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## **ANTARCTICA RE-DISCOVERED – BORCHGREVINK ROCK SPECIMENS IN THE HUNTERIAN MUSEUM**

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A number of Antarctic rock samples have recently been re-discovered in the geological collections of the Hunterian Museum. These were not known at the time of a description of the Hunterian's Antarctic rocks (Durant and Farrow 1999). The re-discovered rocks are from Possession Island and Cape Adare and are clearly labelled 'C.E.Borchgrevink' (Figure 1). These rocks have historical importance as the very first geological specimens collected from the Antarctic continent.

Carsten Egeberg Borchgrevink was born in Oslo in 1864, the son of an English mother and a Norwegian father. At the age of 24 he travelled to Australia where he found employment initially with government survey teams and then from 1892 as a schoolmaster teaching languages and natural science (Evans and Jones, 1975).

In 1894 an exploratory whaling voyage to the Ross Sea was being organised by Henryk Johan Bull and financed by the famous whaling pioneer Svend Foyn. Under the command of Leonard Kristensen, final arrangements were being made for the 'Antarctic' to depart Melbourne for polar waters when Borchgrevink appeared on the scene. The polar explorers Eivind Astrup and William Speirs Bruce were originally due to travel with the 'Antarctic' but were unable to reach Melbourne in time, leaving the expedition without any scientific crew. Borchgrevink arrived in Melbourne on September 14th 1894 and, following an introduction from the Norwegian consul, was able to talk his way on board but only as a crew member and not as a passenger or scientific observer. Borchgrevink was taken on board as a sea-man, seal-shooter and curer of skins with freedom to use his free time as he pleased (Evans and Jones op.cit). Bull's original plan to accommodate Astrup and Bruce was to build an extra cabin but Borchgrevink's qualifications and letter of introduction were not such as to warrant the expense of this and Borchgrevink had to make do with seaman's quarters. The 'Antarctic', a 346-ton wooden bark formerly used to hunting seals in the Arctic, sailed from Melbourne on September 20<sup>th</sup>.

Several accounts of the 6-month expedition have been published by Kristensen (1896), Bull (1896) and Borchgrevink (1895a, 1895b, 1896, 1901) and much has been written about the disputes that erupted between Kristensen, Bull and Borchgrevink after the voyage (eg. Swan 1967). These disputes seems to have been caused by Borchgrevink's attempts to take significantly more of the credit for the expedition than he deserved. This was at the expense of the true organiser, Bull and involved different opinions and recollections about a number of important details. One dispute was about just who had first stepped first onto the Antarctic continent when the expedition boat finally beached near Cape Adare. Borchgrevink always claimed that he was the first man to step foot on the Antarctic continent as illustrated by his illustration from a popular account (see <http://www.south-pole.com/p0000087.htm>). Others on the voyage, notably Kristensen and a young seaman, A.H.F. von

Tunzleman, dispute this both claiming to have been the first. In any event it has been shown subsequently that others landed on the Antarctic continent over seventy years previously during whaling and sealing expeditions (Bewsher, 1992). Although at the time Kristensen and Borchgrevink believed that one of them was the first person to step onto the Antarctic continent, and were prepared to fight about the details of this event, it seems that the 1895 landing from the 'Antarctic' was in fact the fourth landing on the continent and the second in Victoria Land (Bradshaw 1996).

What is clear, however, is that the rocks collected by Borchgrevink on the 1895 'Antarctic' expedition were indeed the first rocks collected from the Antarctic continent for scientific purposes. It is these rocks that have found their way into the Hunterian Museum collection.

After sailing from Melbourne the 'Antarctic' spent two months searching for whales off the south west of Tasmania, around Macquarie Island and Campbell Island before sighting and approaching the pack ice. By mid-December 1894 the vessel had reached Balleny Island in the Ross Sea following the track of Sir James Clark Ross with the 'Erebus' and 'Terror' some 54 years previously (Figure 2). Finding themselves in clear water on January 14<sup>th</sup> 1895, Bull and Kristensen were able to steer the 'Antarctic' towards Cape Adare on Victoria Land. On January 18<sup>th</sup> the expedition arrived at Possession Island and was able to effect a landing (Figure 3).

Possession Island is formed of vesicular basaltic lava which forms two peaks some 100metres high. Borchgrevink used a sledge hammer for his 'geologizing' on the island and climbed one of the peaks. He collected a number of volcanic rock samples and a large sample of guano ("which might prove valuable to Australia") for subsequent analytical testing. His discovery of lichens on rocks about 10metres above sea-level was the first observation of vegetation in Antarctica.

