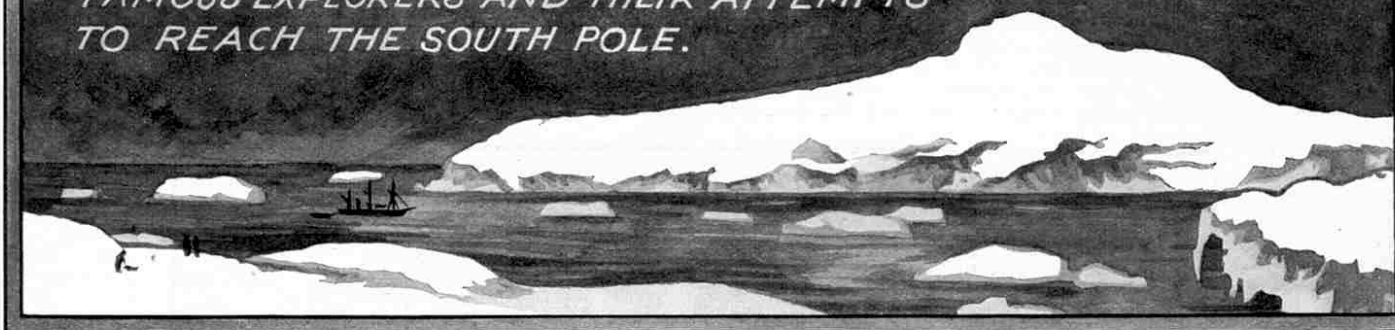


EXPLORING THE ANTARCTIC

FAMOUS EXPLORERS AND THEIR ATTEMPTS
TO REACH THE SOUTH POLE.



IV.—SHACKLETON'S GREAT EFFORT

LAST month we described how Captain Scott with four companions reached the South Pole on 17th January, 1912, only to die on the Ross Barrier on the return journey. This was the last episode of Scott's expedition, the second he had commanded in the frozen South. We must now turn to the achievements of Sir Ernest Shackleton, whose attack on the South Pole in 1908 was one of the most brilliant exploits in Antarctic exploration, and only just failed to forestall both Scott and Amundsen.

Sir Ernest Shackleton first became prominent when he took part in Scott's "Discovery" Expedition. He owed his selection for that expedition to his knowledge of sailing vessels, but his energy and resource so greatly impressed Scott that he was chosen as one of the leader's companions in the march southward that established a new Polar record.

During that journey Shackleton suffered severely from scurvy, and he was in such an exhausted state on reaching the headquarters of the expedition that it was necessary to invalid him home. In spite of this experience his enthusiasm for Antarctic exploration grew, and he bent all his energies to the task of securing sufficient financial backing to enable him to lead an expedition of his own. In this he was eventually successful and in the "Nimrod," an old whaling vessel, he entered the Ross Sea in January, 1908. His intention was to establish a base in King Edward VII Land, which had been discovered by Scott a few years earlier; or near it on the Barrier. Unfortunately his plans to reach King Edward VII Land were frustrated by heavy ice pack. Changes on the Barrier also seemed to show that it would not provide a safe winter home, for enormous masses of ice had broken away from its edge since last seen by Antarctic explorers, and Shackleton had no wish to be carried northward on an iceberg formed in this manner. The only plan that remained was to winter on Ross Island, on which Scott had established his headquarters in 1902; and the members of the expedition were therefore landed on Cape Royds, on the west coast of the Island. There they erected a hut that was to be their home throughout the coming Antarctic winter, and the necessary stores and equipment were quickly unloaded in order that the "Nimrod" might return to New Zealand before the sea froze over.

Shackleton had entered the Antarctic with the intention of making a very determined effort to reach the South Pole. Most of his preparations were made with this end in view, and he had given special thought to the sledging equipment necessary for traversing the wilderness of ice and snow over which he must pass. His experience with Scott had shown him that dogs were not too reliable on the Barrier, and in their place he brought a number of hardy ponies from Manchuria. These animals were accustomed to snow and ice, and he anticipated that they would do good work in hauling the sledges so far southward that he and the members of the little party that he intended to take would be able to accomplish

the rest of the journey to the South Pole and back themselves.

