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### The proposed Scottish national Antarctic expedition

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patch, or, if amongst the lower cañons, a patch of sugar-cane with a crude antiquated mill, or possibly a private mine on some by-streak of silver-bearing rock; and their personal history, if it can be got at, may supply the passer-by with a romance outdoing the products of fiction.

Among many such instances, I recall an old soldier who I found had been in the Imperial Guard under Napoleon III., but had entirely lost his own language, though unaccountably remembering a few words of English; another ancient Frenchman, residing in a solitary hut at an altitude of 9000 feet on one of the highest ridges of the Cordillera, who recovered some facility with his native tongue after conversing in it for an hour or two, and who surprised me with a detailed account of the construction of the Mont Cenis tunnel; a mountain guide in the wilds of Chihuahua, who proved to be of English birth and evident education, but whose identity and history I could not venture to elicit; a Spanish scout who had been present at the execution of Maximilian, and spoke of that tragedy with bated breath: to each and all of these belonged a story of adventure which, if I were to give it in detail, might well be taken for a work of imagination. The freaks of fortune, or rather of misfortune, which had brought these wanderers to a halt at such remote and unexpected spots, were indeed, as may often be said of real life-stories, much too strange not to be true.

To appreciate the full interest of such research as is afforded by travel off the few beaten tracks in this mighty range, one would need to possess acquirements comprising nearly all the sciences, together with such powers of observation and memory as no individual was ever yet gifted with. Many of the sources of such interest will doubtless continue to exist indefinitely; and of those which must needs be lost as time progresses, it is to be hoped that some at least may be further studied and their results gathered in before the active broom of civilisation sweeps them away.

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## THE PROPOSED SCOTTISH NATIONAL ANTARCTIC EXPEDITION.

By WILLIAM S. BRUCE, F.R.S.G.S., M.B.O.U.

Two important expeditions are being fitted out to explore the Antarctic regions in 1901. One of these sails from Germany, the other from Britain. It is not at all possible that these two ships can explore the whole of the Antarctic regions. The leader of the German Expedition, Professor Erich von Drygalski, says, "Should the British Expedition include a second ship, it would be possible to carry on biological deep-sea research round the Antarctic area over a much wider circle than we can attempt with one vessel."<sup>1</sup> Other autho-

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<sup>1</sup> *Nature*, vol. lxi. No. 1579, 1st Feb. 1900, p. 321.

rities have strongly advocated a second British ship. "Two ships," says Sir John Murray, "not exceeding one thousand tons, should, it seems to me, be fitted out for a whole commission, so as to extend over three summers and two winters."<sup>1</sup> While Professor James Geikie says, "Two ships, at least, are required—adequately supplied with material and men, including, of course, a trained scientific staff." "Here, then," he continues, "is an opportunity for patriotic Scotsmen! In Germany every one, from the Emperor downwards, will do what can be done to make their expedition complete and a credit to the Fatherland. We cannot afford to do less, and it is to be hoped that some wealthy Scotsman or Scotsmen will come forward to emulate the munificence of Mr. Longstaff, so that the expedition that leaves our shores next year may be one in every way worthy of a country which has so great a reputation to maintain."<sup>2</sup> These recommendations and appeals have not, however, resulted in producing funds sufficient for this purpose, and the Expedition will have to leave London with only one ship, which is being especially built and fitted out for magnetic research.

Professor von Drygalski has pointed out that "an expedition from a third side would find a wide and important field of activity to the south of South America." It is now proposed that a third expedition such as this should sail from Scotland as a Scottish National Antarctic Expedition, which will co-operate with the other expedition, and devote its attention more especially to physical and biological oceanographical researches and to geology and meteorology.

