Albinoes, however, show up in every class of human being, birds, and animals, and, no doubt, insects, proving another unity of birth and the common nature of the vital force.) There is little or no use here for these different varieties of elephant, as one type would have been sufficient for us.

Then, there is the hyena, which laughs like a demented human being, with powerful neck and jaws for bone-crushing, and no back or hindquarters to speak of. This animal is sent by nature, apparently, to crunch up the huge bones of larger animals, for it usually resides in big-game countries, and shows that nature never even wastes bone-marrow. The hyena bristles its back hair when excited, just like a dog. Dogs, wolves, and hyenas have many points of resemblance, proving the minor doctrine of evolution, a doctrine I readily admit, seeing that it is by this path progressive adaptation plays its part in the production of new species—that is, new only to us, but actually far older than our hills. There are many varieties of hyena—the striped hyena, or *Hyæna vulgaris;* the Abyssinian hyena, the spotted hyena (*H. crocuta*), the brown or hairy hyena (*H. villosa*). These animals burrow just like dogs, having burrowing-claws for the purpose. (The power to burrow is possessed by many orders of living things, and shows another unity of design, deserving explanation in a separate section of this paper.)

ART. LXXIII.—*Public Ferneries: A Suggestion.*

By the Rev. PHILIP WALSH.

[*Read before the Auckland Institute, 19th October, 1893.*]

THE work of beautifying our towns should be of interest to every true citizen, and especially to the members of a body like the Auckland Institute, which may be said to be a kind of *ex officio* guardian of the arts and sciences, and the natural leader in all matters of culture and taste. I need therefore make no apology for introducing to your notice a point in connection with it which seems hitherto to have been overlooked, and one by which, at a comparatively slight expenditure of money and trouble, a great and permanent advantage might be secured.

In advocating the establishment of public ferneries in our principal centres of population—which is the object of the present paper—I may be excused if I enlarge somewhat upon a subject which, though familiar enough to older colonists,

hardly comes within the observation of later arrivals and of the younger generation of our town populations—namely, the deplorable destruction of almost all forms of indigenous vegetation which is taking place throughout the country.

Few, of our townspeople at least, are at all aware of the great and increasing extent of this destruction, which is seen not only in the shrinkage from various causes of the area of standing bush, but in the thoughtless and wanton demolition of "specimen" plants that have survived the general wreck, and would, if permitted to remain, contribute largely to the interest and beauty of the landscape. A group of graceful fern-trees, growing in some damp and sheltered corner, have, perhaps, just managed to escape the devastating fire of the clearing; but, to save the trouble of splitting a few slabs, they are cut down to patch a fence or to build an outhouse. A lovely nikau palm has focussed the beauty of some little green clump that stands like an oasis amid the desert of charred stumps and bleaching skeletons; but, with the stately koraus growing beside it, it is slaughtered to furnish cheap decoration for a country ball-room. A rugged old puriri, scorched and torn, is slowly renewing its youth with a vitality rare amongst New Zealand trees. It has been contemptuously allowed to stand because its gnarled trunk will not yield a length of posts, or because it was too hard to chop up for firewood. One would fain hope that it was safe; but, alas! its buttressed roots offer a too-convenient place for the road-contractor to "sling his billy," and it is slowly roasted to death, while the road-contractor and his gang smoke their after-dinner pipes beneath its shade.

Now, the saddest part of it is that this loss is quite irretrievable. A nikau or a fern-tree, or, indeed, with few exceptions, any native tree or shrub, once destroyed, is, under ordinary conditions, never replaced. The seedlings, as they appear above ground, are at once browsed off by cattle or sheep; while, as to the wealth of ferns, which in the bush in its natural state occupy every available inch of space, they are in settled districts soon trodden down or consumed: in fact, for the greater part of our town populations they are practically non-existent; they have vanished with the bell-bird and the tui, and must now be sought amongst the far-off mountain-ranges whose steep crests and gullies are as yet comparatively untrodden by the ever-encroaching cattle of the settler.