As soon as possible after the end of the Antarctic winter Shackleton set out. With him were Frank Wild, who had also been with Scott in the "Discovery" Expedition; Lieutenant Adams and Dr. Marshall. Other members of the expedition accompanied them for a short distance, and finally the four marched out into the unknown, each leading a pony hauling a sledge loaded with provisions, on 7th November. They had started a desperate undertaking, for from that moment they were to rely entirely on their own capabilities for success in their journey of about 1,400 miles over treacherous surfaces and in the face of death by starvation or exposure.

Shackleton set a course almost due south, and thus kept well away from the mountains on the right that had been discovered by Scott and his companions five years earlier. The weather was bad and pulling the sledges in the soft snow was heavy work for the ponies. As they pressed farther and farther south the animals became weaker, and it became necessary to kill three of them in order to put an end to their sufferings. Even when dead the animals were still of service to the expedition, however, for their meat provided the explorers with a change from sledging rations and helped to ward off scurvy, the dread of Arctic and Antarctic explorers.

On 28th November the four men achieved a new Antarctic record, for they passed beyond the latitude reached by Scott in 1902. New land lay ahead of them, and every day splendid mountains never previously seen by human eyes came within their view. Then they began to experience trouble with the disturbed state of the Barrier surface, and eventually they were brought to a standstill by a gigantic chasm, 80 ft. in width, that compelled them to make a wide detour. The range of mountains they had seen for days now lay directly in their path, and it became evident that

their way to the Pole lay across them. They climbed one, about 4,000 ft. in height, in order to trace out a possible route through the mountains, and from its summit were overjoyed to see an enormous glacier that seemed to offer an easy path southward.

Without hesitation the four men resumed their march up the great white way that led Poleward, to which they gave the name Beardmore Glacier. Shackleton, Marshall and Adams hauled one sledge, while the solitary pony left to them pulled the second under Wild's leadership. They had not proceeded very far up the glacier when the man-hauling party heard a loud and agonised shout from Wild, who was a little in the rear. Hastening back to his assistance they found him precariously perched on the edge of a gigantic crevasse, holding on for dear life to the sledge, which threatened every moment to fall into the unknown depths below the ice and to drag him with it. The sledge with its precious load of provisions was quickly pulled into safety, but there was no trace of the pony, which had disappeared in the black depths of the crevasse. This had been a very narrow escape for Wild, and



Sir Ernest Shackleton, O.B.E.

indeed for the entire party, for if they had lost the provisions on the sledge they would scarcely have been able to make their way homeward, and certainly would have had to abandon all hope of reaching the Pole.

From this point onward every ounce of food and equipment had to be pulled by the four men themselves. They forced their way upward, slowly approaching the head of the gigantic glacier they had discovered. Time after time they thought they had reached the plateau from which it descended, only again to find ahead of them ice falls up which it was necessary to climb, dragging after them their tremendous load. But they doggedly pressed on in spite of mishaps. Falls were frequent, and each of them disappeared on various occasions through the thin crusts of snow that covered yawning crevasses. Fortunately their harness was strongly made and reliable, and saved them from the fate that had overtaken their last pony.

When the party reached the plateau, conditions under foot were much better, but they were now at a height of nearly 10,000 ft. above sea level, and the temperature was as low as 40-50°F. below freezing point. Their clothing was worn thin and their footgear was almost falling to pieces, with the result that they suffered terribly from the cold. Breathing in the thin atmosphere was difficult, and their hard work under these trying conditions brought on terrible headaches. To add to their discomfort they were half starved.

All these hardships were endured in the hope that the scanty store of food they had with them would enable them to reach the Pole. As they marched southward, however, covering almost incredible distances every day, they began to fear that their resources were scarcely sufficient. Christmas Day was celebrated by an exceptionally long march of 13 hours and by a wonderful feed that included a tiny plum pudding. It was then that their fear of failure became most acute, but they were not yet beaten. They formed the desperate resolve to make each week's supply of food last ten days in future. They were then living on a few biscuits a day, and pemmican boiled up with maize that had been intended for food for the ponies. The maize was half raw and brought on acute indigestion. Considering the circumstances, it is remarkable to read the cheery entry that Shackleton made in his diary at this time:—"It is a fine open air life and we are getting south."

