

lying only as far south of the equator as York is north of it, South Georgia is covered, in the higher parts at least, with permanent snows and glaciers, and is altogether of a most wild and desolate aspect. Large masses of ice were continually breaking off from the perpendicular cliffs and falling into the sea with a noise like cannon. "The inner parts of the country," says Cook, "were not less savage and horrible. The wild rocks raised their lofty summits till they were lost in the clouds, and the valleys lay covered with everlasting snow. Not a tree was to be seen, nor a shrub even big enough to make a toothpick. The only vegetation we met with was a coarse strong-bladed grass growing in tufts, wild burnet, and a plant like moss, which sprung from the rocks."

Animal life, however, was more abundant. Seals were plentiful, and the penguins the largest ever seen by Cook; some which were taken on board weighed from twenty-nine to thirty-eight pounds. Eight kinds of "oceanic birds" are enumerated, and one, a yellow bird, was found to be delicious food. All the land birds observed were "a few small larks." From Cook's narrative it appears that Forster, the botanist, was one of the landing party, hence it might have been expected that few flowering plants would have escaped observation, especially as the visit was made in January, the midsummer of the southern hemisphere. Forster himself states ("Observations made during a Voyage round the World," p. 16) that South Georgia is an isle of about eighty leagues in extent, consisting of high hills, none of which were free from snow in the middle of January, except a few rocks near the sea. And he adds that there was no soil except in a few crevices of the rocks.

No further information respecting this island has been published, so far as I am aware, until since the return of a recent German Expedition, which made the island one of its stations for meteorological and other observations. When collecting the materials to illustrate the flora of the very much broken coldest southern zone of vegetation for the "Botany of the *Challenger* Expedition," I had to be content with Cook and Forster's very meagre accounts of South Georgia; but from the published northern limits of drift ice in different longitudes in the southern hemisphere, it was not expected that South Georgia possessed much more than the scanty flora they attributed to it, though Macquarie Island, in the same latitude, and nearly in the longitude of New Zealand, was known to support a comparatively luxuriant vegetation. Dreary and barren as it is, however, South Georgia is not so bad as it has been painted. The officers of the German Expedition spent nearly a year on the island, and appear to have explored it thoroughly, botanically and otherwise. During this period the atmospheric pressure was subject to extraordinary fluctuations, the extremes exhibiting a difference of 64 millimetres, or a fraction over $2\frac{1}{2}$ inches, while the range of temperature during the same period was only $48^{\circ}\cdot6$ Fahr., or in round numbers, from 8° to 57° Fahr.; thus showing the freezing-point to be nearly midway in the range. The actual mean temperature of the year was $35^{\circ}\cdot06$ Fahr.; of June, the coldest month, $25^{\circ}\cdot6$ Fahr.; and of February, the warmest month, $41^{\circ}\cdot6$ Fahr.

With regard to the flowering plants collected in the island by Dr. Will, one of the officers of the Expedition, we are indebted to Dr. Engler for an enumeration of them in his *Fahrbücher*, vol. vii. p. 281. They are thirteen in number, and their general distribution is so extremely interesting that I may be pardoned for giving it in detail:—

(1) *Ranunculus biternatus*, Sm. (Ranunculaceæ).—Fuegia, Falklands, Tristan d'Acunha (?) Marion, and Kerguelen Islands.

(2) *Colobanthus subulatus*, d'Urville (Caryophyllaceæ).—Fuegia, Campbell's Island, New Zealand, and Alps of Victoria, Australia.

(3) *Colobanthus crassifolius*, d'Urville (Caryophyllaceæ).—Fuegia and Falklands.

(4) *Montia fontana*, L. (Portulacæ).—Fuegia, Marion, Kerguelen, Campbell's Island, and widely diffused.

(5) *Acæna adscendens*, Vahl. (Rosaceæ).—Fuegia, Marion, Crozets, Kerguelen, Macquarie Islands, and New Zealand.

(6) *Acæna lævigata*, Ait. (Rosaceæ).—Fuegia.

(7) *Callitriche verna*, L. var. (Haloragææ).—Fuegia, Marion, Kerguelen, Heard Islands, New Zealand, and widely diffused.

(8) *Juncus novæ-zealandiæ*, Hook. f. (Juncaceæ).—New Zealand.

(9) *Rostkovia magellanica*, Hook. f. (Juncaceæ).—Andes, Fuegia, Falklands, and Campbell's Islands.

(10) *Aira antarctica*, Hook. f. (Gramineæ).—Fuegia, Falklands, South Shetlands, and Kerguelen Island.

(11) *Phleum alpinum*, L. (Gramineæ).—Magellan's Straits, and widely dispersed in the cold regions of the northern hemisphere.

(12) *Festuca erecta*, D'Urville (Gramineæ).—Fuegia, Falklands, and Kerguelen.

(13) *Poa flabellata*, Hook. f., syn. *Dactylis caspitosa*, Forst. (Gramineæ).—Fuegia and Falklands.

From the collector's remarks, appended by Engler to each species, it appears that some of the foregoing plants flourish luxuriantly in South Georgia, especially the species of *Acæna* (the burnet of Cook's narrative), and *Aira antarctica* and *Poa flabellata*. The *Ranunculus* was abundant by the side of a stream and elsewhere, and *Colobanthus subulatus* (doubtless the moss-like plant mentioned by Cook) formed large tufts on the south side of the hills. Nine out of the thirteen plants in South Georgia are also found in the eastern part of this southernmost zone of vegetation from Kerguelen to New Zealand, taking these islands together. One, *Juncus novæ-zealandiæ*, had not previously been found in what may be termed the American part of the zone; but, as Prof. Buchanan, to whom Dr. Engler submitted the South Georgian specimens, remarks, this is so nearly allied to the South American *Juncus stipulatus* that it may be cited as another instance of representative and closely-allied species in the American and Australian regions.

Thus are we gradually obtaining a knowledge of the vegetation of the detached fragments of the Antarctic flora; yet several islands are still quite unknown botanically or only very imperfectly. Concerning Diego Alvarez, or Gough Island, situated about 4° south of the Tristan d'Acunha group, we know nothing except that the vegetation is said to be similar to that of Tristan d'Acunha, and to include *Phyllica nitida*, the only arborous member of the latter flora. Then there is a group of islands, including Lindsay, Bouvet, and Thomson, in about the same latitude as South Georgia, but 35° eastward, of which nothing is known botanically.

W. BOTTING HEMSLEY

NOTES

THE Visitation of Greenwich Observatory takes place on Saturday next.

THE Ladies' *Soirée* at the Royal Society takes place on the evening of Wednesday, the 9th inst.

THE honour of C.M.G. has been conferred on Mr. Charles Meldrum, Director of the Royal Alfred Observatory, Mauritius.

THE explosion of the 43-ton gun has led to the appointment of a Committee of Inquiry, in which the name of Mr. Anderson is conspicuous by its absence, although surely no greater authority on the points at issue exists. A year ago, in his important lectures at the Society of Arts, he drew attention to the want of relation between the sections and pressures, and predicted disasters.