

ART. XXXVI.—*On Four Notable Foreign Plants.*

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[*Read before the Hawke's Bay Philosophical Institute, 9th October, 1893.*]

At our July meeting I had the honour of reading to you my paper on two peculiar yet useful foreign plants that are acclimatised with us here in New Zealand—viz., *Agave americana*, and *Opuntia ficus-indica*. A chief reason for my bringing them to your notice (as I mentioned at the time) was their having been well known to and cultivated by the Aztecs, or ancient Mexican nation, long before their ruthless invasion by the Spaniards in 1519; and, in continuing my researches in that same direction, I found other noted plants that were also assiduously cultivated by that ill-used race, which have since become of the highest esteem among ourselves, and are commonly used by us and by nearly all civilised peoples.

And here I may (*in limine*) call your attention to two matters respecting those useful plants that have been so very long in cultivation, or rather, perhaps, I should say, to the ancient races by whom they were cultivated.

1. That such kind or class of labour—that of the husbandman—is always a sure proof of the antiquity of the civilisation of the people successfully practising it; for, leaving out the so-called barbaric or Stone Age of man, nothing can be more certain than this: that the proper cultivation of food-crops, wherever found, with all their attendant and necessary labour, must have been handed down from olden times; *pari passu*, I may truly say, with that of building good houses, and vessels for navigation, and all the many useful arts, &c., of life. For such works are not attended to by savage peoples, who live on the wild uncultivated vegetables and fruits of the earth, the spontaneous production of nature, equally with the flesh of the wild animals common to their countries. Indeed, here in New Zealand we have notable instances of this in two races that *lived* near us—the Tasmanians and the Australians. (I am, I regret to say, obliged to speak of one of these distinct peoples, the Tasmanians, in the *past tense*, as not one of them now lives, though once numerous; and all destroyed by civilised “Christian” man! and that, too, during my own time.) Especially when we also consider with them the very superior position of the Maoris of this country, whose extensive root-

crops* were only annually raised and preserved through an immense amount of close attention and labour, and all done without the use of iron or any other metal. It is only when man has outgrown, or abandoned, the roaming, ever-changing life of a hunter, and has defined and settled his habitation, that he can become a real and loving cultivator of the soil.

2. That the beginnings of all such cultivation of food-crops, especially when the plants themselves are not indigenous to the countries in which they were anciently cultivated, is lost, far back in the night of history; hence, too, all particular mention of their introduction is always surrounded by marvellous legendary and mythical lore—a further proof, I may, I think, rightly consider of their high antiquity. And this is eminently seen in the ancient traditions among the Aztecs and other original American races, of how they first received some of their prized cultivated plants; in those also of the ancient Greeks respecting their first receiving wheat from Ceres, Isis, and Triptolemus; and those still more romantically mythical ones of the Maoris concerning their prized *kumara*; while those of the origins of their *taro* and *hue* and *aute* plants† are utterly unknown.

As on the former occasion (above mentioned by me), so now, two of the plants I purpose bringing before you this evening were cultivated by those ancient Mexicans; these are the *banana*, so well known here among us as an esteemed and wholesome article of food, and the *vanilla*, almost equally well known for its sweet scent and flavouring uses, though neither of them are grown in this colony. And I think I shall be able to give you some very interesting, if not astonishing, particulars respecting both plants.

1. Of the BANANA, OR PLANTAIN (*Musa sapientium* et *M. paradisiaca*, Linn.; *Musa sapientium*, Br.).

This plant is peculiar in many respects:—

1. From having been found in both the Old and New World.

2. From its antiquity, being mentioned in our oldest books; as by Pliny, who relates it having been found by Alexander in his Indian expedition in the greatest abundance in the country of the Sydraci, and that it was remarkable for the size and sweetness of its fruit, upon which the sages‡ of India live.

* Cook says, "These plantations were of different extent, from 1 or 2 acres to 10; taken together, from 150 to 200 acres in cultivation in the whole bay"—Tolaga Bay—"though we never saw there an hundred people. Each lot was fenced in—so closely done that there was scarcely room for a mouse to creep between."—"Voyages," vol. ii., p. 313.

