-birds, seals, and other game in abundance; and occasionally the eggs of the eider and other ducks figured in their bills of fare.

As they proceeded on their voyage, they touched at the Eskimo settlement of Etah-y-tamy, but found it abandoned; also at Hakluyt Island; and afterwards they landed on the west shore of Northumberland Island, where they were detained until the 10th by the pack-ice. Putting to sea again, the ice carried them back to their point of departure. But on the 12th the prospect was more favourable, and they set sail for the second time. Crossing the southern part of Murchison Sound, they doubled Cape Parry, and rested for awhile at Blackwood Point. Continuing their voyage on the following day, they reached and landed on Dalrymple Island; afterwards at Wolstenholme Island and Cape York.

Thus far, says Mr. Blake, their course had been com-

paratively easy; but they were now called upon to encounter the ice of the glacier-fed Melville Bay; and here considerably greater exertion was required of them—the water-ways frequently closing up, so that they had to haul their boats across the ice until they came to another open "lead." Their troubles, however, were not of long duration. On the twentieth day from their departure, and soon after entering upon the difficult waters of Melville Bay, they sighted a steamer in the distance. They were then twenty-five miles south-east of Cape York.

"True, they perceived that the vessel was beset, and could not come to them; and she was some ten miles away. But being beset, she was sure to remain until they could get to her; and the relief appeared all the more timely, since one of the boats had been injured in its contact with the ice, and only about one week's provisions remained. The party had apparently over-eaten their rations, or had not rightly estimated them.

"Two men were sent forward toward the steamer, but had traversed only a portion of the distance when they were met by a body of eighteen men from the ship—which proved to be the *Ravenscraig* of Dundee, Captain Allen; lying in lat. $75^{\circ} 38'$ N. long. $65^{\circ} 35'$ W., Cape York being to the north-west, at about twenty-five miles distance.

"The party on the ice had been sighted by the lookout on the vessel at about one A.M. (it being light all the time then); they were at that time about fourteen miles off, and were supposed to be Eskimos. By nine o'clock it was observed that the party were moving toward

the vessel, but very slowly, not having made more than two miles since first seen; and it was now discovered that they were not natives, but white men. This naturally increased the interest on board. It was perceived that they had two boats, and their colours on a pole. Volunteers were now ready to go to their relief, and eighteen picked men were chosen for the purpose; Captain Allen also hoisting his ensign as an encouragement to the wanderers.

"Captain Buddington and his party were intensely gratified to see that they had been noticed, and all watched with the greatest anxiety the progress of the two men who had gone forward toward the vessel. But when the rescuers were seen returning with them, every heart was relieved, and weariness gave place to the joy of anticipated security.

"The boats had been considerably injured by contact with the rough, hummocky ice; and one of them was slightly stove, but had been repaired. The fatigue of dragging boats over such ice may be partly imagined when we find that it took the combined party of thirty-two from six P.M. until midnight to get to the vessel—a rate of two miles an hour. The difficulty had been greatly increased by a deep slushy snow, which was spread over the entire surface; and was not only heavy and disagreeable to wade through, but was not without its real dangers, as more than one found by suddenly sinking into some treacherous hole, which was concealed by it. One of the men had great difficulty in extricating himself from one of these hidden pitfalls; indeed, without assistance the accident might have proved fatal."

THE CONCLUSION.

On board the *Raver craig*, Captain Buddington and his companions were most hospitably entertained; but as she was not homeward-bound, her captain, as soon as possible, transferred them to the *Arctic* and the *Intrepid*, which, having completed their work in the Polar seas, were about to sail for Dundee. The *Arctic*, with Captain Buddington and ten of his party, reached that port on the 18th of September 1873. Embarking on board the *City of Antwerp*, they arrived safely at New York on the 4th of October; and were followed, a few weeks later, by Mr. Bryan and his two companions, who had been transferred to the *Intrepid*, and from that to the *Erick*. Thus every member of the ill-fated *Polaris* expedition arrived safely at their homes, except its gallant and enthusiastic leader, whose ambitious hopes had been so sadly and fatally extinguished. Had Captain Buddington possessed a tithe of his ardour, he might, perhaps, have succeeded in accomplishing that final achievement of the conquest of the Pole which, we trust, is now reserved for British enterprise and courage.

CHAPTER VIII.

THE SWEDISH AND AUSTRIAN EXPEDITIONS.



THE work of Arctic Exploration has not languished in the last two or three years. An Austrian expedition, conducted by Messrs. Payer and Weiprecht, sailed in 1870; proceeded to König Karl Land in the latter part of the summer; and, ascending to the east of Spitzbergen, in long. 40° to 42° , discovered an open Polar sea, free from ice, as high up as the 79th parallel of latitude.

The Swedes, in the summer of 1871, despatched a ship under Baron von Otter to the west coast of Greenland, to bring away a large mass of meteoric iron that had been discovered there; and Mr. Rosenthal, a merchant of great enterprise and culture, sent out in his own ship scientific observers to the seas east of Spitzbergen.

In the same year, an Arctic voyage was accomplished by the Grand Duke Alexis in the corvette *Warjäg*; during which some valuable observations were made by the geographer, Von Middendorff, on the currents and temperature of the sea off the western coasts of Novaia Zemlaia.

Sir Roderick Murchison, in his address to the Royal Geographical Society on opening the session of 1872-73, justly remarked, that not the least praiseworthy and productive of Arctic voyages in recent years have been those of the Norwegian whaling-fleet, whose captains now engage in honourable rivalry to penetrate as far as they can into the Icy Sea,—making new discoveries there, and constantly adding to our knowledge of its climate by carefully-kept meteorological registers. Two of these fishers—Captains Allmann and Johnsen—brought home, in 1872, highly-interesting accounts of König Karl Land; an island of the Spitzbergen Archipelago, first seen by the voyager Wiche in 1617, but never previously visited. In length the newly-examined island measures about forty-four nautical miles; no glaciers exist in it; the snow-fields are disconnected, and of inconsiderable extent. Vast quantities of drift-wood lie high above the tide-mark on its eastern shores; and it contains the ordinary Polar animals in abundance—the reindeer being specially large and well-nourished. Captain Johnsen (or Jansen) anchored in 79° 8' N.

An important Swedish expedition—the fifth fitted out by that country, partly at Government cost, partly by aid of scientific societies, and partly by national enterprise—sailed in 1872. It consisted of two ships of the Swedish navy, each commanded by a naval officer, under the general direction of the veteran, Professor Nordenskiöld. Besides the steamers *Polhem* and *Onkel Adam*, the brig *Gladan* was employed upon this service.

The *Onkel Adam* and the *Gladan* carried supplies of moss and coal, several reindeer, and a dwelling-house

all ready for putting up; and were intended to return to Sweden before the beginning of winter.

Commander Palander, of the *Polhem*, and his officers; Professor Nordenskiöld, Dr. Envall, Professor Wykander, Lieutenant Parent (an Italian officer), two engineers, nine Swedish seamen, and four Laplanders, were to form a winter-party; but, during the summer, the expedition was also to be accompanied by Dr. Kjellman, a naturalist, the crews of the *Gladan* and *Onkel Adam*, and several supernumeraries.

The plan of the expedition, was to pass the autumn on the eastern side of Spitzbergen, and to winter in Mussel Bay, or off Parry Island.

Unfortunately, the *Onkel Adam* and the *Gladan*, which had been intended to return in the autumn of 1872, were detained by the ice, and compelled to winter in Spitzbergen, along with the *Polhem*. The resources of the exploring-vessel were accordingly crippled, from the necessity she was under of supplying the wants of her ice-bound consorts. Six fishing-vessels, whose crews amounted in all to fifty-eight men, were also frozen in, off Grey Point, on the northern coast; and eighteen of their men reached Ice Sound by keeping along the shore in open boats. Two of the vessels escaped, with the remainder, in November. The Swedish expedition took up its winter-quarters in Mussel Bay, a small inlet on the east side of Weyde Bay, on the northern coast of Spitzbergen.

The eighteen Swedes who reached Ice Sound found the depôt there well-supplied with fresh and salt provisions, and provided with a good stove. They might

very well have survived the winter; but they preferred salt meat to the preserved meat, and abstained from exercise. Hence all of them died. These details were gathered from a diary which they had kept (October 7, 1872, to April 19, 1873), and which was discovered by Captain Mack on his visit to the sound in the summer of 1873.

We must now return to the Swedish expedition. Its members were under firm command, and held together by the bonds of discipline. A wholesome diet and severe daily exercise were enforced; and the consequence was, that only two men died during the whole winter. Large and valuable collections of botanical, zoological, and geological specimens were made by the officers. In the last days of April, when the weather moderated, and the sunshine gained some influence, Captain Palander, Professor Nordenskiöld, and fourteen men, started on a sledge-journey. They followed up the coast-line of North-East Land, rounded Cape Platen, and then striking into the snowy wastes of the interior, made their way across the hills to their encampment in Mussel Bay. They arrived there on the 29th of June, after an absence of sixty days. In the summer, Mr. Leigh Smith in the *Diana* (see *post*) paid them a visit, and recruited them with a seasonable and liberal supply of fresh provisions. But the Swedes attempted nothing more in the way of exploration, and the *Polhem* returned to Tromsö on the 6th of August 1873. Though some contributions had been made to geographical knowledge, no fresh discovery of any importance was due to this splendidly-equipped expedition.

According to Mr. Markham, the most interesting voyages of recent times are those which have been undertaken by Mr. B. Leigh Smith, an English gentleman of means, with a view to attaining the highest possible latitude, and of exploring the unknown lands to the eastward of Spitzbergen. In 1871, he was accompanied by Captain Ulve, a Norwegian; and the season proving unusually favourable, he sailed down Hinlopen Strait, and at its south-eastern outlet reached the position attained by Koldewey in 1868. What had been supposed to be a peninsula, he discovered to be an island; and it is now marked on the map as Waygat or Wilhelm Island.

From this point he could see the land on the opposite shore, stretching far away a little north of east; and the remotest point he named Cape Mohr. This discovery of Smith and Ulve extends considerably the southern shore of North-East Land. The eastern sea being closed up by the pack-ice, Mr. Leigh Smith returned to the north coast, and in September visited the Seven Islands. Then he doubled Cape Platen, and pursuing a south-easterly course for about forty miles, observed that the coast of North-East Land was still trending eastward. The remotest point visible has been named Cape Smith.

Mr. Leigh Smith's investigations, as Markham informs us, have considerably modified the outline and enlarged the area of North-East Land; and have shown that both the southern and northern shores extend farther to the east than was previously supposed.

In September 1871, Mr. Leigh Smith, on the meri-

dian of 18° E., attained the latitude of $81^{\circ} 14'$ N. This was the highest that had then been reached in a ship; except by Scoresby in 1806 (lat. $81^{\circ} 30'$ N.), and by the Swedes in 1868 (lat. $81^{\circ} 42'$ N.).

In 1872 Mr. Leigh Smith again sailed for Spitzbergen, in his yacht the *Sampson*. But the season proved unfavourable; his vessel was much damaged by the ice, and he found himself unable to advance beyond Weyde Bay.

Once more, in 1873, our indefatigable explorer invaded the frozen realms of the North. His own yacht, the *Sampson*, sailed from Hull on the 1st of May, laden with stores, and in charge of an experienced whaling-captain, W. Walker. The intention was, to station her in Cobbe's Bay, near the north-west point of Spitzbergen, so that if any accident happened to the exploring-vessel, Mr. Leigh Smith and his party would have a second ship to fall back upon. The exploring-vessel was Mr. Lamont's steam-yacht *Diana*, which Mr. Smith engaged for the purpose, and strengthened with an iron stern-piece and iron pieces on the bows, for several feet above and below the water-line. Her burden was 103 tons, and her engine of 50 horse-power. She had twenty hands on board, all told; and her sailing-master was an intelligent and experienced seaman, Captain Fairweather. Mr. Leigh Smith was also accompanied by the Rev. Mr. Eaton as naturalist, by Lieutenant Chermiside, R.E., and by Mr. Richard Potter.

The *Diana* first visited Jan Mayen's bleak volcanic island-mass, and thence worked to the north along the edge of the ice. After relieving the Swedish expedition, she made several gallant efforts to penetrate

to the north or east, but all without success. The season was rigorously cold, and the northern shores of Spitzbergen were hard-bound with ice. Mr. Smith, however, contrived to reach and examine the Seven Islands, explored Hinlopen Strait for a second time, as well as the south shore of North-East Land, and made several interesting deep-sea soundings. Finally, he made a vigorous but fruitless effort to reach Wiche's Land, by doubling the extreme southern point of Spitzbergen; and then returned to Dundee in September 1873.

The results of this voyage, as of the Swedish expedition, proved very conclusively that the Spitzbergen route offers little prospect of an open way to the North Pole; and most authorities are now agreed that the road lies through Smith Sound, if road there be. At all events, the *Polaris* expedition showed that it was possible, without check of any kind, to advance as high as latitude $82^{\circ} 16' N.$; and that, at this remote point, the sea was still navigable, with a "water-sky" to the northward. It is this route which the British expedition of 1875 followed up, and followed up with such valuable results.

We must now glance briefly at the doings of the Austrian expedition, in 1872; which, under Lieutenant Payer, selected the route by Novaia Zemlaia and the Siberian Coast.