The Germans will concentrate their attention to the south of the Indian Ocean. "The point which the German Expedition has in view for commencing the penetration of the Antarctic region is the still hypothetical Termination Island."<sup>3</sup> An effort will be made to establish a station on land to the southward of this. The main work of the British Expedition<sup>4</sup> will lie in M'Murdo Bay, their winter headquarters, and the adjacent coasts or ice-barriers for a considerable distance on each side. The Scottish Expedition will work to the south of South America, in the Weddell Sea, setting up its wintering-station on the east coast of Graham's Land, in a high southern latitude.

The Scottish vessel will be one of the ordinary Norwegian or Scottish type of whalers of about 500 tons, 130 feet long, and steaming 7 to 8 knots. A ship of this size will have ample accommodation for thirty-seven all told. The proposed staff includes 6 scientists and 5 ship's-officers, and a crew of 26. The ship will proceed from Scotland on August 1st, 1901, to Port Stanley, in the Falkland Islands, which will form the base for operations in the Antarctic regions. She will proceed southward by Weddell's track in 30° W. This route has never yet been tried seriously with a steamer. Weddell, in 1823, penetrated far south with two

<sup>1</sup> *Geog. Journal*, vol. iii. No. 1, Jan. 1894.

<sup>2</sup> *Scot. Geog. Mag.*, vol. xv. No. 5, May 1899.

<sup>3</sup> *Nature*, vol. lxi. No. 1579, 1st Feb. 1900, p. 319.

<sup>4</sup> "The Antarctic Expeditions," by Sir Clements Markham, K.C.B.—*Geog. Journal*, vol. xiv. No. 5, p. 480.

sailing ships, one of 120 tons and one of 65 tons: Bellinghausen also was successful a little farther eastward. Ross, with sailing-ship, failed, but Larsen, with a steamer, reached  $68^{\circ}$  S. in about  $60^{\circ}$  W. The Dundee whalers, in 1892 and 1893, being on commerce bound, were chiefly occupied securing seals, and since these abounded in the vicinity of the Circle they had no need to go farther south. There is little doubt that the ice can be penetrated by such a vessel as that above mentioned. The ice I saw in 1892 and 1893, and worked amongst in  $50^{\circ}$  to  $60^{\circ}$  W. in the vicinity of the Antarctic Circle, is very similar, and is certainly not so heavy as East Greenland ice, in which ships like these navigate every year.

The writer will take command of the expedition with a whaling captain under him and four other officers, a naturalist will be permanently attached to the ship, and will take charge of and carry on the scientific work there during the leader's absence with the wintering party. The land party will land in a high latitude on the east coast of Graham's Land, and the ship will return northward for the winter.

The landing party will consist of five scientific men and two skilled workmen. The leader is included in this number. Systematic observations will be taken, and collections made. The ice both on land and sea will be studied—its physical state, the movements of glaciers, salinity, etc. In the spring sledge journeys with dogs will be undertaken for topographical and other purposes. I have seen fast land floe-ice in the Antarctic that could be travelled over with dogs, sledges, and ski; and I have no doubt that useful journeys could be made on the inland ice. In 1902 the ship will return south to relieve the wintering party and to re-supply it with fresh food. If there is occasion and opportunity further exploration will be made with the ship in the summer months in that region, before she returns northward for the second winter. A second winter will be spent at the station, and a final return made during the third year, unless funds allowed the expedition to stay another winter.

Professor von Drygalski, Sir John Murray, and other eminent men of science have recently set forth what the work of a modern Antarctic expedition must be. It is scarcely necessary for me to reiterate what they have said. I may, however, point out a few of the many important problems that will present themselves especially to the Scottish Expedition along the route it intends to follow. The voyage to the Falkland Islands will be made as quickly as possible, using coal freely. The first stop will be to coal at the Cape de Verde Islands, after which a course will be steered for a point  $15^{\circ} 3'$  S.,  $23^{\circ} 14'$  W., where Ross did not obtain soundings with 4600 fathoms of line. This sounding, as far as I can ascertain, has been entirely overlooked, and has remained uncharted except in James Imry and Son's chart of the South Atlantic, where it is marked with a query. Here a sounding will be made to prove or disprove the accuracy of Ross's sounding, which up till quite recently was the greatest depth recorded in the oceans. Should the weather remain favourable other soundings will be made in this little-known "Deep." Besides adding important facts to our know-

