

The North has a summer rain that is monsoonal, then a long period of drought. There is a Palaeotropic element in the flora that is largely unfamiliar to us, though it does contain Spinifex hirsutus (though the one at Perth looks very different from ours), Sideroxylon (Planchonella), Persoonia, Eugenia, and the kangaroos grass (Themeda triandra) that is at the moment arousing some interest in Marlborough. Where there is most rain in the North is woodland, then monsoonal savannah woodland with Themeda, and in the drier interior true savannah with just scattered trees.

The South-West Province is well defined with Eucalypt forest and sand heath. There is winter rain with short summer drought, the total precipitation at Albany being about 65". Here the Antarctic and Austral elements are stronger and there are more genera familiar to us, e.g. Leptospermum, Dracophyllum, Archeria, Leucopogon, Cyathodes, Forstera, Knightia.

At the two ends of the South West Province are two areas of numerous endemics with no cross connections. The transition between the South West and the Eremean Provinces has a capricious climate and carries a woodland vegetation of Eucalypts and Acacias. The true desert has Hakea and Hibiscus and the small-flowered Solanaceous Duboisia that has become important as a source of a substitute for digitalin morphine. Surrounding the desert is a steppe dominated by Triodia, bushes, a metre high and three metres across and almost as spiky as Aciphyllas. South of the Triodia is the mulga country with Myoporum (related to ngaios) Plagianthus (ribbonwoods), Swainsona (legumes with swollen pods), and Dodonaea (related to akeake). Here is a Neo-Australian element composed of species which Gardner seems convinced have developed anew from various elements from north and south in response to the impact of the Eremean environment. Ephemeric convergence is conspicuous, e.g., members of quite distinct families are vegetatively much alike so that it takes a botanist to distinguish between them. This similarity is due, Gardner urges, to the direct influence of the environment, not to selection by it.

Timber trees. Australia has hard wood trees and needs soft woods. Working inland from the southwest coast comes first a forest of karri (Eucalyptus diversicolor) with trees averaging 150 feet tall and sometimes reaching 300 feet with clean boles to 120 feet. Further in the jarrah (Eucalyptus marginata) predominates, some 90 feet high. The white gum (on pipe-clay soils) is 70 feet high and within that as an enclave the York gum predominates. Red gum is coastal and outside that again is the tuart gum. The karri prefers soils from granites and greensand rocks, the jarrah occurs on lateritic soils, and the tuart gum only on littoral limestones. The relation of New Zealand tree distribution to underlying soils is beginning to be recognized but nowhere is it so dramatically clear as in West Australia. The "forest" is more exactly an open woodland.

Both ecologically and floristically much remains to be done in West Australia to build on the solid foundation already laid.

#### THE INDIGENOUS VEGETATION OF CAMPBELL ISLAND.

On the evening of Nov. 17, 1947, a gathering of members and friends had the pleasure of listening to Mr. W. B. Brockie, whose story ran as follows:

Since the subject of my talk was announced in your programme a few months ago, I have procured lantern slides of a number of

the photographs I took on Campbell Island, and these portray, mostly in fact, features other than the vegetation - landscape views, birds, animals as well as the plants. By including these features in my talk, it will probably make it more interesting and, besides, many of the slides, especially those of landscapes and birds, which show the general character of the Island, also show the general character of the vegetation.

Availing myself of the opportunity to visit Campbell Island and to get a first-hand knowledge of the nature of the plants, the distribution of the various species, the distinct plants associations as related to the nature of the soils and the topography of the Island, I was fortunate, after a rigorous medical inspection to join the meteorological party at the end of November of last year, which proceeded to Campbell Island on the motor ketch "Ranui" to relieve the party, most of the personnel of which had been stationed there for a year. I wish here to pay a warm tribute to the Aerodrome Services Branch of the Public Works Department for the efficient and painstaking way in which the hundred and one details of the expedition, known as the Cape Expedition, were organised and attended to.

The period of my stay on the Island was six months. On Friday, November 29, 1946, our party went aboard the motor ketch, "Ranui," at Queen's Wharf, Wellington. This little ship of 57 tons is of prepossessing appearance, but she soon demonstrated that every one of the meteorological party was just a mere land-lubber, if he had not previously been aware of it. On our first night out, passing Cook Strait in a sou'wester, Capt. Worth looking directly from his glass-fronted wheelhouse at the hooded hatch of the fo'c'sle where we had our berths, might well have imagined we were putting on a first-class Punch and Judy Show - there were no "strawberry baskets" on the "Ranui."