The Austro-Hungarian Arctic Expedition was supported by the enthusiasm of the whole empire. Its commander, Lieutenant Payer, was a seaman of proved ability, familiar with the dangers and difficulties of

Polar exploration. He served, as we have seen, in the German expedition (the *Germania* and *Hansa*), under Captain Koldewey, and executed a map of its discoveries which attracted much attention by its beauty and accuracy. Afterwards, he hired a small schooner, and at his own risk explored the waters between Spitzbergen and Novaia Zemlaia.

His second in command was Lieutenant Weyprecht, who had been his companion on both his voyages.

The steamer *Tegethoff* was carefully and liberally equipped for this important service; and Lieutenant Payer had the advantage of Sir Leopold M'Clintock's advice and experience in his preparations for the organization of travelling sledge-parties.

The surgeon was Dr. Kepes, a Hungarian; the pilot, Captain Carlsen, a veteran Arctic mariner. The crew were chiefly Italian seamen from the Adriatic coast; but, says our authority, "there was great confusion of tongues on board the *Tegethoff*—Italian, German, English, Norwegian, and Slavonic, all were spoken. Captain Carlsen gave his orders in Norwegian, with forcible Italian expressions occasionally thrown in. Dr. Kepes talked to the crew in Latin and Hungarian; and two men spoke a very curious dialect, the German of the Tyrol."

As far as the Zemlaia coast, Lieutenant Payer was accompanied by Baron Sterneck, Hans Höfer (a geologist), and Herr Berger (a photographer).

Lieutenant Payer's intention was to round the northeastern point of Novaia Zemlaia, and press eastward to the northernmost point of Siberia, where he would pitch

his winter-camp. In the following year he hoped to continue the voyage to Behring Strait; while, during the spring, sledge-parties would be engaged in exploring the unknown coasts of Wrangell Land, and otherwise advancing the bounds of geographical discovery in that remote and desolate region.

The *Tegethoff* left the Elbe in June; and having completed her preparations, steamed from Tromsö on the 13th of July 1872. The first ice was struck on the 25th, in lat. $74^{\circ} 15' N.$, and on the 29th she was off the dismal Zemlaian coast. Here the vessel was involved in the pack-ice; but steam being got up, she was driven through the floes until she reached open water, about twenty miles wide, to the north of the Matöchkiu Strait. Much ice was fallen in with on the following days; and on the 12th of August the *Isbiörn* yacht joined company, with Count Wilezck and his companions on board. On the 13th, the two vessels dropped anchor about two cable-lengths from the shore, in lat. $76^{\circ} 30' N.$; and celebrated the emperor's birthday in right loyal style on the 18th.

Covers were laid for twelve, and the bill of fare included a haunch of reindeer, bear steaks, six bottles of Moselle, six of Hungarian wine, six of champagne, and a glorious Christmas pudding. This was surely a novel Arctic feast!

Three or four sledge-parties made daily excursions to the adjoining islands; returning with quantities of firewood, spoils of the chase, rare plants, and geological specimens. On the 23rd signs of Winter became disagreeably conspicuous: the young ice began to form; and the north wind came down from its Polar haunts

with characteristic fury. So the two vessels parted company; the *Tegethoff* proceeding northward on her mission of discovery, and the *Isbjörn* keeping southward along the coast. On the 26th she passed the Kostin Shar; but on reaching the mouth of the Petchora, Count Wilczek and his party left her to accomplish her return-voyage to Tromsö, while they made their way in small boats up the Petchora to Perm, whence they returned home by Moscow.

The season of 1872 was one of exceptional severity, and ice was encountered in seas which, under more favourable conditions, were generally free from obstruction. Lieutenant Payer, however, bated not one jot of hope, and kept his course to the eastward with resolute intrepidity; hoping to reach Cape Chelynskin, the northernmost Siberian promontory, where he hoped to pitch his winter-camp.

He was baffled, however, as so many had been baffled before him, by the forces of the Arctic winter. He was compelled to winter among the ice; using his sledges when opportunity offered, for the purpose of exploration, or to obtain fresh provisions.

Both the summers of 1873 and 1874 were spent off the Siberian coast; but though many interesting discoveries were made, Lieutenant Payer did not succeed in effecting a passage through the Icy Sea to Behring Strait. This navigation of the Asiatic mainland remains to be accomplished. Its achievement can never possess any commercial value, but may probably contribute some additional data to the results of scientific inquiry.

In the autumn of 1874, the Austrian expedition returned home; unsuccessful, as we have seen, in its main object, but by no means unproductive. Few expeditions, of late years, have possessed a more decided scientific interest; and the gallant Payer fully deserved the honourable reception accorded to him by our principal Scientific Societies on his visit to England in the spring of 1875.

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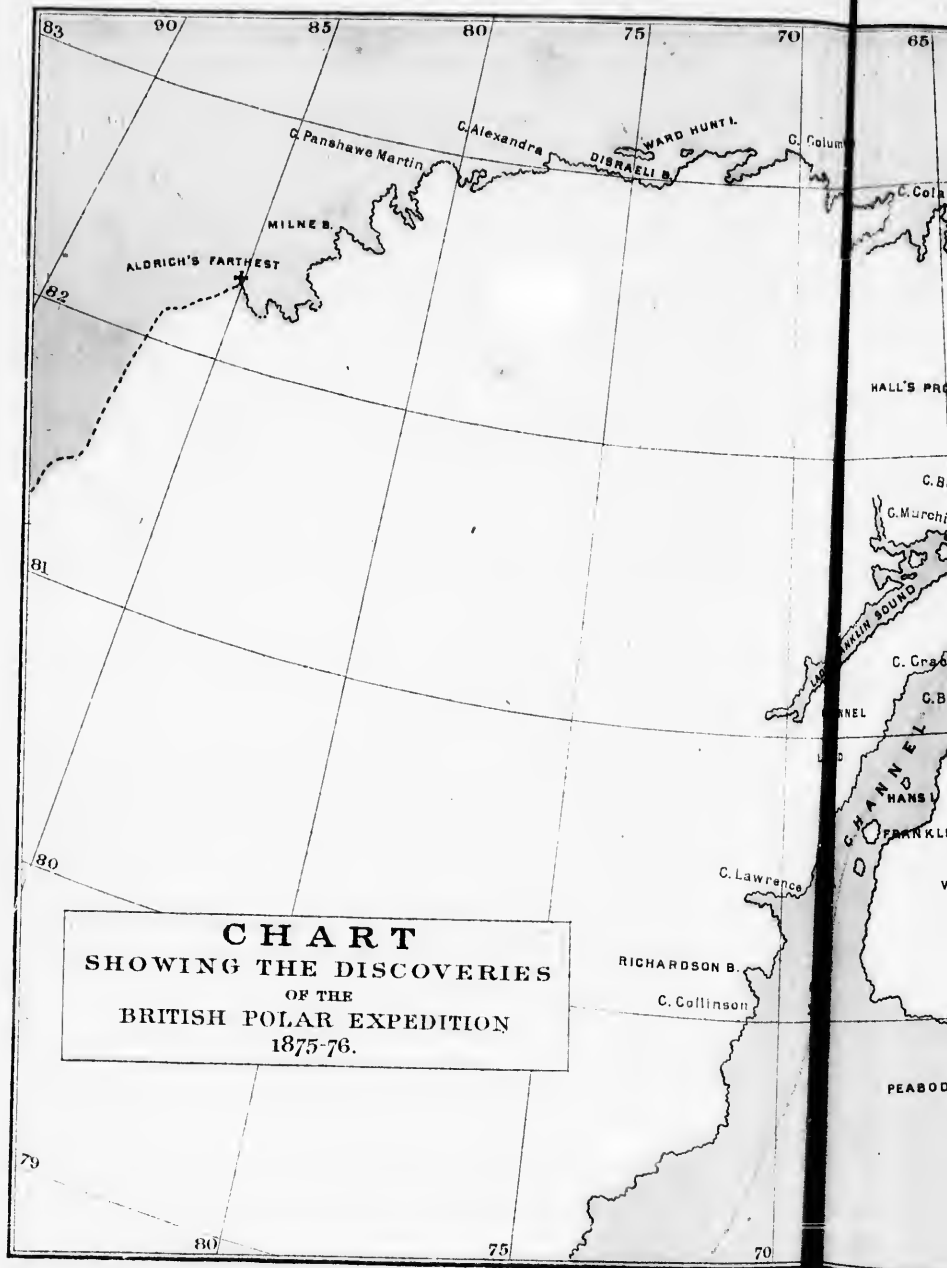


CHART
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CHAPTER IX.

THE BRITISH EXPEDITION OF 1875-76.

GENERAL REMARKS.



THE British Expedition, consisting of the *Alert* and the *Discovery*, did not succeed in all it was intended to accomplish; and yet it can hardly be spoken of as a failure. It did not reach that conventional point of geographers, the North Pole, but it penetrated within four hundred miles of it; and it ascertained the exact nature of the obstacles which render access impossible, except under conditions not at present in existence. We agree with a thoughtful writer in the *Spectator* that this was a most important service rendered both to Science and the State. We now know that by the Smith Sound route a ship may attain to within 450 miles of the Pole; and that, afterwards, a journey about as long as from London to Edinburgh must be undertaken, in a rigorous climate, with the thermometer 50° below zero, over ice packed up into hillocks and hummocks which render sledge-travelling almost impracticable, or practicable only by hewing out a path with the pickaxe at the rate of a

mile and a half a day. And further: the work would have to be begun and completed in four months, or, from lack of light and warmth, it could not be done at all. These are serious difficulties, and whether it is worth while for men to encounter them, where the gain would be problematical, we need not here inquire. Before any attempt can be made, some provision must be discovered for protecting those who make it against the excessive cold, and for a surer and swifter mode of conveyance than the sledge affords. The journalist to whom we have referred speculates that science may furnish future expeditions with undreamt-of resources,—with portable light and heat, for instance, from the newly-discovered mines at Disco; preventives against scurvy; electric lights; supplies of dynamite for blowing up the ice; and a traction-engine to traverse the road thus constructed; but, in the meantime, these appliances are not at our command. We must be content with the measure of success achieved by Captain Nares and his gallant followers.

And these well deserve the gratitude of all who think the fame and honour of a nation are precious possessions. They have shown clearly that the "race" has not degenerated; that Englishmen can do and suffer now as they did and suffered in the old time. They displayed a courage and a fortitude of truly heroic proportions. And the experiences of Arctic voyaging are always of a nature to require the highest courage and the sternest fortitude. The long Arctic night is in itself as severe a test of true manhood as can well be devised. The miner works under conditions far less

laborious than those to which the Arctic explorer submits, for he enjoys an alternation of light and darkness; his underground toil lasts but for a few hours at a time. Yet we know that it tries a man's manly qualities sorely! What, then, must it be to keep brave and cheerful and true throughout a prolonged night of one hundred and forty-two days—that apparently endless darkness, almost the darkness of a sunless world?

We know, too, that continuous work, without relaxation, for month after month, will break down the nerves and shatter the intellect of the strongest. Yet we read that the men of the *Alert* toiled like slaves, on one occasion, for seventy-two days, in cold so extreme that the reader can form no conception of its severity, and with the dread constantly hanging over them of that terrible and most depressing disease, scurvy. Owing to their inability to procure any fresh game, as most former expeditions had done, each of the extended sledge-parties, when at their farthest distance from any help, was attacked by it. The return-journeys were, therefore, a prolonged homeward struggle of men who grew weaker at every step, the available force to draw the sledge continually decreasing, and the weight to be dragged as steadily increasing, as, one after another, the men stricken down had to be carried by their enfeebled comrades.

It has been well said that in such exploits as these there is a sustained heroism which we cannot fully appreciate, because we cannot fully realize the terrible character of the sacrifices involved. But it is comparatively easy for us to understand, and therefore to

admire, the courage of Lieutenant Parr, when he started alone on a journey of thirty-five miles, with no other guide for his adventurous steps than the fresh track of a wandering wolf over the ice and snow, in order to carry help and comfort to his failing comrades. It is easy to understand, and therefore to admire, the devotion of Mr. Egerton and Lieutenant Rawson, when, at the imminent risk of their own lives, they nursed Petersen, the interpreter, while travelling from the *Alert* to the *Discovery*, with the temperature 40° below zero. Petersen, who had accompanied them with the dog-sledge, fell ill; and with a noble unselfishness they succeeded in retaining heat in the poor fellow's body by alternately lying one at a time alongside of him, while the other by exercise was recovering his own vital warmth. We can also acknowledge and admire the constancy of Captain Nares, who, in that horrible climate, lived thirty-six days in the "crow's-nest," while his ship laboured among the grinding, shivering, crushing ice, until exhaustion overcame him. And we can acknowledge and admire the bravery and faithfulness of the men of the sledge-parties who, for days and weeks, drew the sledges and their comrades, with gloom above and around them, ice and snow everywhere bounding the prospect, and in a temperature which seemed to freeze the blood and benumb the heart.

What a tale, says a writer in the *Times*, what a tale of unrequited suffering it is! Surely not "unrequited;" for those who suffered, suffered at the call of duty, and have been rewarded by the approval of their countrymen, and by the consciousness of having done something

great, of not having lived in vain. "How lightly do all talk of glory; how little do they know what it means! The little army had to cut its way through the ice-barriers, dragging heavily-laden sledges, and going to and fro, the whole force being often required for each sledge, content to make a mile and a quarter a day, in pursuit of an object still four hundred miles off, through increasing difficulties, and with barely five months, or one hundred and fifty days, wherein to go and return. The labour is a dreadful reality; the scheme itself a nightmare, the phantasy of a disordered brain. Even the smaller and subsidiary expedition for planting a depôt last autumn cost three amputations. The cold was beyond all former experience for intensity and length, and the physical effect of a long winter spent in the ships under such conditions is particularized as one reason why the men were less able to endure cold, labour, and the want of proper food. Every one of the expeditions, whatever the direction, came back in the saddest plight,—some dragging the rest, and in one case only reaching the ship through the heroism of an officer pushing on many miles alone to announce his returning comrades, and to procure the aid by which alone they were saved from destruction. These are episodes, but they are the matter which redeems the story and makes its truest value. They tell us what Englishmen will do on occasions beyond our feeble home apprehensions, when once they have accepted a call, and are in duty bound."

