Shackleton in the Antarctic

by Ernest Shackleton

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*** START OF THE PROJECT GUTENBERG EBOOK SHACKLETON IN THE ANTARCTIC: BEING THE STORY OF THE BRITISH ANTARCTIC EXPEDITION, 1907-1909 ***

The Commander of the Expedition

SHACKLETON IN THE ANTARCTIC BEING THE STORY OF THE BRITISH ANTARCTIC EXPEDITION, 1907-1909

BY SIR ERNEST SHACKLETON C.V.O.

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CHAPTER I THE EXPEDITION

Men go out into the void spaces of the world for various reasons. Some are incited simply by a love of adventure, some have a keen thirst for scientific knowledge, and

others are drawn away from trodden paths by the mysterious fascination of the unknown. I think that in my own case it was a combination of these factors that determined me to try my fortune once again in the frozen south.

I had been invalided home before the conclusion of the Discovery expedition, and I had the keenest desire to see more of the vast continent that lies amid the Antarctic snows and glaciers. Indeed the stark polar lands grip the hearts of men who have lived on them in a manner that can hardly be understood by people who have never got outside the pale of civilisation. I was convinced, moreover, that an expedition on the lines I had in view could justify itself by the results of its scientific work.

The Discovery expedition had performed splendid service in several important branches of science, and I believed that a second expedition could carry the work still further. For instance, the southern limits of the Great Ice Barrier had not been defined, and it was important to the scientific world that information should be gained regarding the movement of the ice-sheet that forms the barrier. I also wanted to discover what lay beyond the mountains to the south of latitude 82° 17′ and whether the Antarctic continent rose to a plateau similar to the one found by Captain Scott beyond the western mountains.

There was much also to be done in the fields of meteorology, zoology, biology, mineralogy and general geology, so much in fact that apart from the wish to gain a higher latitude the expedition seemed to be justified on scientific grounds alone.

The difficulty that confronts most men who wish to undertake exploration work is that of finance, and for some time I was faced by financial problems; but when the governments of Australia and New Zealand came to my assistance, the position became more satisfactory.

In the Geographical Journal for March 1907, I outlined my plan of campaign, but this had materially to be changed later on owing to circumstances. "The shore-party of nine or twelve men will winter with sufficient equipment to enable three separate

parties to start out in the spring," I announced. "One party will go east, and, if possible, across the Barrier to the new land known as King Edward VII Land, the second party will proceed south over the same route as that of the southern sledge-party of the Discovery, the third party will possibly proceed westward over the mountains, and, instead of crossing in a line due west, will strike towards the magnetic pole. The main changes in equipment will be that Siberian ponies will be taken for the sledge journeys both east and south, and also a specially designed motor-car for the southern journey. I do not intend to sacrifice the scientific utility of the expedition to a mere record-breaking journey, but say frankly, all the same, that one of my great efforts will be to reach the southern geographical pole."

Section, showing Interior of "Nimrod" 1. Forecastle. 2. Stores. 3. Chain locker. 4. Fore hold. 5. Lower hold. 6. Stoke hold. 7. Carpenters' shop. 8. Cook's Galley. 9. Engine room. 10. Engine room. 11. Boiler. 12. After hold. 13. Lower hold. 14. After bridge. 15. Officer's quarters. 16 Captain's quarters. 17. Oyster alley. (See page 19.)

My intention was that the expedition should leave New Zealand at the beginning of 1908, and proceed to winter quarters on the Antarctic continent, the ship to land men and stores and then return. By avoiding the ship being frozen in, the use of a relief ship would be unnecessary, as the same vessel could come south again the following summer and take us off.

Before we finally left England I had decided that if possible I would establish my base on King Edward VII Land instead of at the Discovery winter quarters in McMurdo Sound, so that we might break entirely new ground. The narrative will show how, as far as this particular matter was concerned, my plans were upset by the demands of the situation. Owing largely to the unexpected loss of ponies before the winter, the journey to King Edward VII Land over the Barrier was not attempted.

As the expedition was entirely my own venture I decided that I would have no committee, and thus I avoided delays that are inevitable when a group of men have

to arrive at a decision on points of detail. The aim of one who undertakes to organise such an expedition must be to provide for every contingency, and in dealing with this Work I was fortunate enough to secure the assistance of Mr. Alfred Reid, who had already gained considerable experience in connection with previous polar ventures, and who—as manager of the expedition—was invaluable to me.

CHAPTER II I—SUPPLIES

For a polar expedition the food must in the first place be wholesome and nourishing in the highest possible degree. Scurvy—that dread disease—was once regarded as the inevitable result of a prolonged stay in ice-bound regions, but by selecting food-stuffs which had been prepared on scientific lines we entirely avoided any sickness attributable directly or indirectly to the foods we took with us.

In the second place the food taken on the sledging expeditions must be as light as possible, always remembering that in very low temperatures the heat of the body can be maintained only by use of fatty and farinaceous foods in fairly large quantities. The sledging-foods must also be such as do not require prolonged cooking, for the amount of fuel that can be carried is limited. It must even be possible to eat these foods without any cooking, because the fuel may be lost or exhausted.

As regards foods for use at the winter quarters of the expedition a greater variety was possible, for the ship might be expected to reach that point and weight was consequently of less importance. My aim was to get a large variety of foods for the winter night, when the long months of darkness severely strain men unaccustomed to the conditions.

I based my estimates on the requirements of twelve men for two years, but this was added to in New Zealand when the staff was increased.

At first the question of packing presented difficulties, but at last I decided to use "Venesta" cases both for food-stuffs and as much as possible for equipment. These

cases are manufactured from composite boards prepared by uniting three layers of birch or other hard wood with water-proof cement. They were eminently suited to our purpose, and the saving of weight, as compared with an ordinary packing-case, was about four pounds per case. In spite of the rough handling our stores received in the process of being landed at Cape Royds, after the expedition had reached the Antarctic we had no trouble with breakages.

II—EQUIPMENT

After placing orders for the principal food supplies I went to Norway with Mr. Reid to secure sledges, fur boots and mits, sleeping bags, ski, &c. The sledges were to be of the Nansen pattern, built of specially selected timber and of the best workmanship. I ordered ten twelve-foot sledges, eighteen eleven-foot sledges and two seven-foot sledges, the largest being suitable for pony-haulage. The sledges were made by Messrs. Hagen and Company of Christiania and proved to be all that I desired.

The next step was to secure furs, but this was not a very large order as after the experience of the Discovery expedition I decided to use fur only for the feet and hands and for the sleeping-bags, relying otherwise on woollen garments with an outer covering of windproof material. I ordered three large sleeping-bags, to hold three men each, and twelve one-man bags. Each bag had the reindeer fur inside, and the seams were covered with leather strongly sewn.

Seal suckling Young, and taking no Notice of the Motor-car

The foot-gear I ordered consisted of eighty pairs of ordinary finnesko or reindeer-fur boots, twelve pairs of special finnesko and sixty pairs of ski boots of various sizes. The ordinary finnesko is made from the skin of the reindeer stag's head, with the fur outside, and its shape is roughly that of a very large boot without any laces. It is large enough to hold the foot, several pairs of socks, and a supply of sennegrass, and it is a wonderfully warm and comfortable foot-gear. This sennegrass is a dried grass

of long fibre with a special quality of absorbing moisture and I bought fifty kilos (110.25 lb.) of it in Norway.

The sixty pairs of wolfskin and dogskin mits which I ordered from Mr. Möller were made with the fur outside, were long enough to protect the wrists, and had one compartment for the four fingers and another for the thumb. They were worn over woollen gloves and were hung round the neck with lamp-wick when the use of the fingers was required.

CHAPTER III THE SHIP, THE HUT AND OTHER NECESSITIES

Before I left Norway I visited Sandyfjord to see whether I could come to terms with Mr. C. Christiansen, the owner of the Bjorn, a ship specially built for polar work; but much as I wished to try her I could not afford to pay the price.

So when I returned to London I purchased the Nimrod. She was small and old, and her maximum speed under steam was hardly more than six knots, but on the other hand she was able to face rough treatment in the ice. I confess that I was disappointed when I first examined the little ship, to which I was about to commit the hopes and aspirations of many years, but I had not then become acquainted with her many good qualities, and my first impression scarcely did justice to the plucky old ship. She was at once put into the hands of Messrs. R. & H. Green of Blackwall, the famous firm that had built so many of Britain's "wooden walls," and that had done fitting and repairing work for several other polar expeditions, and day by day she assumed a more satisfactory appearance. Quarters were provided for the scientific staff of the expedition by enclosing a portion of the after-hold and constructing cabins which were entered by a steep ladder from the deck-house. For some reason not on record these small quarters were known later as "Oyster Alley."

As however the Nimrod, after landing the shore-party with stores and equipment,

would return to New Zealand, it was necessary that we should have a reliable hut in which to live during the Antarctic night, and until the sledging journeys began in the following spring.

THE HUT

I ordered a hut (which was to be our only refuge from furious blizzards) measuring externally 33 ft. by 19 ft. by 8 ft. to the eaves from Messrs. Humphreys of Knightsbridge. It was specially constructed to my order, and after being erected and inspected in London was shipped in sections.

It was made of stout fir timbering of best quality in walls, roofs and floors, and the parts were all morticed and tenoned to make erection easy in the Antarctic. Great precautions were taken against the extreme cold, and the hut was to be erected on wooden piles let into the ground or ice, and rings were fixed to the top of the roof so that guy-ropes might be used to give additional resistance to the gales. The hut had two doors, connected by a small porch, so that ingress or egress would not cause a draught of cold air, and the windows were double so that the warmth of the hut might be retained. We took little furniture as I proposed to use cases for the construction of benches, beds, and other necessary articles of internal equipment. The hut was to be lighted with acetylene gas, and we took a generator, the necessary piping and a supply of carbide.

We also took a cooking-range, manufactured by Messrs. Smith and Wellstrood, of London, which had a fire chamber designed to burn anthracite coal continuously day and night.

CLOTHING

Each member of the expedition was supplied with two winter suits made of heavy blue pilot cloth, lined with Jaeger fleece. An outer suit of windproof material is necessary in the polar regions, and I secured twenty-four suits of Burberry gabardine. The underclothing was obtained from the Dr. Jaeger Sanitary Woollen

Company.

PONIES, DOGS, AND MOTOR-CAR

I decided to take ponies, dogs, and a car to assist in hauling our sledges on long journeys, but my hopes were mainly based on the ponies. Dogs had not proved satisfactory on the Barrier surface, but I was sure that the hardy ponies used in Northern China and Manchuria would be useful if landed in good condition on the ice. They had done good work both on the Jackson-Harmsworth expedition and in the Russo-Japanese War. Fifteen of these ponies, practically unbroken and about fourteen hands high, were selected and ultimately transferred to Quail Island in Port Lyttelton, where they were free to feed in luxury until they were required.

Their Majesties King Edward and Queen Alexandra inspecting the Equipment on the "Nimrod" at Cowes, (See page 26)

As I thought it possible, from my previous experience, that we might find a hard surface on the Great Ice Barrier, I resolved to take a motor-car, so I selected a 12-15 horse-power New Arrol-Johnston car, fitted with a specially designed air-cooled four-cylinder engine and Simms Bosch magneto ignition. A non-freezing oil was prepared for me by Messrs. Price and Company. I placed, as I have suggested, but small reliance on dogs; I did however order forty of the descendants of the Siberian dogs used on the Newnes-Borchgrevink expedition. The breeder was only able to let me have nine, but this team proved sufficient for my purposes.

SCIENTIFIC INSTRUMENTS

On the scientific side the equipment of a polar expedition is very costly, and I felt the pinch of necessary economies in this branch. I was, however, greatly assisted by loans of instruments and charts from the Admiralty; the Royal Geographical Society lent me three chronometer watches, and three wardens of the Skinners' Company gave me one chronometer watch which accompanied me on my journey to the Pole and which proved to be the most accurate of all. We also took with us a

photographic equipment which included nine cameras, and a cinematograph machine in order that we might place on record the curious movements of seals and penguins.

For the rest I had tried to provide for every contingency, and the gear ranged from needles and nails to a Remington typewriter and two Singer sewing machines. There was also a gramophone and a complete printing-press; and even hockey-sticks and a football were not forgotten.

CHAPTER IV THE STAFF AND THE ROYAL VISIT

It was no easy matter for me to select the staff from the large number (over 400) of applicants who wished to join the expedition.

After much consideration I selected eleven men for the shore-party, only three of whom—Adams, Wild and Joyce—had been known to me previously, while only Wild and Joyce, having been members of the Discovery expedition, had previous experience of polar work. Every man, however, was highly recommended, and this was also the case with the officers whom I chose for the Nimrod. Before leaving New Zealand I was able to increase the number of the expedition, which ultimately consisted of:

THE SHORE-PARTY

Ernest H. Shackleton, Commander. Professor T. W. Edgeworth David, F.R.S., Director of the scientific staff. Lieutenant J. B. Adams, R.N.R., Meteorologist. Sir Philip Brocklehurst, Bart., Assistant geologist. Bernard Day, Motor expert. Ernest Joyce, in charge of dogs, sledges, &c. Dr. A. F. Mackay, Surgeon. Douglas Mawson, D.Sc., B.E., Physicist. Bertram Armytage, in charge of ponies. Dr. E. Marshall, Surgeon, cartographer. G. E. Marston, Artist. J. Murray, Biologist. Raymond Priestley, Geologist. W. Roberts, Cook. F. Wild, in charge of provisions.

THE SHIP'S STAFF

Lieutenant R. G. England, R.N.R., Captain. John K. Davis, Chief officer, later captain. A. L. A. Mackintosh, Second officer. A. E. Harbord, Auxiliary second officer. H. J. L. Dunlop, Chief engineer. W. A. R. Michell, Surgeon. Alfred Cheetham, Third officer and boatswain. W. D. Ansell, Steward. J. Montague, Cook. E. Ellis } H. Bull } S. Riches } A.B.'s. J. Paton } W. Williams } G. Bilsby, Carpenter. [Lieutenant F. P. Evans, R.N.R., was appointed captain for the second voyage to the Antarctic.]

The work of preparation progressed rapidly, and on July 30, 1907, the Nimrod sailed from the East India Docks on the first stage of the long journey to New Zealand. On the following day Mr. Reid received a telegram from the King's equerry, commanding the Nimrod to visit Cowes in order that the King and Queen might inspect the ship on August 4, and consequently we proceeded to the Solent, where we anchored.

The Towing Steamer "Koonya" as seen from the "Nimrod" in a heavy sea. This particular wave came aboard the "Nimrod" and did considerable damage. (See page 31)

ROYAL VISIT TO THE NIMROD

Their Majesties King Edward and Queen Alexandra, their Royal Highnesses the Prince of Wales, the Princess Victoria, Prince Edward and the Duke of Connaught, came on board and inspected the ship, an honour which was greatly appreciated by the members of the expedition. Her Majesty graciously entrusted me with a Union Jack to be carried on the southern journey, and His Majesty graciously conferred on me the Victorian Order.

On Wednesday August 7, the ship sailed for New Zealand, and arrived at Lyttelton—from whence the final departure for the south was to be made—on November 23. Mr. Reid reached Australian waters a month ahead of the Nimrod, so that he might make necessary arrangements and meet the Manchurian ponies.

CHAPTER V WE LEAVE LYTTELTON

By strenuous labour we were in readiness to start from Lyttelton on New Year's Day, and we were honoured by the Postmaster-General of the Dominion printing off for us a small issue of special stamps, and making me a postmaster during my stay in the Antarctic.

The quarters of the scientific staff on board the Nimrod were certainly small, and as the day of departure approached, Oyster Alley reached a state of congestion awful to contemplate. The ponies—of which we finally took away ten known as "Socks," "Queen," "Grisi," "Chinaman," "Billy," "Zulu," "Doctor," "Sandy," "Nimrod," and "Mac"—were carried on deck and ten stout stalls were built for them. The motor-car was enclosed in a large case and made fast with chains on the after-hatch whence it could be transferred easily to the ice. Our deck load, indeed, was so heavy that the Nimrod was low in the water, and when we left Lyttelton the little ship had only three feet six inches of freeboard.

In order to save coal I was anxious to have the Nimrod towed south, and the Government of the Dominion agreed to pay half the cost of the tow, and Sir James Mills, chairman of the Union Steamship Company, offered to pay the other half. The Koonya, a steel-built steamer of about 1100 tons, was chartered and placed under the command of Captain F. P. Evans. The wisdom of this selection was proved by subsequent events. Before my departure I placed the conduct of the affairs of the expedition in New Zealand into the hands of Mr. J. J. Kinsey, whose assistance and advice had already been of great service to me.

January 1, 1908, arrived at last, a warm and clear morning for our last day in civilisation. Before sunset we were to sever all ties with the outer world, but we all looked forward eagerly to our coming venture, for the glamour of the unknown was with us and the south was calling.

All day long the deck of our little vessel was thronged by sight-seers, who showed

the greatest interest in everything connected with the ship and her equipment. There were many whose criticisms were frankly pessimistic as to our chances of weathering an Antarctic gale, for the Nimrod was deep in the water, but we, having confidence in the ship, were not disturbed by these criticisms.

Oyster Alley was crammed with the personal belongings of at least fourteen of the shore-party, and if you once got into it the difficulty of getting out was even greater. The entrance to this twentieth-century Black Hole was through a narrow doorway and down a ladder, which ushered one into almost complete darkness. And it was in this uncomfortable, crowded, murky place that the spirit of romance grew strong in the heart of George Buckley, until he suddenly jumped up and asked if I would take him as far as the ice. I was only too glad to consent, for his interest in the expedition showed that his heart was in the right place, and his personality had already appealed to us all. It was then 2 P.M. and the Nimrod sailed at 4 P.M., but in those two hours he dashed to Christchurch, gave his power of attorney to a friend, slung a tooth-brush and some underclothing into a bag, and arrived on board a few minutes before sailing time, equipped for the most rigorous weather in the world with only the summer suit he was wearing. Surely a record in the way of joining a polar expedition!

Cheer after cheer broke from the watching thousands as we moved towards the harbour entrance, and after a most cordial send-off we stopped to pick up our tow-line from the Koonya; and this operation being completed we signalled the Koonya to go ahead and were soon in the open sea.

Fortunately we did not know that we were not to take our clothes off for the next two weeks, and that we were to live in a constant state of wetness and watchfulness until we arrived in the neighbourhood of winter quarters. But bad weather was not long delayed, and I was soon wishing for the splendid modern gear of the Discovery, the large, specially built vessel that we had on the previous expedition.

View of the Great Ice Barrier

As the wind and sea increased the Nimrod pitched about, shifting everything that could be moved on deck. The seas began to break over her, and we were soon wet through, not to be properly dry again for many days. Our chief anxiety was the care of the ponies, and looking back now to those days, it remains wonderful to me how they survived the hardships that fell to their lot.

The Nimrod had—owing to her deeply loaded condition—begun the voyage like a reluctant child being dragged to school, but as the gale increased in vehemence she seemed to throw off the sluggishness which possessed her, when she had found herself outward bound at the end of a tow-line for the first time in her strenuous life of forty years. Now that the tow-line was but little use—save to steady us in the furious gale—the Nimrod began to play her own hand, and marvellously well did she play it. So furiously did the gale blow that on the morning of the 5th I told Captain England to signal and ask the Koonya to pour oil on the water, but although this helped us to a certain extent it did not prevent the heaviest seas from breaking on board. The Nimrod rolled over fifty degrees from the perpendicular to each side; how much more than that I cannot say for the indicator was only marked up to fifty degrees, and the pointer had passed that mark. Under these circumstances it was but natural that the sturdy ponies had their strength taxed to the utmost to keep their footing. It was impossible to sling them, for they were only half-broken, and an attempt to put a sling under one nearly drove it crazy with fright. On the night of the 5th during an extra heavy roll one of the ponies slipped, and when the ship rolled the opposite way it turned right over on its back and could not regain its footing. All our attempts to get "Doctor," as he was called, upon his legs failed, and regretfully I had to order him to be shot.

CHAPTER VI THE ANTARCTIC CIRCLE

The continuous bad weather was attributed by some on board to the fact that we had captured an albatross on the second day out. It is generally supposed by seamen to be unlucky to kill this bird, but as we did it for the purposes of scientific collections and not with the wantonness of the "Ancient Mariner," the superstitious must seek another reason for the bad weather.

The storm increased until, by midnight on the 6th, the squalls were of hurricane force, and the morning of the 7th brought no relief. Seas came on board with more frequency than ever, finding out any odd article that had escaped our vigilance. At one time a sack of potatoes was washed on to the deck and the contents were floating in two or three feet of water, but standing on the poop I heard one of the crew, in no way disheartened, singing, as he gathered them up, "Here we go gathering nuts in May."

On the evening of January 8, the gale was so terrific that we had to signal to the Koonya to heave to. We did this with the sea on our starboard quarter, and one enormous wave smashed in part of the starboard bulwarks and did much—though happily no vital—damage. The galley was washed out and the fire extinguished, but so pluckily did the members of the cooking department work that never during this most uncomfortable time were we without a warm meal. This was really a great feat considering that the galley was only five feet square, and thirty-nine persons blessed with very hearty appetites had to be provided for.

To show what a state we were in I may mention that in the wardroom I salved a small wooden case from the water, and found that it contained a patent mixture for extinguishing fires!

At noon on January 11 we were in latitude 57° 38′ South, and longitude 178° 39′ West, but the weather, which had moderated for a day or two, again became as bad as ever. We had imagined that we might find difficulty in cleaning out the stables, but the herculean waves settled that difficulty in a most arbitrary and thorough

manner.

On the 13th we had a warmer and pleasanter day than any we had experienced since leaving Lyttelton, and the whole vessel began to look like a veritable Petticoat Lane. Pyjamas and pillows of pulp that had once been pillows of feathers, books and boots, coats and carpet-slippers were lying in a mass on the poop deck so that they might dry. A few of us ventured on baths, but in the open air and with the temperature only two degrees above freezing-point it was chilly work.

We were now keeping a sharp look-out for icebergs and pack, and the meeting with the pack-ice was to terminate the Koonya's tow; and that meant parting with Buckley, who had endeared himself to every one on board, and who had been of the greatest assistance in the matter of the ponies.

Next morning, January 14, we sighted our first iceberg. It had all the usual characteristics of the Antarctic bergs, being practically tabular in form, and its sides being of a dead white colour. During the afternoon we passed two more icebergs with their usual tails of brash ice floating out to leeward. The sea had changed colour from a leaden blue to a greenish-grey, albatrosses were not nearly so numerous, and the temperature of the air and water had dropped to 32° Fahr. Everything pointed to our nearness to the pack, and on the next morning we saw the ice looming up through the mist to the southward.

Pushing through heavy Floes in the Ross Sea. The dark line on the Horizon is a "Water Sky," and indicated the Existence of Open Sea

Now had come the time for the Koonya to drop us, after a tow of 1510 miles—a record in towage for a vessel not built for the purpose—and before the Koonya finally cast off from us, she had achieved another record by being the first steel vessel to cross the Antarctic Circle.

About 10 A.M. I decided to send Captain England across to the Koonya with Buckley and the mail, our letters being stamped with the special stamp given by the

New Zealand Government. As the sea was rising again we lost no time in making the necessary communication by boat between the two ships, and during a favourable roll the whale-boat was dropped into the water, and Buckley—with his week-end handbag—jumped into her. About a quarter to one Captain Evans signalled that he was going to cut his hawser, for in the rising sea the two vessels were in dangerous proximity to each other.

We saw the axe rise and fall, rise and fall again, and the tie was severed. The Koonya's work was done, and at last the Nimrod was dependent upon her own resources. Our consort steamed round us, all hands on both ships cheering; then her bows were set north and she vanished into a grey, snowy mist, homeward bound. All that afternoon we unremittingly toiled to get in the cable link by link, and by seven o'clock we were able to proceed and to put the ship's head due south.

By 2 A.M. on January 16, the bergs were much more numerous, but none of the ice we passed through at this time had the slightest resemblance to pack-ice. An hour later we entered an area of tabular bergs, varying from 80 to 150 ft. in height, and all the morning we steamed in beautiful weather through the lanes and streets of a wonderful snowy Venice. The magic of such a scene cannot be described. As far as the eye could see, great, white, wall-sided bergs stretched east, west and south, contrasting strikingly with the lanes of blue-black water between them.

A stillness, weird and uncanny, had fallen upon everything. Here there was no sign of life, except when one of the little snow petrels, invisible when flying across the glistening bergs, flashed for a moment into sight. Beautiful as this scene was it gave me some anxiety, for I knew that if we were caught in a breeze amidst this maze of floating ice it would go hard with us. Already an ominous dark cloud was sweeping down from the north, and I was unfeignedly thankful when, in the afternoon, I saw open water ahead. After a few more turnings and twistings we entered the ice-free Ross Sea, this being the first time a passage had been made into that sea without the

vessel being held up by pack-ice; and I think our success was due to the fact that we were to the eastward of the pack, which had separated from the land and the Barrier, and had drifted to the north-west. Indeed all my experience goes to prove that the easterly route is the best.

Whence these bergs had come is open to conjecture, but I am certain that this ice had not long left the parent barrier or coast-line, for there was no sign of weathering on the sides. Our latitude at noon on the 16th was 68° 6′ South, and the longitude 179° 21′ West.

Before we entered the actual line of bergs a couple of seals, probably a crabeater and a Weddell seal, appeared on the floe-ice, and a few Adelie penguins were also seen. The quaint walk and insatiable curiosity of these birds greatly amused us, and Marston, our artist, whose sense of the ludicrous is very fully developed, was in ecstasies at their genuine surprise and profound concern when they saw the ship.

It was fortunate that we cleared the ice during that afternoon, for shortly afterwards the wind increased, and the weather thickened with falling snow.

CHAPTER VII THE ATTEMPT TO REACH KING EDWARD VII LAND

We were now in the Ross Sea, and evidently had avoided the main pack. Our position at noon (Jan. 17) was 70° 43′ South latitude, and 178° 58′ East longitude, and we were steering a little more westerly so as to strike the Barrier well to the east of Barrier Inlet, and also to avoid the heavy pack that previous expeditions had encountered to the east of meridian 160° West. The snow had now become hard and dry, like sago—the true Antarctic type, and numbers of Antarctic petrels circled round and round the ship.

We were now revelling in the indescribable freshness of the Antarctic that seems to

permeate one's being, and which must be responsible for that longing to go again which assails each returned explorer from polar regions. On the morning of the 23rd we saw some very large icebergs, which were evidently great masses broken off the Barrier, and we were keeping a sharp look-out for the Barrier itself. The thermometer registered some twelve degrees of frost, but the wind was so dry that we scarcely felt the cold.

Flight of Antarctic Petrels

At 9.30 A.M. on the 23rd a low straight line appeared ahead of the ship. It was the Barrier. After half an hour it disappeared, but by eleven o'clock the straight line stretching east and west was in full view and we rapidly approached it. I had hoped to make the Barrier about the position of what we call the Western Bight, and at noon we could see a point which was obviously the eastern limit of the Western Bight. Soon afterwards we were within a quarter of a mile of the ice-face, and exclamations of wonder at the stupendous bulk of the Barrier were drawn from those who had not seen it before.

Looking at the Barrier from some little distance, one would imagine it to be a perfectly even wall of ice; when steaming along parallel with it, however, the impression it gave was that of a series of points, each of which looked as though it might be the horn of a bay. Then when the ship came abeam of it, one would see that the wall only receded for a few hundred yards, and afterwards new points came into view as the ship moved on. The weather continued fine and calm, and there was absolutely no sign of the strong westerly current along the Barrier which we had always encountered during the voyage of the Discovery.

About midnight we suddenly came to the end of a very high portion of the Barrier, and entered a wide shallow bay which must have been the inlet where Borchgrevink landed in 1900, but it had changed greatly since that time. About half a mile down this bay we reached fast ice. It was about half-past twelve at night, and the southerly

sun shone in our faces.

To the east rose a long snow slope which cut the horizon at the height of about 300 ft. It had every appearance of ice-covered land but we could not stop to make certain, for the heavy ice lying to the northward of us was setting down into the bay, and if we were not to be beset it was necessary to get away at once. All round us were numbers of great whales showing their dorsal fins as they occasionally sounded, so we named this playground for these monsters "The Bay of Whales."

As it was impossible to work to the eastward, we struck northwards through an open lead and came south to the Barrier again about 2 A.M. on the 24th. Then we coasted eastward along the wall of ice, always looking out for the inlet. The lashings had been taken off the motor-car, and the tackle rigged to hoist it out directly we got alongside the ice-foot, to which the Discovery had been moored. For in Barrier Inlet we proposed to place our winter quarters.

I had decided on this inlet because I knew that it was practically the beginning of King Edward VII Land, and that the actual bare land was within an easy sledge journey of that place, and it also had the great advantage of being some ninety miles nearer to the South Pole than any other spot that could be reached with the ship. A further important reason was that it would be an easy matter for the ship on its return to reach this part of the Barrier, whereas King Edward VII Land itself might quite possibly be unattainable if the season was adverse.

However the best-laid schemes often prove impracticable in polar exploration, and within a few hours our first plan was found impossible to fulfil, for the very sufficient reason that the inlet had disappeared. Great disappointment as this was to us, we were thankful that the Barrier had broken away before we had made our camp upon it. The thought of what might have happened made me decide then and there that, under no circumstances, would I winter on the Barrier, and that wherever we landed we would secure a solid rock foundation for our winter home.

We had two strings to our bow and I resolved to use the second and push forward towards King Edward VII Land. The ship was headed eastward, again keeping a few hundred yards off the Barrier, for here the cliff was overhung and a fall of ice would assuredly have been disastrous to us. Soon, however, I saw that we could not make much easting in this way, for by 10 A.M. on the 24th we were close to the pack and found that it was pressed hard against the Barrier edge; and, what was worse, the whole of the northern pack and bergs at this spot were drifting in towards the Barrier.

The seriousness of this situation can be realised by the reader if he imagines that he is in a small boat right under the vertical white cliffs of Dover; that detached cliffs are moving in from seaward slowly but surely with resistless power and force, and that it will only be a question of perhaps an hour or two before the two masses come into contact, and crush his tiny craft as they meet.

There was nothing for it but to retrace our steps, and by steaming hard and working in and out of the looser floes, we just managed to pass the point with barely fifty yards of open water to spare between the Barrier and the pack.

I breathed more freely when we passed this zone of Immediate danger, for there were two or three hundred yards of clear water now between us and the pack, and after skirting along the seaward edge we came to the high cliff of ice at the westerly end, and passed safely out of the bay.

"Nimrod" moored off Tabular Bergs. (See page 14)

We then continued to the westward until in the evening the ship's head was put north and we gained a fairly open sea. It is, however, remarkable how limited is one's horizon at sea, for although there appeared to be open water for an indefinite distance we were soon up against rigid ice again. The fact is that low pack-ice is not visible at any great distance, and that one cannot trust an appearance of open water. All night long we tried to penetrate to the east, practically doubling in our tracks

before we were able to pursue the direction we wished to follow.

By noon on January 25 I found that any hopes I had of a clear run were vain, and the prospect of reaching King Edward VII Land grew remoter every ensuing hour. Indeed it seemed impossible to reach the land, and the shortness of coal, the leaky condition of the ship, and the necessity of landing all our stores and putting up the hut before the vessel left us, made the situation an extremely anxious one. I had not expected to find Barrier Inlet gone, and, at the same time, the way to King Edward VII Land absolutely blocked by ice, though the latter condition was not unusual.