† Kumara = *Ipomœa chrysorrhiza*, Forst.; taro = *Colocasia antiquorum*, Schott.; hue = *Cucurbita* sp.; aute = *Broussonetia papyrifera*, Vent.

‡ Gymnosophists or Brahmins.—Hist., lib. xii., cap. 12 (6).

Hence the botanical name of *Musa sapientium*. *Musa* (generic) is from the Arabic *mouz* or *mauwz*, which we find was given to it as early as the thirteenth century; the second specific name of *paradisiaca* comes from the ridiculous hypothesis which made the banana figure in the story of Adam and Eve. It is, however, a curious fact that the Hebrews and the ancient Egyptians did not know this Indian plant.

3. From its many varieties or sorts—upwards of sixty—all forming but a single species. The celebrated botanist De Candolle says: “There is an immense number of varieties of the banana in the south of Asia, both on the islands and on the continent. The cultivation of these varieties dates in India, in China, and in the Archipelago from an epoch impossible to realise. It even spread formerly into the islands of the Pacific, and to the west coast of Africa. Lastly, the varieties bore distinct names in the most separate Asiatic languages, such as Chinese, Sanskrit, and Malay. All this indicates great antiquity of culture, consequently a primitive existence in Asia, and a diffusion contemporary with, or even anterior to, that of the human races.” Cook found it largely cultivated at Tahiti. The accurate and observing Parkinson (Sir Joseph Banks’s botanical draughtsman), who was with Cook on his first voyage, says of it: “The well-known tropical fruit called plantains and bananas, of which there is a great variety in these islands; they reckon more than twenty sorts, which differ in shape and taste. Some of these are for eating raw, and others best boiled, and will serve instead of bread. They plant them in a rich soil, and take great pains in their cultivation. They call them *meiya*” (now *meia*). The celebrated Peruvian author Garcilasso de la Vega* says distinctly, “At the time of the Incas, maize, quinoa,† the potato, and bananas formed the staple food of the natives.” He describes the *Musa* of the valleys in the Andes, distinguishing the rarer species with a small fruit and a sweet aromatic flavour (the *dominico*) from the common banana, or *arton*. The botanist Desvieux, in a remarkable work published in 1814, studied the specific question. He gives it as his opinion that all the bananas cultivated for their fruit are of the same species. In this species he distinguishes forty-four varieties, which he arranges in two groups—the large-fruited bananas (7in. to 15in. long) and the small-fruited bananas (lin. to 6in.), commonly called fig-bananas.‡ R.

* Descendant of the Incas, who lived from 1530 to 1568. A copy of his scarce work is in our Institute library.

† *Quinoa*, a small, insignificant plant, a species of *Chenopodium* (*C. quinoa*, Willd.). The leaves are dressed as spinach, and the small seeds are still esteemed at Lima.

‡ To a wild fertile species found in Asia, Desvieux gave the name of *paradisiaca*.

Brown, in 1818, maintains the same as all belonging to one species, and so brought back Desvaux's second species (*M. paradisiaca*) to the one earlier-named one (*M. sapientium*).