At the time we write no elaborate record of the expedi-

tion has been published, and the materials of the following sketch are collected therefore from various narratives which have appeared in the daily journals. We shall begin by endeavouring to place before the reader, with the assistance of Mr. Clements R. Markham, a rapid summary of what the expedition accomplished. And then we shall describe its more interesting incidents.

SUMMARY OF RESULTS.

The object of Captain Nares and his followers was to discover and explore as considerable a portion of the unknown area in the Polar Regions as was possible with reference to the means at their disposal, and to the positions the vessels succeeded in reaching as starting-points. The theories about open Polar basins and navigable waters which once obtained have long been discarded by practical Arctic geographers. A coast-line, however, is needful as a means of progress to "the threshold of work;" and it is needful, too, in order to secure the desired results of Arctic discovery in the various departments of scientific inquiry.

The expedition, then, in the first place, had to force its way through the ice-encumbered channel which connects Baffin Bay with the Polar Ocean; a channel which successively bears the names of Smith Sound, Kane Basin, Kennedy Channel, Hall Basin, and Robeson Strait. Smith Sound opens out of Baffin Bay between Capes Alexander and Isabella. The *Alert* and the *Discovery* passed these famous headlands and entered the Sound on July 29, 1875; and from that date until September 1, when the *Alert* crossed the Threshold of

the Unknown Region, they fought one continuous battle with the ice. The *Polaris*, it is true, had made a rapid passage on the occasion of its memorable voyage; but the circumstances were exceptional. Generally the Sound is blocked up by heavy floes, with winding waters caused by the action of wind and tide. With great difficulty our two ships forced the barrier; but their success was due in no small measure to the skill and vigilance of Captain Nares, who allowed himself no rest until they were out of danger. At length, after many hairbreadth escapes, and many laborious nights and days, and much energy and devotion on the part of the officers, and equal courage and industry on the part of the men, the expedition reached the north shore of Lady Franklin Inlet, and found a safe, commodious harbour in lat. $81^{\circ} 44' N.$ Here the *Discovery* took up her winter quarters, as had previously been arranged; and the *Alert*, after a brief interval of repose, continued her northward progress.

This she was enabled to do through the opportune opening up of a water-lane between the shore and the ice. Bravely she dashed ahead, rounded Cape Union, so named by the men of the *Polaris* expedition, and entered the open Polar Ocean. Then, in lat. $82^{\circ} 20' N.$, the white ensign was hoisted on board a British man-of-war in a latitude further north than the ship of any nation had reached before. Soon afterwards the solid masses of the Polar pack-ice began to close around the adventurous vessel; and on the 3rd of September 1875, the *Alert* was fast fixed in her winter quarters, on the ice-bound shore of the inhospitable Polar Sea, in lat. $82^{\circ} 27' N.$

This, says Mr. Markham,* was the first grand success; and it assured the eventual completion of the work. For, owing to the admirable seamanship of Captain Nares, and to the zeal and devotion of the officers and crew, the *Alert* had been carried across the Threshold, and was *within* the Unknown Region. A point of departure was thus obtained, which rendered certain the achievement of complete success; inasmuch as in whatever direction the sledge-parties travelled, valuable discoveries could not fail to be the result.

The autumnal excursions, during which depôts of provisions were established for use in the work of the coming spring, were not performed without a very considerable amount of suffering. Lieutenant May and two seamen were so severely frost-bitten, that, to save their lives, amputation was found necessary.

As will be seen from the latitude given, the ships wintered further north than any ships had ever previously wintered. The cold exceeded anything previously registered, and darkness extended over a dreary period. The winter, however, was not spent idly: observatories were erected, and a mass of valuable scientific data industriously accumulated.

"But the crowning glories of this ever-memorable campaign were," as Mr. Markham exclaims, "achieved during the spring." Three main sledge-expeditions were organized: one, under Commander Markham and Lieutenant Parr, instructed to keep due north, as far as possible, into the newly-discovered Polar Ocean; another, under Lieutenant Aldrich, to explore the

* *The Academy*, November 4, 1876, p. 453.

American coast, westward; and the third, under Lieutenant Beaumont of the *Discovery*, to survey the north coast of Greenland, facing eastward. Each party consisted of two sledges; and the six, with their gallant crews, set out on the 3rd of April 1876, determined to vindicate and maintain the reputation of British seamen. They separated at Cape Joseph Henry; and before they again met, this was what they achieved:—

Commander Markham and Lieutenant Parr pushed northward as far as lat. $83^{\circ} 20' 26''$ N.; being the most northerly point which any explorers have attained. They may therefore be fairly and justly regarded as "the Champions" of Arctic Discovery, until some successors, more fortunate than they, shall surpass their glorious feat.

Lieutenant Aldrich struck westward; rounded Cape Colombia in lat. $83^{\circ} 7'$ N.; and explored 220 miles of the American coast-line, previously not laid down on any map.

Lieutenant Beaumont crossed Robeson Strait, and surveyed the northern coast of Greenland for about seventy miles.

"In order," it is said, "that these three main parties might do their work successfully, every soul in the two ships was actively employed. The depôt and relieving parties did most arduous work, and the officers vied with each other in promoting the objects of the expedition, while the most perfect harmony and unanimity prevailed. Captain Feilden and Mr. Hart were especially active in making natural history collections; and Lieutenants Giffard, Archer, Rawson,

Egerton, and Conybeare did admirable work in exploring and keeping open communications." When the sledge-parties returned to the ships, Captain Nares found that they had suffered terribly; but he also found that their success had been complete. They had solved a geographical problem; no open sea surrounded the Pole, as so many sanguine spirits had anticipated. The way northward was over a waste of ice—of ice broken up into hummocks and ponderous masses. And with the appliances they possessed further progress was impossible; the expedition had reached its *ne plus ultra*.

The work was done, and Captain Nares perceived that nothing more could be gained, while valuable lives might be lost by remaining longer in the Polar Ocean. He decided upon returning to England, with the following rich results to show as the reward of an heroic enterprise:—

First, the expedition had discovered a great Polar Ocean, a knowledge of which cannot fail to prove of exceeding value to the hydrographer. Next, the shores of this ocean had been explored along fifty degrees of longitude, and important collections formed of specimens of the Arctic fauna, flora, and geology. The channel connecting the Polar Ocean with Smith Sound had also been carefully surveyed, and an accurate delineation effected of either shore. Geological discoveries of high value had also been made; as, for example, that of the former existence of an evergreen forest in lat. $82^{\circ} 44' N.$,—a fact significant of vast climatic changes. And, lastly, interesting observations in meteorology, magnetism, tidal and electric pheno-

mena, and spectrum analysis had been carefully recorded. The expedition of 1875-76 must, therefore, in view of these results, be classed among the most successful which ever adventured into Arctic waters; though it failed, like its predecessors, to gain the North Pole.

NARRATIVE OF THE EXPEDITION.

The *Alert* and the *Discovery* left the shores of England in May 1875. After a voyage of five weeks' duration they arrived at Lively, the port of Disco Island, on the west coast of Greenland. This small settlement numbers about ninety-six inhabitants, Danes and Eskimos,—generally speaking, a mixed race. The Danish Inspector of North Greenland resides here, and he received the expedition with a salute from three brass cannon planted in front of his house. There is a well-conducted school, attended by about sixteen children; and a small church, where the schoolmaster reads the Lutheran service on Sundays,—the priest coming over from Upernavik occasionally, to perform marriages, christenings, and other religious services.

The *Alert* having taken on board thirty Eskimo dogs and a driver, the expedition left Disco at one o'clock on the evening of July 16th, and next morning reached Kiltunbunto, about thirty miles further north.

Kiltunbunto is a little island in the Strait of Weigattet, between Disco and the mainland. Here the *Discovery* took on board thirty dogs; and shooting-parties from both ships made a descent on a "loomery," or "bird-bazaar," frequented by guillemots, kittiwakes,

and other ocean-birds. Two or three days later the expedition arrived at a settlement named Proven, where it was joined by the Eskimo dog-driver who has already figured so conspicuously in these pages,—Hans Christian, the attendant of Kane, Hayes, and Hall, in their several expeditions. At Proven the adventurers received and answered their last letters from "home.

Striking northward through Baffin Bay, they reached Cape York on the 25th of July, and met with a company of the misnamed Arctic Highlanders, who traversed the ice-floes in their dog-sledges, and soon fraternized with the seamen. A narwhal having been harpooned, a quantity of the skin and blubber was given to these Eskimos. Mr. Hodson, the chaplain of the *Discovery*, describes them as exceedingly greedy and barbarous, eating whatever fell in their way, but living chiefly upon seals. They were not so far advanced in civilization as to be able to construct kayacks, and apparently they had never before seen Europeans. They wore trousers of bear-skin, and an upper garment of seal-skin.

Proceeding northward by Dr. Kane's Crimson Cliffs, they soon reached that brave explorer's celebrated winter quarters, Port Foulke, and took advantage of a day's delay to visit the Brother John Glacier, which we have described in a previous chapter. They found Dr. Kane's journal, but no relics; shot a reindeer, and a large number of birds.

Between Melville Bay and the entrance to Smith Sound no ice was met with; but on the 30th of July the "pack" was sighted, off Cape Sabine, in lat. 78°

41' N. Here, at Port Payer, the ships were fast held by the ice for several days. An attempt to proceed further northward was made to the west of the islands in Hayes Sound; but the water-way not leading in the right direction, the ships returned. On the 6th of August they made a fresh start, and thenceforward maintained an uninterrupted struggle with the ice. The *Alert* led the way, with Captain Nares in her "crow's-nest," anxiously looking out for practicable channels. At Cape Frazer the huge solid mass again delayed them. Then they succeeded in crossing Kennedy Channel to the east side, and taking shelter in Petermann Fiord—so named after the great German geographer. After a few days, they again pushed northward; and on the 25th of August, after many narrow escapes from being crushed in the ice, a well-sheltered harbour received them, on the west side of Hall Basin, north of Lady Franklin Sound, in lat. $81^{\circ} 44'$ N. This was at once selected as the winter quarters of the *Discovery*. Her sister-ship, continuing her course, rounded the north-east point of Grant Land; but instead of falling in with a continuous coast-line, stretching one hundred miles further towards the north, as all had anticipated, found herself on the border of what was evidently a very extensive sea, with impenetrable ice on every side. As no harbour could be found, the ship was secured as far north as possible, inside a kind of embankment of grounded ice close to the land. There she passed the winter; and during the eleven months of her detention no navigable water-way, through which she could move further to the north, presented itself.

Far from meeting with the "great Polar Sea" dreamed of by Kane and Hayes, our adventurers discovered that the ice-barrier before them was unusually thick and solid. It looked as if composed of floating icebergs which had gradually been jammed and welded together. Henceforth it will be known on our maps as the Palæocrustic Sea, or Sea of Ancient Ice; and a stranded mass of ice disrupted from an ice-floe is to be termed a floeberg.

Ordinary ice does not exceed ten feet in thickness; but in the Polar Sea, generation after generation, layer has been superimposed on layer, until the whole mass measures from eighty feet to one hundred and twenty feet; it floats with its surface nowhere less than fifteen feet above the water-line. It was this wonderful thickness which prevented the *Alert* from driving ashore. Owing to its great depth of flotation, sixty feet to one hundred feet, the mass grounded on coming into shallow water, and formed a breakwater within which the ship was comparatively secure. "When two pieces of ordinary ice are driven one against the other, and the edges broken up, the crushed pieces are raised by the pressure into a high, long, wall-like hedge of ice. When two of the ancient floes of the Polar Sea meet, the intermediate lighter broken-up ice which may happen to be floating about between them alone suffers; it is pressed up between the two closing masses to a great height, producing a chaotic wilderness of angular blocks of all shapes and sizes, varying in height up to fifty feet above water, and frequently covering an area upwards of a mile in diameter.

We must now return to the *Discovery*. As soon as she had taken up her winter quarters, her crew began to unload her, landing the boats, stores, and spare spars, and otherwise preparing for the winter. The first day ashore they shot a herd of eleven musk-oxen. A few days afterwards the sea was frozen all round the ship, so that they could freely move to and fro about the ice. A week later they saw a large number of musk-oxen, and shot about forty—thus laying in a considerable supply of provisions.

Their winter port, which was surrounded by snow-clad hills about two thousand feet high, they christened Discovery Harbour.

As soon as the sea was completely frozen over, the sledging-parties were organized and duly despatched; but as the autumn was rapidly passing, very little could be done in this direction. The usual preparations on the part of Arctic explorers were then made for "hybernating." Houses were built; also a magnetic observatory and a theatre of ice—recalling the glittering edifice constructed by Catherine II. of Russia on the Neva, and celebrated by Cowper in the well-known lines,—

" No forest fell

When thou wouldst build, no quarry sent its stores
To enrich thy walls; but thou didst hew the floods,
And make thy marble of the glassy wave."