At Dunedin, we were joined by Mr. Tische of the National Film Unit, who was to stay on Campbell Island for a week or so and return with the relieved party. I met Mr. Tische in George Street, Dunedin, on his way down to the wharf, carrying a large Mintie tin under his arm - he is an old campaigner. His fears were soon realised, but, in spite of his indisposition, he was always to the fore, taking pictures of the various incidents of the voyage - a real hero under the circumstances.

We hove to at Breakseas Islands, off the south coast of Stewart Island, to fish, when the crew caught some fine blue cod. The Snares Islands came in sight next morning. There are seven islets in this group; the two largest support a thick growth of scrub-like vegetation, but the others appeared from our distant view point, to be naked, jagged rocks, rising abruptly from the ocean.

On the following morning, a week to the day after we left Wellington, we came up to the Auckland Islands and passed over the relatively quiet water amongst the small islands at the north east of the group, - Enderby, Ocean, Ewing, etc. Low lying Ewing Island is covered, along the sea shore, with a dense growth of Olearia lyallii. The mass of bluish green leaves of this handsome shrub is in striking contrast to the sombre tones of the rata, which is the dominant tree on the main island. Strangely, Olearia lyallii, I understand, although it is so abundant on Ewing Island, is found only in one small group, near Port Ross, on Auckland Island.

The geological structure of a large portion of Auckland Island presents a series of alternate layers of basalt and scoria, a structure that is also common to much of Campbell Island. I am no

geologist, however, and I allude to this only because, on sea cliffs of this structure, the layers are often well defined by long, narrow strips of vegetation between them.

On my homeward journey from Campbell Island, the "Ranui" proceeded to the extreme western end of Carnly Harbour, which separates Adam's Island from Auckland Island. Here, I had a good view of Fairchild's Garden, an area of about 400 acres at the north western tip of Adams Island. This piece of ground is named after Capt. Fairchild of the Government steamer "Hinemoa," who frequently, towards the end of the last century, visited the Subantarctic Islands in search of marooned sailors. No animals have been liberated on Adams Island, so the vegetation here is quite unspoilt and the large leaved herbaceous plants, characteristic of these islands grow in great luxuriance - Pleurophyllum speciosum, P. criniferum, Stilbocarpa polaris, Anisotome latifolia and others. Unfortunately, I did not land on any of the Auckland Islands.

Campbell Island showed up at 4 a.m. on Saturday, 7th December. Approaching nearer, the jagged skyline of the Island resolved into a series of sharply peaked hills. Soon we were off Courrejolles Point, a ragged topped promontory, banded with layers of basalt and scoria. Near here, on very steep ground above the cliffs, thousands of nesting mollymauks were seen. We passed Bull Rock, at the north east point of the Island and soon entered Perseverance Harbour, where we anchored at the entrance to Tucker Cove.....

Presently a few of the men from the station came aboard, and, after an exchange of greetings, and mutual toasts, we went ashore, to enjoy an excellent meal.....

Dracophyllum scoparium constitutes, by far, the greater portion of the scrub which, in a number of places, reaches from sea level to an altitude of about six hundred feet. It attains a height of about fifteen feet, but only in sheltered gullies-on higher ground, it may be only a few feet in height. This species, which is endemic in Campbell Island, has very narrow leaves, averaging, I would say, about an inch in length. The leaves are closely imbricating, but in this respect, as in their size and the amount of hairiness, individual plants exhibit much diversity. In some specimens the leaves are so densely covered with silky hairs that they present quite a silvery appearance. D. longifolium is more or less thinly scattered about among the scrub. Some of the smaller leaved plants of this are very difficult to distinguish from the larger leaved forms of D. scoparium, and these may be hybrids. The other shrub constituents of this formation are Suttonia divaricata, Coprosma-cuneata and C. ciliata. Some of the taller growing coprosmas one, at first glance, would take for C. parviflora, but, in every such case, a close examination revealed that the leaves were more or less ciliate. In the denser parts, the floor of the scrub is deeply blanketed with the fallen leaves of the Dracophyllum and there is little, or no undergrowth. Mosses and liverworts of various kinds carpet the more open parts, in which also are to be commonly found the orchids, Chiloglottis cornuta and Corybas trilobus. The filmy fern, Hymenophyllum multifidum, and other plants from the open hillside are also to be seen. On the branches of the Dracophyllum, foliaceous, bearded and scaly lichens are abundant, and Polypodium billardieri is fairly common. Hebe elliptica occurs in small and remote groups fringing Perseverance Harbour and a few other places around the east and south-east coast.