On January 23<sup>rd</sup> the 'Antarctic' approached the Antarctic mainland at Cape Adare and the disputed landing was made that night. Borchgrevink collected more rocks and made a further observation of lichens on the rocks. He describes the rocks as "differing but little" from the rocks collected on Possession Island but noted one granular rock composed of quartz, garnet and feldspar (Borchgrevink 1895b). A sample of microcline granite from Cape Adare was presented to King Oscar of Norway for use as a paperweight (Evans and Jones, op cit). The significance of these granular and granitic rocks as being of continental origin was subsequently recognised by Edgeworth David (1895). Borchgrevink noted that the discovery of the granular rock holds out hope that minerals of economic value may occur in these regions (Borchgrevink 1895b).

The expedition returned to Melbourne on March 12<sup>th</sup> 1895. Kristensen described the voyage in a letter to the Victorian branch of Royal Geographical Society of Australia (Kristensen 1895). Bull and Borchgrevink presented lectures about the expedition in Melbourne and Sydney. Some of the rocks collected were given to the geologist Professor T.W.Edgeworth David of the University of Sydney who, with colleagues, described 13 specimens from Possession Island and Cape Adare (David, Smeeth and Schofield 1895). Examination of these specimens 'strongly confirmed the conclusion already arrived at by Dr John Murray and several eminent biologists as to the existence within the Antarctic Circle of an Antarctic Continent rather than an

Antarctic Archipelago. The schistose and granitic rocks collected by Borchgrevink are distinctly of continental origin' (David et al op cit). It is the rock specimens described by David that are now in the Hunterian.

Other rock samples must have existed, for example the microcline granite presented to King Oscar was not amongst the samples examined by David. Other samples from this expedition were described by the British petrographer, J.J.H. Teall in an appendix to Bull's book describing the 'Cruise of the Antarctic (Teall, in Bull 1896). 11 of the 13 rocks described by Teall were collected 'from the rock' on Possession Island. The other two specimens were 'picked up' at Cape Adare by Captain Jensen during the 1895 landing. The specimens described by Teall confirmed a volcanic origin for Possession Island. The two samples from Cape Adare were a volcanic nepheline tephrite and a granitic rock with vein quartz. Since the granitic rock was a pebble Teall could not confirm that it came from an Antarctic continent. The current whereabouts of these samples is not known. In a Royal Society of Edinburgh paper (Teall 1897) it is noted that "In 1895 some further specimens were supplied by Dr John Murray, which he received from Cape Adair (sic) having been collected there by Mr C.E. Borchgrevink. These were also submitted to Mr Teall who examined and described them. The publication of his notes, however, was still further delayed in the expectation that they would be capable of being extended by the receipt of another collection of specimens. As this hope has not yet been fulfilled, and as so much geological interest is now felt in Antarctic exploration, it seems desirable to publish the following details without delay" (Teall 1897). The paper describes rocks from Dundee Island and Cape Adair, the former being granite, vein quartz, a dark green tuff and jasper. Two out of three pebbles from Cape Adair are a vesicular olivine basalt. The third pebble is a more compact basalt (Teall op cit). Dundee Island is in the Weddell Sea and was not visited by the 1895 voyage of the 'Antarctic' but was visited by Bruce and others during the 1892-3 Dundee Whaling expedition (Bruce 1896; Donald, 1896). The Cape Adair rocks collected by Borchgrevink that Teall described were presented to him for examination by Dr John Murray.

A link can be established between Borchgrevink and Murray which could account for Murray having specimens from the 'Antarctic' expedition. Having lectured in Melbourne and Sydney at the end of the 1894-5 expedition, and presumably after having left a collection of rocks with David in Sydney, Borchgrevink hurried to England to attend the Sixth International Geographical Congress at which there was a session devoted to Arctic and Antarctic exploration. The Sixth International Geographical Congress was opened in London on July 26<sup>th</sup> 1895 by HRH the Duke of York. On Monday July 29<sup>th</sup> Professor Neumayer and Admiral A.H. Markham introduced the conference session about 'Arctic and Antarctic Exploration'. Unfortunately Borchgrevink was unable to reach London in time and missed the session. However he was given the opportunity to present a paper about the 'Antractic' expedition on Thursday August 1<sup>st</sup>. His presentation 'received an enthusiastic reception and after he had read his paper giving an account of the voyage of the 'Antarctic' the Congress offered him its congratulations on the results of his work' (anon.1895). His youthful enthusiasm "made a deep impression on such veterans of Antarctic exploration as Sir Joseph Hooker, Sir John Murray and Dr G. von Neumayer" (Mill 1934).