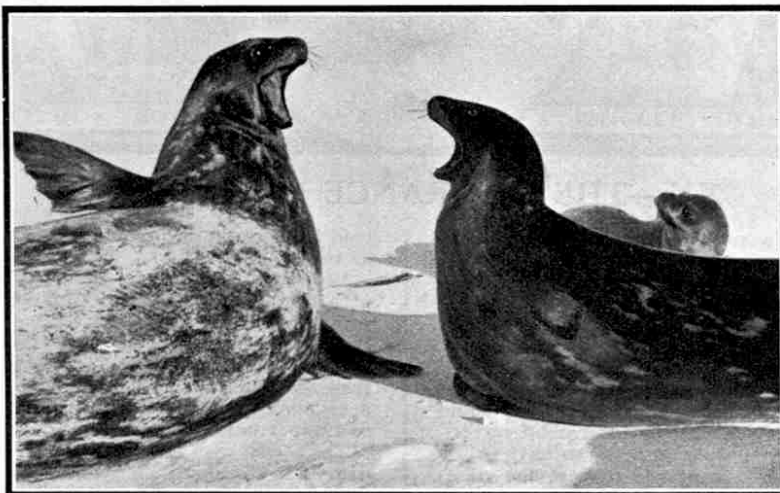
"Getting South" was always in the leader's mind, and his companions backed him up nobly. But even their iron determination was beaten when a fierce blizzard compelled them to spend two days in idleness in their tents, shivering with cold and dreaming of the food they so greatly needed.

At last the party recognised that they had shot their bolt. At 4 o'clock in the morning of 9th January, 1908, they left their camp, and half ran and half walked a further distance of 11 miles southward. There they set up a Union Jack given them by Queen Alexandra, and buried a metal cylinder containing a record of their achievement. They had reached a latitude of 88°23'5". This was 420 miles nearer the Pole than any previous explorer had reached, and only 113 miles separated them from their goal. With a feeling of disappointment, tempered by the knowledge that they had done their utmost, they gazed longingly southward through their field glasses. Nothing was visible but a continuation of the bleak plateau covered with ice and snow over which they had

advanced since reaching the head of the Beardmore Glacier.

Returning to camp Shackleton and his companions quickly packed up and began the homeward march. Day after day they continued the dreary journey northward, full of aches and pains, and tantalised by dreams of abundance of food. Shackleton has recorded that their conversation during the day almost entirely ran on food. As soon as the day's march had fairly begun, one of them would say: "What's for breakfast to-day, boys?" They had already breakfasted on a pannikin of tough horsemeat, and a biscuit and a half, but each in turn would then give free rein to his imagination in describing the amazing fare that awaited them at the end of their journey!

The imaginary dishes they invented were astonishing in their richness and quantity, the most remarkable being a wonderful roll of mincemeat, bacon and rich pastry, suggested by Wild. Shackleton's best contribution to these imaginary feasts was a gigantic pasty filled with the contents of at least ten sardine tins. He writes that he proposed this with considerable pride, for their talks on food were taken very seriously and on returning home they really intended to carry out a long programme of intermittent sleeping and feeding that should only be interrupted



Weddell seals fighting. These inoffensive creatures abound in the Antarctic. They are agile and graceful in the water, but ungainly and awkward when on land.

for regular substantial meals!

In the meantime the reality was far different from their dreams. At no time during their homeward run had they food on their sledge for more than a few days, and failure to find one of the numerous depots they had left behind on their southward march would almost certainly have meant starvation. "Our food lies ahead and Death stalks us from behind," wrote Shackleton in his diary. While descending the Beardmore Glacier death nearly overtook them, for after terrible struggles in a maze of dangerous crevasses, they reached the depot at the foot of the Glacier after being practically without food for two days. They were all heavily

bruised from continual falls, and so weak that they only continued pulling day after day through force of habit. On several occasions one or other of them simply dropped from exhaustion at the end of the day's march.