Looking from the bottom of Tucker Cove Valley, and not much above sea level, towards Lyall Ridge with Lyall Pyramid, a massive rock a hundred feet high on its serrated crest, the general aspect

strongly reminded me of the high country above the bush line in the New Zealand mainland. Above and around the patches of scrub; indeed, covering by far the greater part of the Island, the land is clothed with the subantarctic tussock grass Poa litorosa. Almost as commonly distributed, is the handsome Chrysobactron rossii, a much larger plant than its congener, C. hookeri which is common in many parts of New Zealand. Often it grows in an almost pure stand, covering acres of ground, but usually it is mixed with Poa litorosa and, during the summer, when it is in full growth, these two plants, growing together, form a deep and dense, foot-entangling mass of vegetation which is difficult to walk over. In March, however, the tops of the Chrysobactron die completely, leaving only the withered and blackened leaves, as if a fire had swept over the land, and then it is very much easier to proceed on a journey.

Along the shores of Perseverance Harbour, and elsewhere along the coast, on the rocks and on peaty banks, the cushion-like (Colobanthus muscoides) is plentiful, together with the succulent leaved Liliaea moschata, the small cress, Cardamine depressa, Colobanthus crassifolius, which is also found in New Zealand, Blechnum durum, B. banksii, Asplenium obtusatum, here and there a group of the small dandelion, Taraxacum magellanicum, a chickweed, Stellaria decipiens and, one of the commonest plants of all, the fern-like Cotula plumosa. This Cotula, described by Cheeseman as by far the finest of the genus, makes very rank growth in some parts where elephant seals have congregated, especially at Camp Cove where its leaves are a foot or more in length and form a deep, soft carpet. Carex trifida is rare. Abandoned elephant seal wallows soon become covered with a bright green mat of Callitriche antarctica and one has to be very wary in such places to avoid plunging through these delectable mats into the filthy ooze beneath them.

On the open, tussock clad slopes there is a mixed assemblage of herbaceous plants. The small, Scirpus aucklandicus forms a continuous turf in many places, also Uncinia riparia var. hookeri. Other small plants are the pretty pink flowered Epilobium confertifolium, E. nerteroides, E. linnaeoides, Abrotanella spatulata, Stellaria decipiens, Luzula campestris var. crinita, Acaena sanguisorbae, Lagenophora pumila, Geranium microphyllum, Claytonia australasica, Montia jontana, Cardamine corymbosa, Coprosma pumila and Helichrysum bellidioides. In wet places Scirpus carnuus, Juncus antarcticus and J. scheuchzerioides are common. Lycopodium fastigiatum nets the turf and the large tufts of L. varium stand out conspicuously. Chrysobactron rossii is, of course, everywhere and Gentiana antarctica is plentiful. Histiopteris incisa occurs in large patches. Hypolepis millerifolium is rare.

Over large areas of the wet, lowland slopes the land is covered with a coarse herbage of Carex appressa, Polistichum vestitum, Blechnum procerum, Hierochloa redolens, together with Poa litorosa and the Chrysobactron. Such a mixture is not palatable to sheep, and I noted in one large area of it a number of plants of Pleurophyllum criniferum which had escaped their attention.

Sheep have been grazing on Campbell Island for the last sixty years or so. There were about 8,000 sheep on the Island at one period, but since sheep farming was abandoned in 1931, their number has dwindled considerably, and, at a guess, I would say it is now something over a thousand. It was sometimes depressing when out on a ramble to think of the glorious assemblage of plants which at one time must have clothed the hillsides. Indeed, it is almost impossible to visualise, in many parts, what the original plant covering was like, thanks to the shameful action of a Government which permitted sheep farming on the Island.

Perhaps the most significant aspect of the botany of Campbell Island today is the great scarcity of many of the handsome sub-antarctic herbaceous plants on every part that is accessible to sheep.