I decided to continue to try and make a way to the east for at least another twenty-four hours, but when we saw the western pack moving rapidly towards us under the influence of the wind, and that it was most probable that we should be inextricably caught for days or even weeks in this great mass, I reluctantly gave orders to turn the ship and make full speed out of this dangerous situation.

Under the circumstances I could see nothing for it except to steer for McMurdo Sound and there make our winter quarters, though I would greatly have preferred to land at King Edward VII Land, because that region was quite unknown and we could have added greatly to the geographical knowledge of it. However the forces of these uncontrollable ice-packs are stronger than human resolution, and a change of plan was forced upon us.

After more trouble with the ice we worked into clearer water and the course was set for McMurdo Sound, where we arrived on January 29 to find that some twenty miles of frozen ice separated us from Hut Point. I decided to lie off the ice-foot for some days in the hope that Nature might break up the ice intervening between us and our goal.

So far the voyage had been without accident to any of the staff, but unfortunately on the 31st Mackintosh was struck in the right eye by a hook, and the eye had to be removed by Marshall, assisted by the other two doctors, Michell and Mackay.

Keenly as Mackintosh felt the loss of his eye, his great sorrow was that he would not be able to remain with us in the Antarctic. He begged to stay, but when Marshall explained that he might lose the sight of his other eye he accepted his ill-fortune without demur.

While waiting at the ice I sent a small party—consisting of Adams, Joyce and Wild—to Hut Point to report on the condition of the hut left there by the Discovery expedition in 1904, and on their return Adams reported that the hut was practically clear of snow and the structure intact.

On February 3 I decided to wait no longer, but to seek for winter quarters on the east coast of Ross Island; so we started toward Cape Barne on the look-out for a suitable landing-place. Steaming slowly north along the coast we saw across the bay a long, low snow slope connected with the bare rock of Cape Royds, which seemed a suitable place for winter-quarters.

About eight o'clock I left the ship in a boat, accompanied by Adams and Wild, and we used the hand-lead at frequent intervals until we came to fast ice. This covered the whole of the small bay from the corner of Flagstaff Point (as we afterwards named the seaward cliff at the southern end of Cape Royds) to Cape Barne to the southward. Close up to the Point the ice had broken out, leaving a little natural dock into which we ran the boat, and hundreds of Adelie penguins greeted Adams and me with hoarse squawks of excitement as we landed. I was soon satisfied that Cape Royds would be an excellent place at which to land our stores, and after taking soundings we pulled out towards the ship which had slowly been coming in. We were pulling along at a good rate when suddenly a heavy body shot out of the water, struck the seaman who was pulling stroke, and dropped with a thud to the bottom of the boat. The arrival was an Adelie penguin, which had doubtless thought it was jumping on to a rock, and it would be difficult to say whether the bird or we were the more astonished.

By 10 P.M. on February 3, the Nimrod was moored to the bay ice, and as soon as she was secured I went ashore accompanied by Professor David, England, and Dunlop, to choose a place for building the hut, and up a small valley we soon found an ideal spot for our winter quarters.

The floor of this valley was almost level and covered with a couple of feet of volcanic earth, and there was room not only for the hut itself, but also for the stores and for a stable for the ponies. A hill behind this valley served as an excellent protection from the prevailing strong south-easterly wind, and a number of seals lying on the bay ice gave promise of a plentiful supply of fresh meat.

Adelie Penguins at Cape Royds. (See page 44)

With this ideal situation and everything else satisfactory, including a supply of water from a lake right in front of our valley, I decided that we had better start to get our gear ashore at once.

CHAPTER VIII THE LANDING OF STORES AND EQUIPMENT

We now started upon a fortnight full of more checks and worries than I or any other member of the expedition had ever experienced. Nevertheless, in face of most trying conditions, the whole party turned to late and early with whole-hearted devotion and cheerful readiness.

The ponies gave us cause for the most anxiety, because in their half-broken and nervous condition it would have been practically impossible to land them in boats. Finally we decided to build a rough horse-box, get them into this, and then sling it over the side by means of the main gaff. By 3.30 A.M. on the morning of the 6th we had got all the ponies ashore, and they immediately began to paw the snow as they were wont to do in their own far-away Manchurian home.

The poor ponies were naturally stiff after their constant buffetings, but they negotiated the tide-crack all right, and were soon picketed on some bare earth at the entrance to a valley, which lay about fifty yards from the site of our hut. We thought this a good place, but in the future the selection was to cost us dear.

The tide-crack played an important part in connection with the landing of the stores. In the polar regions, both north and south, when the sea is frozen, there always appears between the fast ice, which is the ice attached to the land, and the sea ice, a crack which is due to the sea ice moving up and down with the rise and fall of the tide. When the bottom of the sea slopes gradually from the land, sometimes two or three tide-cracks appear running parallel to each other. When no more tide-cracks can be seen landwards, the ice-foot has always been thought to be permanently joined to the land, and in our case this opinion was strengthened by the fact that our soundings in the tide-crack shoved that the ice-foot on the landward side of it must be aground.

I have explained this fully, for it was only after considering these points that I, for convenience's sake, landed the bulk of the stores below the bare rocks on what I thought was the permanent snow-slope.

On the morning of February 6 we started work with sledges, hauling provisions and pieces of the hut to the shore. On the previous night the foundation posts of the hut had been sunk and frozen into the ground with a cement composed of volcanic earth and water, and the digging of the foundations had proved extremely hard work.

Now that the ponies were ashore it was necessary to have a party living on shore to look after them, and the first shore-party consisted of Adams, Marston, Brocklehurst, Mackay and Murray. Two tents were set up close to the hut, with the usual sledging requisites such as sleeping-bags, cookers, &c. The first things landed this day were fodder for the ponies, and sufficient petroleum and provisions for the shore-party in case the ship had to put suddenly to sea owing to bad weather.

The work of hauling the sledge-loads right up to the land was so heavy, that I decided to let the stores remain on the snow slope beyond the tide-crack, whence they could be taken at leisure. Our attempt to substitute mechanical haulage for man haulage was not successful, and we soon had to go back to our original plan.

Delays at once occurred, for during the afternoon of the 6th a fresh breeze sprung up, and the ship had to stand out to the fast ice in the strait and anchor there. Thus two valuable working days were lost.

When, however, I went ashore again I found that the little shore-party had not only managed to get all the heavy timber that had been landed up to the site of the hut, but also had stacked the cases of provisions, which previously had been lying on the snow slope, upon bare land. While we were engaged on the increasingly difficult task of landing stores, &c., the hut-party were working day and night and the building was rapidly assuming an appearance of solidity. The uprights were in and the brace ties were fastened together, so that if it began to blow there was small fear of the structure being destroyed. This was something to be thankful for, but while the hut-party were getting on so well, we who were engaged on landing the stores had—owing to the breaking away of the ice—to move our spot.

The stores had now to be dragged a distance of nearly three hundred yards from the ship to the landing-place, but this work was made easier by our being able to use four of the ponies. A large amount of stores was landed in this way, but a new and serious situation arose through the breaking away of the main ice-foot. Prudence suggested that it would be wiser to shift the stores already landed to a safer place before discharging any more from the ship, and on this work we were engaged during the evening of the 10th.

The "Nimrod" lying off the Penguin Rookery, Cape Royds

Next we had to find a safer place on which to land the rest of the coal and stores, and Back Door Bay, as we named the chosen spot, became our new depot. This was a

still longer journey from the ship, but there was no help for it, and after laying a tarpaulin on the rocks to keep the coal from mixing with the earth, we started landing the coal.

By this time there were several ugly looking cracks in the bay ice, and these kept opening and closing, having a play of seven or eight inches between the floes. We improvised bridges, from the motor-car case, so that the ponies could cross the cracks, and presently were well under way with the work.

Then there was a most alarming occurrence, for suddenly and without the slightest warning the greater part of the bay ice opened out into floes, and the whole mass that had opened started to drift slowly out to sea. The ponies on the ice were at once in a perilous position, but the sailors rushed to loosen the one tied to the stern rope and got it over the first crack, and Armytage also got the pony which he was looking after from the floe nearest the ship on to the next floe.

Just, however, at that moment, Mackay appeared round the corner from Back Door Bay with a third pony attached to an empty sledge, on his way back to the ship to load up. Orders were shouted to him not to come any further, but not at first grasping the situation he continued to advance over the ice, which was already breaking away more rapidly.

When he realised what had occurred he left his sledge and pony, and rushed towards the place where the other two ponies were adrift on the ice, and, by jumping the widening cracks, he reached the moving floe on which they were standing. This piece of ice gradually grew closer to a larger piece, from which the animals would be able to gain a place of safety. But when Mackay started to try to get the pony Chinaman across the crack where it was only six inches wide, the pony took fright, and rearing and backing towards the edge of the floe, which had at that moment opened to a width of a few feet, he fell bodily into the ice-cold water.

It looked indeed as if it was all over with poor Chinaman, but Mackay hung on to

the head rope, and Davis, Michell and Mawson rushed to his assistance. After great difficulty a rope sling was passed underneath Chinaman, and he was lifted up far enough to enable him to scramble on to the ice.

A few seconds later the floe closed up against the other one, and it was providential that it had not done so while the pony was in the water, for in that case Chinaman would inevitably have been squeezed to death. As it was he lived to help us very materially on another—and more critical—day. The ship was now employed to push the floe back against the fast ice, and directly this was accomplished the ponies were rushed across and taken straight ashore, and the men who were on the different floes took advantage of the temporary closing of the crack to get themselves and the stores into safety.

As soon as the ship was backed out the loose floes began to drift away to the west, and after this narrow escape I resolved not to risk the ponies on the sea ice again. The breaking of the ice continued to give us great cause for anxiety, and we had a narrow escape from losing our cases of scientific instruments and a large quantity of fodder. Had we lost these cases a great part of our scientific work could not have been carried out, and the loss of the fodder would have meant also the loss of the ponies.

We were handicapped too by such a heavy swell running on the 13th that no stores could be landed. This swell would have been welcome a fortnight before, for it would have broken up a large amount of fast ice to the south, and I could not help thinking that at this date there was open water up to Hut Point. Now, however, it was most unfortunate for us, as precious time was passing, and still more precious coal was being used by the continual working of the ship's engines.

CHAPTER IX THE NIMROD LEAVES US

As the swell continued during the following day, I signalled England to go to

Glacier Tongue and land a depot there. Glacier Tongue lies about eight miles north of Hut Point and about thirteen to the southward of Cape Royds, and by landing a quantity of sledging stores there we should be saved several miles of haulage.

Although we were busy in building the hut, and in one way and another had plenty of employment, I was disappointed at not being able to continue landing the stores until the 16th. And here I should like to mention the cheerful assistance which we always received from the officers and crew of the Nimrod. They had nothing but hard work and discomfort from the beginning of the voyage, and yet they worked splendidly and were invariably in good spirits.

Naturally Captain England was anxious to get the ship away, and also much concerned about the shrinkage of the coal-supply, but it was impossible to let her leave until the wintering party had received their coal from her. The weather was quite fine, and if it had not been for the swell we could have got through a great deal of work.

The Ponies transporting Coal on Sledges at Back Door Bay. (See page 50)

According to our experiences on the last expedition, the latest date to which it would be safe to keep the Nimrod would be the end of February, for the young ice forming about that time on the sound would seriously hamper her from getting clear of the Ross Sea.

On the 17th and 18th we contrived to land a considerable quantity of coal, equipment and stores, but soon after five o'clock on the afternoon of the 18th a furious blizzard was blowing, and the Nimrod stood off from the shore but could make little headway against the terrific wind and short-rising sea.

I was aboard the vessel at the time, and the speed of the gusts must have approached a force of a hundred miles an hour. The tops of the seas were cut off by the wind, and flung over the decks, mast, and rigging of the ship, congealing at once into hard ice, and the sides of the vessel were thick with the frozen sea water.

"The masts were grey with the frozen spray,

And the bows were a coat of mail."

Very soon the cases and sledges lying on deck were hard and fast in a sheet of solid ice, and Harbord, who was the officer on watch, on whistling to call the crew aft, found that the metal whistle stuck to his lips, a painful proof of the low temperature.

The gale raged on for days and nights, and about midnight on the 21st the Nimrod shipped a heavy sea, and all the release-water ports and scupper holes being blocked with ice, the water had no means of exit, and began to freeze on deck, where, already, there was a layer of ice over a foot in thickness. Any more weight like this would have made the ship unmanageable.

As the ropes, already covered with ice, would have frozen into a solid mass, we were forced to take the drastic step of breaking holes in the bulwarks to allow the water to escape; and only by dint of great exertions did Davis and Harbord perform this feat.

It was a sight to see Harbord, held by his legs, hanging over the starboard side of the Nimrod, and wielding a heavy axe; while Davis, whose length of limb enabled him to lean over without being held, did the same on the other. The temperature at the time was several degrees below zero, and the wind was as strong as that which we had experienced in the gales after we had left New Zealand; though the waves were not so huge as those which had the whole run of the Southern Ocean in which to gather strength to buffet us.

At 2 A.M. the weather suddenly cleared, and we were able to discover that in spite of our efforts to keep our position, the wind and current had driven us over thirty miles to the north. As, however, the sea was rapidly decreasing we were at last able to steam straight for Cape Royds.

Arriving ashore early in the morning I rejoiced to see that the hut was still intact, but the report I received as regards the warmth of it was not reassuring, because, in spite

of the stove being alight the whole time, no heat was given off. This eccentric conduct of the stove was a grave matter, for on its efficiency depended not only our comfort but our very existence. The shore-party had experienced a terrific gale, and the hut had trembled and shaken so much and so constantly that I doubt if with a less admirable situation we should have had a hut at all after the gale.

On going down to our main landing-place the full effect of the blizzard was apparent, for hardly a sign of the greater part of our stores was to be seen. Such had been the force of the wind blowing straight on to the shore that spray had been flung in sheets over everything, and had been carried by the wind for nearly a quarter of a mile inland. Consequently, in places, our precious stores lay buried to a depth of five or six feet in a mass of frozen sea water.

We feared that it would take weeks of work to get the stores clear of the ice, and also that the salt-water would have damaged the fodder. However there was no time then to do anything to release the stores from the ice, for the most important thing was to get the remainder of coal ashore and send the ship north.

Before 10 P.M. on February 22 the final boatload of coal arrived, and as we had in all only about eighteen tons, the strictest economy would be needed to make this amount spin out until the sledging parties began in the following spring.

We gave our final letters and messages to the crew of the last boat, and said good-bye. And at 10 P.M. the Nimrod's bows were pointed to the north, and she was moving rapidly away from the winter quarters with a fair wind.

We were all devoutly thankful that the landing of the stores had at length been finished and that the state of the sea would no longer be a factor in our work, but it was with something of a pang that we severed our connection with the world of men. We could hope for no word of news from civilisation until the Nimrod came south again in the following summer, and before that we had a good deal of difficult work to do and some risks to face.

Digging out Stores after the Cases had been buried in Ice during a Blizzard. (See page 58)

There was, however, scant time for reflection, even if we had been moved that way, and after a good night's rest we started digging the stores out of the ice, and transporting everything to the vicinity of the hut.

As soon as the stores were in position we hoped to make a start with the scientific observations that were to be an important part of the work of the expedition.

CHAPTER X WINTER QUARTERS AT CAPE ROYDS OUTSIDE

The next few days were spent in using pick, shovel and iron crowbars on the envelope of ice that covered our cases, corners of which only peeped from the mass.

The whole looked like a huge piece of the sweet known as almond rock, and it was as difficult to get our cases clear of the ice as it is to separate almonds from that sticky conglomerate without injury. In this strenuous labour, however, there was some humour, for Brocklehurst, who took great interest in the recovery of the chocolate, spent his energies in rescuing one particular case which had been covered with ice.

Having rescued it he carried it up to the hut to be sure of its safety, and was greeted with joy by the Professor, who recognised in the load some of his scientific instruments which were playing the part of the cuckoo in an old chocolate box. Needless to say Brocklehurst's joy was not as heartfelt as the Professor's.

We were now using the ponies, and within ten days after the departure of the ship we had practically everything handy to the hut, excepting the coal. Permanently we had not lost very much, but we do know that our one case of beer lies to this day under the ice, and some volumes of the Challenger reports, which had been intended

to provide us with useful reading matter during the winter nights, were only dug out a few days before our final departure.

Most of us at one time or another had wounds and bruises to be attended to by Marshall, and the annoying feature of these simple wounds was the length of time it took in our special circumstances for them to heal.

The day after the ship left we laid in a supply of fresh meat for the winter, killing about a hundred penguins and burying them in a snow-drift close to the hut. By February 28 we were practically in a position to feel contented with ourselves, and to explore the neighbourhood of our winter quarters (See sketch, page 61).

From the door of our hut which faced north-west, we had a splendid view of the Sound and the western mountains. Right in front of us lay a small lake which came to be known as Pony Lake, and to the left of that was another sheet of ice that became snow-covered in autumn, and here in the dark months we exercised both the ponies and ourselves.

Six times up and down the "Green Park," as we called it, made a mile, and it was here before darkness fell upon us that we played hockey and football.

To the left of Green Park was a gentle slope leading down between two cliffs to the sea, and ending in a little bay known as Dead Horse Bay, and on either side of this valley lay the penguin rookery.

On coming out of the hut we had only to go round the corner of the building to catch a glimpse of Mount Erebus, which lay directly behind us. Its summit was about fifteen miles from our quarters, but its slopes and foothills began within three-quarters of a mile of the hut.

Our view was cut off from the east to south-west by the ridge at the head of the valley where the hut stood, but on ascending this ridge we looked over the bay to the south-east, where lay Cape Barne. To the right was Flagstaff Point.

There were many localities which became favourite places for walks, and these are

shown on the plan (page 61). Sandy Beach was generally the goal of any one taking exercise, when uncertain weather warned us against venturing further, and while the dwindling light allowed us to go so far. Here we sometimes exercised the ponies, and they much enjoyed rolling in the soft sand.

As regards the interest and scenery of our winter quarters we were infinitely better off than the expedition which wintered in McMurdo Sound between 1901 and 1904, and as a field of work for geologists and biologists Cape Royds far surpassed Hut Point. The Professor and Priestley saw open before them a new chapter of geological history, for Murray the lakes were a fruitful field for new research. Adams, the meteorologist, could not complain, for Mount Erebus was in full view of the meteorological station, and this fortunate proximity to Erebus and its smoke-cloud led, in a large measure, to important results in this branch. Mawson made the study of ice part of his work, and from every point of view I must say we were extremely fortunate in the winter quarters to which the state of the ice had led us.

Before we had been ten days ashore the hut was practically completed, though it was over a month before it attained the very fully furnished appearance which it assumed after every one had arranged his belongings. It was not a spacious dwelling for fifteen persons, but if the hut had been larger we should not have been so warm.

Winter Quarters. (See page 59)

At first the coldest part of the house was undoubtedly the floor, which was formed of inch tongue-and-groove: boarding, but was not double-lined. There was a space of about four feet under the hut at one end, and as the other rested almost on the ground it was obvious to us that as long as this space remained we should suffer from the cold. So we decided to make an airlock of the area under the hut, and to this end we built a wall with the bulk of provision cases round the south-east and southerly sides, which were to windward.

On either side of the porch two other buildings were gradually erected. One, built

out of biscuit cases, the roof covered with felt and canvas, was a store-room for Wild, who looked after the issue of all food-stuffs. The building on the other side was far more elaborate, and was built by Mawson to serve as a chemical and physical laboratory. It was destined, however, to serve solely as a store-room, for the temperature inside was so nearly the same as that outside, that the moist atmosphere rushing from the hut covered everything inside this store-room with fantastic ice crystals.

The lee side of the hut ultimately became the wall of the stables, for we decided to keep the ponies sheltered for the winter. However the first night they were stabled none of us had much rest, and some of them broke loose and returned to their valley. Shortly afterwards Grisi, one of the most high-spirited of the lot, pushed his head through a window, so the lower halves of the hut windows had to be boarded up.

In a store-room built on the south-east of the hut we kept the tool-chest, the shoe-maker's outfit which was in constant requisition, and any general stores that had to be issued at stated times. But the first blizzard found out this place, and after the roof had been blown off the wall fell down. When the weather was fine again we organised a party to search for such things as mufflers, woollen helmets and so on, and I found a Russian felt boot, weighing five pounds, lying three-quarters of a mile from the crate in which it had been stowed. For the whole of this distance it must have had a clear run in the air, for there was not a scratch on the leather.

The dog kennels were placed close to the porch of the hut, and the meteorological station was on the weather side on the top of a small ridge. Adams was responsible for this, and as readings of the instruments were to be taken day and night at intervals of two hours, and as in thick weather the man trying to go between hut and screen might possibly lose his way, a line was rigged up on posts which were cemented into the ground by ice.

CHAPTER XI WINTER QUARTERS INSIDE

As regards the inside of the hut the first thing done was to peg out a space for each individual, and we saw that the best plan would be to have the space allotted in sections, allowing two men to share one cubicle. This space for two men amounted to six feet six inches in length and seven feet in depth from the wall of the hut towards the centre.

There were seven of these cubicles, and a space for the leader of the expedition; thus providing for the fifteen who made up the shore party.

One of the most important parts of the interior construction was the dark-room for the photographers, and as we were very short of wood we used cases of bottled fruit to build the walls. The dark-room was built in the left-hand corner of the hut as one entered, and the cases were turned with their lids facing out, so that the contents could be removed without the walls being demolished. The interior of the room was fitted up by Mawson and the Professor, and as Mawson made the fittings complete in every detail, the result was as good as any one under the conditions could desire.

Opposite the dark-room was my room, six feet long, seven feet deep, built of boards and roofed, the roof being seven feet above the floor. The bed-place was made of fruit-boxes, which, when emptied, served, like those outside, for lockers. My room contained the bulk of our library, the chronometers, chronometer watches, &c., and there was ample room for a table. The whole made a most comfortable cabin.

We set up the acetylene gas-plant on a platform between my room and the dark-room, for our efforts to work it from the porch had failed owing to the lowness of the temperature. The simplicity and portability of this apparatus and the high efficiency of the light represented the height of luxury under polar conditions. The only objectionable feature was the unpleasant smell when the carbide tanks were being recharged, but although we were soon used to this, the daily charging always drew down strong remarks on the unlucky head of Day, who was responsible for the

acetylene plant.

As during the winter months the inside of the hut was the whole inhabited world to us, some of the distinctive features of our furnishing may be worthy of mention. The wall of Adams' and Marshall's cubicle, which was next to mine, was fitted with shelves made from Venesta cases, and this apartment was so neat and orderly that it was known by the address "No. 1 Park Lane." The beds of this particular cubicle consisted of bamboos lashed together for extra strength, to which strips of canvas were attached, so that each bed looked like a stretcher. These beds took a little longer than the others to rig up at night, but this disadvantage was more than compensated for by the free space gained during the day. The wall end rested on stout cleats screwed on to the side of the hut, the other end on chairs, and so supported, the occupant slept very comfortably.

The First Slopes of Erebus. (See page 82)

The dividing curtain between this cubicle and the next—occupied by Marston and Day—had been adorned with life-sized coloured drawings of Napoleon and Joan of Arc, and as the colour of Joan and also portions of Napoleon oozed through, the curtain on Marston's side did not require to be decorated! This cubicle was known as "The Gables," and in it was set up the lithographic press. The beds were solid wood, and as Marston was the artist and Day the handy man of the expedition one naturally found an ambitious scheme of decoration.

The next cubicle on the same side belonged to Armytage and Brocklehurst, where everything in the way of shelves and fittings was very primitive, and next to this cubicle came the pantry.

Beyond the stove, facing the pantry, was Mackay and Roberts' cubicle, the main feature of which was a ponderous shelf, on which socks and other light articles chiefly rested, the only thing of weight being our gramophone and records.

Between this cubicle and the next there was no division, neither party troubling to

put one up. The result was that the four men were constantly at war regarding encroachments on their ground. Priestley, who was long-suffering, and who occupied the cubicle with Murray, said he did not mind a chair or a volume of the "Encyclopædia Britannica" being occasionally deposited upon him while asleep, but that he drew the line at wet and dirty boots. This cubicle was garnished on Priestley's side with bits of rock, ice-axes &c. and on Murray's with biological requisites.

The next cubicle was occupied by Wild and Joyce, and was known as the "Rogues' Retreat," a painting of two very tough characters, with the inscription The Rogues' Retreat painted underneath, adorning the entrance to the den. The couches in this house were the first to be built, and the first bed was made in Wild's store-room for secrecy's sake. It was to burst suddenly upon every one and to create feelings of admiration and envy. Unfortunately, however, in building it he had forgotten the size of the doorway through which it had to be taken, and it had ignominiously to be sawn in half before it could be passed out of the store-room into the hut.

The last compartment was the dwelling-place of the Professor and Mawson, and it would be difficult to do justice to the picturesque confusion of this cubicle. A miscellaneous assortment of cameras, spectroscopes, microscopes and the like lay in profusion on the blankets. Everything in the way of tin cans was collected by these two scientific men, and the Professor made a pile of glittering tins and coloured wrappers at one end of his bunk, and the heap looked like the nest of the Australian bower bird.

The name given, though not by the owners, to this cubicle was "The Pawn Shop."

In order to give as much free space as possible in the centre of the hut, the table was so arranged that it could be hoisted over our heads after meals were over. At first we put the boxes containing knives, plates &c. on top of the table before hauling it up, but after these had fallen on the head of the unlucky man trying to get them down, we were content to keep them on the floor.

After hearing that the stove had failed to work during the blizzard which had kept me on board the Nimrod, I was very anxious about it. My anxiety, however, was dispelled after the stove had been taken to pieces, and it was found that eight important pieces of its structure had not been put in. As soon as this more than trifling omission was rectified the stove worked magnificently, and as it was kept going day and night for over nine months without once being put out for more than ten minutes, it was severely tested.

Looking back to those distant days, it seems strange to me now that we should have taken so much trouble to furnish and beautify what after all was to be but a temporary home. Nevertheless it represented all the world to its inhabitants, and so we tried to make it as bright and cheerful a spot as possible.

Divine service was held in the hut on Sundays during the winter months.

CHAPTER XII SLEDGING EQUIPMENT

The sledge which we used is the outcome of the experience of many former explorers, but to Nansen is the chief credit that it has become such a very useful vehicle.

Our experience on the Discovery expedition had convinced me that the eleven-foot sledge is the best for all-round use, but I took with me some twelve-foot sledges as being possibly more suitable for pony traction. A good sledge for Antarctic or Arctic travelling must be rigid in its upright and cross-bars, and yet give to uneven surfaces. A well-constructed sledge needs to be supple without interfering with the strength of the structure, and in our case there was nothing wanting in this respect.

Marston in his Bed. (See page 66)

The wooden runners were about four inches wide and made of hickory, and in pulling the sledge the direction of the grain on the snow surface has to be observed, for it is wonderful what a difference it makes whether one is pulling with or against

the grain of the runner.

The second point to consider is the height of the framework of the sledge above the surface of the snow, and as it has been found that a clearance of six inches is ample in ordinary circumstances, the uprights of our sledges were only about six inches high.

An eleven-foot sledge, fully loaded, is at its best working weight with about 650 lb. on it, but this does not represent its actual strength capacity, for while we were unloading the ship we often placed over a thousand pounds' weight on a sledge without damaging it in the least.

Another vitally important article of equipment for the polar explorer is the cooker and cooking-stove, and here again we were indebted to the practical genius of Nansen who designed the form of cooker that is now invariably used in polar work. The stove was the ordinary "primus," burning kerosene, vapourised in the usual way.

Such was the efficiency of the cooker and stove that, in a temperature of forty or fifty degrees below zero, the snow or ice, which would be at this temperature, could be melted and a hot meal prepared within half an hour from the time the cooker was placed on the primus. The whole apparatus, including the primus, did not weigh more than fifteen pounds.

The next important item was the tent, and as the usual unit for sledging consists of three men, our tents were designed to contain that number. The tent cloth was thin Willesden duck, with a "snow-cloth" of thicker material round the lower edge, and instead of a single tent-pole we used five bamboo rods fastened together at one end in a cap, over which the apex of the tent fitted. Inside the tent was placed on the snow a circle of thick Willesden water-proof canvas to protect the sleeping-bags from actual contact with the ground.

It has been generally assumed by polar explorers that sledge travellers must wrap themselves up in furs, but my experience during two expeditions convinces me that

except for the hands and feet in the way of personal clothing, and the sleeping-bags for camping, furs are unnecessary. The term "bag" literally describes this portion of the sledging gear, for it is a long bag with closely sewn seams, and is entered by means of a slit at the upper end.

The appetite of a man who has just come to camp after a five-hours' march in a low temperature is something that the ordinary individual at home might possibly envy but would scarcely understand, and, indeed, the sledger himself is sometimes surprised when his ration is finished, and he feels just about as hungry as before his meal.

In choosing supplies I tried to provide those of heat-giving and flesh-forming materials, and to avoid foods containing a large amount of moisture. Our cuisine was not varied, but a voracious appetite has no nice discernment, indeed all one wants is more, and this is just what cannot be allowed if a party is to proceed a great distance while confined to man-haulage. It is hard for a hungry man to rest content with the knowledge that the food he is eating is sufficient for his needs, when he does not feel satisfied after his meal and the aching void has not even temporarily disappeared.

Pemmican, which consists of the finest beef powdered with 60 per cent, of fat added was one of the main items of our food supply, and biscuits are also a standard food in polar work.

I secured thicker biscuits than were used in the previous expedition, and the Plasmon Company supplied a ton of the best wholemeal biscuit, and with an allowance of one pound for each man per day we were as regards farinaceous food considerably better off than those on the Discovery expedition had been.

This allowance, I may mention, was reduced very considerably when food began to run short on the southern and northern journeys, but we had no fault to find with the quality of the biscuits and the addition of Plasmon certainly increased their

food-value.

Tea and cocoa were chosen as our beverages for use on the march, tea for breakfast and lunch; and cocoa, which tends to produce sleepiness, for dinner at night. Sugar is a very valuable heat-forming substance, and our allowance of this amounted to about a third of a pound per day for each man.

We also took chocolate, cheese, and oatmeal, so that although there was not much variety we felt that we were getting the most nutritious food possible.

I have already mentioned the clothing which I bought for the expedition, but as regards the most effective head-gear there were marked differences of opinion. The general method, however, of keeping head and ears warm was to wrap a woollen muffler twice round the chin and head, thus protecting the ears which are the first parts of the body to show signs of frost-bite. The muffler was then brought round the neck, and over the muffler was pulled a fleecy travelling-cap, a woollen helmet something like an old-time helmet without the visor.

Plan of the Hut at Winter Quarters (See page 64)

If a blizzard were blowing the muffler was discarded, the helmet put on, and over this the Burberry helmet, which has a stiff flap in front that can be buttoned into a funnel-shape. In very low temperatures, or even in moderately low temperature and a breeze, we had occasionally to inspect each others' faces for the sign of frost-bite; and if the white patch denoting this was visible, it had to be attended to immediately.

CHAPTER XIII OUR PONIES AND DOGS

The experiences of the National Antarctic Expedition and of the Discovery Expedition convinced me, that if we could use ponies instead of dogs for traction purposes we should be making a very successful change.

It was a risk to take ponies from the far north through the tropics, and then across

two thousand miles of stormy sea on a very small ship, but we eventually established ourselves at the winter quarters with eight ponies. Unfortunately, however, we lost four of them within a month of our arrival.

In the case of three out of the four the loss was due to the facts that they were picketed at first on sandy ground, and that we did not notice that they were eating the sand. I had neglected to supply them with salt, and as they found a saline flavour in the sand they ate it at odd moments.