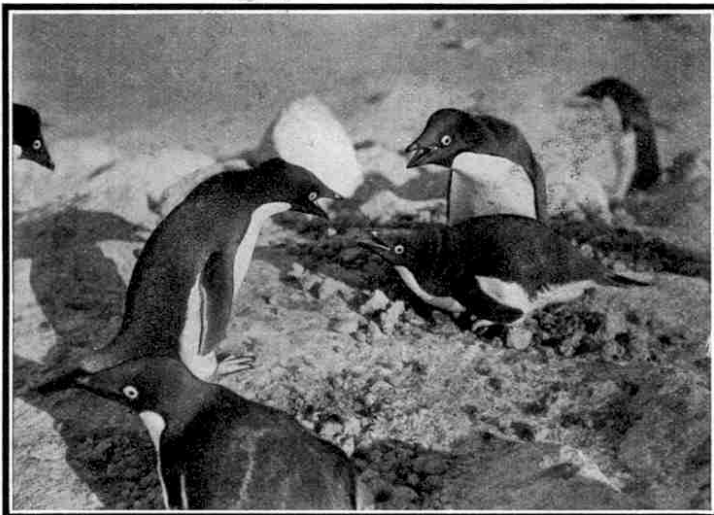
At last they left the Glacier and commenced the last stage of their homeward journey. The Barrier surface was almost familiar ground, and they were full of confidence. But new troubles arose. Each in turn became seriously ill with dysentery caused by tainted pony meat picked up at one of the Barrier depots, and for several days they made painfully slow progress.

Their hopes eventually centred on a depot that Shackleton had ordered to be laid down for them. Failure to find it meant the end, for the supplies they carried were practically finished. They scanned the Barrier surface

eagerly as they drew near the spot where they expected to see it. At last a strange flash attracted their notice; they pressed forward to investigate, and to their intense relief and joy they found that it came from the depot. Joyce, the man who had made preparations for their return, had placed a biscuit tin in such a position on top of the pile of cases that it reflected the sunlight. A feast of good things now awaited them, and the four hungry and weary men were able to indulge in a meal as substantial, if not as varied, as the meals they had dreamed about!

Their troubles were not yet at an end,

(Continued on page 519)



A violent quarrel between Adelie penguins. The two photographs on this page are reproduced by permission from "The Great White South" by Herbert G. Ponting, F.R.G.S. (Duckworth & Co., London. 7/6).

Free Gifts from Nestlé's

We have received from Messrs. Nestlé's a copy of the excellent booklet they have prepared to illustrate the gifts they offer in their coupon gift scheme. Many of the splendid articles offered by the firm make a special appeal to boys, and readers of the "M.M." will be particularly interested in them. Those who wish to have further details of the scheme should write to Messrs. Nestlé's, Gift Dept., Silverthorn Road, Battersea, London, S.W.8, for a free copy of the booklet. Return postage need not be enclosed if the "M.M." is mentioned.

A Junior Photographic Club

Few hobbies give such lasting satisfaction as photography, and the "Coronet" Camera Company are to be congratulated upon their enterprise in forming a club to encourage boys and girls to take up this hobby.

The principal object of the "Coronet" Camera Club is to help young photographers by giving them free advice in regard to their hobby; and in addition competitions for members will be organised. An attractive enamelled badge is provided to enable fellow enthusiasts to recognise one another. The first number of a small official magazine entitled "The Prince of Hobbies," issued this month, contains interesting photographic hints. A copy of this publication, and a badge, will be sent to "M.M." readers who apply, enclosing 2d. in stamps for postage, to the "Coronet" Camera Club, "Coronet" House, Great Hampton Street, Birmingham.

Essentials in Photography

The most notable developments in photography during recent years have been in the direction of greater simplicity, and valuable work in this respect has been done by Burroughs Wellcome and Company. Their "Handbook and Diary" solves automatically almost every problem that is likely to confront the amateur. It contains a calculator by which the correct exposure for all subjects can be found in a few seconds; and it describes methods of developing and printing, in conjunction with the famous "Tabloid" brand chemicals, that are so simple that it is almost impossible to go wrong. Readers who wish to know more about this handbook and of the latest and simplest photographic methods should obtain the attractive new illustrated booklet entitled "Essentials in Photography," a copy of which will be sent, post free, on application to Burroughs Wellcome and Co., G.P.O. Box No. 213A, London.