A smithy was erected on the 11th of November, being the first the Arctic ice had ever borne. Its roof was made of coal-bags, cemented with ice. The ship's stoker reigned supreme in it as blacksmith; and when we consider the accessories,—the ice, the snow, the

darkness,—we must admit that his blazing forge must have made a curious picture. The chaplain tells us, humorously, that the smith adorned the interior wall with a good many holes, as each time that his iron wanted cooling he simply thrust it into the ice!

WINTER AMUSEMENTS.

As for the theatre, which, as we know, has always been a favourite source of amusement with Arctic explorers when winter-bound, it was sixty feet long and twenty-seven feet broad; and, in honour of the Princess of Wales, was named "The Alexandra." Her birthday was selected as the day of opening—December 1st; and the opening piece was a popular farce—"My Turn Next." As sailors are generally adepts at dramatic personations, we may conceive that the piece "went well," and that the different actors received the applause they merited. It is recorded that foremost among them was the engineer, Mr. Miller, who appears to have been, emphatically, the *Polar Star*. Several of the men sung songs; and recitations, old and new, were occasionally introduced; the result of the whole being to divert the minds and keep up the spirits of the ship's company during the long, long Arctic night.

The Fifth of November and its time-honoured associations were not forgotten. A huge bonfire blazed on the ice; a "Guy Fawkes" was manufactured and dressed in the most approved fashion; and the silence of the frozen solitudes was broken by the sounds of a grand display of fireworks and the cheering of the spectators.

A fine level promenade had been constructed on the

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ice, about a mile in length, by sweeping away the snow; and this served as a daily exercise ground. A skating-rink was also constructed. A free hole in the ice, for the sake of better ventilation, was carefully kept up. Whenever it closed, through a process of gradual congelation, the ice-saws were set in motion to open it up again, or it was blasted with gunpowder. The dogs lived on the ice-floe all the winter. It must not be thought that the cold was uniform day after day. Probably it is not the *low* temperature so much as the *variable* temperature that makes an Arctic winter so very trying to the European. In a few hours the change would be no less than 60°. The cold reached its height—or depth—in winter, when the thermometer marked 70½° below zero; the greatest cold ever experienced by any Polar expedition. It is difficult for the human frame to bear up against this excess of rigour, even with the help of good fires, good food, and good clothing. Not only the physical but the mental faculties are debilitated and depressed.

Our ice-bound seamen, however, managed to keep Christmas merrily. Early on the day so dear to Christian memories "the waits" went their usual rounds,—a sergeant of marines, the chief boatswain's mates, and three other volunteers,—singing Christmas carols, and making "a special stay outside the captain's cabin." In the forenoon prayers were said on the lower deck; after which the captain and officers visited the men's mess, tasting the Christmas pudding, and examining the tasteful decorations which had been improvised. Then the gifts which, in anticipation of the day, had been sent

out by kindly English hearts, were distributed by the captain,—to each gift the name of the recipient having been previously attached. This was an affecting scene; and hearty, though not without a touch of pathos in them, were the cheers given as the distribution took place; a distribution recalling so many "old familiar faces," and all the sweet associations and gentle thoughts of home! Cheers were also raised for the captain and men of the far-away *Alert*. Next, a choir was formed, and echo resounded with the strains of "O the Roast Beef of Old England!" of which, no doubt, many of the singers entertained a very affectionate remembrance. The men dined at twelve and the officers at five, and the day seems in every respect to have been most successful as a festival.

A few particulars of the "situation" may here be given in the chaplain's own words:—"We had brought fish, beef, and mutton from England," he says, "all of which we hung up on one of the masts, and it was soon as hard as a brick, and perfectly preserved. We had also brought some sheep from England with us, and they were killed from time to time. When we arrived in Discovery Bay, as we called it, six of them were alive; but on being landed they were worried by the dogs, and had to be slaughtered. During the winter the men had to fetch ice from a berg about half a mile distant from the ship, in order to melt it for fresh water."

THE SLEDGING-PARTIES.

At last the long Arctic night came to an end. It was with emotions of hope and gratitude and joy that the

explorers welcomed the first rays of the returning sun on the last day of February. For four months they had lived in obscurity and gloom, with the exception of such relief as the stars and the moon had occasionally afforded. On the day of the sun's return to the Polar World, it was known that it would rise at about twelve o'clock, and everybody ascended the hills for the purpose of hailing the glorious spectacle. The mists and fogs, however, baffled their expectations; and though they *felt* its influence; they did not see it for some days after it had mounted above the horizon.

News was brought from the *Alert* by two officers and two men towards the end of March. They had accomplished the journey with the thermometer at 40° below zero, and had occupied six days in making it. The officers were Lieutenant Rawson and Mr. Egerton, who had started at first in company with Petersen, the interpreter, but had been compelled to return with him, as already narrated, because he was severely frost-bitten. Directly they returned to the *Discovery*, preparations were made for sending out the sledge-parties. Two officers and three men, with a dog-sledge, started across Robeson Channel to Hall's Rest, the winter quarters of the *Polaris*, to report on the stores left by the American vessel, which the United States Government had placed at the disposal of the British expedition. They reappeared on the fifth day, with the information that they had found biscuit, pemmican, preserved meat, molasses, and other articles. They had lived in a wooden observatory that they found erected there. Captain Hall's grave was in excellent preservation; and they set

up a head-board, with an inscription on it, to mark its situation.

Lieutenant Beaumont and Mr. Coppinger, the surgeon, each with an eight-man sledge—or, rather, with seven men besides themselves—started for the *Alert*, in quest of the other sledge which had wintered with that vessel, their design being to cross Robeson Channel, and explore the North Greenland coast. In this journey, owing to the “hummocky” character of the ice, they spent twelve days.

Two days later, a third party, consisting of a twelve-man sledge and an eight-man sledge, with two officers, proceeded to survey the shores of Lady Franklin Sound. The captain accompanied them in the eight-man sledge, and was absent about a week; but the twelve-man sledge, which had gone merely to carry stores and provisions for the other, did not return for a fortnight, the sledge having been damaged, and one of the marines severely frost-bitten in the heel. The other sledge, after an absence of about four weeks, returned in safety,—having discovered that Lady Franklin Strait, as the Americans call it, was a sound or fiord about sixty miles long. They had fallen in with some musk-oxen, which were too wild to be got at; and had seen three or four glaciers, and hills three thousand feet in height.

About June the warm summer began to assert itself, and in the rays of the sun their ice-houses melted away, like the baseless fabric of a vision. So the sledging-party last spoken of adventured across the ice to Polaris Bay, taking with them a life-boat as a precaution (for

the ice might at any time have broken up), and a supply of provisions for the use of the North Greenland expedition. This work done, they returned to the ship, leaving behind them two officers and three men, who pushed up Petermann Fiord for about eight miles, until arrested by the impenetrable barrier of a huge glacier.

On returning from their explorations they found that Lieutenant Newsome, with four men, of whom one had died of scurvy on the way, had accidentally separated from the North Greenland party, and reached Petermann Fiord on the 3rd of June. All were seriously ill of scurvy, except Mr. Rawson and a marine. Under Dr. Coppinger's skill and care, however, they recovered. As soon as possible, the doctor, with Mr. Newsome and the Eskimos, started in a dog-sledge to gather some information about the other members of the North Greenland party. In a day or two they fell in with them; and not too soon, for all were thoroughly exhausted. They had abandoned everything, and when the doctor arrived were without food. Four of them, who were accommodated on the sledge, were broken down with scurvy, and two others had been attacked slightly. What was to be done in this critical position of affairs? At first it was thought advisable to remain on the spot for a while, and see if the Eskimos could shoot a seal. But a day's experience showed that this plan would not answer; and they then resolved to carry the two worst invalids on the dog-sledge to Hall's Rest. This was accomplished, and the poor fellows seemed to grow better when nourished by seal-soup and proper food; but on the following morning one of them sank and

died. The life of the other hung for some time in the balance. The whole company were now invalidated; and Hall's Rest might fitly have been termed Hall's Hospital.

A few days—weary, melancholy days—having elapsed, an officer, with a couple of men, was sent across to the ship to report the serious condition of affairs. As it was the end of June, the ice had broken up in many places, and the trajet of the strait was not accomplished without difficulty, and frequent immersions in the water. No sooner did Captain Stephenson learn how the party were situated, than he set out, with seven men, to carry a supply of medicines, provisions, and various comforts. They had with them a boat and a sledge on a four-wheeled car, and in this they crossed the land to the margin of the sea, a distance of about six miles. Sometimes the boat was called into requisition to carry themselves and the sledge from floe to floe. With half of the men they returned in a few days, leaving the rest in charge of Lieutenant Beaumont and Dr. Coppinger, until they had made more progress towards recovery.

Early in August an officer arrived from the *Alert*, to report that she had moved southward, and was only about ten miles distant, and that Captain Nares, considering the main objects of the expedition secured, had decided on returning to England. About the same time returned the North Greenland party; their provisions having failed them. A few days later, and, having made her way through the broken ice, the *Alert* joined the *Discovery* in Discovery Bay. Mr. Beaumont's party next arrived; and both vessels prepared

for the homeward voyage. They left Discovery Bay, as we shall see, on the 28th of August.

THE STORY OF THE "ALERT."

Let us now return to the *Alert*, which we left embedded in the ice of the North Polar Ocean.

Her crew made shift to spend a tolerably merry winter, availing themselves of the usual resources of Arctic explorers under similar conditions. The day's order was much as follows:—At 6.45 A.M. the commander was called, and all hands were piped up on deck; and the hammocks having been previously stowed away and the decks cleansed, everybody sat down, with vigorous appetite, to breakfast. The steerage and lower deck were afterwards cleared up, and soon after 9 A.M. the men were told off for their respective daily duties. At 10 A.M. another general parade of the crew was summoned, and, as a preventive against scurvy, the day's dose of lime juice was administered. Then the crew went to quarters; the usual careful inspection took place; and the chaplain read prayers. At one o'clock the deck was cleared, and "dinner smoked upon the board." On days when the darkness was not too intense the crew turned out to work upon the ice, or took their turn at walking exercise and amusements. They were thus occupied until supper, which was served at about five o'clock; and followed by evening school, the duties of which proved equally agreeable to the officers who taught and the men who learned. Soon after nine the officers in charge inspected the ship to see that all was quiet for the night. At ten out

went the lights of the chief petty officers, and at eleven those of the wardroom.

This daily routine was freely interrupted on festival occasions. Guy Fawkes' Day was celebrated as hilariously as by the men of the *Discovery*; and it is a curious illustration of the strength of old English traditions that the merry-making customs of the fifth of November should be thus closely observed by both the ice-bound vessels. Due honours were also paid to Father Christmas; nor was New-Year's Day forgotten. Dramatic talent existed among the men of the *Alert* in sufficient force to provide a regular dramatic company. The "Royal Arctic Theatre" was erected in Funnel Row, and entertainments given weekly. The programmes of the "Thursday Pops," as they were commonly called, were thrown off at a printing-press established in Trap Lane by Messrs. Giffard and Simmons; and from one of these we gather that the Royal Arctic Theatre opened for the season "under the distinguished patronage of Captain Nares, the members of the Arctic Expedition, and all the nobility and gentry of the neighbourhood," on the 18th of November 1875. The orchestra consisted of one eminent pianist, Signor Aldrichi (Lieutenant Aldrich), and the scenic artist was Dr. Moss. The performances commenced at 7.30; and "sledges" might be ordered at nine o'clock. They were by no means wholly dramatic. The bill of fare included scientific and historical lectures, readings and recitations, songs and instrumental music, ranging from grave to gay, from lively to severe; and now and then, to draw a bumper house, some such

attraction as feats of legerdemain by "the real Wizard of the North, on his way to the Hyperborean Regions;" acrobatic feats by "the Bounding Brothers of the Frigid Zone;" or the vocal performances of the "Paleo'-Christy Minstrels," who "never sing *in* London." The plays produced were an original burlesque operetta, "The Vulgar Little Boy; or, Weeping Bill" (founded on Barham's popular "Misadventures at Margate)," written expressly by the ship's chaplain, the Rev. W. H. Pullen, author of the well-known political squib, "Dame Europa's School;" "Aladdin; or, The Wonderful Scamp;" "Boots at the Swan;" and "The Area Belle." The last and grand night was March 2nd, 1876,—when Captain Nares lectured on "The Palæocrystic Sea, and Sledging Experiences;" and after a variety of songs and readings, the company and audience sang a grand choral strain, "The Palæocrystic Chorus," which we borrow from the pages of the *Graphic* :—

“ Not very long ago,
On the six-foot floe
Of the Palæocrystic Sea,
Two ships did ride
Mid the crushing of the tide,
The *Alert* and the *Discovery*.

‘ The sun never shone
Their gallant crews upon
For a hundred and forty-two days;
But no darkness and no hummocks
Their merry hearts could flummox,
So they set to work and acted plays.

“ There was music and song
To help the hours along,
Brought forth from the good ship's store;

And each man did his best
To amuse and cheer the rest,
And 'nobody can't do more.'

" Here's a health to *Marco Polo*;
May he reach his northern goal oh!
And advance the flag of England into realms unknown;
May the *Challenger* be there
All courses bold to dare,
And *Victoria* be victorious in the Frozen Zone.

" May our *Poppie* be in sight
With her colours streaming bright,
And the *Bulldog* tug on merrily from strand to strand
And the *Alexandra* brave
See our banner proudly wave,
O'er the highest cliffs and summits of the northernmost land.

" Here's a health to Hercules,
Whom the autumn blast did freeze,
And all our gallant fellows by the frost laid low.
Just wait a little longer,
Till they get a trifle stronger,
And they'll never pull the worse for having lost a toe.