Until Sandy died and a post-mortem examination revealed the cause of his death, we were at a loss to know why several of the ponies were ill. Naturally we shifted them at once to a spot where they could get no more sand, but in spite of the remedies we gave to them two more of the ponies died.

The loss of the fourth pony was due to poisoning, for Manchurian ponies will eat anything that can possibly be chewed, and this particular—or unparticular—one seems to have eaten shavings in which chemicals had been packed. These losses were a matter of the deepest concern to us.

We were left with four ponies, Quan, Socks, Grisi and Chinaman, and they were so precious in our eyes that they were guarded with most keen attention. During the winter months we had many opportunities to learn the different characters of each animal, and as every one of them seemed to possess an extraordinary amount of sense and cunning, we were not infrequently suffering from petty annoyances.

Quan was the worst offender, his delight being to bite through his head-rope and attack the bales of fodder stacked behind him; then, when we put a chain on him, he deliberately rattled it against the side of the hut, which operation kept us awake. Grisi was our best-looking pony, but he was so unfriendly to the others in the stables that we had to build him a separate stall.

Socks was shaped like a miniature Clydesdale, and was always willing to work and very fiery.

The last of our remaining ponies was Chinaman, a strong animal, sulky in appearance, but in reality one of the best of workers. He also liked to bite his head-rope, but when we put a chain on him he did not emulate Grisi by rattling it against the hut.

We had been able to obtain only nine dogs, but many puppies—most of which came to an untimely end—increased this number. The presence of the dogs around our winter quarters was very cheerful and gave a homelike feeling to the place, and our interest in the pups was always fresh, for as they grew up each one developed peculiarities of its own.

All the pups were white and were most useful to us in guarding the ponies, for if a pony got adrift the little army of pups, which slept in the stables, at once surrounded him, and by their furious barking warned the night watchman that something was wrong.

I remember that on one occasion Grisi got free and dashed out of the stables followed by the whole party of pups, and after Mackay had secured the truant the dogs followed with an air of pride as though conscious of having done their duty.

Since we were reduced to four ponies it was necessary to consider the dogs as a possible factor in our work, and so their training was important. But after enjoying some months of freedom it seemed terrible to the young dogs when first a collar was put on them, and even less did they enjoy their experience of being taken to the sledge and there taught to pull.

Peary's account of his expeditions shows that in Arctic regions dogs have been able to traverse long distances very quickly. Once indeed over ninety miles were accomplished in twenty-three hours, but this evidently was done on smooth sea-ice or on the smooth glaciated surface of the land. Such a feat would be impossible on the Antarctic Barrier surface.

A Group of the Shore Party at the Winter Quarters Standing (from left): Joyce, Day,

Wild, Adams, Brocklehurst, Shackleton, Marshall, David, Armytage, Marston
Sitting: Priestly, Murray, Roberts

CHAPTER XIV MOUNT EREBUS

Until March 3 the arrangement of all the details relating to settling in our winter quarters engaged our attention, but afterwards we at once began to seek some outlet for our energies which would advance the cause of science and the work of the expedition.

I was anxious to make a depot to the south for the furtherance of our southern journey in the summer, but the open water between us and Hut Point forbade all progress in that direction; neither was it possible for us to journey towards the western mountains, where the geology might have been studied with the chance of most interesting results.

One journey, however, was possible, certainly a difficult one, yet gaining interest and excitement from that very reason, and this was an attempt to reach the summit of Mount Erebus.

Both geologically and meteorologically the accomplishment of this work was desirable, but apart from scientific considerations the ascent of a mountain over 13,000 feet in height would be exciting both to those chosen as climbers, and to the rest of us who wished for their success.

After deliberation I decided that Professor David, Mawson and Mackay should form the party that was to try to reach the summit, and they were to be provisioned for ten days. A supporting-party, consisting of Adams, Marshall and Brocklehurst, was to assist the main-party as far as possible, and the whole expedition was to be under Adams' charge until he decided that his party was to return, when the Professor was to be in charge of the advance-party.

In my written instructions to Adams, he was given the option of going to the summit

if he thought it feasible for his party to push on, and he actually did so, though the supporting-party was only provisioned for six days, and was not so well equipped for mountain-work as the advance-party. I also gave instructions that the supporting-party was not to hamper the main-party, especially as regarded division of provisions, but instead of being drawbacks the three men were of great assistance to the advance division, and lived entirely on their own stores, and equipment.

No sooner was the decision arrived at to make the ascent than the winter quarters became busy with the bustle of preparation, and such was the energy thrown into this work, that by 8.30 A.M. on March 5 the men were ready to start upon the expedition.

In ascending such a mountain as Erebus it was obvious, that a limit would soon be reached beyond which it would be impossible to use a sledge. To meet these circumstances straps were arranged by which single sleeping-bags could be slung in the form of a knapsack upon the climber's back, and inside the bags the remainder of the equipment could be packed. Both the advance and the supporting-party followed this arrangement.

When they started I confess that I saw but little prospect of the whole party reaching the top, yet when, from the hut, on the third day out, we saw through Armytage's telescope six tiny black spots crawling up the immense deep snowfield, and when on the next day I saw the same small figures on the sky-line, I realised that the supporting-party was going the whole way.

But before I give an account of this expedition as reported to me most graphically by Professor David and Adams, I must say something about the mountain on which these six men were winning their spurs not only on their first Antarctic campaign, but also in their first attempt at serious mountaineering.

The name of Mount Erebus looms large in the history of polar exploration both north and south. On January 28, 1841, Sir James Clark Ross named the great

volcano—at whose base our winter quarters lay—after the leading ship of his expedition.

The final fate of that ship is linked with the fate of Sir John Franklin and one of the most tragic stories of Arctic exploration, but though both the Erebus and Terror have sunk far from the scenes of their first exploration, that brilliant period of Antarctic discovery will always be remembered by the mountains which took their names from those stout ships. Standing as a sentinel at the gate of the Great Ice Barrier, Erebus forms a magnificent picture. At the top of the mountain an immense depression marks the site of the old crater, and from the side of this rises the active cone, generally marked by steam or smoke. To ascend such a mountain would be difficult in any part of the world, but the difficulties were accentuated by the latitude of Erebus. The men, however, were determined to do their utmost to reach the crater itself, and how they fared and what they found must be told from the reports they gave to me.

CHAPTER XV ATTACKING MOUNT EREBUS

All hands accompanied the expedition when it started at a quarter to nine on the morning of March 5, and helped to pull the sledge along the slopes of Back Door Bay across Blue Lake, up the eastern slope to the first level; and there we said farewell to the mountain party.

Ice Flowers on newly-formed Sea Ice early in the Winter

They first steered straight up a snow slope, and about a mile out and 400 feet above sea-level a glacial moraine barred their path, and they had to portage the sledge over it by slipping ice-axes under the load between the runners and bearers of the sledge (total weight of sledge and load was 560 lb.), and lifting it over the obstruction. On the further side of the moraine was a sloping surface of ice and névé, on which the sledge capsized for the first time. Light snow was falling and there was a slight

wind.

More difficulties were quickly encountered, and no sooner had the party managed, by struggling upon their hands and knees, to drag the sledge up the steep slope of a small glacier, than their progress was impeded by sastrugi.

"Sastrugi" means wind furrow, and is the name given to those annoying obstacles to sledging, due to the action of the wind on the snow. These sastrugi vary in depth from two or three inches to three or four feet, according to the position of any rock masses near them and to the force of the wind forming them.

Though they have many disadvantages, they are occasionally very welcome; for sometimes it is impossible to see the way to steer unless one takes the line of sastrugi and notes the angle it makes with the compass course, the compass for the moment being placed on the snow to obtain the direction.

The sledgers, at this particular juncture, had much trouble in keeping their feet; and their remarks upon the subject of sastrugi were distinctly audible and uncomplimentary.

On the first evening the party camped at 6 P.M., about 2750 ft. above sea-level and a distance of seven miles from winter quarters; and on the following morning they found that the temperature was 10° below zero Fahr.

The gradient was becoming much steeper, being 1 in 5, and sastrugi, running obliquely to their course, caused the sledge frequently to capsize. The heavy work, however, resulted in keeping the travellers warm; and on the night of March 6 they had reached an altitude of 5630 ft., and a temperature of 28° below zero.

On the following morning Adams decided that the supporting-party should attempt to reach the summit, though they were handicapped by having a three-man sleeping-bag—which article of bulk one man had to carry—and in various other ways.

The party made a depot of the sledge and of some of the provisions and cooking

utensils at the second camp, and then, starting with tent-poles among their equipment, they resumed their climb. Soon, however, they realised the impossibility of climbing the mountain with these articles, which had to be taken back to the depot.

Each man carried a weight of 40 lb., and on the third evening the party camped about 8750 ft. above sea-level. Between 9 and 10 P.M. of the 7th a strong wind sprang up, and when the men woke the following morning a fierce blizzard was blowing from the south-east.

In the whirling snow and roaring wind, the two sections of the party, although only some ten yards apart, could neither see nor hear each other, and the blizzard increased in fury as the day wore on.

In the afternoon, however, Brocklehurst emerged from the three-man sleeping-bag, and instantly a fierce gust whirled away one of his wolfskin mits, and he, dashing after it, was swept down the ravine by the force of the wind.

Adams, who had left the bag with Brocklehurst, saw the latter vanish, and in trying to return to the bag to fetch Marshall, he also was blown down by the wind. Meanwhile Marshall, the only occupant of the bag, had great difficulty in keeping himself from being blown, sleeping-bag and all, down the ravine.

At last Adams, on his hands and knees, succeeded in reaching the bag, and at the same time Brocklehurst, also creeping along as best he could, appeared. It was a close call, for so biting was the cold that he was all but completely gone.

During the day and night of the 8th the travellers had nothing to drink, as it would have been impossible to have kept the lamp alight to thaw out the snow. Happily, by 4 A.M. the blizzard was over, and soon afterwards the climbers were again on their way. The angle of ascent was now steeper than ever, being thirty-four degrees—that is, a rise of 1 in 1½ and the travellers kept as much as possible to the bare rocks. During this day Brocklehurst, who was wearing ski boots, began to feel the cold

attacking his feet, but did not think seriously enough of it to change into finnesko.

At noon a fair camping-ground was found some 800 ft. below the rim of the old crater, and after a hasty meal the ascent was again tackled. Within a little distance from the top of the rim of the main crater, Mackay chose to work his way alone with his ice-axe up a long and very steep névé slope, instead of following the safer route by the rocks.

One thousand feet below the Active Cone

He passed from sight, and then was heard to call out that he was getting weak, and did not think he could last much longer. Hastening to the ridge, Marshall and the Professor dropped to the point where he was likely to be found, and fortunately met him, thoroughly exhausted, coming towards them.

It appeared that Mackay had, with his heavy load, found the work of cutting steps more difficult than he had expected, and that he had only just managed to reach safety when he fell and fainted. No doubt this was partly due to mountain sickness, which under the severe conditions and at the high altitude also affected Brocklehurst.

Having found a camping-place, the members of the party were at leisure to observe the nature of their surroundings; and they found themselves on the very brink of a precipice of black rock, forming the inner edge of the old crater. This wall of dark lava was mostly vertical, and the base of the cliff was separated from the snow plain beyond by a deep ditch like a huge dry moat, evidently due to the action of the blizzards.

But what surprised the explorers most were the extraordinary structures which rose here and there above the surface of the snowfield. They were in the form of mounds and pinnacles of most varied and fantastic appearance, some resembling beehives, others huge ventilating cowls, while others were like isolated turrets, and yet others looked like various animals in shape.

At first sight no one was able to understand the origin of these remarkable structures, but as it was time for food, they left the closer investigation until later in the day.

CHAPTER XVI THE CONQUEST OF MOUNT EREBUS

While some of the party cooked the meal, Marshall examined Brocklehurst's feet, as the latter stated that for some time he had lost all feeling in them. When his boots and socks were removed it was found that both his big toes were black, and that four more toes were also frost-bitten. Ultimate recovery from so severe a frost-bite was bound to be slow and tedious, though Marshall's and Mackay's efforts to restore circulation were, under the conditions, fairly successful. To climb almost continuously for nine hours with badly frost-bitten feet up the steep and difficult track must have required splendid pluck and determination.

After lunch Brocklehurst was safely tucked up in the three-man sleeping-bag, and the five other members of the party started off to explore the floor of the old crater, and the mystery of those remarkable structures was soon solved by the Professor.

Directing their steps towards one of the ice mounds, which bore a whimsical resemblance to a lion couchant, and from which smoke seemed to be issuing, the Professor recognised that these structures were the outward and visible signs of fumaroles.

In ordinary climates a fumarole, or volcanic vapour-well, may be detected by the thin cloud of steam above it, but in the rigour of the Antarctic climate the fumaroles of Erebus have their vapour turned into ice as soon as it reaches the surface of the snow-plain.

Thus ice mounds, somewhat similar in shape to the sinter mounds formed by the geysers of New Zealand, Iceland and Yellowstone Park, are built up round the orifices of the fumaroles of Erebus.

Next morning when the party got up at 4 A.M. they had a splendid view of the shadow of Erebus projected on the field of cumulus cloud below them by the rising sun, and while Marshall was attending to Brocklehurst, the hypsometer, which had become frozen on the way up, was thawed out, and a determination of the boiling-point made.

This, when reduced and combined with the mean of the aneroid levels, made the height of the old crater rim, just above the camp, 11,400 ft.

At 6 A.M. the party left the camp, and, hastening to reach the summit of the present crater, were soon ascending rather steep slopes, formed of alternating beds of hard snow and vast quantities of large and perfect felspar crystals, mixed with pumice. And a little farther on they reached the base of the volcano's active cone. Progress now became painfully slow, as the height and cold combined to make it difficult to breathe.

The cone of Erebus is built chiefly of blocks of pumice, from a few inches to a few feet in diameter. Externally these were grey, or often yellow, owing to incrustations of sulphur, but when broken they were of a resinous, brown colour.

At last, just after 10 A.M. on March 10, the edge of the active crater was reached, and the little party stood on the summit of Erebus, the first men to conquer perhaps the most remarkable summit in the world. From measurements made while at the crater's edge, Erebus may be calculated to rise to a height of 13,370 ft. above sea-level.

The report most vividly describes the magnificent and awe-inspiring scene before the eyes of the travellers.

The "Lion" of Erebus. (See page 86)

"We stood on the verge of a vast abyss, and at first could see neither to the bottom nor across it on account of the huge mass of steam filling the crater and soaring aloft in a column 500 to 1000 ft. high. After a continuous hissing sound, lasting for some

minutes, there would come from below a big, dull boom, and immediately great globular masses of steam would rush upwards to swell the volume of the snow-white cloud which ever sways over the crater. This phenomenon recurred at intervals during the whole of our stay at the crater. Meanwhile the air around us was extremely redolent of burning sulphur. Presently a pleasant northerly breeze fanned away the steam cloud, and at once the whole crater stood revealed to us in all its vast extent and depth. Mawson's angular measurement made the depth 900 ft., and the greatest width about half a mile. There were at least three well-defined openings at the bottom of the cauldron, and it was from these that the steam explosions proceeded."

As soon as the measurements had been made and Mawson had taken some photographs, the party returned to camp, because it had been decided to start the descent during the same afternoon.

Numerous specimens of the unique felspar crystals and of the pumice and sulphur were collected on the way back to camp, and, having arrived there, the travellers made a hasty meal, packed up, and started down the steep mountain slope, Brocklehurst insisting on bearing his own heavy load in spite of his frost-bitten feet.

Soon a point was reached where the party had either to retrace their way or to cut steps across a névé slope, or, lastly, to glissade down some 500 or 600 feet to a rocky ledge below. In their tired state, they chose the path of least resistance, which was offered by the glissade, and consequently the loads were rearranged so that they might roll down easily. Brocklehurst's load, which contained the cooking utensils, protested noisily as it went down, and the aluminium cookers received a severe battering from their abrupt contact with the rocks below.

At this time the whole party were suffering from thirst, but a makeshift drink was obtained by gathering a little snow, squeezing it into a ball, and placing it on the surface of a piece of rock, where it melted almost at once on account of the heat of

the sun.

Adams and Marshall were the first to reach the depot, having dropped down 5000 ft. between 3 P.M. and 7 P.M., and they found that the blizzard of the 8th had played havoc with their gear, for the sledge had been overturned and some of the load scattered to a distance and partly covered with drift snow. The party camped during that night at the depot, and by 5.30 A.M. on the following morning the sledge was packed and the homeward journey resumed.

The sastrugi, however, were so troublesome that rope brakes were put on the sledge-runners, and two men went in front to pull when necessary, while two steadied the sledge, and two stayed behind to pull back when required.

At this time, indeed, the conditions were most trying, for the sledge either refused to budge or suddenly it took charge, and overran those who were dragging it.

Capsizes occurred every few minutes, and, owing to the slippery ground, some of the party who had not crampons or barred ski-boots were badly shaken up. One has to experience such a surface to realise how severe a jar one gets from falling. The only civilised experience akin to it is when one steps unknowingly on a slide which some small street-boy has made on the pavement.

The party reached the spot where they had made their first camp, six miles distant from Cape Royds, at 7.30 A.M. By this time a blizzard seemed to be approaching, and the snow, which was beginning to drift before a gusty south-easterly wind, threatened to cut off all view of the winter quarters. Every one was tired, one of the tents had a large hole burnt in it, the oil supply was almost done, and one of the stoves had been put out of action as the result of the glissade. So in the circumstances the party decided to make a dash for Cape Royds, leaving sledge and equipment to be picked up later.

In the grey light the sastrugi did not show up in relief, and every few feet some member of the party fell sprawling over the snow. At last their eyes were gladdened

by the shining surface of the Blue Lake only half a mile distant from winter quarters. But now that the stress and the strain were over, their legs grew heavy and leaden, and that last half-mile seemed to be one of the hardest they had covered.

Meanwhile, at winter quarters we had been busy opening cases, with the result that the cubicles of the absentees were crowded with an accumulation, of stores. We had just decided to make the cubicles tidy again for the travellers, and were beginning on the Professor's, when I left the hut for a moment, and to my astonishment saw six slowly moving figures within thirty yards of me.

Running towards them, I shouted, "Did you get to the top?" and as there was no answer I asked again. Then Adams pointed with his hand upwards; but, not satisfied by this, I repeated the question, and Adams replied "Yes." After that I dashed to the hut and shouted to the others, who streamed out to cheer the successful venturers. A good feed followed, in which porridge had the place of honour.

The Crater of Erebus, 900 feet deep and half a mile wide. Steam is seen rising on the left. The photograph was taken from the lower part of the Crater edge. (See page 88)

After some days' delay on account of bad weather, a party consisting of Adams, the Professor, Armytage, Joyce, Wild and Marshall started to fetch in the sledge with the explorers' equipment, and this work was successfully accomplished.

Among some of the scientific results of this expedition, as given to me by Professor David, must be mentioned the calculating of the height of the mountains, and that "as regards the geological structure of Erebus, there is evidence of the existence of four superimposed craters."

"Two features," the Professor wrote, "in the geology of Erebus which are specially distinctive are: the vast quantities of large and perfect felspar crystals and the ice fumaroles.... Its situation between the belt of polar calms and the South Pole; its isolation from the disturbing influence of large land masses; its great height, which enables it to penetrate the whole system of atmospheric circulation, and the constant

steam cloud at its summit, swinging to and fro like a huge wind vane, combine to make Erebus one of the most interesting places on earth to the meteorologist."

CHAPTER XVII PREPARATIONS FOR THE WINTER MONTHS

After the journey to the summit of Erebus we began to prepare for the long winter months that were rapidly approaching.

It was most important, for instance, that the geologists should get as far afield as possible before the winter night closed upon us; so both the Professor and Priestley were out early and late collecting geological specimens which would need to be examined later on.

There was also a fine field for Murray's biological studies; while the lengthening nights gave indications that the mysterious Aurora Australis would soon be waving its curtains and beams over our winter quarters; and as information on this phenomenon was greatly needed, Mawson prepared to record the displays.

Adams was the meteorologist of the expedition, and he took all the observations from 8 A.M. to 8 P.M.; while the night-watchman was responsible for those taken from 10 P.M. to 6 A.M.

In addition to the meteorological screen, Mawson built an erection on the top of the highest ridge, in which he placed an aneurometer of his own construction to register the strength of the heaviest gusts of wind during a blizzard. Frequently the squalls were found to blow with a force of a hundred miles an hour.

There remained one more outdoor instrument connected with weather observation, and that was the snow-gauge. By using some spare lengths of stove chimney, the Professor erected a gauge into which the snow falling in a blizzard was collected, and when it was melted down we could calculate fairly accurately the amount of

snowfall.

This observation was very important, as it is on the precipitation in the form of snow, and on the rate of evaporation, that calculations regarding the formation of the huge snowfields and glaciers depend.

As soon as the ice in the bay was strong enough to bear, Murray prepared to capture the different marine creatures that rest on the bottom of the sea or creep about there. His ultimate plan for the capture of specimens was, whenever a crack opened in the bay ice, to let down a line, one end being made fast at one end of the crack, and the length of the line allowed to sink in the water horizontally for a distance of sixty yards.

A hole was dug at each end of the line, and a small dredge was let down and pulled along the bottom, being hauled up through the hole at the far end. By this means rich collections were made, and rarely did the dredge come up without some interesting specimens.

Although terrestrial vegetation is very scanty in the Antarctic, the same cannot be said of the sub-aqueous plant-life; and the investigations of the plant-life in the lakes was one of the principal things undertaken by Murray, Priestley and the Professor during the winter months.

As the winter approached a regular winter routine was arranged for the camp, and apart from Brocklehurst, who was laid up with his frost-bitten foot, all the party had to do a certain amount of work for the common weal, apart from their own scientific duties.

From the time we arrived we always had a night-watchman, and we now took turns to carry out this important duty, Roberts, who was busy cooking all day, being the only one who was exempt from night duties.

Many as the duties—such as taking the meteorological observations, looking after hut, ponies and dogs, and keeping up the fire—were, they were not unpleasant: for

when our turn came round we had a chance to wash clothes, darn socks, and do little jobs which could not receive much attention during the day. The night-watchman generally took his bath either once a fortnight or once a month, as his inclination prompted him.

The watchman during the earlier months was kept busy enough, for the ponies were constantly trying to break loose and, generally speaking, to upset things in the stable, and it was a comfort when they at last learned to keep fairly quiet.

Another difficulty the watchman encountered was that of keeping the hut warm when, instead of lumps of coal, he had to content himself with very fine stuff. To meet this difficulty we had recourse to lumps of seal blubber, and it was good to know that with the large supply of seals obtainable in these latitudes no expedition need want emergency fuel.

Towards mid-winter an institution known as eleven-o'clock tea grew into existence, the Professor being greatly attached to this, and generally undertaking to make the tea for the men still out of bed. By one o'clock, however, most of the hut party were wrapped in more or less noisy slumber. The watchman's most trying time was about five o'clock in the morning: for then one's eyes grew heavy, and great effort was needed to prevent oneself from falling asleep.

At 7.30 A.M. Roberts was called, and at this hour Armytage or Mackay was roused up to feed the ponies; but before mid-winter day Armytage took over the entire responsibility of the stables and ponies. At 8.30 A.M. all hands were called, special attention being paid to turning out the messman for the day; and at nine o'clock sharp every one sat down to breakfast.

CHAPTER XVIII STILL IN THE HUT

The duties of the messman were more onerous than those of the night watchman, and began by laying the table—a simple operation owing to the primitive conditions

under which we lived. He then garnished this with hot sauces to tickle some of our tough palates, and when we sat down he passed up bowls of porridge and the big jug of hot milk, which was the standing dish every day.

Then came the messman's order, "Up bowls," and, reserving our spoons, the bowls were passed along. If it were a "fruit day"—a day when the second course consisted of bottled fruit—the bowls were retained for this popular dish.

After he had been assisted in washing up the breakfast things, the duty of the man in the house was to fill the melting-pots with ice, empty the ashes and tins into the dust-box outside, and get in a bag of coal. One often heard the messman anxiously enquiring what the dinner dishes consisted of, the most popular, from his point of view, being those which resulted in the least amount of grease on the plates. The hut was swept out three times a day, so that the building was kept in a tidy state.

The Type-case and Printing Press for the production of the "Aurora Australis" in Joyce's and Wild's Cubicle, known as "The Rouges' Retreat." (See page 100)

It would only be repetition to chronicle our doings from day to day, during the months that passed from the disappearance of the sun until the welcome daylight returned. We lived under conditions of steady routine, and having more than enough to occupy us in our daily work that spectre known as "Polar ennui" never appeared.

At night some of us played bridge, poker and dominoes; but Joyce, Wild, Marston and Day spent much time in the production of the "Aurora Australis," the first book ever written, printed, illustrated and bound in the Antarctic.

Messrs. Joseph Causton & Sons, Ltd., had generously given us a complete printing outfit and the paper for the book, and Joyce and Wild had been instructed in type-setting and printing, Marston being taught etching and lithography.

They had hardly become skilled craftsmen, but although the early days of the printing department were not exactly happy, the work progressed steadily, until at the end of a fortnight or so two pages could be printed a day. Day meanwhile

prepared the binding by cleaning, planing and polishing wood taken from the venesta cases, while Marston reproduced the illustrations by printing from aluminium plates.

Marston was handicapped by the fact that all our water had a trace of salt in it, but he managed to produce what we all regarded as creditable pictures. In its final form the book consisted of about 120 pages; and at any rate it had helped to guard us from a dangerous lack of occupation during the polar night.

On March 13 we experienced a very fierce blizzard, and cases weighing from 50 to 80 lb. were actually shifted from their positions; so when the gale was over we put everything that could possibly blow away into places of greater safety.

On this day Murray found living microscopical animals on some fungus that had been thawed out from a lump of ice taken from the bottom of one of the lakes, this being one of the most interesting discoveries that had been made in the Antarctic, for the study of these minute creatures threw a new light on the capability of life to exist under conditions of extreme cold and in the face of great variations of temperature.

From our point of view, it was humorous to see Murray trying to slay the little animals he had found. He used to thaw them from a block of ice, freeze them up again, and repeat this process several times without causing the rotifers any inconvenience. Then he tested them in brine so strongly saline that it would not freeze at a temperature above minus 7° Fahr., and still the animals lived, and a good proportion of them survived a temperature of 200° Fahr. It became a contest between rotifers and scientist, and generally the rotifers seemed to triumph.

Tongue and pencil would sadly fail to describe the magic of the colouring in the days when the sun was leaving us. The very clouds at this time were iridescent with rainbow hues. The change from twilight into night, sometimes lit by a crescent moon, was extraordinarily beautiful, for the white cliffs gave no part of their colour

away, and the rocks beside them did not part with their blackness; so the effect of deepening night over these contrasts was singularly weird. Throughout April hardly a day passed without an auroral display, and about the beginning of that month the temperature began to drop considerably, and in calm, still weather the thermometer often registered 40° below zero.

On April 6 Marshall decided that it was necessary to amputate Brocklehurst's big toe, as there was no sign of its recovery from frost-bite; and the patient having been put under chloroform, the bone was removed, and the sufferer moved to my room, where he remained till just before mid-winter's day.

When mid-winter's day had passed, and the twilight became daily more marked, I set on foot arrangements for the sledging work in the following spring. For it was desirable that, at the earliest possible date, a depot of stores should be placed at a point to the south, in preparation for the departure of the Southern Party, which was to march towards the Pole. This depot I hoped to make at least a hundred miles from the winter quarters.

It was also desirable that definite information should be obtained regarding the condition of the snow surface on the Barrier; and I also wanted various members of the party to have practice in sledging before the serious work began. Considering our scarcity of ponies, I resolved that these preliminary sledging journeys should be performed by man-haulage.

During the winter I had given earnest consideration to the question of the date on which the party that was to march towards the Pole should leave the hut. Our hoped-for goal lay over 880 statute miles to the south, and the brief summer was all too short a time in which to march so far into the unknown and return. The ship would have to leave for the north about the end of February, for the ice would then be closing in; and, moreover, we could not hope to carry on our sledges much more than a three months' supply of provisions on anything like full rations.

Finally, I resolved that the Southern Party should leave mid-winter quarters on October 28, for by starting earlier the ponies would probably suffer from the severe cold at nights; and if the ponies were quickly incapacitated, we should have gained no advantage from our early start.

Preparing a Sledge during the Winter

But the date having been fixed, it became necessary to arrange for the laying of the depot during the early spring, and I thought that the first step towards this should be a preliminary journey on the Barrier surface, so that we might gain an idea of the prevailing conditions, and find out if the motor-car would be of service for at any rate the early portion of the journey.

CHAPTER XIX PRELIMINARY JOURNEYS

The sun had not yet returned and the temperature was exceedingly low, but the Discovery expedition had proved that it is quite possible to travel under these conditions. Accordingly I started on this preliminary journey on August 12, taking with me Professor David, who was to lead the Northern Party towards the South Magnetic Pole, and Bertram Armytage who was to take charge of the party that was to journey into the mountains of the west later in the year.

We were equipped for a fortnight with provisions and camp gear, packed on one sledge, and had three gallons of petroleum in case we decided to stay out longer. A gallon will last three men for about ten days, and we could get more food at Hut Point if we required it. We took three one-man sleeping bags, for although the larger bags are certainly warmer one's rest in them is very likely to be disturbed by the movements of a companion.

At first the weather was bad and consequently progress was slow, but although the temperature was about forty degrees below zero we slept soundly at night, and arose praising the one-man sleeping bags.

We reached the old Discovery winter quarters at Hut Point on the morning of August 14, and I took the Professor and Armytage over all the familiar ground.

To me the revisiting of these old scenes was supremely interesting. Here was the place where, years before, when the Discovery was lying fast in the ice close to the shore, we used to dig for the ice required for the supply of fresh water. The marks of the picks and shovel could still be seen, and I noticed an old case bedded in the ice, and remembered the day when it had been thrown away. The fascination of the unknown swept upon me as I stood in those familiar surroundings, and I longed to be away towards the south on the journey that I hoped would lay bare the mysteries of the Pole.

The old hut had never been a cheerful place even when we were camped alongside it in the Discovery, and it looked doubly inhospitable now after standing empty for six years. I proposed, however, to use it as a stores depot in connection with the southern journey, for it was twenty miles further south than our winter quarters. We slept there that night and on the following morning started for our journey across the Barrier.

The chief result of this expedition was to convince me that we could not place much reliance on the motor-car for the southern journey, because the condition of the surface on the Barrier varied from mile to mile, and it would be impossible to keep changing the wheels of the car so as to meet the requirements of each new surface.

Professor David and Armytage had also received a good baptism of frost, and as it was desirable that every member of the expedition should have personal experience of travelling over ice and snow in low temperatures before the real work began, I arranged to dispatch a small party every week to sledge stores and equipment south to Hut Point.

I did not hesitate to let these parties face bad weather, because the road was well known, and a rough experience would be useful to men later on. Each party returned

with adventures to relate, and curiously all of them encountered bad weather, but there were no accidents and the men seemed to enjoy the work.

Early in September Adams, Marshall and I started for Hut Point, and decided to make one march of the twenty-three miles, and not camp on the way. A blizzard, however, struck us when we were near our goal, and abandoning the extra weights we were pulling for the depot, we managed to reach the hut in a sorely frost-bitten condition. I mention this to show how constantly one has to guard against the onslaughts of the elements in the inhospitable regions of the south.

By the middle of September a good supply of provisions, oil and gear was stored at Hut Point, in fact everything needed for the southern journey had been taken there so that the start might be made from the most southern base available. Also while the men were gaining experience the ponies were being given exercise, and I felt that these little Manchurian animals were going to justify my confidence. After many experiments I concluded that 650 lb. per pony should be the maximum load, this weight including the sledge itself which weighed about 60 lb.

