

SERIAL NO  
50

BRITISH ANTARCTIC  
AD6/1/1945/N  
SURVEY ARCHIVES

-I-

F.I.D.Sc.B. Serial (No 50/25)

Ser 50

F I D Sc B Serial No 51

1945

A, B, D.

OPERATION TABARIN

GENERAL BOTANICAL REPORT  
AND FINAL SUMMARY OF RESULTS

**D**URING the period of our stay in the Dependencies, from 4. February 1944 to 16. January 1946, a total of 1030 selected botanical specimens has been collected. These include lichens, bryophytes, algae, phanerogams, fungi, and diatoms, the number of specimens in each category being as follows:

Lichens . . . . .	865
Bryophytes. . . . .	84
- Algae, marine . . . . .	40
" freshwater and terrestrial . . . . .	17
Phanerogams (grasses) . . . . .	5
Fungi (lichen-parasites). . . . .	7
Diatoms, marine . . . . .	10
" freshwater . . . . .	2
Total:	<u>1030</u>

The specimens were collected at the following localities:

SOUTH SHETLANDS. Deception Island.  
GRAHAM LAND.

W. COAST. Palmer Archipelago: Wiencke Island, Doumer Island, Goudier Islet. Danco Coast: Cape Renard.

E. COAST. Johnson Coast: Hope Bay, Seal Bluff, View Point, Bald Head, near Church Point, Pitt Point. Eagle Archipelago: Sphinx Island, Tabarin Island, Sheppard Island, Marr Island, Corry Island, Vortex Island. Crown Prince Gustav Channel: Long Island, Alectoria Island, Persson Island, Longing Island. Erebus & Terror Gulf: Cockburn Island, Saddle Island. Vega Island and the adjoining small Devil Island. Ross Island, various localities. Snow Hill Island. Seymour Island.

The greater part of the collections was made around our two bases at Port Lockroy (Wiencke Island), 1944, and Hope Bay, 1945, but a considerable amount of material was also acquired on local excursions from these bases and notably on the three sledge journeys, covering in all a distance of about 800 miles, in which I had the privilege of taking part. These were:

1. W. Graham Land: Wiencke Island, 24. September to 18. October 1944. A man-hauling expedition in which no great area was covered; the number of localities examined for vegetation hence very limited. 45 specimens collected.

2. E. Graham Land: across Duse Bay, down the Crown Prince Gustav Channel to Longing Island ("Cape Longing"), round Ross Island, visiting Snow Hill, Seymour, and Cockburn Islands; 8. August to 11. September 1945. 47 specimens collected.

3. E. Graham Land: across Duse Bay, visiting all the islands of the Eagle Archipelago, along the coasts of Ross Island on both E. and W. sides as far as Cape Gage and Cape Broms respectively, visiting numerous localities; 9. November to 29. December 1945. 271 specimens collected.

The majority of the specimens were collected at low altitudes, mostly at or near sea level, but a number, from mountains on Wiencke



Island and the Pyramid Peak at Hope Bay, were taken at altitudes of 1000 to 1900 feet. The composition of the flora at these higher altitudes was different from that in the lower tracts, this being partly due to the paucity of bird life and the corresponding elimination of the ornithocrophilous species.

Except in certain special cases (marine and freshwater algae, etc.) the specimens, selected to show typical development of vegetative and reproductive parts, were preserved dry in paper packets, each bearing the serial number, locality, date, and other necessary information. The drying of damp specimens on extended sledging trips proved somewhat of a problem; during the winter journey, with temperatures constantly below freezing point, I packed the specimens in soft snow in pemmican boxes and dried them out on our return to the base. On the second journey, with its higher temperatures, specimens were exposed in the sunshine until dry, or, in bad weather, dried off on a large flat stone heated on the pressure stove inside the tent. All these methods gave satisfactory results. Material of marine and freshwater algae, and also lichen apothecia intended for cytological examination, were preserved in alcohol or formalin after appropriate fixation.