" Here's a health with three times three
To the brave *Discovery*,
And our merry, merry guests so truly welcome here;
And a brimming bumper yet
To our gallant little pet,
The lively *Clements Markham* with its bold charioteer.

" Here's a health to all true blue,
To the officers and crew,
Who man this expedition neat and handy oh!
And may they ever prove,
Both in Sledging and in Love,
That the tars of old Britannia are the dandy oh!"

In explanation of some passages in the foregoing spirited effusion, we may state that the six sledges

belonging to the *Alert* were named respectively, *Marco Polo*, *Victoria*, *Challenger*, *Poppie*, *Bulldog*, and *Alexandra*. "Hercules" appears to have been the nickname of one of the strong men of the ship.

MORE SLEDGING-PARTIES.

The *Alert* wintered so far north, that its officers and men failed to meet with some of the usual accessories of a Polar expedition. There were no Polar bears; no Eskimos; even auroral displays were infrequent. On the other hand, the darkness is described as not having been particularly dense. The reflection of the snow, and the keen "light of stars," considerably mitigated the "deep obscure;" and once in every fourteen days the splendour of the moon illuminated the weird outlines of the monotonous Arctic scenery.

Some sledging was done in the autumn, though spring is the season when it can best be undertaken. The *Alert* was no sooner made all snug in her winter quarters, than sledging-parties carried provisions and boats along the shore both northward and westward, ready for use by expeditions in the following spring; the depôt being planted within a mile of the farthest northern position hitherto attained by civilized man. After a terrible journey of twenty days' duration, the travellers returned on the 14th of October, just two days after the disappearance of the sun. The snow fell heavily, and, by protecting the sloppy ice from the intense frost, rendered travelling difficult. The men's shoes got thoroughly wet; hence several were frost-bitten, and one officer and two men, on their return, were compelled

to undergo amputation. Beneath the cliffs lay great dense, deep snow-wreaths, and in many places a road had to be excavated to the depth of six feet. The men sunk to their waists. The sledge was often completely buried. It needed all Lieutenant Rawson's resolution and patience to bring back his little company in safety.

The main sledging-party, under Commander Markham, with Lieutenants Parr and May, and twenty-five men, left the *Alert* on the 25th of September, for the purpose of establishing a depôt at Cape Joseph Henry. They advanced three miles beyond Sir Edward Parry's northernmost point, and, from a mountain 2000 feet high, sighted land towards the west-north-west, as far as lat. 83° 7' N., but saw none to the northward.

With the return of the sun on the 29th of February, Captain Nares began his preparations for the spring sledging-expeditions, organizing two main detachments: one, bound northward, under Commander Markham and Lieutenant Parr, with fifteen men, supported by Dr. Moss and Mr. White, with two seven-man sledges; and another, bound westward, consisting of two seven-man sledges, led by Lieutenants Aldrich and Giffard.

On the 12th of March, Lieutenant Rawson and Mr. Egerton, as already narrated, started off to open up communication with the *Discovery*, but were compelled to return by the illness of Petersen, whom they nursed on the way with womanlike tenderness and devotion. In the following week, accompanied by Simmons, of the *Alert*, and Regan, of the *Discovery*, they resumed their adventurous track across the hum-

mocky ice, with the temperature 40° below zero, enduring much, but pushing forward undauntedly. When their comrades of the *Discovery* condoled with them on account of frost-bitten cheeks, and noses, and fingers, it was with the frank, blithe heroism of the true British seaman that Lieutenant Rawson replied,—“Well, at least we feel that the cheers from Southsea beach have been fairly earned.”

The sledging-expeditions began in earnest in the first week of April, only a few men being left on board each ship. Captain Stephenson, of the *Discovery*, paid a visit to the *Alert*, and also crossed Hall's Basin twice to Greenland. Captain Nares, with Captain Feilden, was not less energetic; and for a considerable area round the two ships all was activity and motion. When at Polaris Bay, Captain Stephenson, in memory of the gallant and unfortunate Hall, hoisted the American ensign, and erected a brass tablet above the explorer's lonely grave. It bears the following inscription:—

“Sacred to the memory of Captain C. F. Hall, of the U.S. ship *Polaris*, who sacrificed his life in the advancement of science on November 8, 1871. This tablet has been erected by the British Polar Expedition of 1875, who, following in his footsteps, have profited by his experience.”

It may be noted here, in illustration of the labour attendant on the equipment of an Arctic sledge-party, and the despatch of provisions for their sustenance, that, in order to support the expeditions on the north coast of Greenland and in Petermann Fiord, “Robeson

Channel was crossed eleven times from the position of the *Alert* to a depôt established north of Cape Brevoort, and Hall's Basin eleven times between Discovery Bay and Polaris Bay; making a total of twenty-two sledge-parties crossing the straits, including the transporting of two boats. The main depôt at Cape Joseph Henry, for the support of the northern and western divisions, thirty-seven miles from the *Alert*, was visited by sixteen different sledges."

Our travellers did not fail to examine the various cairns erected by the seamen of the *Polaris*. At one place a box chronometer was found to be in excellent order, though it had undergone the test of four Arctic winters. And some wheat, which the *Polaris* had brought out in order to ascertain the effect upon it of exposure to extreme cold, was successfully cultivated under a glass shade by Dr. Ninnis,—almost as interesting an experiment in its way as the sowing and successful harvesting of Mummy wheat, the grains found in ancient Egyptian sepulchres.

The British expedition had advanced so far north that it was beyond the life-limit of bears, birds, and even seals; and the sledging-parties, unable therefore to obtain any fresh game, were severely attacked by scurvy. This fell disease invariably broke out when its victims were furthest from any assistance. The journeys back to the ships were consequently undertaken, as we have already pointed out, by men whose strength decreased daily; and the burden became all the greater as man after man was smitten down, and, to save his life, placed upon the sledge. Great was the alarm on

board the *Alert*, when, towards the close of the 8th of June, Lieutenant Parr suddenly presented himself. He was alone. Where were his comrades? What calamity had befallen them? He soon explained that he had undertaken a journey of thirty-five miles, toiling for twenty-two hours through mist and drift and snow, and guided only by the fresh track of a stray wolf, to convey the news of the prostrated condition of the members of the northern expedition. Preparations were immediately made for hastening to their assistance. With the help of the officers, who all volunteered to drag the sledges, Captain Nares was able by midnight to start with two strong relief-parties—Messrs. Egerton, Conybeare, Wootton, and White, the officers who could best be spared from the ship, taking their places at the drag-ropes; and Lieutenant May and Dr. Moss pushing forward with a supply of medicines in the dog-sledge.

Such was the alacrity and energy of the two latter, that they contrived to reach Commander Markham's encampment within fifty hours of the departure of Lieutenant Parr; though, unfortunately, not in time to save the life of one of the marines, who but a few hours before had expired and been buried in the floe. On the remainder of the stricken company, their arrival, however, had a most beneficial influence; and when, early the next day, Captain Nares came up to their relief, their courage and resolution, which had never deserted them, were quickened to the utmost, and even the invalids threw off that dread depression an attack of scurvy invariably produces. On the morning of the 14th all

were once more safe on board the ship, and offering up their heartfelt thanksgiving to God.

Captain Nares furnishes some particulars which illustrate very vividly the terrible experiences of the adventurous sledge-party, and also the ravages which scurvy never fails to commit. He says that of the seventeen officers and men who originally left the *Alert*, only five—namely, three officers and two men—were able to drag the sledges alongside. Three others—heroes as true as any of those whom Homer has made famous!—manfully kept on their feet to the last, enduring the extreme of pain and fatigue rather than, by riding on the sledge, increase the burden their weakened companions had to drag. They were just able to crawl on board ship without assistance. The remaining eight had struggled gallantly, but the disease had proved too much for them, and they were carried on the sledges. Out of the whole number, only two officers escaped the ravages of scurvy. After due rest and medical attention, the chief carpenter's mate returned to his duty, and three others recovered so as to be able to wait on their sick comrades; but Jolliffe, a petty officer, who had nobly borne up against the disease while actively employed, when his legs became cramped from resting on board proved to be one of the most lingering cases.

Surely the nation will never begrudge the cost of expeditions which give such occasion for the display of the most generous unselfishness and the noblest devotion!

These sledge-journeys were performed in the face of tremendous difficulties. Beyond the mere coast-belt,

there was little smooth ice; the tolerably level floes or fields, usually about six feet above the neighbouring ice, seldom measured a mile across. Their surfaces were thickly covered with rounded blue-topped ice-humps, averaging twenty feet high; which lay sometimes in ranges, and sometimes a hundred to two hundred yards apart, the intervening spaces being filled with wind-driven snow, and the whole resembling a gusty ocean suddenly stiffened into rest.* Between these floes, like an embankment of rude formation, extended a vast pile of the wreck and refuse of previous summers' broken-up pack-ice, regelated during the winter into one rugged and confused mass of angular blocks of various heights up to forty and fifty feet, and of every imaginable variety of configuration, like the disrupted lava at the mouth of a crater. These were interspersed with a continuous series of "steep-sided snow-drifts," which stretched downwards from the highest summit of the ice-chaos until lost in the general level at a distance of about one hundred yards. It may be conceived that it was not easy to find a passage for the sledges through these labyrinths of ice and snow. The snow-slopes were by no means an assistance, for the winter-winds coming chiefly from the west, and the course of the sledges being due north, they had to be encountered almost at right angles. Consequently, the journey was an incessant struggle with ever-recurring obstacles; as fast as one had been conquered, another presented itself. The pickaxes were in constant requisition, either to cut a way through the packed-up ice, or out of the per-

* "Here let the billows stiffen, and have rest."—COLERIDGE.

pendicular side of the high floes. Instead of a steady advance, the whole party were frequently detained half a day by the necessity of facing the sledge and hauling it forward a few feet at a time. These considerations will enable the reader to judge how great must have been the "pluck," persistence, and energy which could accomplish a journey of seventy miles in such exceptional circumstances.

Captain Nares observes—and his eulogium will be endorsed by the reader—that no two officers could have accomplished this laborious enterprise with greater ability or courage than Commander Markham and Lieutenant Parr. And it is but just that the services of Rawlings and Lawrence, the captains of the two sledges, should be put on record. In addition to their general cheerfulness and good-humour,—qualities which always help to lighten difficult work,—to their care and skill were due the safe return of the sledges, on which the lives of all depended—safe, uninjured, and in as serviceable a state as when they left the slip, notwithstanding the terrible character of the road they had travelled. To such men as these, and to the brave, patient, resolute sledge-crews generally, we owe the tribute of our praise. However severe their privations, they never complained. During this memorable journey to penetrate to the north over the rugged Polar oceanic ice, a journey in which the "pluck" and determination of the British seaman were most conspicuously displayed, day after day, against obstacles which might well have been regarded as insurmountable, the two officers and their brave followers succeeded in advancing the Union Jack

to latitude $83^{\circ} 20' 26''$ N.,—or within four hundred miles of the North Pole.

In order to attain this advanced post, the present boundary-mark of geographical research in that direction, the total distance travelled was two hundred and seventy-six miles on the outward, and two hundred and forty-five miles on the homeward journey, though the furthest direct distance from the ship did not exceed seventy-three miles. The result of labour so colossal and sufferings so severe would seem to be, that we must consider a long journey over the Polar pack-ice, with sledge and boat, to be impracticable at any season of the year. As the sledges were necessarily advanced each stage singly, we are able to calculate the exact rate of progression which may be expected, if it should be thought desirable to push forward with light sledges, without any additional means of returning later in the season in the event of a disruption of ice in the rear. The maximum attained by Commander Markham was two and three-quarter miles a day; the mean rate being one mile and a quarter.

NO ROAD TO THE POLE.

The outbreak of scurvy rendered Captain Nares very anxious as to the welfare of Lieutenant Aldrich's company on their return from the westward; and the more so, when it was found that the cairn erected over his depôt of provisions, thirty miles to the north-west, remained untouched on the day appointed for his arrival there. Lieutenant May, with the dog-sledge, and three robust men, were therefore sent to meet him. On the

20th of June the two parties met at the depôt, and signalled the welcome fact to Captain Nares. It was fortunate that Lieutenant Aldrich returned when he did, for on the following day a rapid thaw set in, with the wind from the southward, and the snow-valleys were rendered impassable for sledges for the rest of the season. His party, like Commander Markham's, were stricken with scurvy, four of them lying helpless on the dog-sledge; and Lieutenant May's arrival proved most opportune.

Having now assembled all his company on board the *Alert*, Captain Nares was called upon to decide whether it was possible to carry the work of exploration further, or whether the expedition should return to England. Owing to the absence of any land with a northward trend, and the innavigable character of the Polar pack-ice, he concluded that on neither side of Smith Sound could any ship advance further northward than the *Alert* had done; and also, that from no secure position in Smith Sound was it possible for sledges to advance nearer to the Pole. If the expedition remained in the vicinity for another season, the exploration of the shores of Grant Land might be pursued to the south-west, and of Greenland to the north-east, but not more than fifty miles beyond the points already attained. In the weakened condition of the crew, and for so small an additional gain, Captain Nares decided that it would be unwise to risk another winter. As soon as the ice broke up, "Ho for merry England!"

THE RETURN HOME.