When the question of weight came to be considered I realised more than ever the seriousness of the loss of the other four ponies. It was evident that we could not take to the Pole as much food as I would have liked.

The Leader of the Expedition in Winter Garb

On September 22 I started out again with a party consisting of Adams, Marshall, Wild, Marston and Joyce and myself to place a depot 160 statute miles south of the Discovery winter quarters, the depot to consist of pony maize. The loads were about 170 lb. per man, and the journey was a severe one, for at times the temperature got down to 59° below zero Fahr.

We reached the main depot in latitude 79° 36′ South, longitude 168° East on October 6, and this we called "Depot A." It was marked with an upturned sledge and a black flag on a bamboo rod, and here we deposited a gallon tin of oil and 167 lb.

of pony maize so that our load would be materially reduced for the first portion of the journey south.

The weather was shockingly severe on our return journey, and we did not reach the old Discovery winter quarters until October 13, but continuing our march home on the following day we were lucky enough to meet the motor-car, and with the sledges hitched on, we drove triumphantly back to winter quarters.

During our absence the Northern Party, consisting of Professor David, Mawson and Mackay, had started on their journey to the South Magnetic Pole. I said good-bye to the Professor and his two companions on September 22 and we did not meet again until March 1, 1909.

CHAPTER XX ARRANGEMENTS AND INSTRUCTIONS

The Southern Party was to leave winter quarters on October 29, so on our return from Depot A we began finally to prepare for our attempt to reach the South Pole. I decided that Adams, Marshall and Wild should go with me and that we should take provisions for ninety-one days. This amount of food with other equipment brought the load per pony up to the weight fixed as the maximum safe load. The supporting party was to accompany us for some distance so that we might start fairly fresh from a point beyond the rough ice off Minna Bluff, and we were to take the four ponies and four sledges.

Early in 1907 I had proposed that one party should travel to the east across the Barrier surface towards King Edward VII Land, but the loss of so many ponies caused me to abandon this project.

Arrangements, however, were made for sending out a party early in December to lay a depot for the Northern Party, and when this was done, the same men were to

proceed to the western mountains.

Also on January 15, 1909, a party under Joyce, was to lay a depot near Minna Bluff containing sufficient stores for the return of the Southern Party from that point. This same party was to return to Hut Point, reload and march out to the depot a second time, and await the arrival of the Southern Party until February 10, 1909. If the Southern Party had not arrived by that date, Joyce and his companions were to go back to Hut Point and thence to the ship.

Before my departure I left instructions which provided for the conclusion of the work of the Expedition in its various branches, and for the relief of the men left in the Antarctic in the event of the non-return of the Southern Party.

To Murray I gave command of the Expedition and full instructions during my absence.

The provisioning of the Southern Party was long and anxiously considered, and Marshall went very carefully into the question of the relative food-values of the various supplies, and we were able to derive much useful information from the experience of previous expeditions.

At length we decided that the daily allowance of food for each man on the journey, as long as full rations were given, was to be as follows:

Oz. Pemmican 7·5 Emergency Ration 1·5 Biscuit 16 Cheese or Chocolate 2 Cocoa ·7 Plasmon 1 Sugar 4·3 Quaker Oats 1 34·0

Tea, salt, and pepper were extras not weighed in with the daily allowance. We used about two ounces of tea per day for the four men, and the salt and pepper were carried in small bags, each bag to last one week.

Everything was ready for the start as the end of October approached, and we looked forward with keen anticipation to the venture. The supporting-party, consisting of Joyce, Marston, Priestly, Armytage, and Brocklehurst, was to accompany us for the first ten days.

The weather was not very good towards the end of October, but there were signs that summer was coming. We spent the last days overhauling sledges and equipment, and our evenings in writing letters for those at home, to be delivered in the event of our not returning from the unknown regions into which we hoped to penetrate.

The Motor-car in the Garage, Maize-Crusher on the right

CHAPTER XXI THE START TO THE SOUTH POLE

Brilliant sunshine and a cloudless sky were an auspicious beginning to the day on which we started upon our attempt to plant the Union Jack, which the Queen had given us, on the last untrodden spot of the world. Yet on leaving the hut where we had spent so many months in comfort, we had a feeling of real regret that never again should we all be together.

The supporting-party started first, and at 10 A.M. we said good-bye to Murray and Roberts, who were to be left behind, and we four of the Southern Party followed with an intense desire to do well for the sake of every one concerned in the Expedition.

Hardly, however, had we been marching for an hour when mishaps began to occur. First of all Socks went dead lame, and soon afterwards, when we were halting to feed ourselves and the ponies, Grisi lashed out and struck Adams just below the knee.

Three inches higher and the blow would have shattered both his knee-cap and his hopes of reaching the South Pole. As it was the bone was almost exposed and he was in great pain, although he said very little about it. What he would have done if he had been completely knocked out it is impossible to imagine, as his interest in the Expedition was intense.

On October 30 we reached Hut Point and with Adams better, the ponies recovered from their lameness, and the weather gloriously fine, we rejoiced to be out at last on

the long trail.

Quan fit or unfit was the most mischievous of all the ponies, for when any one was looking his special delight was to bite his tether, and unfortunately he did this on one occasion when no one was watching him and played havoc with the maize and other fodder. When we tried to catch him he dashed from one sledge to another tearing bags to pieces and trampling the food out, kicking up his heels and showing that he was deliberately destructive, for his distended appearance proved that he had eaten more than his fill.

We left the sea ice on November 3, but instead of finding a better surface on the Barrier, we discovered that the going was more difficult than ever. The ponies, however, pulled magnificently and every hour the pony-leaders changed places with the sledge-haulers. On the next day we wore goggles, as we were already feeling the trying light, and as soon as we had passed the end of White Island the surface became softer and it was trying work for both men and ponies. Still, however, we tramped along, the supporting-party pulling magnificently, and our march for the day was over sixteen miles.

Up to this time we had been blessed with fair weather, but on Guy Fawkes' Day we encountered driving snow which made our steering very wild. In the bad light the sastrugi could not be seen, and the surface was very bad for both ponies and men. Minor mishaps were natural under such conditions, and after Marshall, who was leading Grisi, had got his legs into a crevasse, and soon afterwards Wild, Adams and Marshall had got into another crevasse, there was nothing for it but to pitch camp and wait until the weather cleared.

To our sorrow we had to lie during the whole of the next day in our sleeping-bags except when we went out of them to feed the ponies, for a blizzard was upon us with thick drift. One can scarcely realise how trying it is to be held up by blizzards, unless one has been on a polar expedition and knows that each lost day means also

the consumption of 40 lb. of pony feed alone. Nevertheless, we endeavoured to make the best of an irritating situation, and in our one-man sleeping-bags each of us had a little home, where he could read and write and look at his household gods—if he had brought any with him.

During the morning I passed the time reading Much Ado About Nothing—an inappropriate play perhaps for me to be reading when I was worrying over our delay and thought that I had good cause to be.

The blizzard would not have mattered so much if we had only to consider ourselves, for we could save on the food, but if the ponies were to be of much use to us they had to be properly fed.

On the 7th the weather was better, though still very thick and overcast, and cheered by the supporting-party, who were returning to winter quarters, we started off with the ponies pulling splendidly. But almost immediately we found ourselves in a maze of crevasses. The first one which Marshall crossed with Grisi was 6 ft. wide, and when I looked down there was nothing to be seen but a black yawning void.

Crevasses were here, there, and everywhere, and we had to camp between two large ones and wait until the light became better, for to proceed in such weather was to court disaster.

At last we were quite on our own resources, and as regards comfort in the tents were very well off, for with only two men in each tent there was plenty of room. Adams began by sharing a tent with me, but we decided to shift about so that we could take turns with each other as tent-mates.

The Southern Party marching into the White Unknown, (See page 112)

In respect to books also we were well supplied, for I took Shakespeare's Comedies with me, Marshall had Borrow's "The Bible in Spain," Adams, Arthur Young's "Travels in France," and Wild "Sketches by Boz." By changing round when we had finished, we had literature enough to keep us going for many hours when we were

unable to march.

No literature, however, could prevent us from chafing at the weather which kept us in our bags until the morning of November 9, but the difficulties of travelling over snow and ice in a bad light are practically insurmountable.

When the light is diffused by clouds or mist, it casts no shadows on the dead white surface, which consequently appears to the eye to be uniformly level. Often when we thought that we were marching on a level surface, we would suddenly fall two or three feet, and the strain on the eyes under these conditions was very great.

It is, indeed, when the sun is covered and the weather thickish that one is in danger of snow-blindness, that painful complaint with which we all became too well acquainted during the southern journey.

The only way to guard against an attack is to wear goggles the whole time, but when one is perspiring on account of exertion with the sledges, the glasses fog and they have to be taken off so that they may be wiped. When they were removed, the glare from the surrounding whiteness was intense, and the only relief was to get inside a tent, which was made of a green material very restful to the eyes.

On the night of the 8th the weather cleared, and we saw that we were in a regular nest of crevasses, Marshall and Wild finding that their tent was pitched on the edge of a previously unseen one.

To stand in drift for four days with 24° of frost was so bad for the ponies that we were thankful that their appetites for the hot food we gave to them was not affected, but we wanted to get under way and put some good marches in before we could feel really happy.

The distance as the crow flies from our winter quarters to the Pole is 750 geographical miles and as yet we had only done fifty-one. That a polar explorer needs a large stock of patience in his equipment is not to be denied, and as we lay in our bags anxious to be marching yet unable to move we drew heavy draughts upon

our stock.

CHAPTER XXII ONWARD

The morning of the 9th was fine, calm and clear, and, as soon as we had dug the sledges out of the drift and breakfasted, we set out to find a track among the crevasses. Our hunt for crevasses was successful enough, for we discovered all sorts from narrow cracks to ugly chasms with no bottom visible, but to find a track through them was beyond our powers.

There was indeed nothing for it but to trust to Providence, and having got under way we got over the first few crevasses without difficulty. And then all of a sudden Chinaman went down a crack which ran parallel to our course.

Adams tried to pull him out and he struggled gamely, but it was not until Wild and I left our sledges and hauled along Chinaman's sledge that, just in time, he managed to get on to firm ice, for three feet more and it would have been all up with the Southern Journey. The three-foot crack opened out into a great fathomless chasm, and down that would have gone the pony, all our cooking gear and biscuits and half the oil, and probably Adams as well.

But when things seem to be as hopeless as possible they often take a sudden change for the better, and in our case this was the last crevasse we encountered for some time, and at length, with a gradually improving surface, we were really able to push along.

During the day we knocked off over 14 miles of those intervening between us and our goal, and we turned in for the night in a more cheerful frame of mind. Our rest, however, was disturbed by the mischievous Quan eating away the straps on his rug, and Grisi and Socks fighting over it. The propensities of Manchurian ponies for eating peculiar things must certainly be allowed to have their drawbacks.

Such accidents may seem very trivial, but they meant work for us in repairing the

damage, and when one is thoroughly tired after a day's march one does not welcome any unlooked for labour.

To our astonishment during our march in the afternoon we came across the track of an Adelie penguin, and where on earth the bird had come from was a mystery. It had been travelling on its stomach for a long way, and it had at least fifty miles to travel before it could reach food and water, and the nearest water in the direction from which it had come was over fifty miles away. Among penguins this bird ought, I think, to have been credited with an adventurous disposition.

With better weather for the next few days we made good progress towards the depot where 167 lb. of pony food was lying, and our appetites were already too good for the amount of food we were allowing ourselves. Perhaps those who have never known what it is to be desperately hungry will be disgusted at us for remembering that when the ponies had done their work we should be able to add horse-meat to our rations. But I can say with truth that until the ponies had to be killed they were treated with a liberality that we denied sternly to ourselves.

Cape Barne and Inaccessible Island by Moonlight

To pick up a depot which is only a tiny speck in a vast snowy plain and is nearly sixty miles from the nearest land, is like picking up a buoy in the North Sea with only distant mountains for bearings, and I was most anxious that we should reach it before the glorious weather broke up, for there was stored not only the pony feed but also a most valuable gallon of oil.

Imagine then my delight when, on the evening of the 14th, Wild, who was outside the camp looking through the Goertz glasses, shouted that he could see the depot. We rushed out at once, and there were the flag and sledge to be seen plainly through the glasses. On the next morning we found everything intact and the flag waving merrily in the breeze, and we camped there for a few hours so that we could distribute weights and parcel our provision to be left there for our return journey.

It went to our hearts to leave a tin of sardines and a pot of black currant jam which we had intended for our feast on Christmas Day, but every ounce of additional weight was so important, that although we felt that we ought to take as much food as we possibly could these luxuries had to be left behind.

We were on again soon after one o'clock and when we camped that night we built a snow mound as a guide to our homeward track, and decided to build one at each camp we made. Having two shovels with us, in ten minutes a mound 6 or 7 ft. high could be built, and although we wondered whether our tracks would remain longer than our mounds, or our mounds longer than the tracks, we thought it most advisable to neglect no precautions. And as a matter of fact these mounds remained after the sledge tracks had vanished, and were a great comfort to us on our journey back.

Everything continued to go splendidly for us, and I could not help contrasting the progress of our last few days with the time six years before, when I was toiling along five miles a day over the same ground.

On November 16, for instance, we covered over 17 miles, a record day for us; and also every one was in splendid health, my eyes (which had been attacked by snow blindness) were better, and although split lips prevented us laughing we were going straight as a die to the south—a reason sufficient in itself for our cheerfulness.

Another opportunity for contrast was that between our parsimony in the way of food and Quan's wastefulness. To economise we saved three lumps of sugar each day so that in time we might build up a reserve stock, while Quan with his marvellous digestion preferred to eat a yard of creosoted rope than his proper bait, and often in sheer wantonness threw the food given to him all over the snow.

By this time the work was beginning to tell upon the ponies, especially upon Chinaman, but all of them continued to work splendidly in their own particular way, and naturally we were anxious to advance our food-supply as far as possible south before the ponies gave out.

Quan plodded stolidly through everything, possibly thinking of what tricks he would play at night but at the same time working magnificently; Chinaman was the first to show signs of collapse, but his spirit was willing though his strength was weakening; Grisi and Socks took all soft places with a rush.

But in spite of the hard labours of the day we always felt confident that the ponies would enjoy themselves in their peculiar way at night, and on one occasion I had to go out to prevent Socks from biting and swallowing lumps out of Quan's tail. If we had ever anticipated that they would have played such games, we should have taken a longer wire to tether them and keep them apart.

CHAPTER XXIII BEYOND ALL FORMER FOOTSTEPS

On November 18 I imagined that we had reached the windless area of the Pole, for the Barrier was a dead, smooth, white plain, weird beyond description, and, having no land in sight, we felt tiny specks in the immensity around us. It seemed as though we were in some other world, and yet the things that concerned us most were such trifles as split lips and big appetites.

Already the daily meals were all too short, and we wondered what it would be like when we were really hungry. However, we were moving on at a rate of about fifteen miles a day, and every night that we camped we felt that another long step towards our desire had been made.

Soon I discovered that I was wrong in thinking that we had reached the windless area, for all the sastrugi began to point due south, but the whole place and conditions were so unlike anything else in the world of our experience, that it was extremely difficult to make correct forecasts as to what we should next encounter.

At one moment I thought of Coleridge's "Ancient Mariner": "Alone, alone; all, all alone, alone on a wide, wide sea"; and then, when the mazy clouds sprung silently up and, not followed by any wind, drifted quickly across our zenith, the only word to

describe my feeling is uncanny.

It was as though we were truly at the world's end, and were bursting in on the birthplace of the clouds and the nesting-home of the four winds, and we could not suppress a feeling that we mortals were being watched with a jealous eye by the forces of nature.

Still, in spite of these sensations, which every one who goes out into the intensely lone places of the world must experience, we were more interested in such things as heavy going and soft surfaces than in anything else, for the surface was all-important to us and played the leading part in our day's work.

On November 20 we met with a terribly soft surface—so bad, in fact, that it sounded the death-knell of poor old Chinaman, who was no longer able to keep up with the others; and so we had to shoot him on the following day.

Let me say again that the killing of the ponies was not pleasant work, and that our only satisfaction was in knowing that they were well fed up to the last, and had suffered no pain. When we had to kill a pony we threw up a snow-mound to leeward of the camp, and took the animal behind this out of sight of the others.

Of necessity we had to eat the meat, and as within a very short time after killing the carcase was frozen solid, we always tried to cut the meat into small pieces before this occurred.

On the same day that saw the death of Chinaman we made our second depot, and left there 80 lb. of pony meat, one tin of biscuits weighing 27 lb., some sugar, and one tin of oil to see us back to Depot A.

With three ponies dragging 500 lb. each we left our depot, with its black flag flying on the bamboo lashed to a discarded, sledge, and were soon in new land to the south—land never before seen by human eyes.

The land consisted of great snow-clad heights rising beyond Mount Longstaff, and also far inland to the north of Mount Markham. We found that our latitude was 81°

8′ south.

The weather still remained splendid for marching, with a cool breeze from the south and the sun slightly hidden, but our enjoyment of the glorious view of peaks new to human eyes was marred by Wild being temporarily unwell, and by Adams suffering badly from toothache. Our first attempt to pull out this tooth merely resulted in the tooth breaking, but at a second attempt Marshall succeeded in getting it out, an achievement—under the conditions—as creditable to the one as it was welcome to the other.

Steady progress was made until November 26, which is a day which we travellers at least shall remember, for on it we passed the "farthest south" previously reached by man. On this night we reached latitude 82° 18 south, and our "farthest south" in the march with Captain Scott was 82° 16½′.

As each hour passed on this memorable day we found new interest to the west where the land lies, for we opened out Shackleton Inlet, and up the inlet a great chain of mountains, and far into the west still more peaks. To the west of Cape Wilson another chain of peaks about 10,000 ft. high appeared, and to the south-south-east new mountains were continually coming into view. It falls to the lot of few men to see land not previously looked upon by human eyes, and it was with feelings of keen curiosity and awe (mingled in my case with a fervent hope that no land would block our path) that we watched the new mountains rise from the great unknown that lay before us.

No man of us could even guess what wonders might be revealed to us in our march south, and our imaginations took wings until a stumble in the snow or the sharp pangs of hunger brought back our attention to the needs of the immediate present.

Our anxiety, however, to learn what lay before us was as keen as it could be, and the long days of marching over the Barrier surface were saved from monotony by the continued appearance of land to the south-east. As we marched on and new

mountains kept on rising, we were concerned to notice that they trended more and more to the eastward, for that meant that we must alter our course from nearly due south. Nevertheless, we hoped that when we reached them some strait might be found which would enable us to go right through them and on south. Really, however, patience was of more use to us than speculation, for, come what might, we meant to push on until our limit of strength was reached.

By November 28 we had reached a truly awful surface, and poor Grisi, who had been smitten with snow-blindness, had to be shot in the evening. Having made Depot C. and left one week's provisions and oil to carry us back to Depot B, we went on the next morning with 1200 lb. weight, which we decided to pull with the ponies, but we quickly discovered that the ponies would not pull when we did, so we had to untoggle our harness.

The whole country seemed to be made up of range upon range of mountains, but the surface over which we were going was so bad that the ponies sank in right up to their bellies, and we had to pull with might and main to get the sledges to move.

By evening the ponies were nearly played out, especially old Quan, who was suffering, not from the weight of the sledge, but from the effort of lifting his feet and limbs through the soft snow, and on the following days we had practically to pull his sledge.

The time had come for him to go, and I am sure that we all felt losing him and I was especially sorry, as he had been my special pony for several months. In spite of all his annoying tricks, his immense intelligence made him a general favourite.

CHAPTER XXIV "THE HIGHWAY TO THE SOUTH"

On December 1 we reached latitude 83° 16′ south and could see land stretching away to the east with a long white line in front of it that looked like a giant barrier. It seemed as though there was going to be a change in some gigantic way in keeping

with the vastness of our surroundings.

At one moment our thoughts were on the grandeur of the scene, the next on what we would have to eat if we were let loose in a good restaurant. For we were very hungry in these days, and lived mainly on pony-meat, while on the march, to cool our throats as we pulled in the hot sun, we chewed frozen meat.

The four of us had, now that Quan was gone, to haul one sledge while Socks followed behind with the other, and he soon got into our pace and did splendid work. Although we were working only in shirts and pyjamas, the sun beat down on our heads and we perspired freely, whilst our feet were cold in the snow.

It was heavy work for us as the surface was as bad as it could be, but soon after midday we got close enough to see that ahead of us were enormous pressure ridges, heavily crevassed and running a long way east, with not the smallest chance of our being able to get southing that way any longer on the Barrier. So we had to strike due south in toward the land, and in the evening were close to the ridges off the coast.

There was a red hill about 3000 ft. near to us which we decided to go up on the following day, so that we could gain a view of the surrounding country. How anxious a time this was for us I need hardly mention, for time was precious and food more so, and unless we could find a good route through the mountains our way to the Pole was well-nigh blocked.

Accordingly after breakfast we started off, leaving all camp gear standing and a good feed by Socks to last him for the day. Our allowance for lunch was four biscuits, four lumps of sugar, and two ounces of chocolate each, and we hoped to get water at the first of the rocks when we landed.

Hardly had we gone one hundred yards when we came to a crevasse, and, finding it difficult to see clearly with my goggles, I took them off, and in consequence was afterwards attacked by snow-blindness.

Several crevasses were successfully crossed, and then we were brought up standing by an enormous chasm of about 80 ft. wide and 300 ft. deep which lay across our route. By going round to the right we found that this chasm gradually became filled with snow, and so we were able to cross and resume our line to the land, which deceptively appeared quite close but was really miles away.

Crossing several more crevasses, we reached about midday an area of smooth blue ice where we obtained a drink of delicious water, and after travelling for half a mile we got to the base of the mountain which we hoped to climb so that we might view the country. At 1 P.M. we had a couple of biscuits, and then started to make our way up the steep rock-face.

This was the most difficult part of the whole climb, for the granite was weathered and split in every direction, but at last we clambered up this face, and finally gained the top of a ridge from which an open road to the south burst upon our view. For running almost north and south between two huge mountain ranges a great glacier stretched before us.

Eagerly we clambered on to the top of the mountain, and from the summit we could see the glacier stretching away south inland until at last it seemed to disappear in high inland ice. This was what we had seen ahead of us and speculated about so freely.

There was no longer any question as to the way which we should go, for though on the glacier we might meet crevasses and difficulties not to be met with on the Barrier, yet on the latter we could get no farther than 86° south, and then would have to turn in towards the land and get over the mountains before we could reach the Pole.

Our main difficulty on the glacier route would be, we thought, with Socks, for as yet we could not hope to drag the full load ourselves without relay work. All the afternoon of December 4 we toiled at the sledge while Socks pulled his load with

ease, and eventually we reached the head of the pass, 2000 ft. above sea-level.

New Land. The Party ascended Mount Hope and sighted the Great Glacier, up which they marched through the Gap. The main body of the Glacier joins the Barrier further to the left. (See page 130)

From that point there was a gentle descent towards the glacier, and we camped for the night close to some blue ice with granite boulders embedded in it, round which, were pools of water. This last fact may seem unimportant, but it was really of consequence to us as this water saved our oil, for we had not to melt snow or ice.

The pass through which we had come was flanked by great granite pillars at least 2000 ft. in height, and which made a magnificent entrance to the "Highway to the South."

CHAPTER XXV ON THE GREAT GLACIER

The morning of December 5 saw us breaking camp at eight o'clock, and proceeding south down an icy slope to the main glacier. Soon, however, the ice slope gave place to a snow slope, and after a time the snow was replaced by blue ice split by so many cracks and crevasses that it was impossible for Socks to continue to drag the sledge without our risking his life in one of the many holes.

Snow-blindness was still troubling me so much that I stayed in camp after lunch was over, while Marshall and Adams went on to spy out a good route for us to follow. They found that there was more cracked-up blue ice ahead of us, and—what was much more remarkable—they also discovered a bird, brown in colour with a white line under each wing, which had flown just over their heads and had disappeared to the south.

Such an incident was wonderfully strange in latitude 83° 40′ south, and what this bird was I am unable to say, for both Adams and Marshall were sure that it was not a skua-gull, which was the only bird I could imagine venturing so far south.

Our camp for that night was pitched under a wonderful pillar of granite, and as pieces of granite, from the size of a hazel-nut to great boulders weighing thirty tons or more, were lying all around, we felt that at any moment a great piece of rock might come hurtling upon us. On one snow slope, indeed, we could see the fresh track of a fallen rock, but as it was impossible to spread a tent on the blue ice we were compelled to camp, for half a mile of crevassed ice lay between us and the snow slope to the south-south-west, and we were too tired to march any farther.

We left a depot at this spot, and then, refreshed by sleep, we divided up our load and managed to get the whole lot over the crevasses in three journeys.

But it was an awful job, for every step was a venture, and one felt that at any moment our journey towards the Pole might come to a permanent close. Having, however, succeeded in crossing this particularly dangerous half-mile, my companions (leaving me to rest with one eye entirely blocked up by snow-blindness) went back for Socks, and early in the afternoon we were once more camped upon snow. During the rest of that day we had a wonderful view of the mountains which rose up in peaks and ranges, but the going was exceedingly heavy and our progress was consequently very slow.

He, however, who hopes to go into the unexplored spots of the world must harden himself to labour, and find causes for cheerfulness in conditions which are at the best only comparatively cheering. For instance, on the following afternoon we were congratulating ourselves that if the crevasses were as frequent as ever, the light, at any rate, was better than it had been during the morning, when suddenly we heard a shout of "Help" from Wild, who was following us with Socks.

Stopping immediately, we rushed to his assistance, and saw the pony sledge with the forward end down a crevasse, and Wild reaching out from the side of the gulf and hanging on to the sledge. There was no sign whatever of Socks, and Wild's escape was simply miraculous.

He had been following our tracks, which passed over a crevasse entirely covered with snow, when the weight of the pony had broken through the snow crust and in a second all was over. Wild told us that he felt a sort of rushing wind, that the leading rope was snatched from his hand, and that he put out his arms and just caught the further edge of the chasm.

Fortunately for Wild and for us, Socks's weight snapped the swingle-tree of the sledge, so it was saved though the upper bearer was broken.

We lay down on our stomachs and looked into the gulf, but no sound or sign came to us; we seemed to be gazing down into a black bottomless pit.

Poor Socks was gone beyond recall, but if ever men had cause for gratitude we had in Wild's escape, and in the saving of the sledge. If the sledge had gone we should have been left with only two sleeping-bags for the four of us, and with such a short equipment we could scarcely have even got back to winter quarters. As it was, the loss of Socks was a most serious loss to us, because we had counted upon his meat, but all we could do was to take on the maize so that we could eat it ourselves.

Crevasses and pits of unknown depth continued to beset us, and with 250 lb. per man to haul we naturally could not march at any great rate; indeed, our anxiety to find a level and inland ice-sheet, so that we could increase our speed, was terrific.

Lower Glacier Depot. The Stores were buried in the Snow near the Rock in the Foreground

Falls, bruises, cut shins, crevasses, razor-edged ice, and heavy upward pulls were the sum of our days' trials, not interesting subjects for conversation when the night found us in camp; but, as a matter of fact, our talk was mainly about food and the things we would like to eat. To show how hungry we were, I have only to mention that by December 9 we were all looking forward to Christmas Day, for then, whatever happened, we were resolved to be full of food. On the tenth, after a day's strenuous fight with the glacier, we camped under a mountain which we named the

"Cloud-Maker," and ground up the balance of the maize between flat stones, so that we might use it to eke out our supply of food.

The method of preparation was as primitive as the food would have been unpalatable to most people, but it was the only way we could make the maize fit to cook without using more oil than we could spare for lengthy boiling.

Critical as our position was, we were cheered by the thought that we were still getting south, but the sledges were being badly damaged by the continual ice-work, and as there were still 340 geographical miles between us and the Pole, we longed for a surface which was a little less like walking over a cucumber-frame. Of all the surfaces on which to travel, none can be more irritating than that of rotten ice through which one's feet are everlastingly breaking.

On such a surface, however, we could make a certain amount of progress, and it was not until December 12 that we met with conditions which reduced our progress for the day to a miserable three miles. Sharp-edge blue ice full of chasms and crevasses, and rising to hills and sinking into gullies, provided us with obstacles unequalled in any polar work for difficulty in travelling. Under such circumstances we had to have recourse to relay work, for we could only take on one sledge at a time, two of us pulling while the others steadied and held the sledge to keep it straight. In this way we advanced for a mile, and then returned over the crevasses and hauled up the other sledges over a surface where often and often a slip meant death.

In such rough-and-tumble work the sledges naturally suffered, and the one with the broken bow frequently striking against hard, sharp ice, pulled us up with a jerk and flung us down. In all our difficulties and dangers, however, we found solace in the thought that the glacier must eventually end and our longed-for plateau be reached.

By December 16 we had crossed nearly one hundred miles of crevassed ice and risen 6000 ft. on the largest glacier in the world, and on the following afternoon we burned our boats behind us as regards warm clothing, and made a depot of

everything except the barest necessities. But relay work still hampered our progress towards our goal, and no thirsty man ever longed for water with more eagerness than we longed for the plateau and the end of that vast glacier.

CHAPTER XXVI ON THE PLATEAU TO THE FARTHEST SOUTH

Never do I expect to meet anything more tantalising than the plateau on which our hopes were set. By December 18 I thought that we were almost up, and yet we had to go on and on, apparently unable to get rid of the crevasses.

By this time we were fully conscious that food was to be the key to our success or failure to reach the Pole, and we began to save food in order to spin it out, a saving which made us almost ravenous with hunger. Each day we saved two biscuits per man, and also some pemmican and sugar, and we tried to satisfy our hunger by eating pony maize, which we soaked in water to make it less hard. If only dreams prevented one from hunger we should have been well off, for each night we all dreamed of foods.

A week before Christmas we had food for thirty-five days, and were about three hundred geographical miles from the Pole, with the same distance back to the depot we had just made, so that at the best we knew that we must march on short rations if we were to reach our goal.

Each succeeding day we hoped to get rid of the crevasses, but although we were fortunate in having been favoured with splendid weather, we had to camp each night sustained by the hope that on the morrow we should really be upon the plateau, and by the thought that Christmas Day—with its splendid dinner—was approaching.

By December 21—Midsummer Day—the weather had changed, and we encountered 28° of frost and such a strong blizzard wind that both our fingers and our ears were

frost-bitten, while our beards were masses of ice all day long. From the conditions I could easily imagine that we were on a spring sledging journey, for such a chilly wind was blowing that it found its way through the nearly worn-out walls of our tent.

Relay work still continued to hamper us, and on the 22nd we had to work with the alpine rope all day, dragging 400 lb. at a time up steep slopes and across ridges, and roping ourselves together when we went back for the second sledge, because the ground was so treacherous that often we were only saved by the rope from falling into fathomless pits.

The Camp below "The Cloudmaker"

Wild described this sensation of walking over a surface of half-ice and half-snow as like walking over the glass roof of a station, and so accustomed did we become to crevasses that our usual question when any of us fell into one was, "Have you found it?"

I suppose that we became callous as regards immediate dangers, though I confess that we were always glad to meet crevasses with their coats off, that is, not hidden by their perilous snow-coverings. Longing as we were really to stretch out our legs for the Pole, it can easily be imagined how irksome this constant succession of crevasses was. And to add to our discomforts, the temperature had become so low that the pony-maize refused any longer to swell in the water, the result being that it swelled after we had eaten it.