Model Aeroplanes in Airship Shed

An indication of the popularity of model aeroplane construction is provided by the news that expanding business has compelled our advertisers William E. Appleby Ltd., recently of Jesmond Road, Newcastle-on-Tyne, to move to larger premises. Their new factory is none other than Cramlington Airship Station, just outside Newcastle.

Messrs. Appleby have taken over not only the huge airship shed, but also a dozen other buildings that were used to accommodate the staff stationed at Cramlington during the war. The extent of the new premises will enable our advertisers to cope in a more economical and efficient manner with the demand for their popular models.

How to Get More Fun—(Continued from page 503)

train working, therefore, an engine such as the Hornby No. 1 Special is the most suitable, though for lighter duties an ordinary Hornby No. 1 will be sufficient. The differences in the loads to be dealt with by the two engines will, of course, be determined by tests. For main line goods work the use of tender engines is more correct, but in miniature practice tank engines are equally suitable.

Tank engines perform a good deal of the general work of a model railway, and they may be used to haul either passenger or goods trains; in fact they can hardly be rigidly restricted to either. The Hornby No. 1 Tank is suitable for a great variety of work and will carry out shunting operations and local goods or passenger work in a satisfactory manner. The No. 1 Special Tank Locomotive may be used on similar duties, and it will, of course, handle heavier loads and probably travel a greater distance.

The largest and most powerful of the Hornby Tank Locomotives is the No. 2 Special, and this is well suited for the longer-distance suburban passenger traffic in the same manner as the various large tank engines in use on real railways. It may be employed for express work on occasions, or even regularly if the trains do not travel very long distances without stopping. The use of tank engines on such duties would be quite in accordance with actual practice, for the Southern Railway operate a number of important main-line trains with them. Even the famous "Southern Belle" Pullman express has many times been hauled by tank locomotives.

The allocation of the available locomotives to the various duties as a result of actual tests will result in greatly improved working of the line. Timetable operations will be carried out with no fear of failure, owing to the manner in which the provision of locomotive power is made equal to the demands of the schedules.

Fractional H.P. Motors in the Home

Announcing an Interesting Essay Competition

The distribution of electric current is now so widespread that a very large proportion of homes use it in some form or other—for lighting, heating, cooking or cleaning.

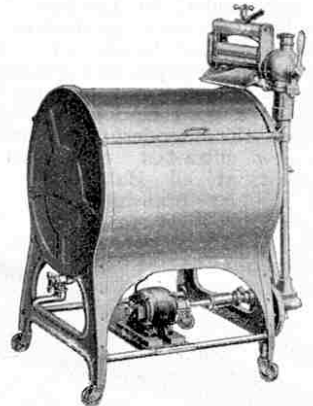
Recently we came across an interesting leaflet issued by the British Thomson-Houston Company, in which the domestic labour-saving possibilities of small electric motors were discussed under the heading: "If you do the work of this motor, you toil for 1d. per hour!" This set us wondering how many jobs in the home a portable electric motor could be made to do. Many of these suggested themselves immediately—driving sewing machines, washing machines, mangles and floor polishers, for example—but we felt that there must be many more.

There seems to be a splendid opportunity for an Essay Competition in regard to the uses of a small motor, and we have decided to run a competition open to every reader of the "M.M." We are offering a first prize of the famous B.T.H. quarter H.P. Motor value £4/10/-, and as a second prize the choice of either a smaller B.T.H. Electric Motor, or a B.T.H. Electric Gramophone Motor. Here are two splendid prizes to be won by keen Meccano boys!

All that competitors are required to do is to write a short essay—not more than 250 words in length—describing the various uses in the home to which they or their parents could put a fractional h.p. motor. We advise would-be competitors to obtain from the nearest electrical dealer, or from the British Thomson-Houston Company at Rugby, a copy of the fractional h.p. motor leaflet. This gives an excellent idea of the possibilities of these motors, and thus forms a splendid basis for the essay.