A regular thaw did not set in until the last week of

June. Water flowed in the ravines on the 1st of July. After that date the thaw gradually extended, and increased in rapidity; and on the 23rd a strong south-west wind drove the pack a mile away from the shore. On the 26th a cairn was erected on the shore, and a record of the work of the expedition deposited in it; and on the 31st, a passage having been cleared through the winter-barrier of icebergs, the *Alert*, with a strong south-west wind filling her canvas, pushed out into Robeson Channel on her homeward voyage. After a run of two miles along-shore, through a fairly open way between the pack-ice and what Dr. Kane calls "the ice-foot," she was checked in her course by a heavy floe one and a half mile in diameter, which almost touched the land; and no other shelter being available, she lay up in a small cove or creek, among a group of icebergs that had gone ashore in the shallows.

The obstructive floe showed signs of movement early on the morning of August 1st; and soon afterwards went away to the northward at the rate of a mile and a half an hour, grinding along the ice-foot somewhat alarmingly as it advanced towards the ship. Steam being up, however, the *Alert* cast off her moorings, and succeeded in edging between the land and the floe; while the latter swung round in-shore with a violent jerk, close to the position which the ship had previously occupied.

We may note here the difference which Captain Nares insists upon between an ordinary floe, such as is commonly met with in Arctic waters, and the ancient Polar Sea ice. The former seldom exceeds six feet in

thickness, and breaks into fragments against an obstruction, or may be charged by a steam-ship, as we have already seen; but the latter, being some eighty or one hundred feet thick, lifts all impediments out of its course, or, so to speak, throws them disdainfully away. "Such was the case on this occasion: the Polar floe, which," says Captain Nares, "we only escaped by a few yards, on nipping against the heavy breastwork of isolated floebergs lining the coast, some of them forty feet high and many thousand tons in weight, which had lately formed our protection from the smaller ice pieces, tilted them over one after another, and forced them higher up the land-slope, like a giant at play, without receiving the slightest harm itself—not a piece breaking away. It was most providential that, by its twisting round, the *Alert* was enabled to escape out of the trap in which she was enclosed."

The shore here presented a formidable line of ice-cliff, from twenty to forty feet in height, striking down into clear blue water ten to twenty fathoms deep. The *Alert* kept onward, so close to the cliff that the boats hung at her quarter frequently touched it, until again brought to a stop near Cape Union by the accumulation of the pack. Her captain, however, was able here to secure her abreast of a large stream, the current of which had undermined the ice-cliff for some fifty yards, and floated it off to sea, leaving a kind of cove or harbour where the ship could be laid alongside the beach in such a manner that, if the pack struck her, it could only force her on shore. The reader of Arctic voyages will remember that a somewhat similar posi-

tion was once occupied by Sir Edward Parry's ship, under somewhat similar circumstances.

When the tide had turned, and began to flow southward, it broke up the ice all around Cape Union, and formed a narrow water-way, which offered Captain Nares a chance of escape. Steam was got up immediately, but, owing to unavoidable delay in shipping the rudder, the ice closed in before the ship could be carried round. Her last stage was worse than her first; for she was now cut off from her safe little port, and no better shelter was available than a slight hollow or break in the ice-cliff. Here, however, she was brought-to, with the ice-blocks swirling past her at a distance of twenty yards. At low water Captain Nares cast off, and bored some way into the pack, so that the *Alert* might drift round the cape with the southern tide. At about a quarter of a mile from the land, she drove along with the ice; and when the tide slackened, steamed out of the pack before it began to set to the northward. Then, keeping close in to the ice-foot, she kept slowly on her course to the southward, the water-way broadening as she approached Lincoln Bay, which was crossed without difficulty. When within five miles of Cape Beechey, the tide turned; but after a short delay a channel opened, allowing the ship to round the cape. At this point the ice-cliff ends, and the land slopes gently to the shore—which is protected by a barrier of floebergs, similar to, but smaller than, those which line the shore of the Polar Sea. Here the ship was made fast in three fathoms water, within twenty yards of the shore, about a mile to the south of the cape.

We dwell on these particulars in order that our readers may form some idea of the difficulties of Arctic voyaging. The words, "She forced her way through the ice," afford no conception whatever of the obstacles that have to be overcome, and the dangers that have to be avoided, by a ship navigating in the midst of pack-ice and ice-floes; or of the skill and vigilance and patience on the part of officers and men, by which only can the enterprise be brought to a successful issue.

We are told that on August the 4th snow-squalls blew from the south-west. As the ice had closed in around the ship, holding it in a vice, the sportsmen of the party landed, and visited some neighbouring lakes in search of game. They found a number of wild geese, and killed fifty-seven, which supplied a welcome addition to the ordinary bill of fare. Mr. Egerton and a seaman were sent off to the *Discovery*, then about twenty miles distant, with orders for her to prepare for the homeward voyage. We have already related how they reached the ship in safety.

While the *Alert* was thus imprisoned, the huge pack-ice in the offing was carried up and down the strait by the tidal movement, the wind having the effect of increasing the velocity of the current and the duration of its flow both northward and southward. The ice generally was of a lighter character than that in the Polar Sea; but many heavy Polar floes were driven southward by the gale, and set into Lady Franklin Sound and Archer Fiord rather than down Kennedy Channel. Lady Franklin Sound, indeed, seems to be the receptacle of all the heavy ice that comes south

through Robeson Channel; retaining it until the prevailing westerly winds carry it once more to the northward, and empty the Sound, previous to its being refilled on the return of the northerly gales. It is only, says Captain Nares, in seasons when northerly winds occur more frequently than westerly ones, that any considerable quantities of the huge Polar ice are drifted into Smith Sound and Baffin Bay.

The gale of the 6th of August was very violent. The tide rushing southward, drove a succession of heavy floe-pieces against the small bergs that protected the ship, and capsized one of them completely. It was firmly aground when struck by the point of a large floe; but such was the force of the collision that it was reared erect in the air to its full height of at least sixty feet above water, when, turning a complete somersault, like a practised gymnast, it came down on its back with a shock that shattered it into pieces, and raised a wave sufficient to roll the ship considerably. Into the gap thus caused moved the ice, until at last it nipped the *Alert*, though not dangerously.

That same evening Lieutenant Rawson and two seamen arrived from the *Discovery*, with news of the ill-fortune that had overtaken the Greenland sledge-party.

It soon became apparent that there was no chance of releasing the ice-bound ship except by cutting down the heavy floe that held her prisoner; and accordingly all hands were set to work. After three days' toil, so much of the floe was hewn away that at high water it floated and set the ship free; at the same time the main pack moved off, and the *Alert* steamed onward.

rejoining her consort, the *Discovery*, on the 11th of August.

All the invalids on board the *Alert* were now removed to the *Discovery*, and Captain Nares remained at the entrance to the harbour, prepared to cross to Polaris Bay, as soon as the ice permitted, to relieve Lieutenant Beaumont. As before stated, however, he arrived on the 14th, and relieved the commander of the expedition of a serious anxiety. Both vessels were now ready to start, but the state of the ice detained them until the 20th, when, a "lead" offering through the pack, away they steamed, and arrived close to Cape Lawrence without encountering any serious obstacle. Here their old enemy, the ice, again opposed them; and Captain Nares found only the famous "three courses" of a well-known statesman open to him: either to return north, to drive ahead into the pack, or make fast the ships to some of the grounded floebergs. This last expedient was adopted, and in a land-locked inner basin the *Alert* and the *Discovery* were accordingly secured. But, unfortunately, at the fall of high water a piece of ice pressed against the *Alert*, and at the same time its protecting floeberg drove ashore. Result: the *Alert* was aground forward, but with deep water under the stern. And before she could be released, the tide had fallen fourteen feet, so that the ship lay over at an angle of 22°, with fore-foot and keel exposed as far aft as the fore-channels. Nothing could be done until the tide rose. Then the ship was lightened, and afterwards hauled off without having undergone any damage.

A passage again opened on the 22nd of August, and the two ships steamed as far southward as Cape Collinson, with no other troubles than dense snow-storms, mists, and strong head-winds. But off the cape, the *Alert* having to back to escape a nip, she fouled the *Discovery* for a moment; the latter escaping, however, with nothing worse than the loss of a boat's davit.

The ice gradually breaking up before a strong southwest wind, the two ships crossed Scoresby Bay, which was perfectly clear, but rolled with a heavy sea. As they approached Cape Frazer, they were buffeted by a terrible gale, and put in to Maury Bay, anchoring among a quantity of grounded ice. Three days were spent in arduous efforts to double Cape Frazer,—one of the *bêtes noires* of Arctic navigators, because it is the meeting-point of the flood-tides, north and south, one from the Polar Ocean and the other from the Atlantic,—and Cape Hayes, the boundary-mark of the channel. Then the voyagers, with glad hearts, passed into Smith Sound; and hugging the shore as closely as was safe, arrived on the 29th at Prince Imperial Island, in Dobbin Bay, “every one heartily thankful to be out of the pack, clear of the struggling icebergs, and for the ships to be secured to fixed ice once more.”

The temperature now sunk again below freezing-point. The brief Arctic summer was over, and day and night the young sea-ice formed continuously. The mists that had hitherto accompanied the ships cleared away before a brisk northerly wind, and revealed a magnificent panorama of lofty mountains, white with shrouds of snow, and deep valleys filled with colossal glaciers.

One of these stretched downwards to the shore, and threw off great icebergs which floated or stranded in Dobbin Bay. It was named after the Empress Eugénie, who had taken a lively personal interest in the expedition.

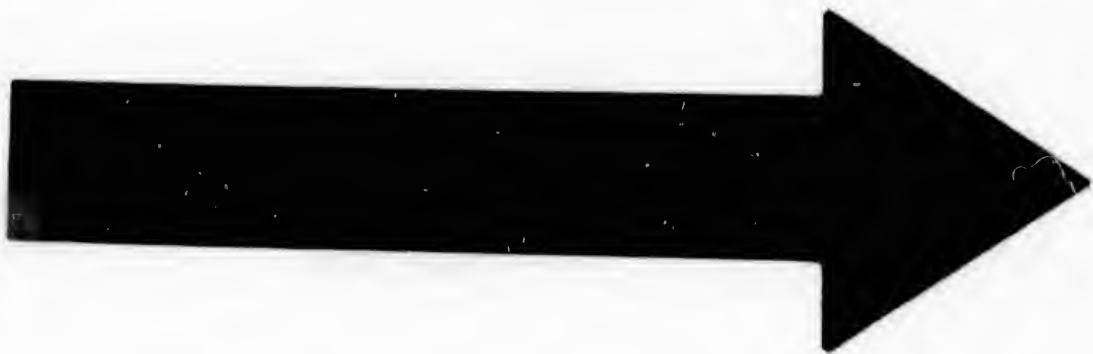
Crossing Dobbin Bay on the 1st of September, the voyagers came within a quarter of a mile of a depôt of provisions established near Cape Hawks in the previous autumn, and succeeded in removing a portion. A day or two later Captain Nares landed on Washington Island, and visited a cairn which he had raised there on the 12th of August 1865. He visited, also, two old cairns erected by former explorers; the lichens with which they were gray proved that they were of earlier date than Dr. Hayes' expedition.

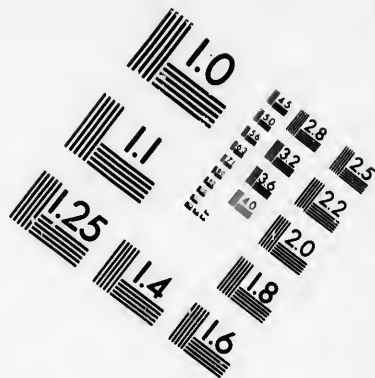
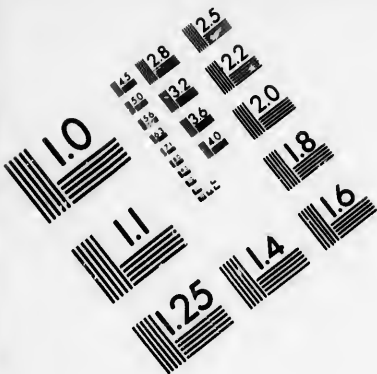
On the 3rd of September, by dint of steaming assiduously, the ships rammed their way through a lane of water to the westward of Cape Hawks, which was inconveniently obstructed by loose pieces of old ice. After rounding the cape, says the captain, the pack by drifting away from the land had left unfrozen water and numerous detached small floes, which forced them to make a very serpentine course, and occasionally to pass within thirty yards of the low ice-foot on the shore, fortunately always finding deep water. In this way they reached Allman Bay, half-way between Cape Hawks and Franklin Pierce Bay. Meeting here with a belt of new ice, the *Discovery* was sent ahead; and under full steam she forced a canal through the ice, which was from one to three inches thick. From the lofty hills in the interior a huge glacier leads down to

Allman Bay; and it is a noticeable fact that always in the neighbourhood of a glacier-stream the water was found nearly fresh, and of the temperature of 32°.