Christmas Eve, however, brought a change in our fortunes, and was much the brightest day we had enjoyed since entering our southern gateway. We covered over eleven miles, and at night were 9095 ft. above sea-level, and the way before us was still rising.

So far we had seen no sign of the very hard surface that Captain Scott speaks of in connection with his journey on the Northern Plateau, but we were determined not to

give up hopes of better surfaces, for without them we knew that we should not reach the Pole. As Christmas approached our thoughts naturally turned to home and the festivities and joys of the time. How greatly we longed to hear "the hansoms slurring through the London mud" it is impossible to say. But instead of the sights and sounds of London we were lying in a little tent, isolated high on the roof of the end of the world, far indeed from the trodden paths of men.

Nevertheless our thoughts flew across the wastes of snow and ice, and across the oceans to those for whom we were striving, and who, we knew, were thinking of us.

By noon on Christmas Day we had by hard hauling covered over five miles, and had reached a latitude of 85° 51′ south. Then I took a photograph of the camp with the Queen's flag flying and also our tent flags, my companions being in the picture, and in the evening we had a splendid dinner, the details of which I cannot refrain from giving.

First came "hoosh," consisting of pony ration boiled up with pemmican and some of our emergency Oxo and biscuit. Then in the cocoa-water I boiled our little plum pudding, which a friend of Wild's had given him. This, with a drop of medical brandy, was a luxury which the greatest glutton living might have envied. And afterwards came cocoa; and, lastly, cigars and a spoonful of liqueur sent us by a friend in Scotland.

We were really satisfied for once, and as we knew that we should not be in that happy state again for many a long day, we discussed the situation after dinner and decided still further to reduce our food.

On Christmas Day we were nearly 250 geographical miles from the Pole, and having one month's food but only three weeks' biscuit, we resolved to make each week's food last ten days, and to throw away everything except the most absolute necessities.

Already we were as regards clothes down to the limit, but at this time we decided

also to dump a lot of spare gear—and risk it.

Pulling 150 lb. per man, we spent our Boxing Day among ridges and crevasses. Every time we reached the top of a ridge we said to ourselves, "Perhaps this is the last," but the last was long in coming. And in the meantime our maize was nearly finished, and our rations were bound to be shorter than ever. Considering that hard half-cooked maize gave us indigestion, it is, perhaps, curious that we were very sorry that there was so little of it left, but those who have suffered from both hunger and indigestion know too well which is the harder to endure.

On December 28 we reached 10,199 ft. above sea-level and a latitude of 86° 31', and bad headaches—which were, I think, a form of mountain sickness—began to attack us. The sensation was as though the nerves were being twisted up with a corkscrew and then pulled out. Our sledge was by this time badly strained, and on the dreadful bad surface of soft snow was very hard to move; and when it is remembered that physical labour of any kind is always trying at a great height, it is not to be wondered at that we were beginning to feel nearly spent.

If the rise would only have stopped we could have endured the cold, but the two together were terribly trying; and then, to add to our unhappiness, the last day but one of the old year brought with it such a blizzard from the south that we had to spend nearly the whole of it in our sleeping-bags.

There we lay while precious time and food were going, and tried to think how we could improve the situation, but all we could find to console us was the resolution that if we could get near enough to the Pole to rush for it, we would leave almost everything behind us and make the attempt. The last day of the year brought us eleven miles nearer to our goal, and although our heads were aching and the shortness of food was telling on us terribly, we were, in spite of everything, cheered by the thought that we were still getting south.

Facsimile or Page of Shackleton's Diary

CHAPTER XXVII FARTHEST SOUTH

By the evening of New Year's Day we were within 172½ miles of the Pole, so we had managed to beat all records North and South, and we also had hopes of a better surface—which were, unfortunately, not fulfilled. Again we had to battle over very soft snow, and the cold wind seemed to go right through us, weakened as we were from want of food.

Impossible as it was to think of failure yet, I compelled myself to look at the matter sensibly and to consider the lives of those who were with me. I felt indeed that if we went on too far it would be impossible to get back over such a surface, and then all the results of our efforts would be lost to the world.

We had now definitely located the South Pole on the highest plateau in the world, and our geological and meteorological work would be of the greatest use to science. But all this was not the Pole. And how sadly I realised that I need not say.

Still, man could only do his best, and after ten hours' struggle against the strongest forces of nature, one pannikin of food with two biscuits and a cup of cocoa did but little to warm and comfort and satisfy him.

I resolved to make a depot on the 4th and then to dash for the Pole, and on that day we left a depot on the great wide plateau, a risk which nothing but the circumstances could justify, but to which my companions agreed with the regardlessness of self which they had always shown.

Pathetically small did the bamboo look which we left to mark the little stock of provisions—indeed, we lost sight of it in half an hour, and had to trust that our footprints in the snow would guide us back again to the depot.

By night, however, I knew—and had to acknowledge—that our limit was almost reached. We had only been carrying 70 lb. per man since we had made our last depot, but it was harder work than the 100 odd lb. we had been pulling the day

before, and far harder than 250 lb. had seemed some three weeks previously.

Nothing could more clearly have convinced me of our failing strength, even if I could have shut my eyes to the facts that our faces were cut, our feet and hands always on the verge of frost-bite, our boots nearly worn out, and that when we got up in the morning out of the wet bag, our Burberries became immediately like a coat of mail, and also that our heads and beards got iced up with the moisture when breathing on the march.

What we would have given at that time for a pair of scissors to trim our beards I should not like to say, and had we known that we were going to experience such cold weather we should certainly have kept a pair.

The main things, indeed, against us were the altitude and ice-cold wind. Nature had declared against us, and at the best I had to abandon all hopes of getting nearer than 100 geographical miles to the Pole.

During the next day we were absolutely obliged to increase our food if we were to get on at all, for our temperatures were far below normal, and I had such a headache that I should be sorry for any living man who had to endure such pain.

Never once had the thermometer been above zero since we had been on to the plateau, though this was the height of summer, and on January 6 we had to endure 57° of frost with a strong blizzard and high drift.

Still, helped by the bigger rations—which did not amount to anything approaching full rations—we marched thirteen and a quarter geographical miles and reached 88° 7′ south. But at night I had to admit that this must be our last outward march, though I determined that we would make one more rush south with the flag. With what feelings of sadness I came to this decision I cannot even try to describe. Only one thing softened our grievous disappointment, and that was the conviction that we had striven to the very limit of our strength, and had not given in until the forces of nature combined with our scanty supply of food had conquered us.

Two days, however, had to be passed in our bags before we could make the final dash with the flag, days of shrieking blizzard and piercing cold, days in which our valuable food was going without our marching, and in which we had a gloomy foreboding that our tracks, to which we were trusting mainly to find our depot, might drift up.

Truly we realised that we had taken a most serious risk, and that we were in a most critical situation, but we were partly sustained by the fact that, at any rate, we had played the game to the last and utmost.

With 72° of frost the wind cut searchingly into our thin tent, and even the drift found its way on to our bags, which were wet enough already. Cramp kept on attacking us, and every now and then a frozen foot had to be nursed into life again by placing it inside the shirt and next to the skin of the sufferer's almost as suffering neighbour. To add to our dreariness we had nothing to read, as we had depoted our little books so that we might save weight.

The Farthest South Camp after sixty hours' Blizzard. (See page 144)

We had honestly and truly shot our bolt at last, and when the wind dropped about midnight we were soon up and ready to struggle forward a little further and hoist the flag as near to the South Pole as we could possibly bear it.

At 9 A.M. on January 9 we were in latitude 88° 23' south, longitude 162° east, half running and half walking over a surface much hardened by the recent blizzard, and it was indeed strange to us to go along without the nightmare of that heavy sledge dragging behind us.

Soon the time came when we had to hoist Her Majesty's flag and afterwards the other Union Jack, and then we took possession of the plateau in the name of His Majesty. And while the Union Jack blew out stiff in the icy gale which was still cutting us to the bone, we looked south with our powerful glasses, but could see nothing but the dead white snow plain.

No break in the plateau was to be seen as it extended toward the Pole, and we felt absolutely sure that the goal which we had struggled for—and failed to reach—lay on this plain.

We stayed only for a few minutes, and then, taking the Queen's flag with us, we turned our backs upon the Pole and began to retrace our steps. Regretfully it is true, but conscious that, though failure was ours, we had done our best to avoid it.

CHAPTER XXVIII THE RETURN MARCH

Our homeward marches are a tale of sufferings from hunger and dysentery, of struggles against blizzards and crevasses and bad surfaces. One desire drove us on from depot to depot, and that was our supreme craving for food.

All of us had tragic dreams of getting food to eat, but rarely did we have the satisfaction of dreaming that we were actually eating. I did, however, once have a dream that I was eating bread and butter. Conscience is said to make men cowardly, and I am sure that it is as true to say that hunger makes them very peevish and irritable. We looked at each other as we ate our scanty meals, and felt a distinct grievance if one man managed to make his ration last longer than the rest of us. Sometimes we did our best to save a bit of biscuit for the next meal, but the problem whether it was better to eat the food at once or to keep a fragment to nibble afterwards was never solved.

At the start circumstances may be said to have favoured us, for we picked up the depot which we had ventured to leave on the great white plain, and the wind was so strongly behind that we were able to put the sail on the sledge.

In five days we had knocked off some eighty-six geographical miles of those which separated us from our home, and as we were left with only six days' biscuit on short ration and had to go 120 more miles before we reached our next depot, we decided to cut down our food by another biscuit.

A following wind continued to help us, and the sail was of such assistance that on one day we made a record of twenty-six and a half miles, and beat it on the next by doing twenty-nine miles.

But although to beat records is pleasant under any circumstances, my own pleasure was rather diminished by the facts that my heels were frost-bitten and cracked, and that there were also cracks under some of my toes.

We had, however, struggled on until we were within eight and a half miles of our depot, though had we been hindered instead of helped by the strong blizzard wind, it is no exaggeration to say that our chance of escaping starvation would have been inexpressibly small.

On the 20th we reached our depot at 12.30 P.M. with sore and aching bodies, and after a struggle against countless difficulties. For two hours we descended a snow-slope, with heavy sastrugi, and then we struck half a mile of badly crevassed névé. After that we got on to blue slippery ice, where we could obtain no foothold, and to add to the discomfort and danger of the situation, a gale was blowing which swept the sledge sideways and knocked us off our feet.

All of us had heavy falls, and I had two very heavy ones which shook me severely. On several occasions one or more of us lost our footing and were swept by the wind down the ice-slope, only with the greatest difficulty getting back to our sledge and companions.

Bad, however, as that day was, and perilous as was our position, we had said a glad farewell to that awful plateau, and were on our way down the glacier.

On the next day I harnessed up for a while, but so bruised and battered was I by my falls that I soon had to give up pulling and to content myself by walking by the sledge. Fortunately we had a fair wind and a downhill course, so my inability to pull was not an important matter.

The 24th saw us with only two days' food left and one day's biscuit on much reduced

ration, and we had to cover forty miles of crevasses before we could reach our next depot. Crevassed ice still added terribly to our troubles, but though weak I had almost recovered from my falls.

Farthest South, January 9, 1909. (See page 146)

Continually we seemed to be fighting for the same thing, to struggle on from one depot to the next to save ourselves from starvation. A lunch of a cup of tea, two biscuits, and two spoonsful of cheese does not make one exactly buoyant to attack the march of the afternoon, but by the 25th we were reduced to this, and at night the food, with the exception of one meal, was completely gone.

No biscuit was left, and all we had to sustain us was cocoa, tea, salt and pepper, and very little of these. On that night we were very tired indeed, and we knew that it was absolutely necessary for us to reach our depot on the following day. By 7 A.M. on the 26th we came to the end of all our provisions except a little tea and cocoa, and that day and the following one can never be erased from our memories, for they were the hardest and the most trying that any of us had ever spent in our lives.

From 7 A.M. on the 26th till 2 P.M. on the 27th we did sixteen miles over the worst surfaces and most dangerous crevasses we had encountered, only stopping for tea and cocoa till they were finished, and marching twenty hours at a stretch through snow 10 to 18 in. thick as a rule, with sometimes 2½ ft. of it. Often and often we fell into hidden crevasses, and were only saved by each other and by our harness. No words of mine could bring before you the mental and physical strain of those forty-eight hours. I will only say that had not an all-merciful Providence guided our steps we could never have arrived safely at the depot.

When we started at 7 A.M. on the 26th we had no biscuit left, and with only one pannikin of hoosh, mostly pony-maize, and one of tea, we marched till noon. Then we had another pannikin of tea and one ounce of chocolate and marched till 4.45 P.M. Having no food, we then had another pannikin of tea and marched until 10

P.M., when we had one small pannikin of cocoa. On again after that until 2 A.M., when we were utterly played out and slept until 8 A.M. Then we had a pannikin of cocoa and marched until 1 P.M., when we camped about half a mile from our depot.

Both Adams and Wild had fallen exhausted in their harness, but had recovered and gone on again. Marshall went on to the depot for food, and at 2 P.M. we got the meal we so desperately needed. And after this very near call we turned in and slept, thankful indeed to have escaped so far with our lives.

CHAPTER XXIX STRUGGLING BACK

At last we were on the Barrier again, and with six days' food and only fifty miles between us and our next supply I thought that grave danger was behind us. But the man who congratulates himself that anxieties and perils are over, before he has reached the very end of his polar exploration work is wasting his time.

In our case Wild developed dysentery, the cause of which we could only ascribe to the horse-meat; while just before we left the glacier I broke through some soft snow and plunged into a hidden crevasse. The harness jerked up under my heart, and it seemed as though the glacier were saying, "There is the last touch for you; don't you come up here again!"

Certainly we were as tired of that glacier as it apparently was of us, and our joy at leaving it was tremendous; for although the Barrier gave us a most unfriendly greeting, we knew that a great many dangers were over, and thought that nothing except blizzards and thick weather were to be feared.

The Barrier, however, did not mean to be beaten by the glacier in the way of treating us harshly, for during our first day on it we were attacked by a wind which froze solidly all our wet clothes, and five minutes after the wind had sprung up we were struck by a furious blizzard of snow and heavy drift. Under the circumstances we had to pitch our camp, and He in our bags, patching our worn-out clothes—a rather

tedious, if useful, pursuit when one was literally aching to go on.

During the following days there was a variety in our misfortunes—a variety, indeed, which was so terribly weakening that by the beginning of February our outlook had become more serious than it had ever been.

Dysentery had attacked all of us acutely; but if there was a variety in our troubles, there was none in our food, for we had only four miserably thin biscuits a day to eke out our horse-meat.

On February 2 we reached our next depot, and started on the following day with a new sledge and 150 lb. more weight. But on that day all of us were suffering from dysentery, and Wild was very bad indeed.

On the 4th I wrote in my diary, "Cannot write more. All down with acute dysentery; terrible day. No march possible; outlook serious. Fine weather."

It gives me joy now to think that, anxious and spent as we were, trusting indeed to God to pull us through, but too weary and weak to be very hopeful or to care very much, we still hung on to the geological specimens we had collected.

By the 6th we were all better, but we were terribly hungry, and six biscuits per day and one pannikin of horse-meat each meal did nothing to enable us to regain our strength. Indeed, my fear was that this incessant hunger would weaken us so much that our return would never be accomplished.

The Camp under the Granite Pillar, half a mile from the Lower Glacier Depot, where the Party camped on January 27 (See page 151)

On the 7th Adams and Marshall were again attacked by dysentery; and, though Wild and I were free of it, all of us were pitiably weak. Still we struggled on, starving for food, and talking about it all the time as we advanced slowly towards the north.

The mounds which we had laid on our way out continued to guide us on our return, and were a great comfort, but all our thoughts and our conversation were about food.

Wind and weather helped us through that desperate time, or again in our weakened and starving condition we could never have hoped to reach our next depot.

Assisted, however, as we were, we reached the depot on February 13 without a single particle of food left. There we found poor old Chinaman's liver, and thought it a dish that kings might envy. We looked round for any spare bits of meat, and while I was digging in the snow I came across some hard red stuff, which turned out to be Chinaman's blood frozen into a solid core. We dug it up, and in such straits were we that we found it a most welcome addition to our food. When boiled up, it seemed to us like beef-tea.

Truly I was in luck in those days, for the fifteenth of February was my birthday, and I was given a present of a cigarette made out of pipe tobacco and some paper we had with us. It tasted absolutely delicious.

Those, however, were glad moments in a most distressing time, for on the day following my smoke all of us were again so appallingly hungry, and consequently so weak, that even to lift our almost empty provision-bag was an effort.

When we broke camp in the morning we pulled the tent off the poles and took it down before we moved the things inside, for the effort of lifting anything through the doorway was too much for us. At night we sometimes had to lift our legs one at a time with both hands in getting them into the tent, and after we had stiffened from the day's march it seemed almost impossible to lift our feet without assistance.

On the 17th we had to march in a blinding blizzard, with 42° of frost, but mercifully the wind was behind us; and although the sledge with the sail up sometimes overran us and sometimes, getting into a patch of soft snow, brought us up with a jerk, we were thankful that we had not to face such a wind. The jerks, however, were very painful; for when we were brought up suddenly, the harness round our weakened stomachs hurt us very much indeed.

All of us had tragic dreams of getting food to eat, and with four men as hungry as

we were, I can assure you that it saves much envy if all of them finish their meal at precisely the same moment. The man in our party who managed to make his hoosh last longer than the rest of us was not for the time being at all a popular man.

On the 18th we sighted Mount Discovery, and it seemed to be a connecting link between us and our winter quarters. Its big, bluff form showed out in the north-west, and we felt that this same mountain might at the very moment be drawing the eyes of our own people. It looked like a reminder that there was still a place called "home," and helped to cheer us on our painful way.

Mount Erebus was sighted on the following morning, and if we had not come to the end of our supplies again, except for some scraps of meat scraped off the bones of Grisi after they had been lying on the snow and in the sun for months, all would have been well. To eat these however, was too great a risk until we were faced with absolute and complete starvation, and on the following day we hoped to reach Depot A.

Calls to breakfast had long since been things of the past. The cook of the day no longer said, "Come on boys; good hoosh," for no good hoosh was to be had and in less time than it has taken me to write this out food was finished, and then our hopes and thought lay wholly in the direction of the next feed, so called from force of habit.

On the 20th we were impeded by such a bad light that we could only see a little way; but by 4 P.M. we reached Depot A, at which was the tin of jam that we had originally intended to eat on Christmas Day—and never did jam taste more delightful! Our depoted tobacco and cigarettes were also there, and apart from the intense enjoyment of a good smoke, I felt sure that tobacco would make up for the shortage of food until we reached the Bluff depot. This last depot was the one which I had told Joyce to lay out, and which was the one ray of hope in front of us during these days of hunger and disease.

At any rate, we had to stake upon finding provisions at the Bluff, for we had not food enough to carry us back to the ship. In fact, if we did not find it we were lost men Each time we took in another hole in our belts we said that everything would be all right as soon as the Bluff was reached, and so eager were we to reach the good things in store for us that on the 21st we struggled on through a blizzard with as many as 67° of frost.

Shackleton standing by the broken Southern Sledge, which was replaced by another at the Grisi Depot

In ordinary polar work no one would think of travelling in such weather, but our need was extreme and we had to keep on going. Food lay ahead and death stalked us from behind. We were so thin that our bones ached as we lay on the hard snow in our sleeping-bags. Was it to be wondered at that, blizzard or no blizzard, we were determined to struggle forward until we dropped?

And on the 22nd we had a splendid day, and came across the tracks of men with dogs, which assured us that the depot had been laid all right. Soon afterwards we passed their noon camp, and as tins were lying round which had different brands from those of the original stores, we were certain also that the ship had returned.

After carefully searching the ground for unconsidered trifles, we found three small bits of chocolate and a tiny bit of biscuit, and we "turned backs" for them. I was unlucky enough to get the biscuit, and a curious and unreasoning anger took possession of me for a moment at my bad luck. Nothing could show more strikingly how primitive we had become, and how much the question of even a morsel of food affected our judgment.

However, we were near to the Bluff, but though we felt certain that food was going to be there in plenty, we also were occasionally beset by the thought that if by some chance it was not, then all chance of our safety was at an end.

CHAPTER XXX THE FINAL STAGE

Early on the morning of the 23rd we broke camp, and in a few hours Wild saw the Bluff depot miraged up. It seemed to be quite close, and the flags were waving and dancing, as though to say, "Come, here I am; come and feed!"

It was indeed a cheerful sight for weary and hungry men, and directly we saw it we devoured the few biscuits we still possessed.

At 4 P.M. we reached this haven, and found that Joyce and his party had done their work splendidly; and I, climbing to the top of it, told those below of the glorious feeds awaiting us. Luxuries there were in plenty: Carlsbad plums, cakes, eggs, plum puddings, and even fresh boiled mutton from the ship. Apart, however, from these luxuries there was an ample supply of ordinary sledging rations, so that we were safe from a want of food, and had only to get back to the ship.

With what thankfulness we set upon our provisions those who have not suffered from want and hunger cannot imagine. Suddenly we found ourselves with meals fit for the gods, and with appetites that the gods might have envied. Our contracted bodies, however, would not stand the strain of much food, but I cannot express the relief it was to know that we had only to stretch our hands to touch food, even if we could not eat it. I lay writing in my bag that night with biscuits and chocolate and jam beside me. I dare say this reminds the reader of a greedy schoolboy; but it is true, and I see no reason to think that it was anything but perfectly natural.

At the Bluff we did not receive much news of the Nimrod, except that Evans, who had towed us down in the Koonya, was now in command of it; and we heard nothing of either the northern or the western party.

Now our main object was to get back to the ship before she was compelled to sail, and full of hope we proceeded on our way during the 24th.

On the following day, however, Marshall was attacked by paralysis of the stomach

and renewed dysentery, and as a blizzard was blowing we decided to lie in our bags and wait. These misfortunes were particularly distressing, for it was absolutely necessary to push on if we were to catch the Nimrod. According to orders, the ship might very possibly leave on March 1 if the Sound was not clear of ice, and we had already arrived at February 26 in a year which unhappily was not Leap Year.

On the 26th we did manage to do twenty-four miles, but although Marshall never complained, he suffered severely, and as his dysentery was getting worse and worse, I decided, on the afternoon of the 27th, to leave him in the care of Adams, and to push ahead with Wild.

My hope was that we should pick up a relief party at the ship, and so we hurried on with no sleep and with the briefest stoppages for meals, until we had been marching for nearly twenty-four hours.

By this time our food was finished, and naturally we were very tired, but although we kept on flashing the heliograph in the hope of attracting attention from Observation Hill, where I thought a party would be' on the look-out, there was no return flash.

Still, there was nothing to do except to push ahead, and once we thought that we saw a party coming over to meet us, but to our sorrow the "party" turned out to be a group of penguins at the ice edge.

At 2.30 P.M. we sighted open water ahead, but the weather had suddenly become so thick that it was impossible to see far, and our arrival at the ice edge was quite sudden and unexpected. The ice was swaying up and down so warningly that to continue on that course was to run grave risk of being carried out, so we decided to follow another route, seven miles round by the other side of Castle Rock.

Return journey of the Southern Party: at the Bluff Depot. (See page 159)

At last, after what seemed a never-ending struggle, we reached Castle Rock, from whence we could see that there was open water all round the north. Indeed, it was a

different home-coming from the one we had anticipated.

Often on the Barrier and up on the plateau our thoughts had turned to the day when we should return to winter quarters, but never had we imagined that we should have to fight our way to the back door, so to speak, in such a cheerless fashion.

At 7.45 P.M. we reached the top of Ski Slope, and from there both the hut and the bay could be seen. But no sign of the ship could we find, and no trace of life could be seen at the hut.

With our minds full of gloomy possibilities, we hurried on to the hut, and discovered that every one had gone away.

A letter had been left for us stating that all the parties had been picked up except ours, and that the ship would be sheltering under Glacier Tongue until February 26. As it was already February 28 there is no need to say how distressed we were at this new development of the situation. For if the ship was gone, both the plight of the two men out on the Barrier and of ourselves was a most serious one.

That was a bad night for Wild and myself, for although we were able to have a good meal, we had left our sleeping-bags behind, and had to wrap pieces of roofing-felt round us in our attempts to keep warm. Our efforts were neither successful in that direction nor in that of trying to signal for help. For we could not get the magnetic hut to light, and we were so tired and cold that when we endeavoured to tie up the Union Jack on the hill the knots were too much for us.

In the morning, however, we managed to make both of these signals, and all our fears vanished with one glad swoop when we saw the ship in the distance.

At 11 A.M. on March 1 we were once more on board the Nimrod, and I will not attempt to describe the load which was suddenly lifted from my shoulders, or the reception we received from our friends who had given us up for lost, and who on that same day were going to send out a search-party in the hope of finding some traces of us.

The ship brought us nothing but good news from the outside world, and I found that every member of the Expedition was well, and that the work laid down had been accomplished.

The immediate thing, however, to do was not to delay over these splendid reports, but to bring in Adams and Marshall; and in the afternoon I started off again from the Barrier edge with Mackay, Mawson and McGillan, leaving Wild on the Nimrod.

We found that Marshall's health had been improved by the rest, but the march renewed the attack, and it was with feelings of great relief that we at length got him back to winter quarters and put him to bed.

By 1 A.M. on March 4 we were all once more safe on board the Nimrod; but Adams, after surviving all the dangers of the interior of the Antarctic continent, was nearly lost within sight of safety. Owing to the fact that he was wearing new finnesko he slipped at the ice edge, and only just managed to save himself from going over, and to hang on until he was rescued by a party from the ship. He had begun with a painful accident and nearly finished with a fatal one.

The Southern Party were in safety once more, but how often and often we were almost hopeless of ever making our way back to the ship I cannot say. We had taken our lives in our own hands, and God had preserved them. Perils from starvation, disease, and sudden death had surrounded us, and as we had learned to know what it is to suffer and to endure, we had also learned what it is to feel supremely grateful for mercy and for guidance.

CHAPTER XXXI NOTES ON THE SOUTHERN JOURNEY

We brought back with us from our march towards the Pole vivid memories of how to feel intensely, fiercely hungry.

From November 15, 1908, until February 23, 1909, we had but one full meal on Christmas Day, and even then scarcely any time had passed before we were as hungry as ever. Our daily allowance of food would have been a small one for a city worker in a temperate climate, and in our own case hunger was increased by the fact that we were performing vigorous labour in a very low temperature.

When our evening meal was prepared we used to "turn backs" in order to ensure fair divisions of the food. The cook used to pour the hoosh into pannikins and arrange the biscuits in four heaps, and as soon as we were all satisfied that the divisions were equal one man would turn his back, and another, pointing at one lot, would say "Whose?"

The Southern Party on board the "Nimrod." Left to right: Wild, Shackleton, Marshall, Adams. (See page 164)

Then the man with his back turned would mention a name, and so the distribution proceeded, each of us feeling sure that the smallest share had fallen to his lot.

On alternate days we had chocolate and cheese for lunch, and since the former was more satisfying and easier to divide we infinitely preferred it. Considering how greatly we depended during our march upon pony-meat, the reader will readily understand that the loss of Socks was a terrible blow to us.

If we had been able to use poor Socks for food there is no doubt that we should have been able to get further south, and perhaps even have reached the Pole itself. But I must also mention that had we managed to get to the Pole, we could scarcely have caught the ship before she was compelled to leave by the approach of winter.

During the last weeks of the journey outwards, and the long march back when our allowance had been reduced to twenty ounces per man a day, I confess without one atom of shame that we really thought of little but food. Man becomes very primitive when he is desperately hungry, and neither the glory of the mountains that towered high on our sides, nor the majesty of the great glacier up which we travelled so

painfully, appealed to any extent to our emotions.

I used often to find myself wondering whether people who suffer from hunger in the big cities of civilisation felt as we were feeling, and I concluded that they did not, for no barrier of law and order would have been allowed to stand between us and any food that had been available. The difference must be that the man who starves in a city is weakened and hopeless and without spirit while we—until nearly the end—were vigorous and keen.

We could not joke about food in any way that is possible for the man who is hungry in the ordinary sense. True we thought and talked about it most of the time, but always in the most serious manner.

On the outward march we were not severely hungry until we reached the great glacier, and then we were so occupied with the dangers of climbing and of crossing crevasses that we were unable to talk much. And afterwards on the plateau our faces were generally so covered with ice that unnecessary conversation was out of the question.

It was on the march back, after we had got down the glacier, and were tramping over the Barrier surface that we talked freely of food. Strange feelings, indeed, did I have when I looked back over our notes, and saw the wonderful meals that we promised to eat when we could get inside a really good restaurant.

We used to tell each other, with perfect seriousness, about the new dishes that we had thought of, and if the dish met with general approval there would be a chorus of "Ah! That's good."

The "Wild roll" was admitted to be the high-water mark of gastronomic luxury. He proposed that the cook should take a supply of well-seasoned minced meat, wrap it in rashers of fat bacon, and place around the whole an outer covering of rich pastry so that it would take the form of a big sausage-roll. Then this roll was to be fried with plenty of fat.

My best dish, which I admit I put forward with a good deal of pride as we marched over the snow, was a sardine pasty. And I remember that one day Marshall came forward with a proposal for a thick roll of suet pudding with plenty of jam all over it, and there arose quite a heated argument whether he could claim this dish to be an invention, or whether it was not the jam roll already known to the housewives of civilisation.

One point there was on which we were all agreed, and that was our wish not to have any jellies or things of that sort at our future meals. The idea of eating such slippery stuff as jelly did not appeal in the least to any one of us.

Perhaps all this sounds very greedy and uncivilised to anyone who has never been on the verge of starvation, but I wish to say again that hunger makes a man primitive. Not a smile broke from us as we planned wonderful feats of over-eating, in truth we were intensely serious about the matter, and we noted down in the back pages of our diaries details of feasts we would have when we got back to the land of plenty.

The dysentery from which we suffered was certainly due to the meat from the pony Grisi. This animal was shot when greatly fatigued, and I think that his flesh was poisoned by the presence of the poison of exhaustion, as is the case with animals that have been hunted. The manner in which we contrived to continue marching when suffering, and the speed with which we recovered when we got good food, were rather remarkable, and the reason doubtless was that the dysentery was due to poison, and was not produced by organic trouble.

Providentially we had a strong wind behind us during that period of distress and this assuredly saved us, for in our weakened state we could not have made long marches against a head-wind, and without long marches we would have starved between the depots.

In the early part of the journey over the level Barrier surface we felt the heat of the

sun severely, although the temperature was very low. It was quite usual to feel one side of the face getting frozen while the other side was being sunburnt. Later on when our strength had begun to lessen, we found great difficulty in hoisting the sail on our sledge, because when we lifted our arms over our heads to adjust the sail, the blood ran from our fingers and they promptly froze. Our troubles with frost-bite were doubtless due partly to the lightness of our clothing, but there was compensation for this in the greater speed with which we were able to travel.

I am convinced that men engaged in polar exploration should be clothed as lightly as possible, even if they are in danger of being frost-bitten when they halt on the march. We owe many grudges against the glacier which caused us so many difficulties, but my chief one now is that we brought back no photographs of a very interesting portion of it. This was due to the facts that we expected to take as many photographs as we had plates to spare on our return journey, and that when we returned we were so short of food that we could not afford the time to unpack the camera.

The glacier itself presented every variety of surface, from soft snow to cracked and riven blue ice, but later the only constant feature were the crevasses, from which we were never free.

Some were entirely covered with a crust of soft snow, and we discovered them only when one of us broke through and hung by his harness from the sledge. Others occurred in mazes of rotten ice, and were even more difficult to negotiate than the other sort. The sledges, owing to their length, were not liable to slip down a crevasse, and when we were securely attached to them by their harness we felt fairly safe, but when the surface was so bad that relay work was necessary we used to miss the support of a sledge on the back journeys.