We, however, here in New Zealand only know the banana, as an imported dessert fruit, and, as such, scarcely ever in perfection as fully ripe, seeing what we receive from the tropical isles of the Pacific are always obliged to be sent to us in a green or unripe state; and, then, of its many varieties we obtain (I believe) but *one*. It is far more extensively used as a vegetable (as well as a fruit) in the countries where it is grown as an introduced plant, particularly in the West Indies, for instance, where, while unripe, it is said to be excellent boiled as a vegetable, or sliced and fried as fritters for breakfast. Roasted and flavoured with the juice of oranges, or lemons and sugar, and made into a kind of *compôte*, it is very choice; in some countries the fruit is dried, in which state it can be preserved for months, or, if spices and sugar are added, it is formed into a paste quite capable of keeping good for years. The mealier ones, by being oven- or sun-dried, and then pounded, can be readily converted into a nutritious flour, which contains not only starch, but protein, or flesh-forming material. Finally, the "merissa" beer, which is drunk in prodigious quantities all over the Upper Nile and Lake Country in Africa, is the fermented juice of the banana. Even the Mahdi has had to wink at its consumption; while a recent traveller doubts whether he ever saw so many tipsy people as in a certain district of Africa. The banana will even yield medicine, for the juice of the stem—the spongy pith of which is also highly nutritious—is a useful astringent and diaphoretic. Taken internally, the leaves are said to be valuable against dropsy, and are often used externally in scalds and ulcers. The stems are in Tonquin burned, and the ashes employed for purifying sugar; while all parts of the plant abound in a fibre which has never been systematically used except in small quantities. In Dacca the country people make from it the string of the bow with which they tease cotton; and in some of the Indian islands a cloth is woven from the banana-thread which is not much inferior to that made from the *abaca*, a kind of banana that yields the well-known Manila hemp; and the large fronds are employed not only for packing, and as plates for holding food, but in roofing native huts.

The banana, we learn from a United States official report, is so popular a fruit in that country that during August and September 78,000 tons were imported, while, on the other hand, its culture is extending with such rapidity that before long the entire home demand will be met by Florida, Mississippi, and other suitable areas of the Republic. It is, however, doubtful whether the warmest portions of the United

States will ever be able to compete with the West Indies in rearing a fruit which flourishes in such perfection all over Jamaica and the Antilles generally. Central Africa, too, is becoming one vast banana plantation. For miles and miles nothing else is seen; even the Indians of Central and South America have not taken more kindly to it. Captain Lugard describes the fruit as the national meat and drink.

In all these lands the plants grow with great ease, in spite of the fact that in many of them they receive the least amount of care. To set out a new plantation is the simplest of operations. The stems, formed by the base of the leaves, are annual, and usually die down after the exhaustive process of fruiting has been completed, new ones being produced from buds or suckers in the root-stock, which is perennial. It is by planting these buds that the banana is propagated, and fresh plantations made; and so exceedingly simple is this form of agriculture that the plant generally bears ripe fruit within ten months of the offsets being put into the ground. Emin Pasha tells us that, though the plantations in Africa are well kept, the only manure they receive is bunches of grass allowed to rot around the base of each plant.

In conclusion, I may briefly observe that I have often been struck with admiration when considering the banana-plant, and noticing (here in New Zealand) the great size and heavy weight of its bunch of fruit, not unfrequently from 40lb. to 50lb. (while in the West Indies such attains to even 70lb., and I have been credibly informed that in South America some sorts bear a bunch of fruit weighing over 100lb.)—this, too, growing high up on the single columnar reed-like stem of the plant, and projecting far from it in a drooping form when the fruit is formed. There is such a wonderful provision of nature to sustain such a heavy mass when extended hanging by its simple annual stem, coupled with the bounteous gift of such a wholesome, ever-plentiful, and easily-grown fruit to the natives of the tropics. I have sometimes compared (mentally) the banana, as to its fruit being that of an *annual* plant, and produced in large quantities, with that of the pumpkin, another annual, whose fruits are often of a large size and weight; but the fruits of the weak pumpkin-vines are supported on the ground, and the plant itself is only raised with much care and attention from seed annually sown.

While staying a few days last month in the bush (at Dannevirke), I saw an express-waggon bringing away from the railway-station a compact load of green bananas in large bunches, each bunch set upon its end in the conveyance, filling it, and coming along slowly. On inquiry, I found there were twenty bunches of bananas. It was a remarkable sight, there in that place so far inland.