Entries must be written on one side only of each sheet of paper used, and addressed:

ELECTRIC MOTOR ESSAY, Meccano Magazine, Old Swan, Liverpool.
The Closing Date is 30th September.



Motor Driven
Washing Machine

Exploring the Antarctic—(Continued from page 457)

however. Marshall became so seriously ill that it was necessary to leave him on the Barrier, with Adams in attendance, while Shackleton and Wild pushed ahead in order to bring relief and assistance. They were long overdue, and Shackleton was haunted by a grim fear that he and his three companions would find themselves marooned in the Antarctic. He therefore made all haste northward in order to intercept the "Nimrod" if possible, and after many difficulties and hairbreadth escapes he and Wild succeeded in making their way to Hut Point, a few miles south of Cape Royds. There, in a hut erected by Scott's men seven years earlier, they spent a cold and miserable night. All their camping equipment had been left behind on the Barrier, and the only cover they had was a piece of old roofing felt discovered in the hut itself. Wrapped in this, they huddled closely together for warmth, but they were unable to sleep.

Their anxiety was deepened by a note found in the hut that gave 26th February as the date of the departure of their vessel—and it was already the 28th! Next morning they set fire to a small hut that had been used for magnetic observations, in the hope of attracting the notice of those on board the "Nimrod," if she were still in McMurdo Sound. Fortunately the vessel had remained, although the risk of being frozen in increased daily. Her officers and crew were reluctant to abandon hope of the return of their comrades, and their fears of disaster were dissipated when they saw the glare and smoke from the burning hut. Within a short time Shackleton and Wild were safely on board, and Marshall and Adams were quickly brought in by a relief party under Shackleton himself. The "Nimrod" then sailed north, just in time to escape from the clutches of the rapidly forming sea ice.

Shackleton returned home to find himself famous. His amazing journey was the most brilliant exploit in Antarctic history, and the courage and determination he had shown in the face of appalling difficulties stamped him as one of the world's greatest explorers.—We are indebted to the courtesy of Lady Shackleton for the portrait of Sir Ernest Shackleton reproduced on page 456.—THE EDITOR.

Famous Inventions—(Continued from page 455)

of ropes. They were very difficult to use, and it is not surprising that little practical work was accomplished with them.

It was not until 1733 that an Essex man, Chester Moore Hall, discovered that by making the object-glass consist of two lenses, an outer convex lens made of crown glass and an inner concave lens made of flint glass, refraction quite free from the halo of rainbow colours was obtained. Telescopes incorporating this arrangement became known as "achromatic" refracting telescopes, the term achromatic meaning "without colour." Hall never made public his invention, and it was John Dolland, the famous optician, who worked out the principle of Hall's discovery and brought the results to the notice of the Royal Society in 1758. A heavy excise duty on flint glass greatly hampered the manufacture of achromatic telescopes in this country, and the flint glass lenses that were produced were rarely larger than 3 in. in diameter.

Many years later discs of flint glass 6 in. in diameter were cast by Guinaud, a Swiss who earned his living by making bells for repeating watches. Guinaud became interested in telescopes about 1784, when for amusement he fixed some spectacle lenses in pasteboard tubes. About the same time he saw, and no doubt used, an English achromatic telescope. The superiority of this instrument was at once apparent to him, and he resolved to make some lenses of flint glass. He obtained a supply of flint glass from England but it was of poor quality, and in spite of his inexperience he decided to produce some himself. After experimenting for seven years he succeeded in producing satisfactory flint glass discs 4 in. to 6 in. in diameter, but by that time he and his family were brought to the verge of poverty. Eventually he produced discs of flawless crystal up to 18 in. in diameter. Guinaud died in 1823 and his secret passed to his son, and from him to Bontemps, one of the directors of a French glassworks. Bontemps fled to England when the French Revolution broke out, and settled in Birmingham where he became a partner in a firm of opticians to whom he communicated Guinaud's secret.