The land is covered with a blanket of peat, many feet deep in some places. The water in the streams draining the peat is the colour of tea. The tops of some of the mountains are rocky; so, too, are the high coastal cliffs, and here and there one meets isolated rock outcrops on comparatively gentle slopes. The tops of these outcrops are in some cases inaccessible to sheep and, being also covered with peat, support a surprisingly luxuriant vegetation. This is, of course, owing to the frequency of rain and drizzle, overcast skies and high humidity. But it is significant that, on those elevated positions, one sees certain kinds of plants, while the land all around is completely devoid of them - Poa foliosa, Danthonia flavescens, Anisotome latifolia, Anistome antipoda, Pleurophyllum speciosum, Stilbocarpa polaris and Hebe benthami. All of these plants undoubtedly flourished in profusion on many parts of the open hillside, but the sheep have just eaten them wholesale. Even the tough snow tussock, Danthonia flavescens, is wholly exterminated over extensive areas. On Mt. St. Col, for instance, the upper slopes must at one time have been covered shoulder high with the waving plumes of this tussock, but all that one can see of it now are great, cushion-like mounds composed of dead culms and leaf sheaths. In between them are deep trenches in the eroded peat. Many of the mounds are strangely decorated with the bright green cushions of Phyllachne clavigera, a plant that appears more at home in boggy ground.

It was pleasing to note, however, that, on the open slopes of Mt. Beaman, which flank the eastern side of Tucker Cove Valley, where the meteorological camp is situated, Pleurophyllum speciosum has again firmly established itself. Sheep never come to this part now because they are gun shy. Here, too, P. criniferum, thanks to the meteorological party, is not uncommon. Only three plants of this species were seen in flower. It was a poor flowering season for more than one species. Of many thousands of plants of Pleurophyllum hookeri I saw, only four of these had flowered. Danthonia flavescens, which grows thickly on some rock faces, failed to produce a single flower, and Anistome antipoda was also completely flowerless.

On most days the tussock-clad uplands are wreathed with scudding fog. Rambling about in this cold, soft-walled world, it is a rather strange experience to meet groups of the majestic royal albatross, to all intents and purposes, in solemn conclave, or to be suddenly faced with a large, fluffy, pure white chick of this bird, sitting up on its nest and appearing very lonely. Hereabout, in boggy places on the hillside and on high, wind swept saddles, the wiry leaved rush, Rostkovia gracilis and the smaller growing R. magellanica form an almost continuous sward. Gentiana antarctica is also plentiful here. This is an amazingly variable species. Some of the plants are a foot or so high, with large leaves and an open, branching habit; others form a compact little ball when in full flower and, between these extremes, a continuous series of intermediate forms can easily be found. The colour of the leaves also varies, some plants having light green leaves and others dark purple; the flowers, too, may be either white or purple streaked.

At higher altitudes, among loose rocks held together with peat, Craspedia uniflora is sometimes found. It differs from all the forms I have seen in New Zealand in its dark brown inner involucre bracts, which give to the flower head a flecked appearance reminding one of a French marigold. In similar situations the pink flowered Cardamine glacialis var. subcarnosa is plentiful. Ranunculus subscaposus occurs here in wet places, but it is much smaller in

its growth than in lowland positions. A little lower down, on steep, rocky places, the lovely blue flowered Hebe benthami instantly attracts attention.

On the peat covered ledges and in clefts and fissures of the summit rocks there is a most interesting diversity of species. Celmisia vernicosa in such positions forms a compact mat of small rosettes, and its flower heads, with white, rarely purple, ray florets and violet disc florets, are produced sometimes in great numbers. The shining green, fleshy leaved Ranunculus pinguis is abundant here, also the small Myosotis antarctica, which, usually, has blue flowers, but sometimes they are white. Abrotanella rogulata and Colobanthus hookeri, small cushion plants and Phyllachne clavigera are common. In some places the fleshy and rather hairy leaved Cardamine depressa var. stellata is to be found. On a rock face half-way up the southern side of Lyall Ridge was a single small plant of Celmisia campbellenses. This appears to be a hybrid between Celmisia vernicosa and Pleurophyllum speciosum. Near the crest of Lyall Ridge I discovered Myosotis pygmaea and the alpine fern Polystichum cystostegium, both common on the mountains of New Zealand. Another find, Polypodium billarduri var. pumilum, nestles in rock fissures.