ADDENDUM.—In order to make my memoir the more complete I have endeavoured to get, from official sources, the amount in weight of bananas imported annually into this colony, but have failed, owing to no distinction having been made in the sorts of fruits imported, all being classed together, but only in the countries producing them. I may, however, give the following official amounts of fruits imported from two principal places within the tropics in the South Sea, which includes (at least) four kinds of fruits commonly used—viz., bananas, pine-apples, cocoanuts, and oranges—omitting the Australian Colonies:—

		Lb.	£
1891.	From Fiji	3,901,264	15,584
	From South Sea Islands ...	4,554,629	17,136
1892.	From Fiji	4,797,936	17,336
	From South Sea Islands ...	2,688,831	9,434

2. Of VANILLA PLANIFOLIA, Andrews.

This plant—a species of orchid, anciently cultivated by the Aztecs (and, curiously enough, for one of the very same purposes for which it is now so extensively used all over the world—viz., to flavour their drinks, one of which was cocoa), is also an indigenous plant of Mexico, and is still cultivated by them. Vanilla was formerly confined to a very limited area, and being an orchid, and a dainty tropical product, was scarce, and long considered difficult of cultivation, but of late years, and through the practical application of scientific knowledge, its production has wonderfully increased, so that it has become a large and pretty general article of commerce.

Few, perhaps, of my audience this evening know much respecting this plant save in connection with ice-creams and superior chocolate. The scented vanilla of commerce is merely the seed-pod of the plant, and, seeing it is now so well known by name, and so commonly used, a few interesting items respecting it and its early history and introduction into Europe, and the triumph of science combined with skilled persevering labour in bringing it on to a proper consummation, may not be considered out of place.

There is an excellent paper on the early history of vanilla in Europe by Professor Morren, of the University of Liège, from which I take several quotations. Professor Morren was one of the first (if not the very first) who succeeded in obtaining ripe fruits from the vanilla in Europe. He says,—

“Having been fortunate enough to obtain two years since, and at two different times, an abundant crop of this interesting fruit, I believe I may assert that henceforth we may produce in Europe vanilla of as good a quality, if not better, as that which is exported from Mexico. . . . My experi-

ments may afford the most convincing proof that in our own climate, but in our hothouses, the same circumstances of atmosphere as those which exist under a Mexican sky produce in the vanilla plant all the phenomena of a good and perfect maturation of the fruit. . . . The *Vanilla aromatica* of Swartz, introduced into Europe in 1739 by Miller, is not to be found at the present time in England. This species was long believed to be the true vanilla of commerce. But the *Vanilla planifolia* of Andrews* is the same plant which is generally cultivated on the Continent, and has produced at Liége an abundant crop of odorous and delicious fruit. This interesting species was at first cultivated in the Hon. Charles Greville's choice collection of plants at Paddington, near London, where it flowered for the first time; but then, no artificial fecundation having been performed, no fruit was produced. In 1812 this plant was carried from the gardens of Mr. Greville into those of Belgium, whence it was introduced at Antwerp. The plant grew rapidly there in the Botanic Garden, and slips were sent to all the towns in Belgium and France, but they very rarely flowered, and fruit was never obtained, so that this culture was despaired of. Nevertheless, in 1819 Dr. Sommé (the director of the Botanic Garden at Antwerp) sent two plants of vanilla to the curator at Brussels that he might send them to the Dutch colonies of Java, where it was said the plant might become valuable by its produce. The history of this migration of the vanilla-plant from America to the East Indies is too interesting not to be made known. Only one of the two roots stood the long passage from Belgium to the East Indies. There at Java, in the Botanic Garden, it prospered well, and flowered, but its flowers bore no fruit. The observations on the necessity of an artificial fecundation in the greater part of the orchideous plants were not known at that time; and I attribute the flowers of the vanilla not bearing fruit in the East Indies to the absence of the species of insect which nature has doubtless given to the climate of Mexico to effect there a fecundation which man alone, by a study of the organs, is able to perfect in other countries. It was long after—in 1836—that, by a peculiar horticultural treatment, we had at Liége, upon one vanilla plant, fifty-four flowers, which, having been fecundated by me, produced the same number of pods; and in 1837 a fresh crop of about a hundred pods was obtained upon another plant by the same methods; so that now there is not the least doubt of the complete success of this new cultivation.