The necessity of making some stand against this lamentable destruction has been recognised by the people of New Zealand in the setting-apart of blocks of land throughout the colony as State forest-reserves, not the least valuable of which is that of the Little Barrier Island, a place eminently suitable,

both from its climatic and topographical conditions, as a conservatory for indigenous plant and animal life. Still, even though more adequate conservation of these reserves were made than is at present attempted, their advantages are not directly available to the bulk of our town populations. We want something nearer at hand, something that we can see and enjoy as a portion of our daily life. We are familiar with the blue-gum and the *Pinus insignis*, with the Norfolk pine and *macrocarpa;* the oak and the elm and the poplar are conspicuous in our streets and suburban allotments. But of the indigenous vegetation most of us know very little indeed. In fact, there are many native-born New-Zealanders who could not distinguish between a rimu and a kauri, and who are obliged to form their idea of the most beautiful forest in the world from the mutilated specimens of the pohutukawa which can hardly be said to adorn the coast-line of our harbour, or from the scrubby survivals in the Domain that are being rapidly exterminated by the more vigorous growth of the imported article.

Now, it seems to me that what is wanted in view of this state of things is a public fernery, as part of the recreational outfit—if I may use the term—of every important colonial town. I hope the time is not far distant when, as in the sister colonies, public opinion will sanction the expenditure of a sufficient sum to form and maintain a botanical garden in each of our chief centres of population, in which specimens of every native plant will find a home; but for the present it is perhaps best to be satisfied with a venture on a more modest scale. We have public parks, public libraries, public art galleries and museums; why not public ferneries? The cost would be proportionately trifling, while the advantages are so self-evident that it is almost unnecessary to enumerate them. Every visitor to the late Dunedin Exhibition must recollect that the fernery, though a mere temporary affair, on a comparatively insignificant scale, was one of the most popular of the sights in connection with the undertaking. Day after day, and all day long, the globe-trotter and the lately-arrived settler might be seen comparing the almost tropical luxuriance with the more scanty products of less favoured climes, while even to the native-born New-Zealander the wealth of assembled beauty was a revelation as grateful as it was unexpected. What this ephemeral "side-show" was to the visitors to the Dunedin Exhibition a public fernery would be to our settled population, only on a much more perfect and extended scale. To the inhabitants of the city it would supply a permanent and unfailing source of wholesome enjoyment at once elevating and refining. It would educate the taste of the country settler, and help to arouse his interest in the protection of

that which he usually deems so worthless because it is so common. And to the traveller from abroad, seeking respite from the turmoil and glare of the busy thoroughfare, it would come as a glimpse of fairy loveliness, suggestive of Alpine heights and sylvan solitudes—of sound and lake and waterfall, inviting him to pause on his journey and join the ever-increasing band of explorers who annually find their way to our shores.

The City of Auckland possesses exceptional advantages for an undertaking of the kind suggested. Not only is the mild and equable climate of the province peculiarly suitable for the growth of every description of fern, whether native or exotic, but its varied topographical conditions help to make it the home of a very large number of species. Nor would the work of collection involve any great labour or expense. The remotest corners of our gulfs and islands—the favoured haunts of the most beautiful and rarest sorts—are now within easy access by means of coasting steamers, and there are not wanting throughout the country districts persons of taste and culture who would be only too glad to collect and forward such specimens as might be required.

To Auckland, then, should naturally fall the honour of leading off in an enterprise which would soon be taken up in every city in the colony. The question of cost would of course have to be faced; but the sum required, as already stated, would not be a very formidable one; whilst, as a matter of fact, the necessary funds are not usually wanting once the desirability of a public undertaking is admitted. The General Government might very fairly be asked to make an annual grant in support of an object of such wide-spread importance, to be supplemented by the city authorities, who would properly act as guardians and trustees; and it is also possible, and, indeed, quite probable, that in this, as in the case of other of our municipal institutions, some public-spirited person would come forward with substantial support.

Before dismissing the subject it may be as well to say a word as to site and structure, though of course these would be influenced by the conditions of individual localities. Speaking generally, a public fernery should consist of two departments, one in the open air in some sheltered position where a good water-supply is available, and the other under glass, or glass and trellis combined. It would, of course, be well if the two could be placed together, so as to form part of a single plan, and for the sake of economy of maintenance; but this is not of vital importance, so long as both are conveniently accessible. In the case of Auckland, the Domain gully and the Albert Park would respectively offer every advantage. As regards the plan of the building for the covered department,

the cruciform shape, surmounted by a dome at the intersection of the arms, which is usually adopted for large conservatories, would probably be found most convenient and at the same time most externally imposing, especially if an aisle or lean-to were carried along the principal sides. By this arrangement the different sizes of the plants would be accommodated by the varying height of the roof, while from every part of the building the eye would be naturally led up to the central group. The larger plants should be placed in the ground, and a system of finely-perforated water-pipes carried overhead, so that a shower of rain could be turned on when required.