We would advance one sledge half a mile or a mile, put up a bamboo pole to mark the spot, and then go back for the other. For the walk back we were always roped

together, but even then we felt a great deal less secure than when harnessed to one of the long, heavy sledges.

One piece—or two pieces—of fortune we assuredly did have upon the glacier, for both when we were struggling up and scrambling down it the wind was behind us. But on the glacier we were often troubled at night by the fact that there was no snow on which to pitch our tent, and consequently when we were weary after the day's march an hour had frequently to be spent in smoothing out a space for the camp on a rippled, sharp-pointed sea of ice.

The provision bags and sledges were packed on the snow cloths round the tents and it was indeed fortunate for us that we met no bad weather while we were marching up the glacier. Had a blizzard come on while we were asleep, it would have scattered our goods far and wide, and we would have been faced with a most serious situation.

The upper glacier depot was overhung by great cliffs of rock, shattered by the frosts and storms of countless centuries, and many fragments were poised in such a fashion that scarcely more than a touch seemed necessary to bring them hurtling down. All around us on the ice lay rocks that had recently fallen, and it was not a comforting sensation to feel that at any moment a huge boulder might drop upon our camp.

We had no choice of a camping-ground, as all around was rough ice. The cliffs were composed largely of weathered sandstone, and it was on the same mountain higher up on the glacier that Wild discovered coal, at a point where the slope was comparatively gentle.

The "Nimrod" pushing through heavy Pack Ice on her way South. (See page 174)

One of our greatest disappointments was that the last ridge of the great glacier having been passed and the actual plateau gained, we did not meet with a hard surface, such as the Discovery expedition had encountered in the journey to the plateau beyond the west of McMurdo Sound, but still had to battle with soft snow

and hard sastrugi.

After the fierce blizzard which raged from the night of January 6 until the morning of January 9, we had better conditions under which to make our final march southwards, for the wind had swept away the soft snow and unencumbered with the sledge we could advance more easily.

In reviewing the experience gained on the southern journey, I do not think that I could suggest any important improvements in equipment for future expeditions. Evidently the Barrier surface varies remarkably, and the traveller must be prepared for either a very hard or a very soft surface, both of which he may encounter in the same day's march.

On the glacier we should have been glad to have had heavy Alpine boots with nails all round, but as the temperature is too cold to permit of the explorer wearing ordinary leather boots, some boot would have to be designed which was at once warm enough for the feel and strong enough to carry the nails.

Our clothing proved to be quite satisfactory, but experience goes to show that a party which hopes to reach the Pole must take more food per man than we did I would in no case take cheese again, for chocolate is more palatable and easier to divide.

Each member of our Southern Party had his own particular duties to perform, Adams being responsible for the meteorological observations which involved—among other duties—the taking of temperatures at regular intervals. Marshall took the meridian altitudes, and the angles and bearings of all the new land, and his work was most discomforting, for at the end of a day's march and often at lunch-time as well, he would be compelled to stand in the biting wind handling the screws of the theodolite. He also prepared the map of the journey and took most of the photographs.

Wild attended to the repair of the sledges and equipment, and also assisted me in the

geological observations and the collection of specimens. My other work was to keep the courses and distances, and to work out observations and lay down our directions.

I kept two diaries, one my observation book, and the other a narrative diary. But although all of us kept diaries we were more often than I care to remember too spent and cold at night to pay much attention to them.

CHAPTER XXXII THE RETURN OF THE "NIMROD"

During the winter the Nimrod had been laid up in Port Lyttelton, and had been thoroughly overhauled so that she should once more be ready to battle with the ice. Captain F. P. Evans had been appointed master of the ship under my power of attorney, Captain England having resigned on account of ill-health, and towards the end of the year sufficient stores were taken on board to provide for a party staying at Cape Royds through the winter, in case one of the sledging-parties had not returned, and also to provide for the ship if she herself was frozen up.

The Nimrod left Lyttelton again on December 1, 1908, and enjoyed fine weather for the voyage southwards, the experience of Captain Evans on this voyage going to show that, under normal conditions, the pack that stretches out from the Barrier to the eastward of the Ross Sea is impenetrable, and that the Discovery was able to push to within sight of King Edward VII Land in 1902 because the ice was unusually open during that season. Twenty-eight miles from Cape Royds fast ice was encountered, and as there seemed to be no immediate possibility of the ship being able to proceed, Captain Evans decided to send Mackintosh with three men to convey a mail-bag to the winter quarters. No very great difficulties were anticipated for this expedition, but as it turned out, not only difficulties but also dangers and almost death were to be met with.

On January 3 Mackintosh set out with McGillan, Riches and Paton, but in the afternoon Riches and Paton returned to the ship and Mackintosh and McGillan

proceeded alone.

On the second day their way was blocked by open water with pressure ice floating past, and although they walked for two hours in a westerly direction to see how far the water reached, they did not get to the end of it. The whole of the ice to the southward seemed to be moving, and as the open water seemed to take away any possibility of reaching Cape Royds, they started back to the ship.

Presently Mackintosh discovered that there was also open water ahead of them, blocking the way to the ship, and a survey of the position revealed the unpleasant fact that the floe-ice was breaking up altogether, and that they were in serious danger of drifting out into the Sound. Safety lay only in a hurried dash for the shore to the east, and every two hundred yards or so they had to drag their sledge to the edge of a floe, jump over a lane of water, and then with a big effort pull the sledge after them.

After an hour of this work their hands were cut and bleeding, and their clothes were frozen as stiff as boards, for they had frequently slipped and fallen when crossing from floe to floe. At last, however, they approached the land, and came to a piece of glacier ice that formed a bridge. The floe that they were on was moving rapidly, so they had to make a great effort and drag the sledge over a six-foot breach. They succeeded in doing this and were in a safe position again, but had they been fifteen minutes later they would have been lost, for by that time there was open water where they had gained the land.

Near this spot they decided to camp, and McGillan was almost at once so badly attacked by snow-blindness that his face was badly swollen and his eyes tightly closed. So bad indeed was McGillan that, until Mackintosh could bear the pain no longer in silence, he did not know that his companion was suffering from the same complaint as himself.

For several days they stayed in camp, and when their eyes were better they studied

the bird-life of the neighbourhood, until, tired of seeing no sign of the ship. Mackintosh decided that they would leave the heavy mail-bag in their tent and march to Cape Royds. Then followed one of those battles against crevasses and hidden dangers with which those who take part in polar exploration are too intimately acquainted. Once McGillan fell into a yawning chasm and was only held up on a projection of ice, and frequently one slip would have meant the end of all things in this world for both of them.

At last a point was reached at which their way was blocked in every direction by crevasses, ascent was no longer possible, and below them lay a steep slope running down for about 300 ft. What lay at the bottom they could not tell, but their case was desperate and they decided to glissade down.

Their knives, which they attempted to use as brakes, were torn from their grasp, but they managed to keep their heels in the snow and to reach the bottom in safety.

Hunger had seized them for they had practically no food left, but two hours after they had dashed down the slope they could see Cape Royds and hoped soon to be at the winter quarters.

Immediately afterwards, however, such thick snow began to fall that they could not see two yards ahead, and for hours they were stumbling along in the blinding storm. Occasionally they rested for a few minutes, but icicles hung from their faces, and they did not dare to stay still for long.

Heavy snow continued to cut off all view of the surrounding country, and they had been wandering for twenty-seven hours after their glissade, when Day found them in a state of complete exhaustion, and just staggering along because they knew that to stop meant death. Had not Day been outside the hut—to which the travellers had no idea they were close—watching for the return of the ship, that expedition, undertaken so light-heartedly, must almost certainly have been a fatal one to Mackintosh and McGillan.

The two weary men reached the hut on January 12, but a week before that date the Nimrod had arrived at Cape Royds, and had gone north again to search for them. Doomed to disappointment and horror were the men at the hut when they learned that not only were they not to have any letters, but that also Mackintosh and McGillan had left the ship on the 3rd to try to bring the letters more quickly over the sea-ice and over the bay, which even then was filled with loose pack and which a few days before had been open water.

The "Nimrod" held up in the Ice. (See page 178)

On January 7 the Nimrod left Cape Royds again to seek for the lost men, and in a few hours was beset by ice, and so remained for practically the whole of the time between the 7th and the 15th. On the afternoon of the 16th, however, the ship cleared the ice, and approached the only piece of shore on which there was a chance of finding Mackintosh and McGillan. Near the end of a stretch of beach a small patch of greenish colour was seen, and the telescope revealed the details of a deserted camp and a tent torn to ribbons. A boat was at once sent ashore, and the bag of letters was discovered, and also a note from Mackintosh telling of his risky attempt to cross the mountains.

As Murray, who was on the ship, knew the frightfully crevassed character of the ground which Mackintosh and McGillan had determined to cross, little hope of their safety remained.

Judge, then, the joy of those on board the Nimrod when two men came out to meet the ship on its arrival at Cape Royds, and one of them was seen to be McGillan.

CHAPTER XXXIII THE WESTERN PARTY

How well Joyce and his party, consisting of Mackintosh, Day and Martin, placed a depot of stores about fourteen miles off Minna Bluff, and how glad the Southern Party were to find them there has already been told.

In the depoting of these stores Joyce made two journeys, starting for the first from winter quarters on January 15 and returning to Hut Point on January 31, and leaving there again with a second load of stores (which had been brought by a party from the Nimrod) and reaching the Bluff Depot for the second time on February 8.

On their re-arrival at this depot they found, to their surprise, that the Southern Party had not appeared, and for some days Joyce and his companions searched the horizon with glasses, in the hope of sighting the overdue travellers.

They waited until the Southern Party was eleven days after the time fixed for their return, and then decided to lay a depot flag in towards the Bluff so that by no chance could the food be missed, and, secondly, to march due south to look for the Southern Party. In this march they were, as is known, unsuccessful in finding the weary travellers, and eventually they returned to the Bluff Depot and found everything as they had left it.

Filled with gloomy thoughts as to the fate of Adams, Marshall, Wild and myself—for we were then eighteen days overdue—they started on the 16th to march back to the coast. But although they did not find us, they had nevertheless saved our lives by the provisions they had so laboriously brought to the depot.

At the same time that we of the Southern Party were fighting our way towards the Pole, the Western Party, consisting of Armytage, Priestley and Brocklehurst, were working in the western mountains.

On December 9 they left winter quarters and reached the "stranded moraines" four days later. These moraines, which were found by the Discovery expedition, are relics of the days of more extensive glaciation, and as they present a most varied collection of rocks they are of very great interest.

There the party succeeded in securing a large number of skuas' eggs, but the anticipated feast was not enjoyed, for, to quote the words of one of the expedition, only about a dozen of the eggs were "good enough for eating." The other eggs were

thrown on the snow near the tent, with the result that there was an invasion of skuas, the birds not only eating the eggs but also making themselves a nuisance by pulling about the sledge-harness and the stores. Geological specimens this party secured in valuable abundance, and, as was the case with the other sledging expeditions that were out at the time, a special feast was provided for Christmas Day.

That Priestley enjoyed this feast is shown by his diary, in which he wrote, "The plum pudding was 'top-hole.' Must remember to give one of the pot-holed sandstones to Wild for the New Zealand girl who gave him the plum pudding."

This party were on the look-out for the men who had gone north in search of the Magnetic Pole, but failing to find any sign of them, they went back to their depot on January 14 and pitched camp to wait for the Northern Party until the 25th, when they were either to make their way back to winter quarters or to signal for the ship by means of the heliograph.

On the 24th, however, this party had the narrowest escape from never seeing either winter quarters or the Nimrod again. They were camped on the sea-ice at the foot of Butter Point, in a position which to all appearances was one of safety. Armytage indeed had examined the tide-crack along the shore and had found no signs of more than ordinary movement, and the ice all round seemed to be quite fast.

The Bluff Depot. (See page 179)

But early in the morning of the 24th, Priestley, who was first out of the tent, abruptly dispelled any feelings of security that his companions possessed. At once he discovered that the ice they were on had broken away and was drifting north to the open sea, and, returning to tell the others, they immediately turned out, to find that this statement was only too true. Two miles of open water already intervened between the floe and the shore, and they were to all appearances moving steadily out.

"When," Armytage wrote in his report, "we found that the ice had gone out, we

loaded up the sledge and started to see whether we could get off the floe to the north. The position seemed to be rather serious, for we could not hope to cross any stretch of open water, there was no reasonable chance of assistance from the ship, and most of our food was at Butter Point. We had not gone very far to the north when we came to an impassable lane of open water, and we decided to return to our original position. We went into camp and had breakfast at 11 A.M."

After that the three men waited for some time on the off-chance of the ship coming along one of the lanes and picking them up, or of the current changing and the ice once more touching the shore, but at the end of four anxious hours there was no improvement in their position. Killer-whales were spouting in the channels, and occasionally bumping the ice under the floe.

Unable to wait any longer, the party marched right round the floe but met with open water in every direction, and at 10 P.M. they were back in their old position, only encouraged by the fact that they had apparently stopped moving north, and were possibly getting a little nearer to fast ice again.

Soon afterwards Brocklehurst turned out to see if the position had changed, and reported that the floe seemed to be within a few hundred yards of the fast ice, and was still moving in that direction. Then Armytage got up, and half an hour later saw that the floe was only about two hundred yards off fast ice.

"I ran back," he reported, "as fast as I could, deciding that there was a prospect of an attempt to get ashore proving successful, and gave the other two men a shout.

They struck camp and loaded up within a few minutes, while I went back to the edge of the floe at the spot towards which chance had first directed my steps. Just as the sledge got up to me I felt the floe bump the fast ice. Not more than six feet of the edge touched, but we were just at that spot, and we rushed over the bridge thus formed. We had only just got over when the floe moved away again, and this time it went north to the open sea. The only place at which it touched the fast ice was that

to which I had gone when I left the tent, and had I happened to go to any other spot we would not have escaped."

After this Providential deliverance from a perilous situation, the party made their way back to Butter Point and camped about 3 A.M.; and when they got up some hours later open water was to be seen where they had been drifting on the floe, and also the Nimrod was sighted some miles out.

The heliograph was flashed to the vessel, and in the afternoon the party—having left a depot of provisions and oil at Butter Point in case the northern travellers should arrive there—were safe on board again.

Towards' the end of January fine weather was very rare, for the season was advanced, and consequently the fast ice remaining in the Sound began to break up quickly and took the form of pack trending northwards.

The waiting for the other parties to come in was unpleasant for the remaining members of the shore-party and for those on board the ship, because the time was approaching when the Nimrod must either leave for the north or be frozen in for the winter. And still both the Southern and the Northern Parties tarried.

Instructions had been left that if the Northern Party had not returned by February 1, a search was to be made along the western coast in a northerly direction. This party by that time was three weeks overdue, and so Captain Evans proceeded north with the Nimrod on the 1st, and began closely to examine the coast. This search was both dangerous and difficult, for Captain Evans had to keep near to the coast, in order to guard against the chance of missing any signal, and the sea was obstructed by pack-ice. The work, however, was done most thoroughly in the face of what Captain Evans afterwards described as "small navigational difficulties."

CHAPTER XXXIV INSTRUCTIONS FOR THE NORTHERN PARTY

The Northern Party, which consisted of Professor David, Douglas Mawson, and Alistair Mackay, was under the command of the Professor, and the tale of their adventures will be related by himself. But before the party set out upon this important expedition I gave final instructions to them, an extract from which is given.

The Motor hauling Stores for a Depot. (See page 188)

"Dear Sir," I wrote to the Professor, "you will leave winter quarters on or about October 1, 1908. The main objects of your journey to be as follows:

"(1) To take magnetic observations at every suitable point, in order to determine the dip and position of the Magnetic Pole; and if time, equipment, and supplies are sufficient, you will try to reach the Magnetic Pole.

"(2) To make a general geological survey of the coast of Victoria Land; this work, however, is not to interfere with your attempt to reach the Pole.

"(3) I particularly wish you to be able, to work at the geology of the Western Mountains, and for Mawson to spend at least a fortnight at Dry Valley to prospect for minerals of economic value on your return from the north. I do not wish to limit you to an exact date for return to Dry Valley, if you think that by lengthening your stay up north you can reach the Magnetic Pole; but I consider that the thorough investigation of this valley is of supreme importance.

"(4) The Nimrod is expected in the Sound about January 15, 1909. If the ship is not in, or if she does not see your signals, you will take into account your supply of provisions, and proceed either to Glacier Tongue or Hut Point to replenish, if you have not sufficient provisions at Butter Point.

"(5) At Butter Point a depot of at least fourteen days' food and oil will be laid for you.

"(6) I shall leave instructions for the master of the Nimrod to proceed to the most accessible point at the west coast and there ship all your specimens.

"(7) If by February 1, after the arrival of the Nimrod, there is no evidence that your party has returned, the Nimrod will proceed north along the coast, looking out for your signals.

"(8) Should any accident happen to you, Mawson is to be in charge of the party.

"(9) Trusting that you will have a successful journey and a safe return,

"I am, yours faithfully, "(Signed) Ernest H. Shackleton. "Commander."

In addition to these instructions, I also wrote to the Professor:

"Dear Sir,—If you reach the Magnetic Pole, you will hoist the Union Jack on the spot, and take possession of it on behalf of the above expedition for the British nation.

"When you are in the Western Mountains, please do the same at one place, taking possession of Victoria Land as part of the British Empire.

"If economic minerals are found, take possession of the area in the same way on my behalf as commander of this expedition.

"Yours faithfully, "(Signed) Ernest H. Shackleton. "Commander."

This letter was dated September 20, 1908, and on that same night we gave a farewell dinner to the Northern Party.

CHAPTER XXXV THE NARRATIVE OF PROFESSOR DAVID WE START FOR THE MAGNETIC POLE

The first thing to be done in connection with our attempt to reach the Magnetic Pole was to lay depots, and so on September 25, after delay from bad weather, Priestley, Day and I (David) started in the motor-car, dragging behind us two sledges over the ice.

One sledge with its load weighed 606 lb., the other 250 lb., and as soon as Day put

the car on her second gear we sped over the floe-ice at a rate of fourteen miles an hour, much to the admiration of the seals and penguins. Accidents, however, both to the car and to Day, who alone of us could be trusted to drive it, hindered us from making our final start until October 5. On that day Brocklehurst took a photograph of the Northern Party and soon afterwards we boarded the car and the sledges and, cheered by those remaining behind, proceeded on our way.

At first Day, Priestley and Roberts accompanied us, but we had only gone a little over two miles, when the snow had become so thick that I did not think it prudent to take the car farther, and accordingly we had to say good-bye to our companions. Strapping on our harness, we toggled on to the sledge rope, and with a "One, two, three and away," we began our long journey over the sea-ice.

On the following morning we had to start our relay work, and dragged the Christmas Tree sledge on first, as we were specially liable to lose parcels off it, for a distance of nearly half a mile. Then we returned and fetched up what we called the Plum Duff sledge, chiefly laden with our provisions.

After a heavy day's work on the following day, we camped for the night close to a seal-hole which belonged to a fine specimen of Weddell seal, but our slumbers were disturbed by the snorting and whistling of the seals as they came up for their blows.

The seals, however, were nothing to the Emperor penguins, which awakened us by their chatter on the morning of the 10th. Evidently they had marched down on our tent during the night to investigate us, and the sounds they made may be described as something between the cackle of a goose and the chortle of a kookaburra.

I saw four of them standing by the sledges, and when they caught sight of me they were much interested, and the conversation between them became very lively. I have no doubt that they took us for penguins of an inferior type, and the tent for our nest. At any rate, they were kind enough to take careful note of our doings, and to give us a good send-off when we left them.

During that day a blizzard was behind us, and as the strength of it increased we found that we could draw both sledges at the same time, which was, of course, a great saving of labour. Tempted, however, to continue our march under these favourable conditions, we went on longer than was wise, with the result that when we stopped it was extremely difficult to get the tent up.

Slipping the tent over the poles placed close to the ground in the lee of the sledge, two of us raised the poles while the other shovelled snow on to the skirt of the tent, which we pulled out by degrees until it was finally spread to its full dimensions. Glad indeed were we to turn in and escape from the biting blast and drifting snow.

This violent blizzard blew throughout the whole of the next day, and we spent it for the most part in our sleeping-bags; but on the 13th we arrived at Butter Point, which is merely an angle in the low ice-cliff near the junction of the Ferrar Glacier valley with the main shore of Victoria Land, and made a depot there.

Altogether we lightened our load by about 70 lb., and we also left letters there for Lieutenant Shackleton and R. E. Priestley respectively, stating that in consequence of our late start from Cape Royds, and also on account of the slowness of our progress thence to Butter Point, we could not return to the Point until January 12 at the earliest, instead of the first week in January, as had been anticipated. Months later we heard that this little depot survived the blizzards, and that Armytage, Priestley and Brocklehurst had read our letters.

A few days later we landed at Cape Bernacchi, and on October 17 we hoisted the Union Jack and took possession of Victoria Land for the British Empire. The geology of Cape Bernacchi is extremely interesting, the dominant type of rock being a pure white coarsely crystalline marble, which has been broken through by granite rocks, the latter in places containing small red garnets.

On the next day we reached a headland where the rocks resembled those at Cape Bernacchi, and Mawson considered that some of the quartz veins traversing this

headland would prove to be gold-bearing.

That same night I was attacked by snow-blindness through neglecting to wear my snow-goggles regularly, and as I was no better when the time came for us to march, I asked Mawson to take my place at the end of the long rope, the foremost position in the team. So remarkably proficient was he on this occasion, and afterwards, at picking out the best track for our sledges and in steering a good course, that at my request he occupied this position throughout the rest of the journey.

Uneventful days followed, but by the 23rd it was quite clear that at our rate of travelling—about four statute miles daily by the relay method—we could not get to the Pole and back to Butter Point early in January, so we held a serious council as to the future of our journey towards the Magnetic Pole, and I suggested that the most likely means to get there and back in the time specified by Lieutenant Shackleton would be to travel on half-rations, depoting the remainder of our provision at an early opportunity.

Loaded Sledge showing the Distance Recorder or Sledge-meter

After some discussion, Mawson and Mackay agreed to try this expedient, and we decided to think over the matter for a few days and then make our depot-.

In pursuing our north-westerly course we presently passed a magnificent bay, which trended westwards some five or six miles away from the course we were steering. On either side of this bay were majestic ranges of rocky mountains, parted from one another at the head of the bay by an immense glacier with steep ice falls.

On either side of this glacier were high terraces of rock reaching back for several miles from a modern valley edge to the foot of still higher ranges. It was obvious that these terraces marked the position of the floor of the old valley at a time when the glacier ice was several thousand feet higher and some ten miles wider than it was when we saw it.

We longed to explore these inland rocks, but time was too precious. Later on we

discovered that the point opposite which we had arrived was really Granite Harbour, and that its position was not correctly shewn on the chart.

By the night of October 29 we were all thoroughly done up after completing our four miles of relay work, and we discussed the important question whether it was possible to eke out our food supplies with seal-meat so as to avoid putting ourselves on half-rations, and we all agreed that this should be done. The chief problem in connection with the seal-meat was how to cook it without the aid of paraffin oil, for we could not afford paraffin for that purpose.

On the next day we tried the experiment of strengthening the brew of the tea by using the old tea-leaves of a previous meal mixed with the new ones—an idea of Mackay's which Mawson and I did not appreciate at first, though later on we were glad enough to adopt it.

By this time the weather had become warmer, and consequently the saline snow on the sea-ice was sticky, and gripped the runners of the sledges like glue. Only by the greatest exertion could we drag the sledges along even at a snail's pace.

But although we were thoroughly exhausted when we camped on the evening of the 30th, our evening meal revived us so much that we walked over to a small island about three-quarters of a mile distant, which turned out to be a truly wonderful place for a geologist and a perfect paradise for the mineralogist.

On this island, which we afterwards called Depot Island, Mawson discovered a translucent brown mineral, which was proved to be titanium mineral.

CHAPTER XXXVI ACROSS THE ICE BARRIER

How to reach the Pole was still our engrossing subject of discussion, and on November 1 we decided that our only hope of reaching it, was by travelling on half-rations from the point we had reached to the point on the coast at the Drygalski Glacier, where we might hope to be able to turn inland with reasonable prospect of

success. Mawson was convinced that we must keep six weeks of full rations for our inland journey, and this meant that we must march on half-rations for about 100 miles.

While I was busy in calculating times and distances for the remainder of our journey, Mawson and Mackay conducted experiments upon the cooking of seal-meat with blubber. At winter quarters Mackay had experimented with blubber as a fuel, but his efforts had not been taken seriously, and, to our sorrow, his blubber lamp had been left behind.

Eventually, however, as a result of Mackay and Mawson's experiments, we secured an effective cooking stove, which was made out of one of our large empty biscuit tins, and a broth from seal-meat was made upon this stove. The broth was apparently very nutritious, but in my case it was also indigestible.

While Mawson was still engaged on cooking experiments, Mackay and I went to the highest point of the island, and chose a spot for a cairn to mark our depot and Mackay began to build the cairn.

It had, of course, become clear to us, from what we had already seen of the cracking sea-ice, combined with our slow progress, that our retreat back to camp from the direction of the Magnetic Pole would probably be cut off altogether through the breaking up of the sea-ice.

Under these circumstances we resolved to take the risk of the Nimrod returning safely to Cape Royds, where she would be instructed to search for us along the western coast; and also the risk of her not being able to find our depot and ourselves.

We knew that there was some danger in this course, but we also felt that we had got on so far with the work entrusted to us by our commander that we could not honourably turn back.

Under these circumstances we each wrote farewell letters to those who were nearest and dearest, and at 4.30 A.M. on the following morning we posted them in one of

our empty dried-milk tins, which had an air-tight lid, and, having walked up to the cairn, I lashed our post-office to the flagstaff by means of cord and copper wire.

There we also left several bags of geological specimens, and with lighter loads were prepared to go onwards towards the Pole.

It was later than usual when we left our depot, and as the sun's heat was already thawing the surface of the snow our progress was painfully slow. So terribly hard, indeed, was it to get along at all, that, after going two miles, we camped and resolved to go on again at midnight, when we hoped to avoid the sticky surface.

This experiment was fairly successful, and by November 5 we were opposite to a most interesting panorama some twenty miles north of Granite Harbour.

During that same day we had a very heavy surface to hamper and tire us, but as an offset to these troubles we had that night, for the first time, the use of a new frying-pan, ingeniously constructed by Mawson out of one of our empty paraffin tins. Indeed, Mawson's cooking experiments continued to be highly successful and entirely satisfactory to the party.

At this time we encountered a good deal of brash ice, and noticed that this type of ice surface was most common in the vicinity of icebergs. The brash ice is, I think, formed by the icebergs surging to and fro in heavy weather and crunching up the sea-ice near to them. The sea-ice, of course, refreezes, producing a surface covered with jagged edges and points.

But although brash ice was too plentiful biscuits were too scarce, and we were already reduced to one Plasmon biscuit each for breakfast and one for evening meals, and we had become exceedingly careful over the crumbs. At first, on this expedition, when biscuits were more plentiful we had munched them boldly, regardless of the loss of crumbs. Not so at this time, when crumbs were collected most carefully by the man to whom they belonged.

Uneventful days of sledging followed—days on which we were tired at night and

hungry nearly always; but on the 9th we were cheered by a fine, though distant, view of the Nordenskjold Ice Barrier to the north of us, and we were all extremely anxious to find out what sort of surface for sledging this great glacier was going to offer us.

According to the Admiralty chart, prepared from observations by the Discovery expedition, this glacier was twenty-four to thirty miles wide, and projected over twenty miles from the rocky shore into the sea. We hoped that we should be able to cross it without following a circuitous route along its seaward margins.

Two days later we reached the Nordenskjold Ice Barrier, and as Mawson wished to take some observations, Mackay and I decided to explore the glacier for the purpose of selecting a suitable track (if we could find it) for our sledges.

On our return we were able to tell Mawson the good news that the barrier was quite practicable for sledging; while he informed us that, as the result of his observations, the Magnetic Pole was probably about forty miles further inland than the theoretical mean position calculated for it from the magnetic observations of the Discovery expedition seven years before.

Early on the morning of the 12th we packed up and started to cross the barrier, and on the second day we had not sledged for more than a thousand yards when Mawson suddenly exclaimed that he could see the end of the barrier, where it ended in a white cliff some 600 yards ahead.

We halted the sledge, and while Mawson took some theodolite angles Mackay and I tried to find a way down the cliff, but failed to find it. Once more we reconnoitred, and this time Mawson and I found some steep slopes formed by drift snow, which were just practicable for a light sledge lowered by an alpine rope.

We chose what seemed to be the best of these slopes and Mackay, having tied the rope round his body and having taken his ice-axe, went down the slope cautiously, Mawson and I holding on to the rope meanwhile.

The snow gave a good foothold, and he was soon at the bottom without needing support from the rope. Then, when he had returned to the top, we all set to work unpacking the sledges, and after loading one sledge lightly we lowered it little by little down the slope, one of us guiding the sledge while the other two slackened out the alpine rope above. The man who went to the bottom unloaded the sledge on the sea-ice, and then climbed back again, while the others hauled up the empty sledge. This manœuvre was repeated again and again until everything was safe, and we very glad to have crossed the ice barrier so quickly. There can be little doubt, I think, that this Nordenskjold Ice Barrier is afloat.

On the following day we were naturally anxious to be sure of our exact position on the chart, in view of the fact that we had come to the end of the barrier some eighteen miles quicker than the chart had led us to anticipate. Accordingly, Mawson worked up his meridian altitude, while I plotted out the angular distances he had found respectively for Mount Erebus, Mount Lister and Mount Melbourne.

As the result of the application of our calculations to the chart it became evident that we were opposite to what on Captain Scott's chart was termed Charcot Bay, and consequently were nearly twenty miles nearer north than we had thought ourselves to be. This was splendid news, and cheered us up very much.

We were still travelling by night and sleeping during the afternoon, and when we got out of our sleeping-bags at 8 P.M. on the night of the 15th there was a beautifully perfect "Noah's Ark" in the sky. We also saw fleecy sheets of frost-smoke arising from over the open water on Ross Sea, and forming dense cumulus clouds. This warned us that open water was not far away, and impressed us with the necessity of pushing on if we hoped to reach our projected point of departure on the coast for the Magnetic Pole before the sea-ice entirely broke up.

Difficult surfaces continued to beset us, and our progress was consequently exceedingly slow.

By the 24th we were suffering both from exhaustion and want of sleep, and I rued the day when we chose the three-man bag in preference to the one-man bag.

A three-man sleeping-bag, where you are wedged in more or less tightly against your mates, where all snore and shin one another, and where each man feels on waking that he is more shinned against than shinning, is not conducive to real rest.

CHAPTER XXXVII THE DRYGALSKI GLACIER

On November 26 Mawson and I ascended a rocky promontory, while Mackay was securing some seal-meat, and from the top we had a splendid view across the level surface of sea-ice far below us.

But although what we saw was magnificent, it was also discomforting, for at a few miles from the shore an enormous iceberg, frozen into the floe, lay right across the path which we had meant to travel on the next day.

To the north-west of us was Geikie Inlet, and beyond that, stretching as far as the eye could follow, was the great Drygalski Glacier. Not a little concerned were we to observe with our field-glasses that the surface of this glacier was wholly different to that of the Nordenskjold Ice Barrier.

Clearly the surface of the Drygalski Glacier was formed of jagged surfaces of ice very heavily crevassed, but we could see that at the extreme eastern extension, some thirty miles from where we were standing, the surface appeared to be fairly smooth.