“From the works of the illustrious Alexander von Humboldt we learn that the Mexicans were already in the habit of

* *Repository*, vol. viii., pl. 538.

perfuming their chocolate when the Spaniards discovered this part of America. Chocolate was brought from Mexico into Europe in 1520, but it appears that vanilla was brought to the Continent as a perfume about the year 1510, at the same time as indigo, cochineal, and cacao itself—that is to say, ten years before the arrival of tobacco. . . . I find that the *Vanilla planifolia* is as common in the gardens of the British Islands as in those of the Continent; but the complaint there generally is that it very rarely flowers. . . . The vanilla-plant in order to flower should be at least five or six years old. The older and larger it is, and the more branches it has, the better and more abundantly it will flower. . . . The culture consists in twining the long branches, cutting, and burning them at their extremity with a hot iron; everything that contributes to stop the sap serves to bring it into a flowering state. . . . The flower of vanilla has this peculiarity: that the *retinaculum* is highly developed, so that this organ forms a curtain suspended before and above the stigmatic surface, thus separating it completely from the anther, which in its turn incloses in two cavities, naturally shut, the pulverulent masses of pollen. From this structure it results that all approximation of the sexes in this orchideous plant is naturally impossible. It is thus necessary either to raise the *velamen* or to cut it when the plant is to be fecundated, and to place in direct contact the pollen and the stigmatic surface. . . . The direct results of this memoir, therefore, go to prove that in all the intertropical colonies vanilla might be cultivated, and a great abundance of fruit obtained, by the process of artificial fecundation. . . . It is a subject which well deserves attention in a commercial point of view, and is, moreover, a proof of the importance of science in improving every branch of industry."

I have gone to some length in these extracts, because (as I shall be able to show you) much of what Professor Morren has so clearly stated, and almost foretold, has already come to pass.

Not very long ago some 5cwt. or 6cwt. was the total of vanilla imported into England from Mexico. At present the United States alone take about 136,000lb. from Mexico, and a proportionate amount from other sources. The Mexican form, we are told, still holds its own in the market, but several other varieties are now cultivated. Numerous other regions have of late years competed with Mexico for the custom of the vanilla buyer. The latest of these is our colony of Fiji, from which some choice samples have been sent to England. Java now harvests enough for the Dutch consumption, none of it being offered to the outside world; and Bourbon, from which in 1849 only 7lb. or 8lb. were exported, has now 3,000 acres

under cultivation, and a crop which seldom falls below 200,000lb., while the quality has been so greatly improved by careful cultivation and preparation that Mexico is beginning to feel uneasy. What is known in commerce as "inferior Bourbon" is actually the product of our colonies of Mauritius and the Seychelles. Brazil, Peru, and other parts of South America are also in the market with their vanillas, while the Pacific coast is well supplied from Tahiti and the Sandwich Islands; and, as the market does not appear to be glutted—the perfumer and the confectioner finding a use for all that is raised—it is likely that West Africa and all the West Indies will before long enter the field; for, notwithstanding that the *planifolia* of Mexico is still the best of the vanilla species, it is quite capable of being transplanted, and it is notorious that several of the other varieties are wonderfully improved by being grown a little less at haphazard than in their native woods. But every sky will not suit the vanilla orchid. The soil is of slight moment, since the plant, clinging for support to trees or to trellis-work, derives a large portion of its nourishment from aerial roots, as is the case with some of our indigenous epiphytal orchids, only these do not arise from the ground. The climate seems to be all-important, for the plant requires a mean temperature of between 75° and 80°, and a damp, steaming atmosphere. Its long, fleshy pods take some six months, or more, to arrive at perfection, and constitute the portion of the plant in which lie its peculiar virtues. A clearing is made in some damp part of the forest, a few trees being left to serve as supports for the vanilla-plants, which are then planted out in the shape of cuttings, and left to the kindly action of the equatorial sun. In three years they are ready for harvesting, and for thirty more will yield pods enough to pay for the gathering. Nor is much care required, except to aid the fertilisation of the flowers by artificial means. But in Mexico this is not needed, and the process of fertilisation (which in no orchid, as Darwin has taught us, can be effected by itself) is accomplished by means of native insects. Yet it is known from experience that even artificial fertilisation has to be performed with judicious care; for, were all the flowers to be fertilised, the result would be an overflowing crop one season, but almost certain death to the plants through exhaustion before another season arrived. Then comes the plucking, each pod being detached as it ripens, a crackling sound as it is passed between the fingers being the criterion as to its ripeness. After being dried in the sun the pods are slightly fermented, to develope their peculiar odour, and, in some places,—for the *modus operandi* differs in different countries,—rubbed over with oil before they are sent to market. Long experience is required, not so much for the cultivation of