All lichen specimens were determined as to their genus; this entailed the use of the microscope with most of the crustaceous species. Some of the genera, and in one case an entire family, had not been previously recorded from the Antarctic; others were new to the Graham Land region:

New to the Antarctic: 3 genera (Cetraria, Collema<sup>1</sup>), Dermatocarpon (sections Entosthelia and Endopyrenium), Ephebe (the family Ephebaceae is new to the Antarctic), Glypholecia, Placopsis, Psoroma, Toninia); 1 section, Aspicilia (of Lecanora), represented by two species, one of which appears to be the common L. lacustris of the northern hemisphere;

New to the Graham Land region: 3 genera (Biatorella, Candelariella, Catillaria).

Two subgenera, of Bacidia and Buellia respectively, are new to science. They are both fruticose representatives of an otherwise crustaceous assemblage, analogous to the subgenera Thamnolecania and Thamnoma of the genera Lecania and Caloplaca.

The numbers of species new to science cannot be indicated until the taxonomic study of the material, which I hope soon to undertake at the British Museum (Natural History), has been completed; my impression at present is that some twenty or thirty species, perhaps more, are new. The number of known bipolar species, i.e., those occurring in the Arctic and Antarctic zones but not intermediately, has also been increased by the present collections, but the Fuegian element remains low numerically, an interesting phytogeographical fact the significance of which I hope to discuss at a later date.

A few points of especial taxonomic or ecological interest may be mentioned here, as they present novel features characteristic of the flora of this region:

1. The crustaceous genus Huea is apparently restricted to the southern hemisphere; 3 species in the Antarctic (of which 2 in Graham Land) and 1 in South Africa. H. cerussata is a markedly chionophilous species. See photographs, negatives 76, II2.

2. No truly marine lichens, with the exception of Verrucaria maura, have yet been reported from the Antarctic, but we have found

two, one of which appears to be the common northern hemisphere species V. mucosa, the other not known to me, possibly a new species.

<sup>1</sup> Hooker's "Collema crispum" from Lockburn Island is a heptogium.



The mode of occurrence of the former here is interesting in that it grows below the lowest ebb tide level and below the water level of rock pools, and is therefore constantly submerged; in Europe V. mucosa, and indeed all other marine lichens, are regularly exposed periodically by the ebbing tide. See photograph: negative 72.

3. Verrucaria glaucoplaca (Syn. V. elaeoplaca), first found by the Belgian Expedition, proves to be a markedly hydrophilous species, occurring only on rock surfaces which are periodically inundated with snowmelt water. It forms conspicuous bands round the edges of snowmelt water pools which collect in hollows of the granodiorite rock on Goudier Islet. See photographs: negatives 65, 85, 92, 108, 115.

4. The phenomenon of erratic or "wandering" lichens, well known in the case of the manna lichen, Lecanora esculenta, and Parmelia revoluta var. concentrica in Britain, was observed in the endemic Lecania (Thamnolecania) Brialmontii. In places on Goudier Islet this lichen occurs as small unattached rounded thalli in the form of pellets, which are transported by the agency of the wind. See photograph, negative 142.

5. The occurrence of Placopsis (serial no. 2472) at Longing Island, Crown Prince Gustav Channel, constitutes the most southerly record for this mainly temperate-subantarctic genus.

The ecology of the vegetation on Goudier Islet, which on account of its small size is well suited to such a study, was investigated by the methods of Du Rietz and Sernander, and a clear picture of the various environmental factors and their influence on the various species was obtained. This is the first detailed plant ecological survey to be carried out in the Antarctic.

In order to ascertain whether there exists any seasonal rhythm in the spore production of crustaceous species, a marked thallus of a species of Buellia was kept under observation at Hope Bay from June to December 1945, and apothecia removed at intervals and fixed in Bouin's fluid for subsequent cytological examination. Preliminary investigation of this species indicates that a new hymenium is periodically formed over the old one, which degenerates and becomes transformed into hypothecial tissue.

A series of large-scale photographs of characteristic species and associations in their natural habitat was made with the half-plate camera supplied to the expedition; an enumeration of these together with the negative numbers will be found in the Photographic Logbook.

... I. Mackenzie Lamb. ...

Port Stanley, Falkland Islands,  
27. January 1946.