One can imagine the difficulties that Borchgrevink faced as a relatively unknown Antarctic explorer and scientific observer in the exalted company of the Congress. There seems to have been some criticism about the lack of scientific results from the expedition and when the abstract of his paper was published in *Nature* Borchgrevink prefaced it with these opening remarks 'Allow me first to explain that my scientific observations were made under the disadvantageous circumstances of a sailor before the mast on board the whaler 'Antarctic'. There seemed no choice between adopting this course and remaining on shore, and I was consequently able to take very few instruments. This explanation may to some extent lighten the criticism of my results' (Borchgrevink 1895a). Borchgrevink probably met Murray at the Congress and again at the British Association meeting in Ipswich where he again presented a paper.

'On Friday, September 13, Mr C.E. Borchgrevink gave a short account of his voyage to Victoria Land and detailed his plans for an expedition to the Antarctic regions which he hopes to conduct from this country. He held, from his observations during the voyage of the 'Antarctic' that there were commercial possibilities in the direction of guano, minerals and probably whales, as well as seals in the high southern latitudes. Sir Joseph Hooker spoke of his experiences in Sir James Clark Ross's expeditions and stated that he had been struck by the close resemblance of the photographs brought home by Mr Borchgrevink, to the sketches made in Ross's ship. Sir William Flower deprecated the attempt to combine scientific observation with commercial pursuits, and strongly urged that any future expedition for research should be purely scientific. Dr John Murray also spoke in the discussion' (Anon 1895b). Murray was at the time strongly advocating the renewal of Antarctic exploration (Murray 1894) and since Borchgrevink wanted to return to Antarctica he must have sought him out.

At some point in the proceedings one presumes that Murray was given the rocks subsequently described by Teall. The mention of the possibility of acquiring further specimens may have been a reference to the samples left behind in Australia with Edgeworth David. But what of these specimens and how did they end up in the Hunterian Museum? A hand-written note on the back of a University of Melbourne expedition label found with the samples provides the answer (Figure 4).

In 1901, John Walter Gregory was Professor of Geology at the University of Melbourne. He was the Royal Society's choice for scientific leader of the British National Antarctic Expedition (1901- 1904) but pulled out not wanting to serve under Scott. His interest in Antarctica may have been the reason why Edgeworth David presented Borchgrevink's rocks to Gregory for examination. Gregory left Melbourne and took up an appointment as Professor of Geology in the University of Glasgow in 1904 presumably bringing the Borchgrevink rocks with him. The rocks were kept together in a drawer and have escaped notice until now.

Borchgrevink did fulfil his ambition and mount another expedition to Antarctica and did visit Cape Adare a second time but there is little doubt that the rocks in the Hunterian are from the first expedition and not the second 1898 'Southern Cross' expedition. The rocks from the 'Southern Cross expedition, "a more complete series of the rocks he (Borchgrevink) collected at Victoria Land in 1894" (Prior 1902) are housed in the Natural History Museum in London. The conclusions from examination of these rocks were subsequently re-inforced by an examination of rock

samples held from Sir James Clark Ross's 1839-43 expedition to the same area of Antarctica (Prior, 1898).

The Borchgrevink specimens in the Hunterian Museum are listed in Table 1. All the specimens have adhering labels giving locality and collector details. There are two distinct styles. Style 1 consists of pre-printed gummed and lined specimen labels. (Figure 1) Writing on these labels is in a dark brownish (faded?) ink with a fairly thick line. Style 2 labels have much finer, smaller and darker writing on pieces of the margins of gummed sheets of penny-denomination postage stamps. This style of writing also overwrites a style 1 label on specimen 111427: hence these labels are younger. We have not yet identified the handwriting on either style of label. J.W. Gregory is a possibility, as would be T.W.E. David, or possibly even G.W. Tyrrell, who worked extensively on Antarctic rocks at Glasgow.

It is clear that there was a commercial edge to the 'Antarctic' expedition and little attempt to maximise the scientific benefit by unifying the geological collections and having them described as a whole. This may reflect poor overall leadership or be a result of Borchgrevink's lowly position and lack of scientific awareness. It seems that both Captain Jensen and Borchgrevink were distributing specimens from the expedition for study and that not all of them were properly described together. However, some of the samples did provide the first definitive proof of continental rocks on mainland Antarctica and as such they have great historical significance.