the vanilla as for preparing and assorting it for sale. The presence of the *givre*, or "frost," is regarded as the test of the best pods. The "frost" consists of needle-shaped crystals, which begin to form at the ends, and gradually spread in a white powder over the whole pod. This efflorescence is composed of the substance known as "vanillin," and to it the peculiar fragrance of the pods is due. Vanillin is, however, not confined to the orchid from which it derives its name. Considerable quantities of it have been extracted from Siam benzoin and raw sugar, from the sapwood of fir trees, from the oil of cloves, and, of all sources, from assafoetida! Ices flavoured with vanilla have not infrequently been found to be poisonous. It is, nevertheless, affirmed that the vanilla has no evil effect on the human system, as much as 15gr. having been swallowed without the patient suffering. On the contrary, it is an aromatic stimulant, exhilarating the mental powers and increasing greatly the energy of the animal system. It is depressing to think that, just when this fragrant orchid looks like becoming one of the good angels of the tropics, the German chemists are manufacturing vanilla artificially, though, happily, they are not likely ever to produce the exquisite balsam of the ripe pods, which is so seldom to be met with in Europe.

In fine, seeing that the vanilla was, at last, successfully cultivated in the hothouses in Liège and in other places in Europe, and is also become a new and an increasing article of commerce from our Polynesian neighbours—Fiji, Tahiti, and the Sandwich Islands—such may also, in years to come, be raised here in our Colony of New Zealand, at the more northern parts, and under glass. *Tempus revelat.*

3. Of the EDELWEISS=*Leontopodium alpinum*, Cass., and its two New Zealand relations.

For my third plant I must take you to the Alps, to the mountains of Europe, particularly to those of Switzerland and Austria; and also to those nearer us—the Alps of the South Island, and our own Ruahine. From the small, very local, and peculiar herbaceous plants of the Swiss mountains I select the famed edelweiss (*Leontopodium alpinum*, Cass.), and this for at least three reasons:—

1. Because it is also considered to be a great and valuable rarity, and has become of late years an increasing article of commerce, so that laws have been obliged to be made by the Swiss and by the Austrian Governments, to prevent their little plant of world-wide celebrity becoming extinct.

2. Because the Swiss mountain flora is very peculiar, possessing more than 120 alpine plants not found anywhere else; these are believed to be involuntary migrants from the arctic

regions, survivors of the flora driven south before the advancing ice-sheet of the glacial period.

3. Because we have here in New Zealand on our mountains two closely-allied plants resembling the Swiss one, which are usually known as the New Zealand edelweiss—viz., *Gnaphalium (Helichrysum) colensoi*, and *Gnaphalium (Helichrysum) grandiceps*, both plants first described by Sir J. D. Hooker in his "Handbook of the Flora of New Zealand," the former of these two from Mount Hikurangi, near the East Cape, and also from the Ruahine Mountain-range, where I first met with it in 1845; and the latter from the Southern Alps, where it was first detected in several localities by Dr. Sinclair, by Professor Von Haast, and by Dr. Hector. There is not much difference between them apparent, however, on close comparison and examination, and they strongly resemble their European relative.

