

*Aspidium* the scale is formed on the top of the receptacle, and covers the capsules like an umbrella. In *Dicksonia*, *Hypolepis*, *Lomaria*, *Pteris*, *Gleichenia dicarpa*, the edges of the lobes of the frond turn over so as to cover the capsules. In *Lindsaya* the edges become double with the capsules between the folds. In *Nephrodium* and *Nephrolepis* the receptacle is towards one side, and the protecting scale becomes kidney-shaped instead of like an umbrella. In *Athyrium* the whole arrangement partly straightens, and in *Asplenium* becomes quite straight. In *Cyathea*, *Hemitelia*, and *Dicksonia* the capsules are enclosed in globular coverings which, when ripe, burst open horizontally or transversely, so as to allow the capsules to discharge their spores. In *Allantodia* the covering is elongated into a curved cylinder with rounded ends (whence the name, which is taken from the Greek word *allantos*, or sausage), which opens longitudinally along the top, and in *Marattia* the sorus consists of a row of pits in which the capsules grow. The lowest and most complete forms grow on the poor volcanic soils, and the higher forms appear as the soil increases in richness owing to the accumulation of vegetable mould. Thus the evolutionary sequence is very complete, and such as to convince all but the most bigoted opponents of the theory.

It would be impossible, in the limited space of a magazine article, to give anything like full particulars of our colonial ferns; but several books have been published respecting them. The first was written on behalf of an Auckland Church Building Fund, and was the work of a lady, though it was generally understood that the late Rev. W. Colenso supplied the information. The second was also by an Auckland lady, whose name I forget at this moment. The third was by Mr. G. M. Thomson, Science Master at the Dunedin High School; and the last, which was published eleven years ago, was by myself, and contained plates of all that were then known, with the exception of one which seemed to have disappeared from the only place where it was reported

as having been gathered by Mr. Forster, the naturalist who accompanied Captain Cook. Several others have been discovered since my book was published, and particulars of them appear in the annual volumes of the *Transactions of the New Zealand Institute*, and will probably be mentioned in a further paper in this Magazine. It was at first intended to print the plates in my book by chrcmo-lithography, and the fern specimens were therefore arranged according to their natural colours, instead of according to their classes, but it was found that this would make the book too expensive for most peoples' means, and therefore the printing was done all in one colour, but the references to the plates at the head of the description of each kind of fern will enable the fern to be identified. The book also contains advice as to growing ferns.

Though so much has been written respecting our ferns, there is still much to be learnt. In my book I adopted the classification of the *Synopsis filicum*, the recognised authority on the subject, but I cannot say I was altogether satisfied with it, as I believe that some plants which it treats as merely divergent forms of our species are really distinct kinds which should be separately classed. I have also reason to believe that we have more kinds of tree ferns than have been classified. Several collectors have assured me that they have met with tree forms of plants which I know only as tufted or even creeping-rooted ones, and I therefore think that the ferns which they have seen are really different from those which I know by the same names. It seems unlikely that a fern would so entirely change its habit of growth, or if so, that, though I have gathered ferns throughout a stretch of the colony, extending from the Dunedin goldfield in the south to the Bay of Islands in the north, I should not have observed an indication of such a change of habit. I feel sure, too, that tree ferns called by the same name in different localities are really different kinds. For instance, what is called *Cyathea Cunninghamii* about Wellington is known as *Hemitelia Smithii*