But it is not only the small plants I have mentioned that are to be found on the mountain tops. Here may be seen, in bold groups, a delightful mixture of the large leaved species - Pleurophyllum speciosum, P. hookeri, Anisotome latifolia, A. antipoda, Stilbocarpa polaris, and all with the leaves of the snow tussock draping gracefully over them. A stoloniferous form of Poa foliosa, like bindweed in habit, occupies some of the peat covered shelves, and everywhere on the rocks is a small, tufted grass which, on examination, looks like a dwarf form of Agrostis magellanica. This is probably Hooker's A. subulata, originally described from immature specimens collected on Campbell Island. Poa aucklandica, another little tufted grass, with heavy and prettily drooping spikelets, also grows here. The densely tomentose Trisetum spicatum and a ruddy brown coloured little grass, Deschampsia gracillima is common. D. chapmanii is fairly abundant on some of the lower slopes and is especially plentiful on tracks near the meteorological station. In drizzly weather its filiform leaves and capillary branched panicles, standing about a foot high, glisten with a multitude of water drops. Similar situations are also occupied by Poa imbecilla var. breviglumis and Deyeuxia forsteri var. micrathera. Markedly differing in its erect habit and contracted panicles Agrostis magellanica is easily discernible amongst the smaller grasses.

A species of holy grass, Hierochloa brunonis, is to be seen here and there on the hillsides, but I found very little of it. This species, which is endemic in the Auckland and Campbell Islands, is readily distinguished from the widely distributed H. redolens by its pale green leaves and its long acuminate outer glumes. A peculiar variant of H. brunonis, or maybe a hybrid of these two species, is distributed over a considerable area of the upper portion of Tucker Cove Valley and extending a little way along the slopes of Lyall Ridge. Its densest concentration appears to be in a somewhat swampy piece of ground a hundred yards or so to the north of the meteorological station. Here also H. redolens is abundant. The peculiarity of the plant is in its spikelets; The glumes are all empty except for a few in which I noted stamens. As the season advances, long-tapering, imbricating leaves emerge from the top of the rhachis and appear as an extension of the spikelet. The added weight to the spikelets arches the culms and this feature, together with the nodding panicles, imparts an exceedingly graceful appearance to the plant. Apparently the

plant is sterile and its only means of increase, apart from its stoloniferous growth, appears to be from the dissemination of the proliferous spikelets. Most of the spikelets dry on the plants, but others, broken off by the wind, or borne down by their weight, reach wet ground and may emit roots, so enabling them to continue growth. From its constancy of form it may not be unreasonable to assume that all of the plants have originated from one hybrid or maybe from a mutant of H. brunonis which, in general appearance, it resembles, but the outer glumes are not attenuated as in that species. Spikelets which I gathered from a plant and brought with me to New Zealand were planted in a mixture of sphagnum and soil; these soon emitted roots and they are now leafy plants.

The peat bogs of Campbell Island present a very distinct and a very interesting plant association. The best examples are on Mowbray Hill, north of the entrance to Perseverance Harbour, and on an elevated piece of ground between Tucker Cove and Camp Cove at the head of this harbour. In both cases they occur on the broad, slightly rounded tops of these windswept elevations. The blackish coloured peat is soaked with water to the point of complete saturation, yet, in spite of this, Dracophyllum scoparium is present though sparsely distributed and rather stunted. In many parts, especially in hollows, cushions and deep beds of Sphagnum, tinted softly with blending shades of yellow, green and red, present a delightfully satisfying spectacle. Cushion plants of various kinds form the bulk of the plant covering. Astelia subulata with its flagon-shaped, orange coloured fruits; the hedgehog-like Oreobolus pectinatus; beautiful green mounds of Phyllachne clavigera which, in season, are often almost completely whitened with a lacy coverlet of its small five to seven lobed flowers; velvet green cushions of the moss-like Gaimardia pallida and the paler coloured G. ciliata. Amongst this pulvinate assemblage the silvery Rosettes of the Celmisia leaved Pleurophyllum hookeri, often two feet across, are most conspicuous. Here and there the bright, reddish orange drupes of the creeping Coprosma pumila and the ruddy brown capsules of Juncus scheuchzerioides offer a warm note. Celmisia vernicosa is plentiful. In the peat bog this charming plant has very much larger rosettes, longer flower scapes and proportionately larger flower heads than specimens found on the mountain tops. Probably the smaller size of the mountain specimens is not an inherent quality and can be ascribed simply to the difference in environment. Two species of orchid frequently seen in the peat bog, though more commonly on their mossy margins and in similar places to these are Caladenia bifolia and Lyperanthus antarcticus, which has one to three strongly hooded yellowish green flowers on six inch scapes. Both of these orchids have a wide distribution in New Zealand. A sundew, Drosera stenopetala, with small, spatulate leaves densely covered with long glandular hairs, is abundant. If one examines the ground carefully, the small leaved Haloragis uniflora may be found and also the quaint little fern, Schizaea fistulosa var. australis with its curiously shaped fronds, like miniature tooth brushes owing to the fertile pinnae being all pointed in one direction.