Several years ago the Swiss cantons were obliged to pass a law prohibiting the common reckless collecting, and consequent rapid destruction, of their alpine plant *Leontopodium alpinum*, for the havoc among the patches of edelweiss had become so great that, in order to protect it from the ravages of climbing tourists, the Government of Valais was compelled, in 1887, to make enclosures for the undisturbed cultivation of the plant, and at the same time to issue an order that the edelweiss was no longer to be plucked. This was soon followed by Austria; and I find more recently that the Diet of Tyrol have been obliged to do the same. Here is a notice of it from a late London paper: "The Diet of the Tyrol last week passed a Bill imposing heavy fines upon persons found selling any samples of the beautiful but rare alpine flower called edelweiss, which has been pulled up by the roots on the mountains. A similar Act was passed seven years ago by the Diet of Salzburg, with a view to the preservation of the edelweiss plant, which is threatened with extinction in the Austrian Alps. In the Salzburg district the success of this legislation is not encouraging."*

Its destruction was one of the many unpleasant results of the alpine mania. The little plant, with its protective covering of woolly hair, is no doubt a curious and pretty one; but there are many more attractive flowers on the mountains. The edelweiss is, however, rather difficult to obtain, and, not being found much below an altitude of 5,000ft. or 6,000ft., the wearing of a sprig in the tourist's hat, after the guides' style, is supposed to infer a moderate acquaintance with the mountains a little way from the hotel-doors, if not some experience in that "climbing" which, for two or three months in the

* London Standard, 21st April, 1893.

year, forms the staple of conversation at the local *tables d'hôte*.

I remember reading some time back of a London *belle* (of whom it may be said she possessed "more money than wit") spending no less a sum than £300 in the making of a dress-cloak or mantle for her use at a grand ball completely overlaid with edelweiss.

I can show you specimens of the southern plant,—*Gnaphalium* (*Helichrysum*) *grandiceps*—and of the Swiss plant—*Leontopodium alpinum*—the true edelweiss; but for our northern (or Ruahine) plant I must refer you to the coloured drawing of it in Hooker's "Flora Novæ-Zelandiæ," made from my Ruahine specimen. I never met with this plant but once in all my visits to that mountain region, and that was on the edge of their western summits, at above 5,000ft. elevation. It was profusely growing on the outer edge of a steep cliffy fall of broken shingle, through which it was a difficult matter to force one's way up to it, as the small dry *débris* from the high cliff formed such a loose slope (or *talus*) on which there was no standing, and carried everything down before it. I often sought this plant on subsequent visits, but without success. Dr. Sinclair, however, detected it growing in a similar situation in the South Island, at "Tarndale Mountains, 5,000ft. altitude, in shingle"; and it is worthy of remark that in both Islands it keeps at about the same elevation as the allied Swiss plant.

Between the two genera of *Gnaphalium* (*Helichrysum*) and *Leontopodium* there is but very little difference. The small genus of *Leontopodium*, containing only three species, established by Brown, has been merged into *Gnaphalium* by both Hooker and Bentham.

4. Of the ROSE OF JERICHO = *Anastatica hierochuntica*,
Linn.

Another highly curious, little-known, and local plant, commonly known as "the rose of Jericho," and also "holy rose," I now bring to your notice. I have lately obtained the loan of a perfect plant of this singular vegetable for exhibition here, thinking it would prove as great a curiosity to you as it was to me, for, although I knew it from drawings and from description, I had never before seen a specimen. Strange to say, this plant is not only no rose, nor even distantly allied to that delightful flowering family, but is a species of the more common Cruciferous or *Brassica* order, to which our cabbage, turnip, radish, and watercress belong. It is, moreover, an annual very local in its *habitat*, growing wild in the sandy arid deserts of Egypt and of Syria, and on the coasts of the Red Sea, and is the only species of its genus;

and further it has only one other allied genus, *Morettia* (and this too, like that, containing only a single species), in the fifth tribe of the extensive order of Crucifers, or *Brassicaceæ*.

As this plant is a very great singularity, and famed for its strongly-marked hygrometrical properties, and as I have a specimen to show you, I may also tell you a little about it—both natural, and legendary and mythical.