ledge of the bathymetrical survey of the Atlantic Ocean, this will enable us to test the capabilities of our deep-sea gear to its fullest extent, thus bettering our researches in the south. As fast a passage as is possible will then be made to the Falkland Islands, where a few days will be spent taking a final supply of coal on board as well as fresh mutton, beef, and other provisions. Throughout this part of the voyage as many observations and collections as possible will be made, without stopping the ship, in meteorology, in physical observations of the surface of the ocean, in planktonic and nektonic collections.

After leaving the Falkland Islands an east-south-east course will be steered until longitude  $30^{\circ}$  W. is reached in the vicinity of the Sandwich Group; this point should be reached on about the 1st of November 1901. It is possible that a line of soundings running southward will be taken at this time along the meridian of  $30^{\circ}$  W., which will be of extreme interest in relation to Ross's sounding of 4000 fathoms, no bottom in  $68^{\circ} 34'$  S. and  $12^{\circ} 49'$  W., and to the deep soundings taken by the *Valdivia* between Bouvet Island and Enderby Land. During this first season, however, the primary piece of work will be to push southward in this longitude to a high latitude and establish a wintering-station. It is hoped that a latitude of  $80^{\circ}$  S. might be reached for this station, or if the coast-line of the Antarctic continent be not met within that latitude, the ship will push southward, as far as the ice allows, till land is reached, but no unnecessary sacrifice of the ship or of scientific work and records will be made, however, in attempting to reach the South Pole, but failing to find land south, a course will be steered eastward to strike the southern continuation of Graham's Land, where the station will be set up.

After the house has been built, provisions for three years having been landed, as well as all the instruments and implements necessary for scientific work, and the staff of seven men, the ship will hastily retire before winter sets in, to gain the open sea and the Falkland Islands. Here officers, ship's naturalist, and crew will rest and recruit for a week or possibly two in order to continue with vigour the work that will have to be done during the winter, before returning to relieve the wintering party in the coming spring, viz., November 1902. I regard it as highly important that the ship should not winter in the ice, if it is at all possible to avoid it; by so doing she becomes a hulk to all intents and purposes, whereas if she is free she can be carrying on excellent oceanographical researches in the open sea in unknown and moderately high southern latitudes. Soundings will be made for instance in radiating lines all round South Georgia. South Georgia itself, the Sandwich Group, and other islands will be visited, and all manner of deep sea and island collections and observations made. At the end of the winter the ship will call at Buenos Ayres or Port Stanley, and after being overhauled, provisions and coal will be taken on board. These will include another two years' provisions in addition to the three years' provisions landed during the previous season, thus making the winterers perfectly secure for at least four more years should the ship find it impossible to reach them again during the next or following two years—a circumstance which, though possible, is scarcely

probable, yet must be provided for. There will no doubt also be a plentiful supply of food near the station, seals, penguins, and other birds forming excellent and nutritive food, as well as fuel.

After the arrival of the ship in the second summer she will be used, as long as the season will permit, to explore in the vicinity of the station. We shall sound, dredge, trawl, and tow-net, and carry on marine physical observations, and visit land that it was impossible to reach by sledge during the previous early spring. Again the ship will not be allowed to winter, if it can possibly be avoided, but will return northward to go on with observations similar to those of the previous winter. Those at the station will once more set to work with serial station observations in meteorology, magnetism, and terrestrial physics, and local topographical, geological, biological, and other work during the second winter and spring. In the third summer the ship will again push southward, and the whole expedition will return home unless the welcome news come that funds sufficient for a third wintering has been secured. Three winters are more useful than two in securing very much better means, but four consecutive winters of life with the long dark polar night I consider undesirable and unnecessary. The work done during a fourth winter would, I believe, not be of sufficiently good quality to justify the attempt.