### **Acknowledgements**

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## **Figure captions**

Figure 1. A Borchgrevink specimen from the Antarctic mainland in the Hunterian Museum collection

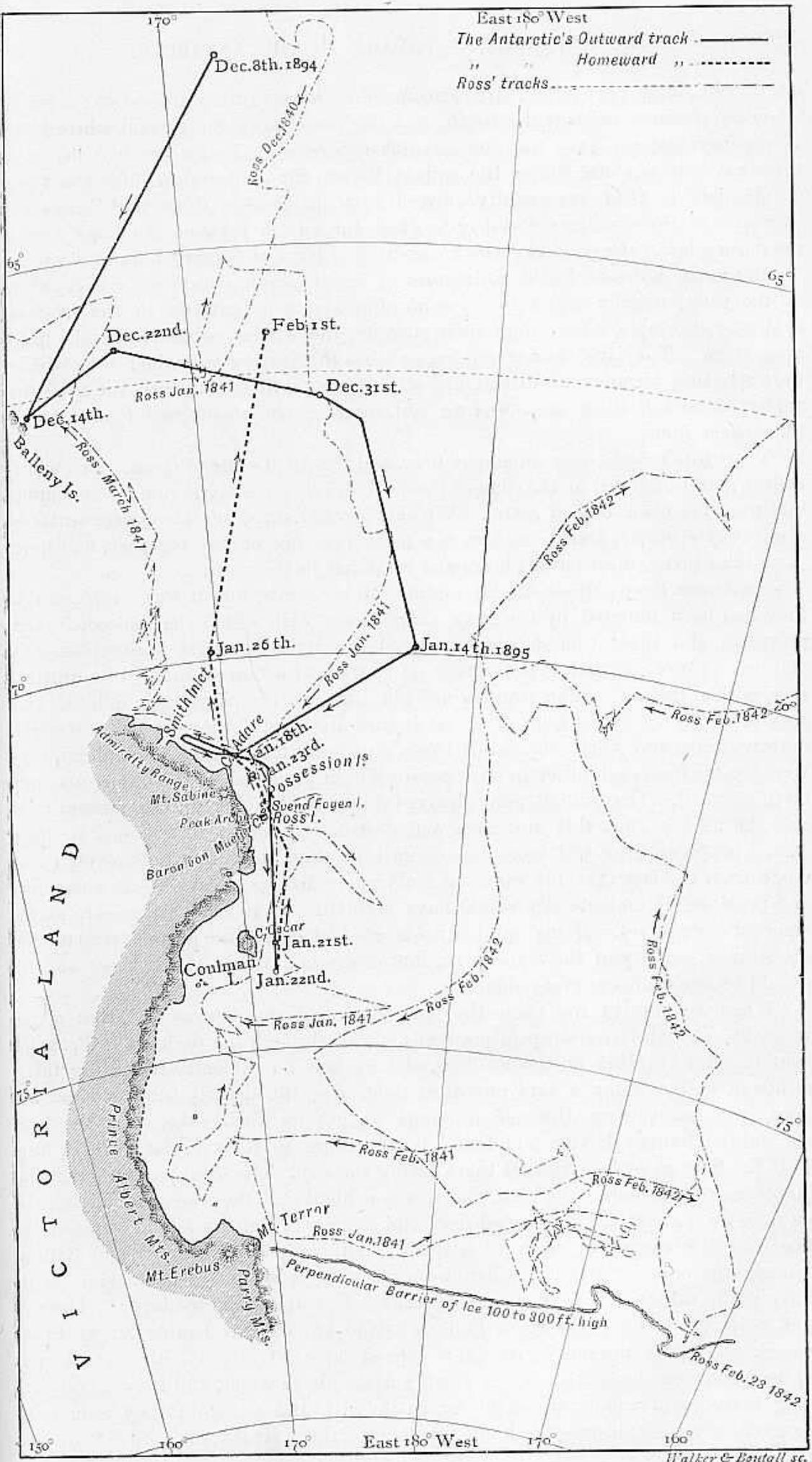
Figure 2. Track chart of the voyage of the Antarctic 1894-5 (Borchgrevink, 1895a)

Figure 3. The landing on Possession Island (Borchgrevink, 1897)

Figure 4 Professor Gregory's hand-written label.