It was also obvious to us, from what we had seen looking out to sea to the east of our camp, that there were large bodies of open water at no great distance from us trending shorewards in the form of long lanes. The lanes of water were only partly frozen over, and some of these were interposed between us and the Drygalski Glacier.

Not a moment was to be lost if we were to reach the glacier before the sea-ice broke

up, for one strong blizzard would have converted the whole of the sea-ice between us and the glacier into a mass of drifting pack.

The thing, indeed, for us to do was to push on with all our might, and still with slushy surfaces to hinder us we pulled and tramped until—on the 28th—we came to a point where for some time it seemed as if our progress further north was completely blocked. Eventually, however, we found a place where the ice might just bear our sledges, and, having strengthened it by laying down slabs of sea-ice and shovelfuls of snow, we rushed our sledges over safely. Extremely thankful were we to get them over to the other side, for the ice was so thin that it bent under our weight, and once Mackay broke through and very nearly got a ducking.

Next we had to encounter some very high sastrugi of hard tough snow, and as these were nearly at right-angles to our course, the work of dragging our sledges over them was very distressing. And after the sastrugi we met with an ice-surface which kept continually cracking as we passed over it, with a noise like that of a whip being cracked.

We were unable by this time to talk about anything but cereal foods, such as cakes of various kinds and fruits, for we were very short of biscuits and were consequently seized with food obsessions.

The sun, however, which had during the afternoons considerable heating power, and in one way was hindering us by making the surfaces so slushy, helped us in another way. For when I put some snow into our aluminium cooking-pot and exposed it for several hours—while we were camping—to the direct rays of the suns, I was glad to find that half the snow was thawed down, a result that, of course, saved us both paraffin and blubber.

The Northern Party on the Plateau, New Year's Day, 1909. (See page 211)

On the 30th the ice ridges fronting us became higher and steeper, and strain we ever so mightily we could scarcely get the sledges to move up the steep ice slopes, and

the sledges also skidded a good deal as we dragged them obliquely upwards.

The glacier was now spread before us as a great billowy sea of pale green ice, with here and there high embankments of marble-like névé resembling railway embankments. Unfortunately for our progress, the trend of the latter was nearly at right-angles to our course, and as we advanced the undulations became more and more pronounced, the embankments higher and steeper.

These embankments were bounded by cliffs from forty to fifty feet in height, with overhanging cornices of tough snow. The cliffs faced northwards, and such serious obstacles were the deep chasms which they produced to our advance that we had often to go a long way round in order to head them off.

December began with a very laborious day, and after battling on for several hours we had only advanced a little over half a mile. So we decided to camp, for Mackay and me to try to find a way for the sledge out of the maze of chasms that beset us, and for Mawson to take magnetic observations.

During that afternoon we discussed our situation at some length. Most probably the Drygalski Glacier was twenty miles wide, and if we were to cross it along the course we were travelling at the rate of a mile a day it would take us twenty days to get over, even if we took no account of the unforeseen delays which our experience had already taught us were sure to occur. From what Mackay and I had seen ahead of us, our difficulties were bound, for a considerable distance, to increase rather than grow less.

Under these circumstances we were reluctantly forced to the conclusion that our only hope of ultimate success lay in retreat, and so we resolved to drag the sledges back off the glacier on to the sea-ice by the way along which we had come.

CHAPTER XXXVIII CREVASSES

Our retreat began early on the morning of December 2, and after a week's struggle

on the glacier Mackay, just before camping-time on the 9th, sighted open water on the northern edge of the Drygalski Ice Barrier, from three to four miles away. This convinced us that we could not hope for sea-ice over which to sledge westwards to that part of the shore where we proposed to make our final depot, before attempting the ascent of the great inland plateau in order to reach the Magnetic Pole.

On the 10th, however, at the end of the day's sledging we rejoiced to find ourselves off the true glacier type of surface, and on to one of the undulating barrier type. This improvement enabled us to steer westwards, and on the following day we had a fine view of "Terra Nova" Bay, and as far as could be judged the edge of the Drygalski Ice Barrier on the north was scarcely a mile distant.

So surprised were we at the general appearance of the outline of the ice, which did not seem to agree with the shape of this region as shown on the Admiralty chart, that we halted a little earlier than usual to reconnoitre. Mackay started off with the field-glasses to a conspicuous ice-mound about half a mile to the north-west, Mawson began to change his plates, while I went out with my sketch-book to get an outline panoramic view of the grand coast ranges in sight.

So few had been the crevasses of late that I failed to take my ice-axe with me and I had scarcely gone half a dozen yards from the tent when the lid of a crevasse collapsed under me, and let me down nearly up to my shoulders.

I only saved myself from going right down by throwing out my arms and staying myself on the snow-lid on either side. The lid was so rotten that I did not dare to move for fear that I might be thrown into the abyss, but fortunately Maws on was near, and on my calling to him he brought an ice-axe and chipped a hole in the firm ice on the edge of the crevasse nearest to me. Then he inserted the chisel edge of the ice-axe in the hole and, holding on to the pick-point, swung the handle towards me. Grasping this, I was able to climb out on to the solid ice.

On the following day we sledged on until we were close to the ice-mound already

mentioned, and decided that as this mound commanded such a general view of the surrounding country, it must also be a conspicuous object to any one approaching the Drygalski Glacier by sea from the north. And so we decided that as we could find no trace of the "low, sloping shore"—as it was called on the Admiralty chart—we would make our depot at this spot.

We estimated that we still had 220 miles to travel from this depot on the Drygalski Glacier to the Magnetic Pole, and therefore it was necessary to make preparations for a journey there and back of at least 440 miles. We considered that with détours the journey might possibly amount to 500 miles.

Our first business, therefore, was to lay in a stock of provisions sufficient to last us for our journey, and after Mackay had killed some seals and Emperor penguins we started cooking our meat for the trip. Our calculation was that the total weight—when we depoted one sledge with spare equipment and all our geological specimens—would be 670 lb. But we were very doubtful whether we, in our stale and weakened condition, would be able to pull such a load.

We unpacked and examined both sledges, and found that of the two, the runners of the Duff sledge were the less damaged.

On the 14th we were still busy preparing for the great trek inland. Mackay was cooking meat, Mawson was employed in transferring the scientific instrument boxes and other things from the Christmas Tree sledge to the Duff sledge, while I was engaged on fixing up depot flags, writing letters to the commander of the Nimrod, Lieutenant Shackleton, and my family, and fixing up a milk-tin to serve as a post office on to the depot flag-pole.

When we were fully prepared the Christmas Tree sledge was dragged to the top of the ice-mound, where we cut trenches with our ice-axes in which to embed the runners of the sledge; then we fixed the runners into these grooves, piled the chipped ice on top, and then lashed the flag-pole about six feet high with the black flag

displayed on the top of it very carefully to the sledge. We all felt quite sorry to part with the Christmas Tree sledge, which by this time seemed to us like a bit of home.

Anxious as we were to start for our dash towards the Pole, we were prevented by a furious blizzard from getting on our way until the 16th. Then we were delighted to find that, in consequence of our three days' rest we were able to pull our sledge with comparative ease.

Soon afterwards we reached another open tide-crack, and had to spend some time in going round it, and on the far side of this crack we encountered a large pressure ridge forming a high and steep slope which barred our advance. Its height was about eighty feet, but if we were to go on there was nothing to do but drag our sledge up the slope, a most exhausting work which was made more difficult still by the fact that this ice-slope was traversed by numerous crevasses.

At last we got up the slope, only to see in the dim light that a succession of similar slopes were ahead of us, becoming continually higher and steeper. The ice, too, became a perfect network of crevasses, some of which were partly open, but most of them covered with snow lids.

Suddenly, when crossing one of these lids, and just as he was about to reach firm ice on the other side, we heard a slight crash, and Mawson instantly disappeared. Fortunately the toggle at the end of his sledge-rope held, and he was left swinging in the empty space between the walls of the crevasse, being suspended by his harness attached to the sledge-rope.

Mackay and I hung on to the rope in case it should part at the toggle, but when Mawson called out for the alpine rope to be passed down to him I left Mackay and hurried back to the sledge to get it. Just, however, as I was trying to disengage a coil of rope, Mawson called out that he felt he was going, so I returned to help Mackay in his effort to keep a strain on Mawson's harness rope. Then Mawson said that he was all right, and the rope having suddenly cut back through the lid of the crevasse

was probably the reason why he had felt that he was falling.

I now held on to the harness rope while Mackay got the alpine rope, and made a bow-line at the end in which Mawson could put his foot. In the meantime Mawson, who was down about eight feet below the level of the snowy lid, secured some ice crystals from the side of the crevasse and threw them up for subsequent examination.

The alpine rope having been lowered, we eventually hoisted him up little by little to the under surface of the snow-lid, but as his harness rope had cut back a narrow groove in this snow-lid several feet from where the snow gave way under him, he found his head and shoulders pressing against the under side of the snow-lid and had difficulty in breaking through this in order to get out his head.

At last the top of his head appeared, and presently he got safely out on the near side of the crevasse, a deliverance for which we were all supremely thankful. After this too-exciting episode we were extra-cautious in crossing crevasses, but the ice was simply seamed with them.

Twice when our sledge was being dragged up ice-pressure ridges it rolled over sideways with one runner in a crevasse, and once the whole sledge all but disappeared into a crevasse, the snow-lid of which partly collapsed under its weight. Had it gone down completely we should certainly have been dragged down with it, as it weighed nearly one-third of a ton.

It was clear to us that these numerous crevasses which we had reached were caused not by the Drygalski but by the Nansen Glacier.

On the 20th we held a council of war, the question being whether we should continue in the direction of the Mount Nansen Glacier, or whether we should retreat and try to find some other way to the plateau. Mackay was in favour of hauling ahead over the glacier, while Mawson and I favoured retreat, and at last we decided to retreat once more.

CHAPTER XXXIX UPWARDS AND ONWARDS

So far as the possibility of reaching the Magnetic Pole was concerned, our fortunes seemed to have reached a low ebb. It was already December 20, and we knew that we had to be back at our depot on the Drygalski Glacier not later than February 1 or 2, if there was to be a reasonable chance of our being picked up by the Nimrod. That meant that we had to travel at least 480 to 500 miles before we could hope to get to the Magnetic Pole and back to our depot, and there remained only six weeks to accomplish this journey.

At the same time we should have to pioneer a road up to the high plateau, and now that everything was buried under soft snow it was clear that sledging would be slower and more difficult than ever. Under the circumstances it was, perhaps, not to be wondered at that we were not hopeful of our chance of success.

However, there was nothing to do but to reconnoitre in a south-westerly direction to see what way was most practicable for us, and after paddling, unwillingly, in many shallow pools of water and crossing much pressure-ice and several crevasses, we at last saw that we should have to drag our sledge up a steep slope encumbered with soft deep thawing snow.

We also collected several specimens, including a solitary coral, and while we were collecting them we could hear the roar of many mountain torrents descending the steep granite slopes of the great mountain mass.

Occasionally, too, we heard the boom and crash of an avalanche descending from the high mountain top, and such sounds were strange to our ears, accustomed so long to the almost uninterrupted solitude and silence of the Antarctic.

The Northern Party at the South Magnetic Pole From left: Dr. Mackay, Professor David, Douglas Mawson (See page 215)

On the 22nd we were suddenly struck by a furious blizzard which hindered us until

Christmas Eve, but by ten o'clock on that evening we had succeeded in struggling on until we were above the uncomfortable zone of thaw, and everything around us was once more crisp and dry though cold. We had reached over 1200 ft. above sea level, and our spirits mounted with the altitude.

On Christmas Day we were delayed at first by a blizzard, but in spite of this we managed to travel about four miles and to camp at night over 2000 ft. above sea-level. Having no other kind of Christmas gift to offer, Mawson and I presented Mackay with some sennegrass for his pipe, his tobacco having been exhausted long before.

The following day saw us again crossing crevasses, and as some of them were from 20 to 30 ft. wide, it was fortunate that the snow lids were strong enough to carry safely both the sledge and ourselves. Mackay suggested that, for greater security, we should fasten the alpine rope around Mawson, who was in the lead, and secure the other end of it to the sledge. The rope was left just slack enough to admit of the strain of hauling being taken by the harness rope, and so Mawson had two strings to his bow in case of being suddenly precipitated into a crevasse. It was a good system, and we always adopted it afterwards in crossing heavily crevassed ice.

On the next day we made a small depot of our ski boots, all our geological specimens, and about one day's food supply together with a small quantity of oil, and this we called the Larsen Depot as it was close to one of the southern spurs of Mount Larsen.

Our eyes were now straining, as we advanced with the sledge, to see whether any formidable mountains still barred our path to the plateau, and our thankfulness was unbounded when at last we realised that apparently we were going to have a fairly easy ascent of hard névé and snow on to the plateau. On that day we advanced a little over ten miles, and on December 30 we reached an altitude of nearly 5000 ft., our breath freezing into lumps of ice and cementing our Burberry helmets to our

beards and moustaches as in winter time.

New Year's Eve brought with it some disappointment from Mawson's announcement—after he had taken a fresh set of magnetic observations—that he made out the Magnetic Pole to be further inland than had been originally estimated. We were still dragging the sledge on an up grade and on a softer surface than before, and as we were also obliged to put ourselves on somewhat shorter rations, in order to form an emergency food-supply in case our journey proved longer than we anticipated, we were very much exhausted by night.

On that same evening a skua gull came to visit us, I am afraid not with any intention of giving us New Year's greetings, but because he mistook us for seals crawling inland to die, as is not infrequently the habit of these animals.

New Year's Day gave us beautifully calm weather, and to celebrate the beginning of 1909 Mawson provided us with a grand hoosh and a rich pot of cocoa, which we enjoyed thoroughly after an exhausting march.

Hunger, indeed, was beginning to beset us, and we should also have liked more to drink if we could have afforded it. In fact instead of talking about what we would like to eat, we began to talk about what we would drink if we had the chance. Mackay would have liked to drink a gallon of buttermilk straight off, Mawson wanted a big basin of cream, while my choice was several pots of the best coffee with plenty of hot milk.

We were still climbing on January 3, but on the next day we were pleased to find that the up grade was becoming less steep. We had reached an altitude of over 6000 ft. and found breathing in the cold air distinctly trying. It was not that definite mountain sickness had attacked us, but that we felt weaker than usual as the result, doubtless, of the height combined with the cold.

Still, we were progressing at the rate of about ten miles a day, and that was enough to make us hopeful in spite of everything.

On the 6th I left off my crampons and put on a new pair of finnesko, with the result that I fell heavily over one of the sastrugi, and slightly straining some muscles on the inner side of my left leg, just below the knee, I suffered a considerable amount of pain for the rest of the journey.

Mountain lassitude still continued to attack us and our hands were often frost-bitten when packing up the sledge. By the 9th we were completely out of sight of any mountain ranges, and were toiling up and down amongst the huge billows of a snow sea.

CHAPTER XL THE MAGNETIC POLE

Each successive evening saw us some ten miles nearer to the Magnetic Pole, but by the 11th we had various inconveniences (to name them mildly) to add to our difficulties. Mawson had a touch of snow-blindness in his right eye, and both he and Mackay suffered much through the skin of their lips peeling off, leaving the raw flesh exposed. Mawson, particularly, experienced great difficulty every morning in getting his mouth to open, as his lips were firmly glued together.

The compass by this time was very sluggish, in fact the theodolite compass would scarcely work at all. This pleased us all a good deal, and at first we all wished more power to it; and then, recognising our mistake, we amended the sentiment and cordially wished less power to it.

On the evening of the 12th, Mawson, after carefully analysing the results set forth in the advance copy of the Discovery Expedition Magnetic Report, decided that, although the matter was not expressly so stated, the Magnetic Pole instead of moving easterly, as it had done in the interval between Sabine's observation in 1841 and the time of the Discovery expedition in 1902, was likely now to be travelling somewhat to the north-west.

The results of dip readings taken earlier in the journey also agreed with this

decision. It would, therefore, be necessary to travel farther in that direction than we had expected, if we were to reach our goal. Most extremely disquieting news was this for us, as we had come almost to the end of our provisions, after making allowance for enough to take us back on short rations to the coast. Still, in spite of anxiety, our overwhelming weariness enabled us to get some sleep.

At breakfast on the following morning we fully discussed our future movements, and Mawson, having carefully reviewed his observations as to the position of the Magnetic Pole, decided that we must travel four more days if we were to reach it, and we resolved to go on sledging for that time.

On that day we advanced thirteen miles, and on the next the snow surface over which we were sledging sparkled with large reconstructed ice crystals, about half an inch in width and one sixteenth of an inch in thickness, which it seemed a sacrilege to break.

On the 15th about twenty minutes before true noon Mawson took magnetic observations with the dip circle and found the angle only fifteen minutes off the vertical, the dip being 89° 45'. Naturally we were very much rejoiced to find that we were close to the Magnetic Pole. The observations made by Bernacchi, during the two years of the Discovery expedition sojourn at winter quarters on Ross Island, showed that the extent of daily swing of the magnet was sometimes considerable. The compass at a distance from the Pole pointing in a slightly varying direction at different times of the day, indicates that the polar centre executes a daily round of wanderings about its mean position.

Mawson considered that we were already practically at the Magnetic Pole; and that if we waited for twenty-four hours taking constant observations at the spot we had reached, the Pole would, probably, during that time, come vertically beneath us. We decided, however, to go on to the spot where Mawson concluded the approximate mean position of the Magnetic Pole would lie. That evening the dip was 89° 48'.

From the rapid rate at which the dip had been increasing, as well as from a comparison of Bernacchi's magnetic observations, Mawson estimated that we were about 13 miles distant from the probable mean position of the South Magnetic Pole. To locate, he said, the mean position accurately it was possible that a month of continuous observation would be necessary, but that the position he indicated was as close as we could locate it.

Consequently we decided to make a forced march of 13 miles on the following day to the approximate mean position of the Pole.

On Saturday, January 16, we were up at 6 A.M. and soon started, pulling our sledge for two miles. We then depoted a lot of our heavy gear and equipment, and having gone on for another two miles we fixed up the legs of the dip circle, the compass moving in a horizontal plane being useless for keeping us on our course.

Two miles farther on we fixed up the legs of the theodolite, and after another two miles we put up our tent and had a light lunch.

Afterwards we walked five miles in the direction of the Magnetic Pole so as to place us in the mean position calculated for it by Mawson, 72° 25′ South latitude, 155° 16′ East longitude. Mawson placed his camera so as to focus the whole group, and in the meantime Mackay and I fixed up the flag-pole.

Then at 3.30 P.M. we bared our heads and hoisted the Union Jack with the words uttered by myself, in conformity with Lieutenant Shackleton's instructions: "I hereby take possession of this area now containing the Magnetic Pole for the British Empire."

At the same time I fired the trigger of the camera by pulling the string which Mawson had arranged, and finally we gave three cheers for His Majesty the King.

The temperature at the moment we hoisted the flag was exactly 0° Fahr.

It was an intense satisfaction and relief to all of us to feel that at last, after so many days of toil and danger, we had been able to carry out our leader's instructions, and

to fulfil the wish of Sir James Clarke Ross that the South Magnetic Pole should be actually reached, as he had already in 1831 reached the North Magnetic Pole.

At the same time we were too utterly weary to be capable of any great amount of exultation. I am sure the feeling that was uppermost in all of us was one of devout and heartfelt thankfulness to the kind Providence which had so far guided our footsteps in safety to that goal.

With a fervent "Thank God" we all did a right-about turn, and marched as quickly as tired limbs would allow us back towards our little green tent in the wilderness of snow. Reaching our depot a little before 10 P.M. that night, we turned into the sleeping-bag faint and weary, but happy that a haunting load of possible failure was at last removed from our minds.

CHAPTER XLI RETURNING

I called the camp later than usual on the following morning, and we discussed our chances of catching the Nimrod if she searched for us along the coast in the direction of our depot on the Drygalski Glacier.

At the Magnetic Pole we were fully 260 statute miles distant, as the skua gull flies, from our depot, and as we had knocked off eleven of these miles on the previous day we still had 249 miles to cover. If, then we were to reach the Drygalski depot by February 1, we had only fifteen days in which to do it, and we should have to average sixteen and two-third miles a day in order to reach the coast in the time specified.

This, of course, did not allow for any delay from blizzards, and we knew from the direction of the sastrugi during our last few days' march that the prevailing direction of the blizzards was likely to be exactly in our teeth. The prospect, therefore, of reaching our depot in the specified time did not appear to be bright.

Ready to start Home. (See page 233)

On starting, however, on the 17th we had most glorious weather, and the wind which had helped us towards the Pole turned round and helped us away from it. In spite of our late start we sledged 16 miles, and on the following day, although Mawson's left leg was paining him, we covered practically the same distance.

The 19th saw us still keeping up the same rate of progress, but owing to some miscalculation of mine we discovered that we had no tea for this week, our sixth week out, unless we took it out of the tea-bag for the seventh week. Accordingly we halved the tea in the seventh week bag, and determined to collect our old tea-bags at each camp as we passed it, and to boil these bags together with the small pittance of fresh tea.

As we progressed coastwards we soon had quite an imposing collection of muslin bags with old tea leaves, and with the thorough boiling they got there was a strong flavour of muslin added to that of old tea. But nevertheless we considered that this drink was nectar.

In view of the steady sixteen miles a day that we were doing Mawson proposed on the 20th that we should return to nearly full rations, a proposal which was hailed with delight, for we were becoming very exhausted through insufficient food.

Up to that date we had been able still to follow our old sledge tracks, which was a great blessing when the magnetic needle was of so little use to us. But on the following days we, lost these tracks, and had a great deal of pie-crust snow to cross, which made our work terribly fatiguing.

However, we managed to keep up our sixteen miles per day, and on January 24 we were cheered by sighting Mount Baxter. Towards evening we discussed whether we were following approximately our old out-going tracks. Mackay thought we were nearer to the mountain than before, I thought we were farther to the south-west, Mawson, who was leading, said that we were pretty well on our old course. Just then I discovered that we were actually on our old tracks which showed up plainly for a

short distance, and which were striking evidence of Mawson's skill as a navigator.

On the next day we encountered a mild blizzard, but we also managed to sight Mount Nansen just before we camped, and when we resumed our march we reached a surface of hard marble-like névé, which descended by short steep slopes.

At first we did not realise that we were about to descend what we had called the Ice Falls on the outward journey, and as the sledge occasionally took charge and rushed down this marble staircase Mawson and I came some heavy croppers.

On the 27th we were delighted at last to sight Mount Larsen, and to have reached a point only forty miles from our Larsen Depot.

The wind was blowing at about 25 miles an hour, and occasionally, in an extra strong puff, the sledge took charge. On one of these occasions it suddenly charged into me from behind, knocked my legs from under me, and nearly juggernauted me. But I was quickly rescued from this undignified position by Mawson and Mackay.

At lunch, with a faint hope of softening the heart of Mackay—who was messman for the week—I mildly informed him that it was my birthday. He took the hint and both at lunch and dinner we all fared, what we considered, sumptuously.

We advanced twenty miles towards the coast on that day, but it had been a most fatiguing journey, and when we started again we decided that pulling the sledge was less exhausting than the sailing had proved to be.

Hour by hour we steadily pulled on, Mounts Nansen and Larsen growing larger and clearer, and we began to hope that we might be able to reach our depot that night. But later on Mawson's sprained leg pained him so much that we had almost decided to camp, when Mackay's sharp eyes sighted our little blue flag tied to the ice-axe at our depot. It was, however, past midnight before we turned into our sleeping-bags.

On the next morning—January 30—we were up at 9 A.M., and after breakfast we collected the material at our depot, such as ski boots, oil, and geological specimens and loaded these on to our sledge.

During this day we discussed whether it would be wiser to descend by the old track up which we had come, or make down the main Larsen Glacier to the point where it joined the Drygalski Glacier. Mackay favoured the former route, while Mawson and I were in favour of the latter, and, as subsequent events proved, Mackay was right and we were wrong.

We held on down the main glacier, and the descent was soon so steep that only with difficulty could we prevent the sledge from charging down the slope.

On January 31 we took half the load off the sledge, and started with the remainder to try and work a passage of the ice-pressure ridges of the combined Drygalski and Larsen Glaciers on the smoother sea-ice, and eventually on to the Drygalski Ice Barrier.

While Mawson and Mackay pulled, I steadied the sledge on the lower side in rounding the steep sidelings, but in spite of my efforts to keep it on even keel the sledge frequently capsized. At last we arrived at the foot of an immense ice-pressure ridge, a romantic-looking spot with a huge cliff of massive granite rising up on our left to heights of about 2000 ft., although I admit that at the time we did not exactly appreciate its romantic beauty.

Mackay reconnoitred, and found that the large pressure ridge which seemed to bar progress towards our depot must be crossed. So taking our ice-axes we smoothed a passage across part of the ridge—a tough job—and then unloaded the sledge and passed each one of our packages over by hand. Finally we dragged the sledge up, and hoisted it over and lowered it down safely on the other side.

Little by little the surface improved after this, until our progress was once more barred, but on this occasion by what may be termed an ice donga, apparently an old channel formed by a river of thaw-water.

We encountered three of them during that afternoon from a few feet to 50 or 100 ft. broad, and often we had to take our sledge a long way round to cross them.

Our difficulties were increased by the innumerable crevasses and steep ice ridges, and once Mackay and I were in the same crevasse at the same time, he up to his shoulders and I up to my waist. Fortunately, however, we were able to save ourselves from falling right through the lid by throwing out our arms.

While we sledged on through the night, snow began to fall, and when we camped at 7 A.M. on February 1 we were all most thoroughly weary.

CHAPTER XLII OBSTACLES IN OUR COURSE

It continued to snow heavily during the day. But although Mawson's leg pained him a great deal we had to push on, for we were still sixteen miles, we thought, from our depot on the Drygalski Glacier, and we had only two days' food left. So we started to sledge in the thick, driving snow, but as the work under these conditions were excessively exhausting, and we were also unable to keep our proper course while the blizzard lasted, we camped at 8 P.M. and were soon sleeping the sleep of worn and weary wanderers.

On the morning of February 2 we were rejoiced to find the sun shining, and we resolved to make a desperate attempt to reach our depot on this day, for we knew that the Nimrod would be due—perhaps overdue—by the night. On looking back we saw that our track of the day before was about as straight as a corkscrew.

Once more we pulled out over the soft snow, but although a little refreshed by our good sleep we found the work extremely trying and toilsome.

We crossed an ice donga, and about four miles out reached the edge of a second donga. Here we determined to leave everything but our sledge, tent, sleeping-bag, cooking apparatus, oil and food, and make a forced march to the Drygalski depot. Accordingly we camped and having fixed up our depot, we marked the spot with a little blue flag tied on to an ice-axe.

The sledge thus lightened was far easier to pull, and having crossed the donga by a

snow-bridge we pulled steadily onwards, Mawson occasionally sweeping the horizon with our field-glasses in hopes of sighting our depot.

Suddenly he exclaimed that he saw the depot flag distinctly on its ice mound, about seven miles distant, but when Mackay and I looked through the glasses neither of us could see any trace of the flag. Mawson considered that both of us must be snow-blind, but when he looked again he at once exclaimed that he could no longer see the flag. The horizon seemed to be walloping up and down, just as though it was boiling, evidently the result of a mirage.

Mawson, however, was so confident that he had seen the flag, well round on the starboard bow of our sledge that we altered our course, and after going a little over a mile, we were rejoiced to hear that he could distinctly see the depot flag. Full of hope we kept on sledging for several miles farther, but at midnight when the temperature had fallen to zero I felt that one of my big toes was getting frost-bitten. All day my socks had been wet through, and with the sudden fall of temperature the water in the socks had turned to ice.

So we halted for me to change my socks and for all of us to have a midnight meal, and much refreshed we started off again, thinking that at last we should reach our depot, or at all events the small inlet a little over a mile from it. But "the best laid schemes of mice and men gang aft agley."

There was an ominous white streak ahead of us with a dark streak just behind it, and soon we saw that this was due to a ravine in the snow and ice surface interposing itself between ourselves and our depot, and shortly afterwards we reached the near cliff of the ravine.

This ravine was 200 yds. broad, and from 30 to 40 ft. deep; and it was bounded by a vertical cliff or very steeply inclined slope on the north-west side, and by an overhanging cliff on the south-east side. Inland the ravine extended as far as the eye could reach.

We determined to try to cross the ravine, at the bottom of which we were excited to see a number of seals and Emperor penguins dotted over the ice floor. At last by means of making fast the Alpine rope to the bow of the sledge we reached the bottom, and there Mackay killed two penguins to replenish our exhausted larder. Meanwhile Mawson was looking out for a spot where we might swarm up, and as I was feeling much exhausted, I asked him to take over the leadership of the expedition.

I considered myself justified in taking this step as the work assigned to us by our leader was accomplished, and we were within two or three miles of our depot and had no reason to fear the danger of starvation.

On the other hand, as regards our ultimate personal safety, our position was rather critical. In the first place, we were not even certain that the Nimrod had arriven in Ross Sea; in the second place, assuming that she had, if was quite possible that she would miss sighting our depot flags altogether.

In the event of the ship not appearing within a few days, it would have been necessary to take immediate action with a view either to winter at the Drygalski depot or to an attempt to sledge over the steeply crevassed glacier for over 200 miles to Cape Royds.

Even at the moment, had some immediate strenuous action been necessary from the Nimrod suddenly appearing, I thought that it would be best for Mawson, who was less physically exhausted than I was, to be in charge.

He had, throughout the whole journey, shown excellent capacity for leadership, and when I spoke to him he at first demurred, but finally said he would act for a time.

At first we thought that there was one very difficult but apparently possible means of ascent up the cliff face; our efforts, however, in this direction were doomed to failure, and we were compelled to retrace our steps up the ravine down which we had previously lowered the sledge.

This was a tremendous labour, for we could only force the sledge up a few inches at a time; eventually, however, we found ourselves on the level plain at the top of the ravine, but, of course, on the wrong side as far as our depot was concerned. There we thought it safe to camp, for we were within three miles of the open sea, and had the Nimrod sighted our depot flag and stood in to the coast, we could easily have hurried down to the entrance of the inlet and made signals to her.

At 7 A.M. we turned in after toiling for twenty-three hours, and at about a quarter-past seven, as we learnt later, the Nimrod must have passed; but owing to a light wind with snow drift she was unable to sight either our depot flag or tent.

Having had four hours' rest we packed our sledge and started along the north bank of the snow gorge, the snow and ice at the bottom being dotted with basking seals and moulting Emperor penguins.

At first, in our tired and weak state, we were much dispirited to find no means of crossing the ravine, but eventually Mackay, who had gone ahead, shouted that he had discovered a snow-bridge across it, and when he had rejoined us we pulled the sledge to the head of the bridge.

There was a crevasse at both the near and far ends of the bridge, and stepping over the crevasse at the near end we launched the sledge with a run down to the centre of the bridge and then struggled up the steep slope facing us, Mackay steadying the sledge from falling off the narrow causeway, while all of us pulled for all we were worth.

In another minute or so we were safely across with our sledge, and thankful to have surmounted the last obstacle between us and our depot.

CHAPTER XLIII SAFE ABOARD

As we were all thoroughly exhausted and had reached a spot from which we could get a good view of the ocean beyond Drygalski Barrier, we camped at 10.30 P.M. on

that evening (February 3) a little over a mile away from our depot.

During that day we had two of the most satisfying meals we had eaten for a very long time; a soupy mincemeat of penguin for lunch, and plenty of seal for dinner.