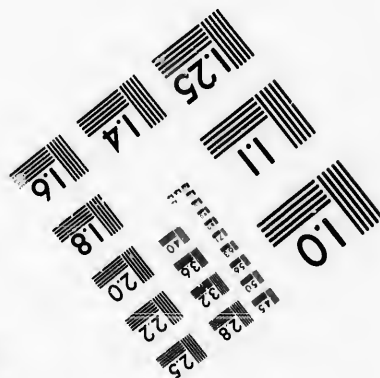
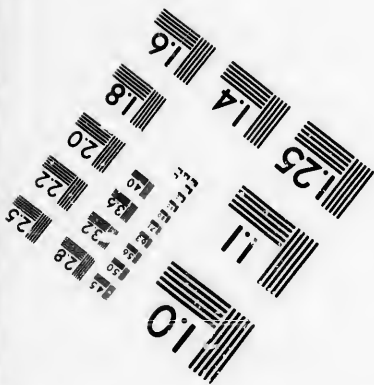
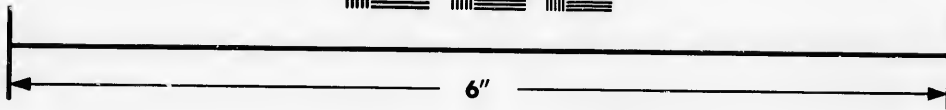
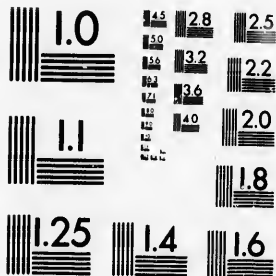
On the 7th our homeward-bound ships reached Norman Lockyer Island, on the margin of Princess Marie Bay. The season was now far advanced, and as the slightest mistake might have led to the vessels being ice-bound for the winter, the two captains ascended to the highest point of the island to obtain some idea of the prospect before them. They were much relieved by seeing a large area of open water some twenty miles distant, which they conjectured would extend to the mouth of Smith Sound. No time was lost in getting under way; and the ships crossed two-thirds of the distance before they fell in with ice. By charging it under full steam, they cleared the obstacle, and then, through an open water-channel, ran on to Cape Sabine.

On the 9th of September, they arrived off Cape Isabella, where they found a small packet of letters and newspapers which had been left at the depôt by the *Pandora*. The weather was now calm, and the wind favourable. Sail was hoisted, therefore, as the supply of coal began to run short, and on the evening of the 12th the expedition reached Bardin Bay. During the 13th and the 14th they worked southward into Wolsenholt Sound; and thence, with a south-easterly wind, crossed to Cape Byam Martin, which they reached on the 16th. Two days later they entered the well-known waters of Melville Bay; on the 25th, they arrived at Disco, where, and afterwards at Egedesminde, they obtained some small supplies of coal.





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Egedesminde was left behind on the 2nd of October, and on the 4th the two ships recrossed the Arctic Circle—exactly fifteen months from the time of crossing it on the outward voyage. Experiencing adverse winds, they made but slow progress to the southward; and as the weather became warmer and damper, a few of the men suffered from rheumatism and catarrhs. During a heavy gale on the 19th, the two ships separated; but both, as we have seen, reached the shores of England in safety, where their gallant officers and crews met with the hearty welcome so thoroughly merited by their courage, perseverance, and heroic industry.

Some notes on the general results obtained by the expedition in zoology, botany, and geology, have appeared in the *Academy*. The two naturalists under whose care these departments were placed,—Captain Feilden, in the *Alert*, and Mr. Hart, in the *Discovery*,—worked with unflagging energy and no small success.

Of mammals, the species found furthest north were the Arctic fox, the wolf, the ermine, the Polar hare, the lemming, and the musk-ox, all of which were seen on the shores of the great Polar Basin or Palæocrystic Sea. No cetaceans were sighted north of Payer Harbour, near Cape Sabine; a fact which renders all the more serious the gradual process of extermination of the Greenland (or right) whale in more southern latitudes. The only seal found beyond Cape Union, in lat. $82^{\circ} 15'$ N., was the little ringed seal or "floe-rat" (*Phoca hispida*).

So far as the land extended, bird life prevailed; the

* THE
game
musk-
three

species being the snowy owl, the snow-bunting, and the ptarmigan. Full collections were made of all the birds frequenting Smith Sound; and our naturalists had the satisfaction of discovering the long-sought-for breeding-haunts of the knott and sanderling.*

Few species of marine fish were obtained, but "an interesting small salmonoid" was met with in freshwater lakes as far north as lat. $82^{\circ} 35'$. A fine collection of marine invertebrates was secured by dredging and trawling; and the character of the sea-bottom from Baffin Bay up to lat. $83^{\circ} 19' N.$ was accurately ascertained by a series of careful soundings.

In the department of botany our naturalists were rewarded by the discovery of between twenty and thirty species of phanerogamic plants between the parallels of 82° and 83° . Much richer and more varied results were obtained in the cryptogamic flora.

Geologically, the facts arrived at were of the utmost value. "The whole west coast of Smith Sound, from Cape Isabella to Cape Union, has been fully surveyed and mapped, and large collections have been made both of fossils and rock-specimens; while the sledge-parties which explored the shore of the Polar Basin, both to east and west, brought back sufficient material to determine the geological character of the country. Silurian limestones, richly fossiliferous, were the prevailing rocks along Smith Sound. Miocene deposits, *including a twenty-foot seam of coal*, were found as far north as lat.

* The scarcity of animal life in the remote North is shown by the small quantity of game shot by the sportsmen of the expedition after reaching winter quarters:—six musk-oxen, twenty hares, seventy geese, twenty-six ducks, ten ptarmigan, and three foxes.

81° 44'. From the shales and sandstones of this formation a beautiful series of leaf-impressions were collected, illustrating the characteristic flora of the epoch, and presenting a remarkable demonstration of the existence of a temperate climate within five hundred miles of the present Pole at a comparatively recent geological time. Not less important are the indications of great recent changes in the elevation of the land afforded by the discovery of thick post-pliocene deposits, lying at a considerable elevation above the sea-level, and containing fossils similar to the existing marine fauna. Lastly, very interesting and suggestive observations have been made on glaciation and ice-action in general."

This, of course, is but a summary, and a very brief and condensed one, of researches which have evidently been of the highest importance. And it might almost be said of the late expedition, that even had its geographical discoveries been less valuable, its scientific results would have entitled it to a foremost place in the annals of Arctic Enterprise.

Our record of Arctic voyages will fitly close with a sketch of the cruise of the *Pandora*, a screw-yacht commanded by Captain Allen Young, which left England in the summer of 1876, in order to open up communications with the Admiralty expedition.

Captain Young left Upernavik on the evening of the 19th of July, and stood away to the northward; in bad weather, and with the wind blowing a gale. Through vast fields of ice he threaded his way, sometimes under sail, sometimes under steam, until, on the morning of

the 24th, he found his ship completely surrounded, in lat. $75^{\circ} 10' N.$

No time was lost in endeavouring to effect an escape by charging the ice at full speed,—again and again returning to the onset; and a slow but steady progress was being made, when the field in which they were held fast, drifting before the gale, "collided" with a group of grounded bergs, and exposed the little vessel to such severe pressure, that preparations were made for abandoning her. Provisions, ammunition, camping and travelling gear, all were made ready, and the boats were lowered as far as possible at the davits. Meantime, heavy charges of gunpowder were used to blast the ice where it pressed the ship most severely; and the bergs taking a different direction, the *Pandora* began to recover herself, and before night settled down nearly to her usual level. In the darkness of the night, with the wind howling, and the snow and sleet driving in heavy showers, she moved ahead with the pack; and in this way continued her progress until the 27th, when the weather cleared, and Captain Young discovered that he had advanced right into the heart of Melville Bay, with no water in sight. Full in view were Capes Walker and Melville, the Peaked Hill, and huge glacier-streams embedded in the intervening valleys. All around was one vast monotonous sheet of rugged ice. It was not until the 29th that the *Pandora*, after many hairbreadth escapes, got into open water, in lat. $75^{\circ} 50' N.$, and long. $64^{\circ} 55' W.$ While thus imprisoned in the grasp of the floe, the explorers killed only one Polar bear, four seals, and a few little auks.

In a clear sea they now stood away to the westward, passing Capes Dudley, Digges, and Athol, and other headlands familiar in the records of Arctic adventure. At noon on the 31st, when off Wolstenholm Island, another gale overtook them, increasing rapidly to almost hurricane fury. This was an unpleasant experience; for the deck was washed by heavy seas, and it was with the greatest difficulty they avoided coming into collision with the icebergs which drifted rapidly through the snow and spray.

Reaching Cary Island, they landed to examine Captain Nares' depôt of provisions, and found it in good preservation. The cairn had not been visited since Young's call at the island on the 10th of September in the previous year. Afterwards they made for Sutherland Island, where they found a record of the American explorer, Captain Hartstene, dated August 16, 1855. It is with a curious feeling that, in these regions of almost perpetual winter, the voyager comes upon such faint memorials of men who, like him, have dared all the perils of icefloes and icebergs, and adventured into seas far beyond the track of ordinary commercial enterprise.

On Littleton Island, already mentioned so frequently in these pages, a record of the expedition was found. The document was dated July 28, 1875, and signed by Captain Nares, and it indicated the course about to be taken by the ships under his orders. Owing to the ice-encumbered condition of the straits, however, Captain Young could not follow it up; and instead of crossing to Cape Isabella, he resolved to examine the coast in Hart-

stene Bay, in order to seek a harbour for the relief-ship which the Admiralty had intended to send out in 1877, in case of the non-return of the Polar Expedition. This was found on the 4th of August, not far from the Eskimo settlement of Etah, and named after the *Pandora*. It would seem to offer every advantage as winter quarters for Arctic discovery-ships; the surrounding hills are "dotted with Arctic hares, appearing like snow-balls on the luxurious vegetation." The little auk breeds in thousands on the cliffs, eider fowl and guillemots haunt the waters, and the adjacent valleys and pastures are frequented by reindeer.

Captain Young next made for Cape Isabella, which he reached on the 6th of August. Watchful eyes soon discovered a large cairn on the summit of this headland. A boat was lowered, and the contents of the cairn soon obtained, while despatches and letters for Captain Nares' expedition were left in their stead. Then the *Pandora* steamed to the northward; but, owing to the adverse winds and the accumulated ice, could make no way, and was forced back to Cape Isabella. Another attempt was made to the eastward, and for several days the gallant little ship crossed and recrossed the straits, through the pack, always beset with ice, and frequently enshrouded in impenetrable fogs. No fewer than three times was she compelled to take shelter in Pandora Harbour. On the 19th she was driven back to the northward of Littleton Island, and Captain Young and some of his officers took the opportunity of visiting the *Polaris* camp. Nothing remained of the house erected by Captain Buddington except a few broken boards.

The rocks were strewn with pieces of metal, fragments of clothing, and other waifs and strays. The *cache* in which the retreating party had deposited their books and instruments was also examined; but the only relics were a brass bowl of a seven-inch compass, a tin tube, and parts of a telescope. Some cases and casks, containing records for the use of Captain Nares, were securely placed among the rocks on the western point of the island; and Captain Young then returned to Cape Isabella.

Finding nothing here of any interest, and convinced that no travelling or boat party had reached that position from the Polar ships, the *Pandora* bore away to the northward under canvas. "It was very dark and thick," says Captain Young, "but sufficiently clear to enable us to avoid the heavy ice. By nine A.M. we were up to Lecomte Island, when we were stopped by a fog until eleven o'clock, when I could see from aloft that the main pack extended across the straits into Rosse Bay. We were in a lake of land water, with close-packed and heavy ice all round, from south to north, and again closing on the land from the eastward. Our only chance of moving seemed to be through a narrow lead or slack place, running first to the east-north-east, and then again apparently towards the east coast. We entered the pack, and succeeded by five P.M. in again escaping into the land water in Hartstene Bay." Such are the experiences of twelve hours in the ice-clogged waters of the North! But we need not delay the reader with these minute particulars, notwithstanding their interest as illustrative of the nature of the struggle waged with so

much persistency of purpose by the Arctic explorer. The sea was now covered everywhere with ice and bergs. Storms were of frequent occurrence; and the wind and wave beaten *Pandora* was forced back into Baffin Bay.

Here, on the 28th of August, her captain could see that the solid ice had filled the straits and the head of the bay right across to Cape Alexander. The way north being thus obstructed, Captain Young resolved on proceeding towards Upernavik, in North Greenland, hoping to find that the last ship had not already sailed for Denmark, and in that case to send an officer home with despatches, while the *Pandora* returned to Smith Strait.

On the 29th she was off Hakluyt Island, and steered for Bardin Bay in Whale Sound. On entering the bay, a summer tent could be seen, and some Eskimos, with their dogs, running to and fro, evidently with the view of attracting the attention of the visitors. Captain Young accordingly landed, with some of his officers, and accompanied by Christian, his Eskimo interpreter. The natives met them with the utmost confidence and fearlessness, assisting to haul their boat up on the shore. They were ten in number, and all members of one family. Food appeared to be plentiful with them, but they were profuse in their thanks for some walrus-flesh given by Captain Young. Their manners were frank and communicative, and they showed considerable vivacity, rejoicing over the results of a very good hunting season. Neither European ships nor white men had they seen for years; but they said that an old man, who, with his family, inhabited Northumberland Island, told

of two ships which had passed to the northward "last summer." How lonely must be the life led by these poor savages! Never gladdened by the sight of a sail; but, year after year, shut up in their frozen solitudes, and without any other object or purpose before them than to obtain just enough food to avoid a premature and miserable death!

Among their treasures Captain Young observed a ship's bucket, half the top of a mahogany table, the paddle of a Greenlander's kayack, much ice-worn, and a piece of packing-case marked "Lime juice—Leith;" all of which, they said, had drifted into the bay at different times from the southward. These people seemed to Captain Young of a kind and simple disposition, while they were evidently robust and healthy. All that they had—and it was little enough—they freely pressed upon their visitor; and when asked what present they would like, their chief selected only some gimlets and a fifteen-foot ash oar. The latter, he said, would split up into spear-shafts; the former he wanted for boring bone and ivory. Captain Young, however, gave them several other useful articles; accepting in return some narwhal horns, specimens of their pot-stone cooking-kettles, and of the iron pyrites which they used for striking fire. An exchange of dogs also took place; five of the dogs belonging to the *Pandora* being given for three of the finest bear-hunting and tame dogs of the Eskimos.