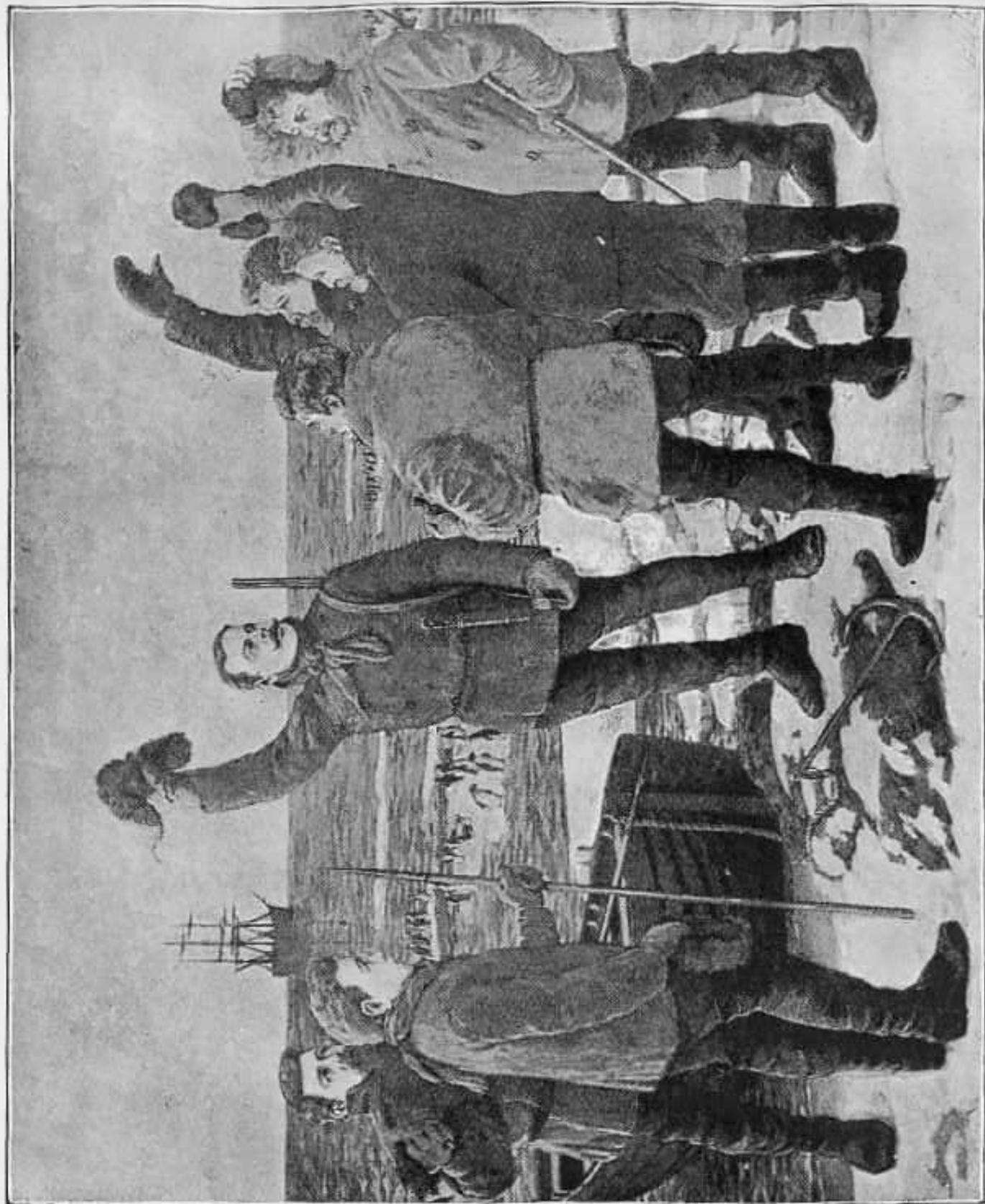
Cape Adare  
Coll<sup>y</sup>  
C.S. Borshgrevink

No. 6 antarctic  
Cape Adare  
C.S. Borshgrevink.



Walker & Bantall sc.

CHART (FROM THE ADMIRALTY CHART) TO SHOW THE TRACK OF THE "ANTARCTIC."



BORCHGREVINK GIVING THREE CHEERS FOR SIR JAMES CLARK ROSS ON POSSESSION ISLAND.  
*From a Drawing by C. E. Borchgrevink.*

Antarctic Rocks

How - [unclear]  
[unclear]

13 sp.