The house, which will be of Russian construction, will be built of logs; it must necessarily be small, because of the difficulties of transport during so long a voyage. There will be double windows and doors all properly secured against cold. There will be one main compartment, and two or three smaller ones. Besides this there will be magnetical and meteorological observatories, and storehouses for provisions and gear, and properly sheltered accommodation for forty dogs. The station will be lighted by electricity, the energy being supplied with a petroleum engine.

On the homeward voyage of the expedition, the vessel will complete as far as possible the accurate survey of the east coast of Graham's Land, the bathymetrical survey work between that coast and about 30° W. longitude.

The great value of such an expedition at the present time is that it will not only secure a number of highly interesting and important observations in the Antarctic, but that these observations will enhance, and will be enhanced by, the observations being carried on at the same time by the German and British Expeditions on the Indian and Pacific sides of the Antarctic. On referring to the diagram it will be seen that the Scottish station completes a triangle of stations round the South Pole, a condition very favourable and indeed almost indispensable for researches in meteorological science. Observations will also be carried out in meteorology and magnetism at Melbourne and New Zealand in connection with the British Expedition, at Kerguelen by the German Expedition, and at Port Stanley or South Georgia in connection with the Scottish Expedition. Thus a very complete series of stations—circumpolar and polar—will be established round and in the Antarctic regions. Should Mr. Otto Nordenskiöld succeed in carrying out his plans,

additional work will be done in the neighbourhood of the South Shetland Islands and Erebus Gulf.

It is my intention to ask the learned societies of Scotland to appoint a committee of advice to which all questions concerning the details of the organisation and scientific work will be submitted. I have been assured by leading members of the councils of most of these Societies that this committee will be constituted as soon as the necessary funds have been secured. The cost of the Expedition, on the lines indicated above, will not exceed £35,000, of which about £10,000 has already been secured. Professor Erich von Drygalski has expressed his pleasure in hearing of a Scottish Antarctic Expedition. "Wishing the best result," he says, "to the endeavours made in this direction, I shall be very happy to allow the German Expedition to co-operate with the planned Scottish one."

The plans have been long considered, and I have consulted with many of the leading authorities in Europe whilst maturing them, notably I may mention His Serene Highness the Prince of Monaco, and Sir John Murray. They are based on the experience I have gained during one summer I spent in the Antarctic regions, and during four summers and one winter in the Arctic regions, and during cruises with the Prince of Monaco in his yacht *Princesse Alice*, and Mr. Andrew Coats in his yacht *Blencathra* (now *Pandora*), doing deep-sea sounding and dredging, as well as on my experience, during more than a year, on the wintry summit of Ben Nevis, where I was in charge of the Observatory.

## BOKHARA.

By W. R. RICKMERS.

THE heart of Asia is easily reached by rail from the shore of the Caspian, and already the personally conducted tourist has triumphantly entered the gates of Bokhara the Noble.

Already in 1896 I had seen much to interest me in the eastern provinces of Bokhara, and in the year before last I decided to revisit them. Accordingly our little caravan left the metropolis on June 27. The first part of our journey lay along the great trade-route to India, and as far as Karshi there is some genuine desert-travel. Gradually, as one passes Baissun, Hissar, Dushambey, the ground rises, and at the provincial capital of Baljuan one encounters in earnest, as it were, the swell from the great ocean of mountains which occupies the centre of the continent. To this province of Baljuan I shall take you to-night. The distance from the railway is 500 miles, and we were three weeks in covering them.

Before starting for the far interior, let us take a glimpse at the capital. First, a view from a housetop over the expanse of flat roofs, from which here and there rise stately mosques and minarets; then a stroll on the market-place, where surges a crowd arrayed in all the hues of the rainbow. Do you wish to step back into the Middle Ages, to everything that was brilliant or sordid in them? do you wish to realise the days