At Upernavik the *Pandora*, after a stormy and dangerous passage, arrived on the evening of September the 7th, but found that the last ship had sailed for Europe. As there were no means, therefore, of com-

municating with England, and as, without such communication, Captain Young did not feel authorized to winter in the North, a supply of fresh water was taken on board, and the ship steered for home. From the 15th to the 21st she tarried at Godhav'n, in Disco Island. In Davis Strait she encountered large quantities of heavy Spitzbergen drift-ice, and weathered a severe south-easterly gale. On the 16th of October, in lat. $54^{\circ} 38' N.$, and long. $44^{\circ} 30' W.$, she sighted the Arctic ships, *Alert* and *Discovery*, and hastened to communicate with them. They kept together until the 19th. On the following day, the *Pandora* was buffeted by another hurricane; but the rest of her voyage was accomplished in safety, and was marked by no incidents of importance.

Here, for the present, terminates the record of British enterprise and adventure in the Arctic World. It is difficult to believe, however, that the nation will rest until the "heart of the mystery has been plucked out," the Secret finally mastered, and the British flag hoisted on that remote point which is conventionally known as the NORTH POLE.

Chronological List of Polar Voyages.

FROM 1848 TO 1878.

1845. Departure of the expedition under Sir John Franklin and Captain Crozier. The two ships, *Erebus* and *Terror*, last seen by Captain Dannet, of the whaling-ship *Prince of Wales*, in Baffin Bay, July 26.
1846. Dr. John Rae is despatched by Hudson Bay Company, to discover whether Boothia be an island or a peninsula.
- 1848-50. Searching-voyage for Sir John Franklin, to Behring Strait, by the *Plover*, Com. Moore; and the *Herald*, Captain Kellet.
1848. Sir James C. Ross's searching-expedition for Franklin is unsuccessful.
1849. The *North Star* despatched with supplies.
1850. Eight vessels sent out by the British Government to continue the search for Franklin.
1850. The *Advance*, Lieutenant De Haven, and the *Rescue*, Lieutenant Griffith, sent out on the same errand, at the cost of Mr. Henry Grinnell of New York. The *Advance* arrives at Beechy Island in August, and ten other searching-vessels in the course of the month.
1850. Franklin searching-expedition, via Behring Strait, conducted by Captain M'Clure in the *Investigator*, and Captain Collinson in the *Enterprise*. M'Clure discovers the North-West Passage.
1850. The *Lady Franklin*, Captain Penny, is sent out by Lady Franklin, the wife of Sir John. Also the *Prince Albert*, Captain Forsyth (and Mr. W. P. Snow).
1850. The first traces of the missing expedition discovered at Cape Riley by Captain Ommany, August 23; and graves of sailors, on Beechy Island, by Sherard Osborn, August 25.
1851. First Arctic exploring-voyage by Mr. Leigh Smith, who sails to the north-east, and reaches lat. 81° 13'.

1851. Searching-voyage of the *Prince Albert*, Captain Kennedy.
1851. Sea to the north of Wellington Channel discovered by Captain Penny.
1852. Searching-expedition of five ships, under Sir Edward Belcher, sets sail. One of these, the *Resolute*, is abandoned in 1853, and afterwards drifts about one thousand miles to Cape Mercy. Several other ships abandoned in 1854-55, under circumstances which led to the removal of Sir E. Belcher's name from the British Navy List.
1852. Captain Inglefield sails in the *Phoenix*.
1853. Dr. Kane's expedition in the *Advance*, fitted out by Messrs. Grinnell of New York and Peabody of London.
1853. Final solution of the North-West Passage problem. Captain M'Clure, entering from Behring Strait, meets Lieutenant Pim, who had entered from Baffin Bay, at Dealy Island, April 19.
1853. Captain Collinson sails right through the Arctic seas, and, taking a south-east course, discovers numerous relics of Franklin's party.
- 1853-54. Dr. Kane's expedition; discovers Humboldt Glacier, and surveys coast of Greenland and Washington Land; supposed discovery of open Polar Sea.
1855. Lieutenant Hartstene searches for Kane and his party, with whom he meets at Upernavik.
1855. Arctic sledge-journeys of Sir R. M'Clintock and Lieutenant Meacham, exceeding 1500 miles each.
1855. The *Resolute*, formerly of Sir E. Belcher's expedition, having drifted to Cape Mercy, is taken possession of by Captain Buddington, of the whaler *George Henry*, and carried to the United States. It is there refitted, and presented to the Queen in the name of the American people.
- 1857-59. Voyage of the *Fox*, Captain M'Clintock, in search of Sir John Franklin. Discovers numerous relics.
1858. Mr. James Lamont, in his steam-yacht, explores the north-east waters.
- 1860-61. Expedition of Dr. Hayes to west coast of Smith Sound, where he plants the American flag on the northernmost point of land attained in that direction.
1861. Voyage of Captain W. P. Snow to King William Land.
1861. Swedish expedition, under Professor Torell, to north of Spitzbergen.
- 1860-62. Captain Charles Francis Hall explores Frobisher Strait (which he discovers to be a bay), and dwells much among the Eskimos.
1863. Captain Carlsen completed the circumnavigation of Spitzbergen.
- 1864-69. Second voyage of Hall to northern shores of Hudson Bay; makes interesting discoveries; is absent five years.

1867. Mr. Edward Whympers's visit to Greenland, and journeys into the interior.

1867. Northern voyages of Captains Long, Rayner, and Lewis, ending in the discovery of land in lat. $70^{\circ} 40'$, extending over eight degrees of longitude, from $178^{\circ} 15' W$.

1867. Lord Duferin sails to Spitzbergen and Jan Mayen in his yacht *Foam*.

1868. Swedish expedition under Professor Nordenskiöld: makes discoveries in the north-east.

1868. Private Russian and German scientific discursions sent out by Sedjicoff and Rosenthal respectively.

1868. Voyage of the *Nautilus*, Captain Blowen, who penetrates beyond Spitzbergen to $72^{\circ} N$.

1869. German expedition in the *Albert*, under Dr. Emil Bessel; no results.

1869. Seven Arctic exploring-expeditions are fitted out from various parts of Europe.

1869. German expedition, consisting of the *Germania*, Captain Koldey, and the *Hansa*, Captain Hegemann, sails for North Pole. The two vessels accidentally separate. The *Hansa*, on 23rd of October, is lost off east coast of Greenland, in lat. $70^{\circ} 50' N$., and her captain and crew drift southward on an ice-floe for one hundred and ninety-three days; after which they make their way to the shore in boats, and, keeping along the coast, reach the Moravian mission-stations of South Greenland. Thence they obtained a passage to Bremen. The *Germania* proceeded north, but was beset in the ice, and returned home in the following summer.

1872-73. Captain C. F. Hall sets sail in the *Polaris*, a vessel fitted out by the American Government, June 14; and on the 30th of August reaches the highest northern latitude ever attained by any vessel— $82^{\circ} 16'$. In November he is taken ill and dies. Part of the crew, in a storm, get adrift on an ice-floe, and losing sight of the *Polaris*, are carried in a south-westerly direction, from 15th October 1872, until the 30th of April 1873, when they are picked up by the *Tigress*. Captain Buddington and the rest of the crew beach the *Polaris* at Lifeboat Cove, near Littleton Island, and winter on the mainland. In the spring they build two boats; in which, on June 23, 1873, they are picked up by the Dundee whaler *Ravensraig*.

1872. Voyage of Captain Allmann, who re-discovers Wiche's Land, first seen by the English in 1617.

1872. Voyages of Captain Johnsen and Captain Nilsen, who both explore the waters around Wiche's Land, which is really a group of islands.

1871. Captain Carlsen circumnavigates Novaia Zemlaia, and discovers the relics of the Dutch navigator, Barentz.

1871. Captain Mack sailed into the sea of Kara, and examined the Novaia Zemlaia coast for 500 miles. Early in September he reached a point in lat. $75^{\circ} 25' N.$, and long. $82^{\circ} 30'$; no ice was in sight.

1871. Two Russian expeditions despatched to explore the northern coast of Asia.

1869-71. Mr. Lamont made three voyages to the North—in 1869, 1870, and 1871.

1872-73. Swedish expedition under Professor Nordenskiöld, of three ships, the *Polhem* and two others. Compelled to winter in Spitzbergen, and returned in August 1873.

1872. Lieutenants Payer and Weyprecht sail in a small private ship, and reach König Karl Land; they find an open sea in lat. 78° .

1872. Captain Jansen, in a vessel of only twenty-six tons, visits the so-called Wiche's Land; climbs a lofty hill, from which he saw open water to the east and north-east; anchored in lat. $79^{\circ} 8' N.$

1873. Overland expedition, under M. Tschekanowski, to survey the coast of Arctic Siberia.

1873. Mr. Leigh Smith's expedition in the *Diana*; discovers that North Cape is an island, and not, as previously supposed, a peninsular promontory.

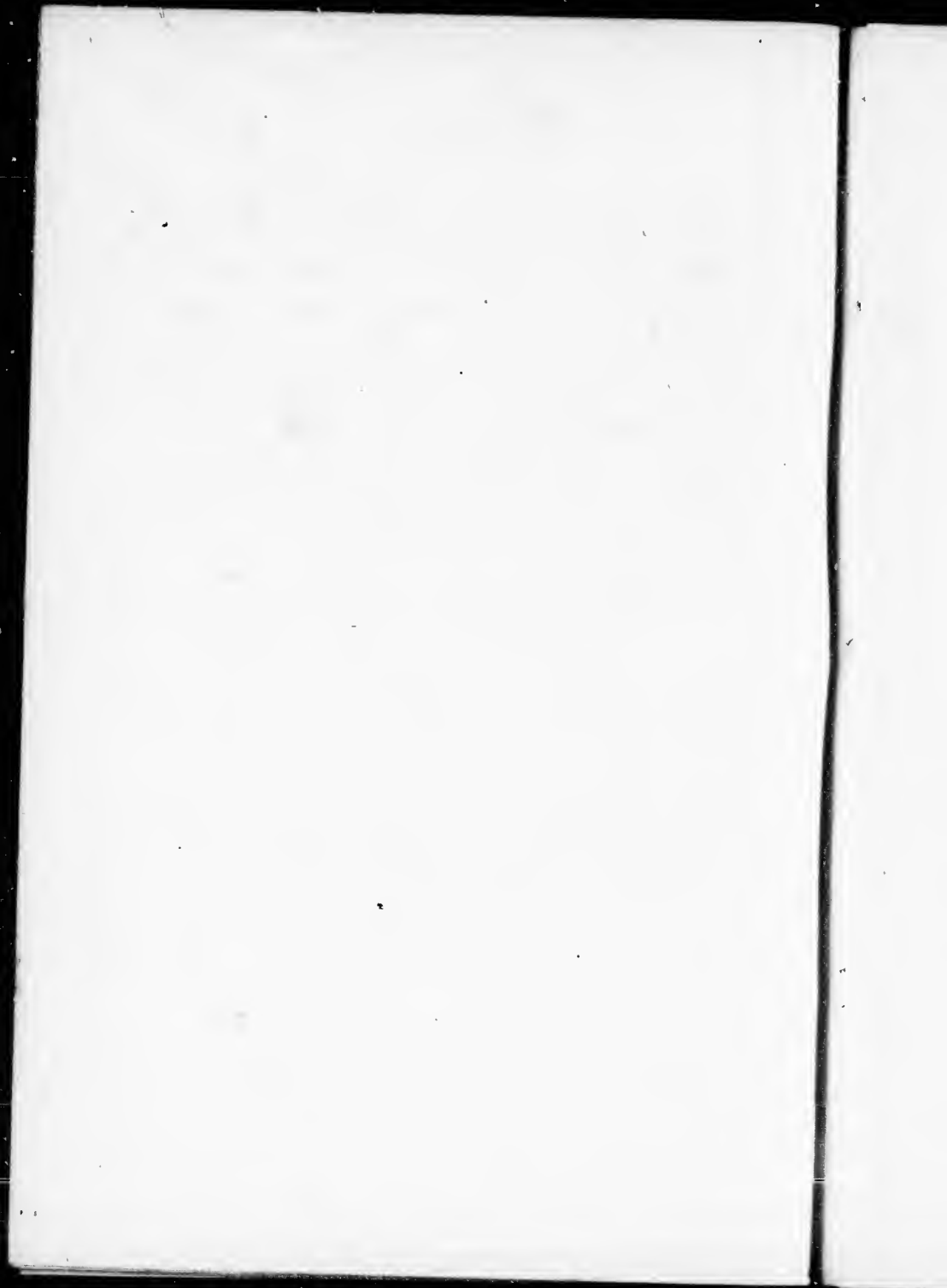
1875. British Arctic expedition, under Captains Nares and Stephenson, in the *Alert* and *Discovery*; sails for Smith Sound, to proceed from thence towards the North Pole.

1875. Swedish expedition, under Professor Nordenskiöld, for exploration of the coast of Arctic Siberia.

1875. Private expedition, fitted out by Lady Franklin, to follow the route of the *Alert* and *Discovery*.

1876. Return of Captains Nares and Stephenson; having ascertained that the Smith Sound route is impracticable.

1876. Voyage of the *Pandora*, Captain Allen Young, to communicate with the Arctic ships, *Alert* and *Discovery*.



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