And after the second meal Mawson and I turned into the sleeping-bag, leaving Mackay to take the first of our four-hour watches on the look-out for the Nimrod. During his watch he walked up to the depot and dug out our biscuit tin, which had served us as a blubber lamp and cooker, together with the cut-down paraffin tin which we had used as a frying-pan, and carried them to the tent.

Then he cooked some penguin meat and regaled himself with dainty morsels from the savoury dish, and when he called me at 4 A.M. I found that he had thoughtfully put into the frying-pan about two pounds of penguin's breast for me to toy with during my watch.

During the afternoon of the 4th we discussed our future plans, and decided that we had better at once move the tent up to our old depot, where it would be a conspicuous object from the sea, and where, too, we could command a more extensive view of the ocean.

A view of the Hut in the Summer. Meteorological Station can be seen on the extreme right. (See page 60)

We also talked about what it would be best to do if the Nimrod did not appear, and determined that we ought to tackle the journey to Hut Point, keeping ourselves alive on the way, as best we might, with seal-meat.

While, however, Mackay thought we ought to start in a few days, Mawson and I, on the other hand, thought that we should wait where we were until late in February. From whatever point of view we looked at it, our lot was not a happy one.

Dispirited, indeed, by forebodings of much toil and trouble, we were just preparing to set our weary limbs in motion to pack up and trek up to the depot, when—Bang! went something, seemingly close to the door of our tent. The sound thrilled us; in

another instant the air reverberated with a big boom, much louder than the first sound.

Mawson was the first to give tongue, roaring out, "A gun from the ship!" and dived for the tent door. As the latter was narrow there was for the moment some congestion of traffic. I dashed my head forwards, only in time to receive a few kicks from the departing Mawson. Just as I was recovering my equilibrium, Mackay made a wild charge, rode me down, and trampled over my prostrate body.

When at last I got started, Mawson had got a lead of a hundred and Mackay of about fifty yards. "Bring something to wave," Mawson shouted, and rushing back to the tent I seized Mackay's ruck-sack.

And then as I ran forward again, what a sight met my gaze! Not a quarter of a mile away was the dear old Nimrod, steaming straight towards us up the inlet, and at the sight of the three of us hastening frantically to meet the ship, hearty ringing cheers burst forth from all on board.

It would be hard, indeed, for anyone who has never been situated as we had been, to realise the sudden revulsion of our feelings, or to understand how those cheers stirred every fibre within us. In a moment, as dramatic as it was heavenly, we seemed to have passed from death into life.

My first feelings were of intense joy and relief, then of fervent gratitude to the kind Providence which had so mercifully led our friends to our deliverance.

Suddenly, however, a shout from Mackay called me back to earth: "Mawson's fallen into a deep crevasse—look out, it's just in front of you," he called, and I saw him kneeling near the edge of a small oblong hole in the névé.

"Are you all right, Mawson?" he asked, and from the depth came up the welcome word, "Yes."

Mackay then told me that Mawson was about twenty feet down the crevasse, and we decided to try to pull him up with the sledge harness and hurried back to get it. Our

combined strength, however, was not enough to pull him up, and as there was a danger of the snow lid at the surface falling in on Mawson unless it was strengthened with some planking, we gave up our attempt, I remaining at the crevasse while Mackay hurried off for help to the Nimrod.

"Mawson has fallen down a crevasse, and we got to the Magnetic Pole," Mackay called out, and almost in less time than it takes to write it officers and sailors were swarming over the bows of the Nimrod and dropping on to the ice barrier.

I called to Mawson that help was at hand, and he replied that he was quite comfortable, for although there was seawater at the bottom of the crevasse, he was able to sustain himself a couple of feet above it on the small ledge that had stopped his fall.

Meanwhile, the rescue party, headed by J. K. Davis, the first officer of the Nimrod, had arrived, and when the crevasse had been bridged with a piece of sawn timber, Davis, with the thoroughness which characterised all his work, promptly had himself lowered down the crevasse. And presently Mawson, with only his back slightly bruised from this fall, and then Davis were safely on the top.

What a joyous grasping of hands and hearty all-round welcoming followed, and foremost among those old friends who greeted us was Captain Evans who had commanded the Koonya, and who was then in command of the Nimrod, a fact which gave us the greatest satisfaction. Quickly he assured me of the good health of my wife and family, and while willing hands packed up our sledge and other belongings, Captain Evans walked with us to the rope ladder hanging over the bows of the Nimrod.

Quickly as all this had taken place, Mackay had already found time to secure a pipe and some tobacco from one of our crew, and was pulling away to his heart's content.

After our one hundred and twenty-two days of hard toil over the sea ice of the coast, and the great snow desert of the Hinterland, the little ship seemed to us as luxurious

as an ocean liner. Pleasantly the buzz of our friends' voices—giving us all the news—blended itself with the gentle fizzing of steam from the Nimrod's boiler, and surely since the days of John Gilpin "were never folk so glad" as were we three.

Afternoon tea came first and then the joy of reading the home letters, and finding good news in them. Later we three had a novel experience, the first real wash for over four months, and after diligent scrubbing bits of our real selves began to show through the covering of seal-oil and soot.

Of course we over-ate ourselves at dinner, but all the same we were ready to partake liberally of hot cocoa and biscuits before we turned in at 10 P.M.

Under Providence we felt we owed our lives to the thorough search, sound judgment and fine seamanship of Captain Evans, and the devotion to duty of his officers and crew.

My last thought in the twilight that comes between wakefulness and sleep is expressed in the words of our favourite record on the gramophone, "So long Thy power hath blest me, sure it still will lead me on."

CHAPTER XLIV THE RETURN TO NEW ZEALAND

The Nimrod, with Professor David, Mawson and Mackay aboard, got back to winter quarters on February 11 and landed Mawson. No news had been heard of the Southern Party, and the depot party, commanded by Joyce, was still out. On February 20 it was found that the depot party had reached Hut Point, and had not seen Marshall, Adams, Wild or myself. My instructions had provided that if we had not returned from our journey toward the South Pole by February 25, a party was to be landed at Hut Point with a team of dogs, and on March 1 a search-party was to go south. Murray, who was in command of the expedition during my absence, was in no way responsible for the failure of that party to be landed, and obeyed faithfully my full instructions.

All arrangements being completed, most of the members of the expedition went ashore at Cape Royds to get their property packed in readiness for departure. The ship left Cape Royds on the 21st, and was lying under Glacier Tongue when I arrived at Hut Point with Wild on February 28, and after I had been landed with the relief party in order that Adams and Marshall might be brought in, the ship went to Cape Royds so that the remaining members of the shore-party and some specimens and stores might be taken on board.

The Nimrod anchored a short distance from the shore, and two boats were launched. As everything had to be lowered by ropes over the cliff into the boats, the work of embarkation took some time, but by 6 A.M. on March 2 only the men and dogs remained to be taken on board.

A stiff breeze was blowing, and by the time the dogs had one by one been lowered into the boats, the wind had freshened to blizzard force, and the sea had begun to run dangerously. The waves had deeply undercut the ice-cliff, leaving a projecting shelf.

One boat, in charge of Davis, succeeded in reaching the ship, but a second boat, heavily laden with men and dogs, was less fortunate, and before it had gone many yards from the shore an oar broke.

The Nimrod, owing to the severity of the storm was forced to slip her moorings and steam from the bay, and an attempt to float a buoy to the boat was not successful.

Consequently Harbord and his men were in great danger, for they could not get out of the bay owing to the force of the sea, and the projecting shelf of ice threatened disaster if they approached the shore. Flying spray had encased the men in ice, and their hands were numb and frozen.

At the end of an hour they managed to make fast to a line stretched from an anchor a few yards from the cliff, the men who had remained on shore pulling this line taut.

Their position was still dangerous, but eventually the men and dogs were all safely hauled up the slippery ice-face before the boat sank. Hot drinks were soon ready for

them in the hut, and although the temperature was low and nearly all the bedding had been sent on board, they were thankful enough to have escaped with their lives.

On the following morning (March 3) the ship came back to Cape Royds, and having got all the men and dogs aboard, went back to the Glacier Tongue anchorage to wait for the relief party.

About ten o'clock that same night Mackintosh was on deck talking to some other members of the expedition, when he suddenly became excited and said, "I feel that Shackleton has arrived at Hut Point." He was very anxious that the ship should proceed to the Point, but no one paid much attention to him, and Dunlop advised him, if he was so sure about it, to go aloft and look for a signal. Accordingly Mackintosh went aloft, and immediately seeing our flare at Hut Point the ship left at once, and by 2 A.M. on March 4 the entire expedition was safe on board.

If we were to try to complete our work there was no time to be lost, for the season was far advanced and the condition of the ice was already a matter of anxiety. But as I was very eager to undertake exploration with the ship to the westward towards Adelie Land, with the idea of mapping the coast-line in that direction, I gave orders to steam north, and in a very short time we were under way.

First of all, I wished to round Cape Armitage and pick up some geological specimens and gear that had been left at Pram Point, but young ice was forming over the sea, and it was evident that we had scarcely an hour to waste if we were not to spend a second winter in the Antarctic.

Having brought the Nimrod right alongside the pressure ice at Pram Point, Mackintosh at once landed with a small party, and as soon as they returned we steamed north again.

On passing our winter quarters at Cape Royds we all turned out to give three cheers, and to take a last look at the place where, in spite of discomforts and hardships, we had spent so many happy days. We watched the little hut, which had been our home

for a year that must always live in our memories, fade away in the distance with feelings almost of sadness, and there were few men aboard who did not cherish a hope that some day they might again live strenuous days under the shadow of mighty Erebus.

I left at the winter quarters on Cape Royds a supply of stores sufficient to last fifteen men for one year, for the changes and chances of life in the Antarctic are such that this supply might be most valuable to some future expedition. The hut was locked up and the key hung where it might easily be found, and we re-adjusted the lashing of our home so that it might withstand the fury of many blizzards. There our hut stands waiting to be used, and containing everything necessary to sustain life.

I was anxious to pick up some geological specimens left on Depot Island, but as the wind had freshened to a gale, and we were passing through streams of ice, it was too risky to chance even a short delay, and consequently I gave instructions that the course should be altered to due north.

My object was to push between the Balleny Islands and the mainland, and to make an attempt to follow the coast line from Cape Nort westward, so as to link up with. Adelie Land. No ship had ever succeeded in penetrating to the westward of Cape North, heavy pack having been encountered on the occasion of each attempt. In our attempt we did not manage to do all that I hoped, but all the same we had the satisfaction of pushing our little vessel along that coast to longitude 166° 14′ East, latitude 69° 47′ South, a point farther west than had been reached by any previous expedition.

On the morning of March 8 we saw, beyond Cape North, a new coast-line extending first to the southwards and then to the west for a distance of over 45 miles, and Professor David was of opinion that it was the northern edge of the polar plateau.

Gladly would we have explored this coast but that was impossible, for the ice was getting thicker and thicker, and it was imperative that we should escape to clear

water without delay.

I still, however, hoped that we might skirt the Balleny Islands and find Wilkes Land, but about midnight on March 9 I saw that we must go north, and the course was set in that direction.

As it was we were almost too late, and the situation looked black indeed when we were held up by the ice, and the ship was quite unable to move. Fortunately we found a lane through which progress could be made, and by the afternoon of the 10th we were in fairly open water.

Our troubles were ended, for we had a good voyage to New Zealand, and on March 22 we dropped anchor at the mouth of Lord's river on the south side of Stewart Island. I did not go to a port because I wished to get the news of the expedition's work through to London before we faced the energetic newspaper men.

That day in March was a wonderful one to all of us. For over a year we had seen nothing but rocks, ice, snow and sea. No green growth had gladdened our eyes, no musical notes of birds had come to our ears. No man who has not spent a period of his life in those "stark and sullen solitudes that sentinel the Pole" will understand fully what trees, and flowers, and running streams mean to the soul of a man. We landed on the stretch of beach that separated the sea from the luxuriant growth of the forest, and scampered about like children in the sheer joy of being alive.

Early next morning we hove up the anchor, and at 10 A.M. we entered Half Moon Bay. There I went ashore, and having despatched my cablegrams from the little office I went on board again and ordered the course to be set for Lyttelton, the port from which we had sailed on the first day of the previous year, and we arrived there on March 25 late in the afternoon.

The people of New Zealand would have welcomed us, I think, whatever had been the result of our efforts, for since the early days of the Discovery expedition their keen interest in Antarctic exploration has never faltered, and their attitude towards

us was always that of warm personal friendship.

But the news of the measure of success we had achieved had been published in London and flashed back to the southern countries, and we were met out in the harbour and on the wharves by cheering crowds. Enthusiastic friends boarded the Nimrod almost as soon as she entered the heads, and when our gallant little vessel came alongside the quay the crowd on deck became so great that movement was almost impossible.

Then I was handed great bundles of letters and cablegrams. The loved one at home were well, the world was pleased with our work, and it seemed as though nothing but joy and happiness could ever enter life again.

Emperor Penguin. (See page 238)

CHAPTER XLV PENGUINS

(Some Notes by James Murray, Biologist to the Expedition)

Though so much has been written about them, penguins always excite fresh interest in every one who sees them for the first time.

There is endless interest in watching them; the dignified Emperor, dignified in spite of his clumsy waddle, going along with his wife (or wives) by his side, the very picture of a successful, self-satisfied, unsuspicious countryman, and gravely bowing like a Chinaman before a yelping dog, and also the little undignified matter-of-fact Adelie, minding his own business in a most praiseworthy manner. Often they behave with apparent stupidity, but sometimes they show a good deal of intelligence. Their resemblance to human beings is always noticed, partly because they walk erect, but they also have many other human traits. They are the civilised nations of the Antarctic regions, and their civilisation, if much simpler than ours, is in some respects higher and more worthy of the name.

But there is also a good deal of human nature in them. As in the human race, their gathering in colonies does not show any true social instinct; each penguin is in the rookery for his own ends, there is no thought of the general good. You might exterminate an Adelie rookery with the exception of one bird, and he would not mind so long as you left him alone.

Some suggestion of unselfishness does appear in the nesting habits of the Adelie, and like men the Adelies have the unpleasant habit of stealing and the pleasant one of not making eating the prime business in life. Both Emperors and Adelies, when nesting is off their minds, show a legitimate curiosity, and having got into good condition they leave the sea and go off in parties for weeks, apparently to see the country.

We saw the Emperor penguins only as a summer visitor, when having finished nesting and having fed up and become glossy and beautiful, they came up out of the sea, apparently to have a good time before moulting. While the Adelies were nesting the Emperors came in numbers to inspect the camp, the two kinds usually paying no attention to each other unless an Adelie thought an Emperor came too close to her nest, when an odd unequal quarrel followed. Little impudence, pecking and scolding, and being more than able to hold her own with the tongue, but knowing the value of discretion whenever the Emperor raised his flipper.

The Emperors were very inquisitive and would come a long way to see a motor-car or a man, and when out on these excursions the leader kept his party together by a long shrill squawk. Distant parties saluted in this way.

The first party to arrive inspected the boat, and then crossed the lake to the camp, but when they discovered the dogs all other interests were swallowed up. After the discovery crowds of Emperors came every day, and from the manner in which they went straight to the kennels one was tempted to believe that the fame of the dogs had been noised abroad.

As regards meetings, Emperors were very ceremonious, whether meeting other Emperors, men, or dogs. They came up to a party of strangers in a straggling procession, some big aldermanic fellow leading. At a respectful distance they halted, and the old male waddled close up and bowed gravely until his head almost touched his breast. With his head still bowed he made a long speech in a muttering manner, and having finished his speech he still kept his head bowed for a few seconds for politeness sake, and then raising it he described with his bill as large a circle as the joints of his neck would allow, and finally looked into our faces to see if we understood. If we had not, as usually was the case, he tried again.

He was infinitely patient with our stupidity, but his followers were not so patient with him, and presently they would become sure that he was making a mess of it. Then another male would waddle forward and elbow the first Emperor aside as if to say, "I'll show you how it ought to be done," and went again through the whole business.

Their most solemn ceremonies were used towards the dogs, and three old fellows were seen calmly bowing and speaking at the same time to a dog, which was yelping and straining at its chain in the desire to get at them.

Left to themselves the Emperor penguins seemed perfectly peaceable, but if they did use their flippers they could strike forward or backward with equal ease.

They seemed to regard men as penguins like themselves, but if a man walked too fast among them or touched them they were frightened and ran away, only fighting when closely pressed. As one slowly retreated, fighting, he had a ludicrous resemblance to a small boy being bullied by a big one, his flipper being raised in defence towards his foe as he made quick blows at the bully. It was well to keep clear of that flipper, for it was very powerful and might easily break an arm.

Many of the stupid acts of both kinds of penguins are doubtless to be traced to their very defective sight in air, and to this defect one must ascribe the fact that when they

fought the blows from their bills always fell short.

The Emperor can hardly be said to migrate, but nevertheless he travels a good deal, and the meaning of some of his journeys remain a mystery.

On journeys they often travel many miles walking erect, when they get along at a very slow shuffle, making only a few inches at each step. In walking thus they keep their balance by means of their tails, which forms a tripod with the legs. When, however, they are on a suitable snow surface, they progressed rapidly by tobogganing, a very graceful motion, when they made sledges of their breasts and propelled themselves by their powerful legs, balancing, and perhaps increasing their speed, by means of their wings.

Eight of them visited the car one day, sledging swiftly towards us, and one obstinate old fellow, who was not going to be hurried away by anybody, had to see the car bearing down upon him before he was persuaded to hustle.

The Adelie is always comical. He pops out of the water with startling suddenness, like a jack-in-the-box, alights on his feet, shakes his tail, and toddles off about his business. He always knows where he wants to go and what he wants to do, and it is difficult to turn him aside from his purpose.

In the water the Adelie penguins move rapidly and circle in the same way as a porpoise or dolphin, for which they are easily mistaken at a little distance. On level ice or snow they can get along about as fast as a man at a smart walk, but they find even a small crack a serious obstruction, and pause and measure with the eye one of a few inches before very cautiously hopping over it. They flop down and toboggan over any opening more than a few inches wide. Very rarely they swim in the water like ducks, and on these infrequent occasions their necks are below the surface and their heads are just showing.

The Adelie shows true courage in the breeding-season, for after he has learned to fear man he remains to defend the nest against any odds. When walking among the

nests one is assailed on all sides by powerful bills, and for protection we wore long felt boots reaching well above the knee. Some of the clever ones, however, realised that they were wasting their efforts on the boots, and coming up behind would seize the skin above the boot and hang on tight, beating with their wings.

Some birds became so greatly interested in the camp that they wanted to nest there. One bird (we believe it was always the same one) could not be kept away and used to come every day, until at last he was carried away by Brocklehurst, a wildly struggling, unconquerable being.

The old birds enjoy play, while the young ones are solely engaged in satisfying the enormous appetites they have when growing. While the Nimrod was frozen in the pack some dozens of them disported themselves in a sea-pool alongside. They swam together in the duck fashion, then at a squawk from one they all dived and came up at the other side of the pool.

Early in October they began to arrive at the rookery, singly or in pairs. The first to come were the males, and they at once began to scrape up the frozen ground to make hollows for nests, and to collect stones for the walls with which they surrounded them.

An Adelie calling for a Mate after commencing the Nest. (See page 242)

When the rookery is pretty well filled, and the nest-building is in full swing, the birds have a busy and anxious time. To get enough suitable small stones is a matter of difficulty, and may involve long journeys for each single stone, so the temptation is too strong for some of the birds, and they become habitual thieves. The bearing of the thief, however, clearly shows that he knows that he is doing wrong, for very different is his furtive look, even after he is quite out of danger of pursuit, from the expression of the honest penguin coming home with a hard-earned stone.

A thief, sitting on its own nest, was stealing from an adjacent nest, whose honest owner was also at home but looking unsuspectingly in another direction. Casually

the latter turned his head and caught the thief in the very act, whereupon the culprit dropped the stone and pretended to be busy picking up an infinitesimal crumb from the neutral ground. Undoubtedly then the penguin has a conscience, at least a human conscience, that is the fear of being found out.

This stone-gathering is a very strong part of the nesting instinct, and even if at a late stage the birds lost their eggs or their young, they began again, in a half-hearted way, to heap up stones. Unmated birds occupied the fringe of the rookery, and amused themselves piling and stealing till the chicks began to hatch out.

After the two eggs were laid the males—who always seemed to be in the majority—used to do most of the work, and judging from certain signs it would seem that some of the birds never left their nests to feed during the whole period of incubation. Many birds lost their mates through the occasional breaking loose of a dog, and these birds could not leave their nests.

CHAPTER XLVI THE ADELIES AND THEIR CHICKS

The rookery is most interesting after the chicks arrive. The young chicks are silvery or stately grey, with darker heads, which are heavy for the first day or so and hang down helplessly. After hatching the parents take equal share in tending the chicks, whatever they may have done before. For some weeks the nest cannot be left untended, or the chicks would perish of cold or fall victims to the skuas.

When the young ones can hold up their heads the feeding begins, and at first the parent tries to induce its offspring to feed by tickling its bill and throat. After the chick has once learned to feed the parents are taxed by the clamouring for more food.

For some weeks after hatching life in the rookery is smooth enough, for one parent is always on the nest and the young birds do not wander. Then the trouble begins, for the young begin to move about, and if anything disturbs the colony they suffer

from panic.

The chicks knowing neither nest nor parent cannot return home, so they meet the case by adopting parents, and although some of the old ones resent this method most of the chicks succeed in getting into nests. The old bird may have chicks already, but as she does not know which are her own she cannot drive the intruders away, and sometimes we saw a sorely puzzled parent trying to cover four gigantic chicks.

The times comes when both parents must be absent together to get food for the growing chicks, and then the social order of the rookery gives way to chaos. But the social condition which is evolved out of the chaos is one of the most remarkable in nature, and both serves its purpose and saves the race. The parents returning with food come back from the sea with the intention of finding their nests and feeding their own young ones, but the young one assumes that the first old one that comes within reach is its parent, and, perhaps, it really thinks so, as the parents are all alike.

An old bird, coming up full of shrimps, is met by clamorous youngsters before it has time to begin the search for its nest. The chicks order the parent to stand and deliver, and the latter scolds and runs off. But the chicks are both wheedling and imperative, and soon there begins one of those parent hunts which were so familiar at the end of the season.

The result, however, is never in doubt. At intervals the old one is weak enough to stop and expostulate, but there is no indecision on the part of the young ones, which in the most matter-of-fact and persistent manner hunt the old one down.

Sometimes these chases last for miles, but in the end the old one stops, and still spluttering and protesting delivers up.

One would think that under these circumstances the weaker chicks would go to the wall, but as far as could be seen there were no ill-nourished young ones. Perhaps the hunt takes so long that all get a chance.

A few days after the eggs began to hatch there was a severe blizzard, which lasted

for several days. Where the snow had drifted deepest, nests and birds were covered out of sight, and the indication of the whereabouts of a bird was a little funnel in the snow, at the bottom of which an anxious eye could be seen. On a moderate estimate about half the young perished in this blizzard.

Adelie trying to mother a couple of well-grown Strangers. (See page 215)

The old Adelies do not mind the cold, their thick blubber and dense fur protecting them sufficiently, and in a blizzard they will lie still and let the snow cover them. Once after a blizzard I went to the rookery and could see no penguins, but suddenly, at some noise, they sprung out of the snow, and I was surrounded by them.

While the Adelie appears to be entirely moral in his domestic arrangements, his stupidity (or his short-sightedness, which causes him to seem stupid) gives rise to many complications. All the birds go to their nests without hesitating when they come from the sea by the familiar route, but if taken from their nests to another part of the rookery, some easily find their way back but others are quite lost. They are most puzzled when moved only a little way from home, and they will fight to keep another bird's nest while their own is only a couple of feet away.

There is no doubt, however, that the presence of our camp upset their social arrangements, and probably when undisturbed there would be no confusion and complications.

As it was, a mere walk among the nests caused innumerable entanglements, for one bird would leave its nest in fright, and flop down a yard away beside a nest already occupied, or on a nest left exposed by another frightened bird.

But in all such cases, even when a bird got established on the wrong nest, things were always put straight afterwards. When they calmed down they became uneasy, probably observing the landmarks more critically, and they would even leave a nest with chicks for their own empty nest.

We tried some experiments on the penguins in order to trace the working of their

minds. If one of us stood between a bird and its nest so as to prevent it from approaching, the bird would make many furious attempts to reach home. After a time, however, it would appear to meditate, and then walk off rather disconsolately, and having made a tour of the colony would approach the nest from the other side. Apparently it was greatly astonished to find that the intruder was still there, and this curious trait was often seen.

It is like the ostrich burying its head in the sand and imagining itself safe, or like a man refusing to believe his own eyes. It appears to think that if it comes to the nest from the other side the horrible vision will have disappeared.

A lost chick was never sought for, indeed there would have been no use in such a proceeding for it could not be recognised. On account of this peculiarity we were able to make many readjustments of the family arrangements. When the blizzard destroyed so many chicks we distributed the young from nests where there were two to nests where there were none, and these chicks were usually adopted with eagerness.

When both birds are at a nest that is disturbed, or when the mate comes up from feeding to relieve guard, there is an interchange of civilities in the form of a loud squawking in unison, accompanied by a curious movement. The birds' necks are crossed, and at each squawk they are changed from side to side, first right then left. We were for some time mistaken in thinking that this harsh clamour was quarrelling.

A bird returning from the sea came to the wrong nest and tried to converse with the occupant, who would have nothing to do with him. The occupant knew that her mate had just gone off for the day, and would not be such a fool as to return too early, so she sat still, indifferent to the squawking of the other. Presently a look of distress came into the visitor's face as he failed to get a response, but he was very slow to realise that he had made a mistake.

The Adelies are not demonstrative of their affections, and it is difficult to discover if

they have any beyond the instinctive affection for the young. One curious incident, however, did occur, which possibly, was in opposition to what we expected after a long study of the penguins' habits.

An injured bird which we had tried to nurse died, and shortly afterwards a live penguin was found standing by it. We moved the dead bird to a distance, and after a time found the other again standing beside it. It was the general opinion that this was the dead bird's mate which had found it out. From any point of view the occurrence was puzzling, but I find it less difficult to believe that the bird had found its dead mate than that it took an interest in a dead stranger, because there were always plenty of dead birds about a rookery, and the living went about entirely indifferent to them.

Instances of real kindness were sometimes noticed; for instance, our passage through the rookery frightened away the parent of a very young chick, and a bird passing a few yards away noticed this and came over to the chick. The bird cocked his head on one side as if saying: "Hullo! this little beggar's deserted; must do something for him." Then he tickled its bill, but the chick was too frightened to feed. After coaxing it in this way the bird turned away and put some food on the ground, and then lifting a little in his bill he put some on each side of the chick's bill. This was not an isolated case, but was observed on several occasions, the helper always running off when the rightful parent returned.

Penguins listening to the Gramophone during the Summer

One incident seemed to reveal true social instinct. From a small colony all the eggs except one were taken to see if the birds would lay again. As it happened they did not, and, after the birds had sat on their empty nests for some time, they disappeared. But when the time came for the solitary egg to hatch quite half the nests were re-occupied, and the birds took their share in defending the one chick.

When the young birds have shed most of their down they cease from hunting the old

ones for food, and congregating at the edge of the sea appear to be waiting for something. When the right time, which they seem to know perfectly, comes, they dive into the sea, sometimes in small parties, sometimes singly, disappear and may be seen popping up far out to sea. They dive and come up very awkwardly, but swim well.

It is marvellous how fully instinct makes these birds independent, for the parents do not take them to the water and teach them to swim, indeed the old ones stay behind to moult. Though the chicks have spent their lives on land and only know that food is something found in an old bird's throat, when the time comes they leave the land and plunge boldly into the sea, untaught, to get their living by straining crustacea out of the water in the same way as a whale does.

Some of our party did report that they saw penguins teaching the young to swim, but if this ever happens it is not general.

Like the Emperor, the Adelie is fond of travelling when free from family cares. The great blizzard unfortunately left hundreds of old birds with no chicks to guard and feed, and they began to explore the country in bands. The round of the lakes was a favourite trip, and tracks also led to the summits of some of the hills, although the short-sighted Adelie could hardly have gone there for the view.

There was no general trek southwards, such as the Emperors made, but the Southern Party found tracks of two Adelies at a distance of some 80 miles from the sea.

While chaos reigned in the rookery I found two Adelie chicks exhausted and covered with mire, and I took them to the hut and bestowed upon them the dignified names of Nebuchadnezzar and Nicodemus. They were placed in a large cage in the porch, and fed by hand with sardines and fish-cakes. They did not, however, like our way of feeding them, and it was necessary to force the food so far down their throats that they were compelled to swallow it.

In a few days they became quite tame and recognised those who fed them. Familiar

only with our peculiar method of feeding them, one of them used to show when he was hungry by taking my finger into his bill.

We shortened their names to Nebby and Nicky and they answered to them, but they answered with equal readiness to the common name of Bill. When sounds from the rookery reached them they would become greatly excited, and tried so desperately to get through the netting of their cage that we used to take them out for a walk. Then they would make no attempt to go to the rookery and were rather frightened.

Nebuchadnezzar was a very friendly little fellow, and would follow me about outside and come running when called. But their feeding was unnatural, and for this reason, doubtless, both of them died after a few weeks.

A single ringed penguin appeared at Cape Royds at the end of the breeding season, just as the Adelies were beginning to moult. It is about the same size as the Adelie but is more agile, and at a little distance, among a crowd of old Adelies, he looked not unlike a young Adelie with the white throat. But when I picked him up by the legs to investigate, he surprised me by curling round and biting me on the hand—a feat that the Adelie could not perform—and a closer examination showed me what he was. Never before had a ringed penguin been seen in this part of the Antarctic.

CHAPTER XLVII NOTES

The first seals which we met on this expedition were seen on our voyage from New Zealand before we entered the actual line of bergs. I did not see them myself, but from descriptions I gathered that one was a crabeater, and the other a Weddell seal. Later on, of course, seals were to be seen in numbers, and one of the reasons why I selected Cape Royds for our winter quarters was because I saw plenty of them lying on the bay ice, and consequently we should not be likely to suffer from a lack of fresh meat.

On the return from the Magnetic Pole, Mackay found two young seals, which

behaved in a most unusual manner, for instead of waiting without moving, as did most of the Weddell seals, they scuttled away actively and quickly.

Later on he discovered that these two seals belonged to the comparatively rare variety known as Ross seal.

On our voyage back to New Zealand I sent a party to the seal rookery near Pram Point to see if they could find a peculiar seal that we had noticed on the previous night.

This seal was either a new species or the female of the Ross seal. It was a small animal, about four feet six inches long, with a broad white band from its throat right down to its tail on the underside. The search, however, proved a fruitless one.

On our voyage out albatrosses were numerous, especially the sooty species, the death of which, on Shelvoke's voyage, inspired Coleridge's memorable poem. I noticed one, flying low between the two ships, strike its wings against the wire tow-line, which had suddenly emerged from the waves owing to the lift of the Koonya's stern upon a sea.

Skua gulls were bathing and flying about in hundreds when we first arrived at Cape Royds. But the most remarkable bird seen on our expedition was discovered by Marshall and Adams on our southern journey, remarkable because it was seen in latitude 83° 40′ South.

This bird was brown in colour with a white line under each wing, and it flew just over their heads and disappeared to the south.

They were sure that it was not a skua gull, which was the only bird I could think would venture so far south. Indeed, on my previous southern trip, when in latitude 80° 30′ South, a skua gull had arrived shortly after we had killed a dog.

As regards bears I have nothing to say except that there are none down south.

The Special Surcharged Expedition Stamp with Postmark

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