On the precipitous coastal cliffs of North-west Bay the wind often strikes with terrific force and it is not an uncommon sight to see waterfalls, not falling, but spraying upward in a thin veil and drenching the hillside above. The lovable, sooty albatross nests here on sheltering ledges. Surely there is no more beautiful ocean bird. It has dusky plumage of marvellous shading, and white-ringed eyes. One of the grandest experiences in my life was to see these birds in flight, faultlessly soaring and diving in a strong wind amidst the grandeur of beetling cliffs, hundreds of feet high, the ocean surf breaking with a roar and swish on reefs and on the rugged shore rocks. Some of the cliffs are of

limestone, which, in places, are seamed with narrow but conspicuous intrusions of black basalt. In fissures of these limestone cliffs and forming a matted turf on the ground above them Brachycome thomsoni, is copiously distributed. This plant, which is fairly common in the eastern coastal district of Otago and in Stewart Island, was not discovered on Campbell Island until a few years ago.

Other New Zealand plants recently discovered are Blechnum penna-marina, Hydrocotyle novaezealandiae and Haloragis uniflora. As regards Brachycome thomsoni, it is remarkable that this plant was not found by some of the members of the 1907 Expedition, Mr. R.M. Laing did not visit the part where it is most plentiful and perhaps it was overlooked by non-botanical members, but I have wondered if it may not be a recent introduction. It is not recorded from any of the other subantarctic islands and its distribution on Campbell Island is certainly limited. It is by no means confined to limestone areas though it is most plentiful in such places, but, if it is not a recent arrival it is difficult to account for its absence in contiguous areas and in similar situations that appear to be entirely suitable to it. Haloragis uniflora has only been seen in the peat bog at the head of Garden Cove and between Tucker Cove and Camp Cove. This latter area was at one time employed as a sheep paddock and it is quite likely that the plant originated here from seed carried in the wool of sheep transported from New Zealand. Hydrocotyle novaezealandiae is found very remotely distributed in isolated patches some of which, however, may cover half an acre or so. I saw it only in a few places in Tucker Cove Valley and on the slopes of Mt. Honey, but one may walk for long distances over these parts and not see it once. It looks "weedy" among the herbage and judging from my understanding of the nature of its distribution in New Zealand I feel certain it is of recent introduction. Blechnum penna-marina is even more remotely distributed in the same area; indeed I can remember clearly seeing only two patches of it though I know there are others, but it is conceivable that this ubiquitous little fern has been on Campbell Island for more than a few years. Schizilema reniforme was not seen.

Returning to the cliffs of North-west Bay, Urtica australis is common on rubbly slopes, and Pratia arenaria is frequently to be seen in moist turf places. But it is in some special parts that are inaccessible to sheep that one sees some of the handsomest subantarctic herbaceous plants growing in their full glory. On rocky ledges below the summit of Mt. Azimuth I saw the lovely dark blue flowered Myosotis capitata in bloom, but it is not at all common anywhere on the island. Many of the cliffs about here are also inaccessible to man, but I managed to descend one of about a thousand feet leading down to a penguin colony north of Mt. Azimuth. Near a third of the way down the silky stemmed Cotula lanata spreads over rock ledges, and Asplenium obtusatum, with its roots fast clenched in rock fissures, is fairly plentiful. Covering broad, steeply sloping banks above high precipices, Stilbocarpa polaris, breast high, grows luxuriantly in the rich peaty soil. The pumpkin-like leaves were often twenty inches across on long stalks, and some of the flower heads I measured were over two feet in diameter. Anisotome latifolia, Poa foliosa and Polystichum vestitum are also exceptionally robust in this place. Above the shore rocks, where thousands of rock-hopper penguins congregated, Poa ramosissima drapes thick curtains of its narrow, glaucous leaves over almost vertical banks.

Many questions and a cordial vote of thanks concluded one of the most fascinating lectures we have ever had.