1. *Natural*.—It is a small, annual, dwarf, shabby-looking plant, only a few inches high; it has one stout tap-root, and its stem, also stout, is short and very much dichotomously branched from the neck, and expanding while young; leaves small, oblong; flowers minute, white; pods also small, ventricose; seeds few. After flowering the leaves fall off, and the branches and branchlets become dry, hard, and woody, and are soon contracted into a globular form. In this state the little plant is easily withdrawn from the sand by the wind, hurried from place to place, and blown from the desert into the sea, or into any water, and as soon as it is wetted the branches relax and expand as if its life was renewed; the valves of the pod open, and the tiny seeds cast on the shores are scattered with the sand by the winds until they are settled, when they spring into life and take root. If this plant is taken up before it is withered, and kept entire in a dry room, it may be long preserved, and after being many years in this situation, if the root is placed in a glass of water a few hours, the buds of flowers will swell, open, and appear as if newly taken out of the ground, or it will recover its original form in the same manner if wholly immersed in water.

I may here mention that I have been sometimes reminded of this little natural globose vegetable ball, drifted about by the winds over the sandy deserts of Arabia, on seeing the globular heads of the female flowers of the large indigenous sea-side grass, *Spinifex hirsutus*, similarly blown about by the winds over the flat sandy shores of our own coasts in my old travelling-days. Indeed, there have been times—at low water, and the sandy flats dry, and wind fair (behind us)—when my Maori companions, carrying heavy loads, in order to relieve the tedium of their long journeys, would gather a few of those round, dry heads, and set them a-going before them, they keeping up a kind of short run after them. From this ancient Maori circumstance and juvenile custom, and the natural rolling of the ball before the winds when ripe and dry, they call those heads *turikakoa* = joyous, or nimble, knees.

The monks of Palestine gave it the name of “the rose of Jericho,”* and also “holy rose,” and of it they make a little

* From, I suppose, “Ecclesiasticus,” xxiv., 14 — “A rose plant in Jericho.”

money. They dry it, and sell to travellers and pilgrims as possessing miraculous powers.

2. *Legendary and Mythical*.—Some superstitious tales are told of it, among which it is said "to have first bloomed on Christmas Eve, to salute the birth of the Redeemer, and also paid homage to His resurrection by remaining expanded till Easter."* The common people in Palestine believe that if you put this plant in water at the time when a woman first experiences the pains of childbirth it will expand at the precise moment when the infant is brought into the world. The plant is called *Kaf Maryam*, or *Mary's Flower*, in Palestine, because it is supposed that the flower opened at the instant Jesus was born.

We have in England many plants bearing similar names, connected with ancient legendary lore, or such may have been originally intended as reminiscences or *souvenirs* of holy things—as, lady's mantle, lady's tresses, lady's slipper, lady's bedstraw, lady's looking-glass, lady's comb, &c. Such colloquial names of plants abound in all European countries; and here, too, in New Zealand, the ancient Maoris called several plants, their flowers and fruits, after their old mythical personages, by way of commemoration.

Here, too, in conclusion, a remark by way of explanation may be made respecting the somewhat strange and long scientific name given by Linnæus to this little plant, which may also be termed a hard one, but yet (like many of the plants of the olden times, named by him and other thoughtful botanists) full of meaning. (1.) Its generic name, *Anastatica*, is from the Greek ἀνάστασις = rising again, resurrection, or, rather, revivication, and is highly suitable. (2.) Its specific name, being a compound of two Greek words, is more difficult, yet also proper, meaning (as I take it) audaciously, impudently, or shamefully, holy! carrying with it a kind of double rebuke—(a) at the poor little insignificant desert annual of no floral beauty being called a *rose*; and (b) at the further daring assumption of *holy* to that pleasing name of the queen of flowers.†

* "Gardeners' Chronicle," 1842, p. 363.

† In our English botanical works I find this specific name differently spelled as to its termination: *hierochuntina*, Lindley and others; *hierochanta*; and by Mueller, in his recent "Index Perfectus," Linn., *hierochuntica*. This last I have here adopted.