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Report of Half-Hardy Plants Growing on the East Coast of Arran. By the Rev. D. LANDSBOROUGH, Kilmarnock.

(Read 12th November 1885.)

In my report this year I refer mainly to gum trees, tree ferns, tree lilies, and wattles.*

EUCALYPTUS.

No tree so fully realises the beautiful saying of Scripture, "The leaves of the tree were for the healing of the nations," as the gum trees of Australia. They heal the land by drying the poisonous marsh. They heal the air by emitting quantities of ozone to purify it, removing injurious organic matter. They heal man by preventing the spread of disease, by arresting the violence of fever, by allaying the irritation of cough, and by giving sleep to the sleepless. I am glad to be able to report that many Eucalypti grow in Arran. They are as follows:—

1. The Blue Gum (*Eucalyptus globulus*).—This is the best known and the most extensively planted of all the species. It germinates freely, grows rapidly, and attains a great height—as high as 330 feet. When young, the leaves are soft, covered with a fine bloom, and diffuse abundantly a camphoraceous odour. They also abound in that oil which has been found so beneficial as a medicine. Like most of the genus, its appearance in the earlier years of growth is very different from its more advanced state. Then the leaves acquire a scimitar shape, become leathery, diffuse less perfume, and the tree is altogether less attractive. In this country it has the disadvantage of being delicate—no tree in Scotland, growing in the open air, having survived the severe winter of 1880–81, except the one at Craigyard, Lamlash. Sown in 1874, it is now 36 feet in height, and is 1 foot 10½ inches in girth. Another plant grows at Strabane, Brodick. The species is named from the form of the leaves when the plant is young. It has not yet bloomed in Arran, nor have any of the other species.

* Unless otherwise mentioned, the girths are taken 5 feet from the ground.

2. The Twiggy or Manna Gum (*E. viminalis*).—This may be called the weeping blue gum, for while it differs from the blue gum in the leaves being small and roundish, and in the branches being very slender, the leaves much resemble the blue gum in perfume, bloom, and in hue, though this is somewhat more of a plum colour. This species is hardy; a large tree grows at Whittinghame, East Lothian, and a young specimen has been planted this year at Lamlash. It is named *viminalis*, from its slender branches, and “manna gum,” from manna being obtained from it.

3. The Almond-leaved Gum (*E. amygdalina*).—This is said to be one of the tallest trees in the world, growing, in some instances, to the height of more than 450 feet. A tree of this species has grown at Cromla, Corrie, for about fourteen years. It is somewhat slow in growth, being only about 25 feet in height and 13 inches in girth. This is more hardy than the blue gum, but not so hardy as some other species. It is named from the leaves resembling those of the almond tree. This and the blue gum are the species from which the oil of commerce is principally obtained.

4. The White Gum (*E. pauciflora*, syn. *coriacea*).—In 1879 I received seeds of this species from Mr Bailey, Government Botanist, Queensland; it had been gathered on the Blue Mountains, New South Wales, and was sown at once. The following year it was planted at Craigyard, Lamlash. It is already $18\frac{1}{2}$ feet in height, and $7\frac{1}{2}$ inches in girth, and probably will one day be the tallest tree of any kind in Scotland. It is so hardy that not a leaf was browned in the severe winter of 1880–81. The leaves are large, approaching the size of those of the blue gum, and are covered with a whitish bloom. It received its name from the whiteness of the trunk after the annual shedding of the bark. It is a native of Tasmania, and the white trunks give a peculiar character to the forests of that great island.

5. The Alpine Gum (*E. alpina*).—This tree is an interesting and important addition to the forestry of Arran, as it is quite different in habit from any of the gums formerly introduced. The leaf is large, thick, and

remarkably broad, one giving a measurement of 9 inches by $4\frac{1}{2}$. It is specially illustrative of that feature in the trees of Australia which enables them to expose themselves edgeways, instead of horizontally, to the sun, for the development of one side of the leaf is almost twice that of the other, and thus the superior weight of the one side causes it to hang down, and to make the opposite side stand erect. The habit of the tree corresponds to the shape of the leaf, being remarkably broad. This tree illustrates the fact that some alpine plants grow well in the vicinity of the sea. A native of the alpine regions of Australia, it grows at Corrie Hotel, Arran, in full luxuriance within 35 yards of the sea. It was planted last year, and is now $3\frac{1}{2}$ feet in height.

6. The Cider Tree or Mountain White Gum (*E. Gunnii*).—The leaves of this species are small, of a light green colour, and are highly odoriferous. It is very hardy, and grows in the open air at Kew. A plant 6 feet in height grows at Craigyrd, Lamlash; a smaller one at the Free Church Manse, Whiting Bay. It receives the name cider tree from the liquid that flows from it when the bark is pierced.

7. The Urn-bearing Gum (*E. urnigera*).—The leaves of this species are of medium size and of a dark green colour. It grows at Strabane, Brodick, and is very hardy. It receives its name from the shape of the fruit.

8. The Coccus-bearing Gum (*E. coccifera*).—This differs from most of the genus in the leaves being leathery, even when the plant is very young. They are small, of a dark bluish colour, and covered with whitish bloom. This species is very hardy. A specimen grows at Powderham Castle, Kenton, Devonshire, more than 60 feet in height and more than a foot in diameter. A tree of what I consider this species, though the authorities at Kew have pronounced it to be *E. amygdalina*, grows at Castle Kennedy, Wigtownshire. It grows at several places in Arran.

In addition to the above Eucalypti already in Arran, through the kindness of friends allowing me to plant them in their gardens, I may mention that I have specimens of the Fig-leaved Gum (*E. ficifolia*), from Broken Inlet,

Western Australia, the leaves of which, as its name denotes, resemble those of a *Ficus*. It is remarkable for flowering when comparatively young, and from the flowers being of a crimson colour; I have also a plant, of the crimson-flowered Iron-Bark (*E. leucoxydon* var. *coccinea*), whose flowers are magenta-crimson in colour. The leaves are small and narrow, and the branches slender, so that it resembles a Babylonian willow. The wood is said to excel that of all other trees in hardness. I have also the red Iron-Bark (*E. siderophloia*), the bark of which as its name tells, is almost iron-like in hardness. The leaves resemble those of the Turkey oak, the veins are red, on account of which it is named the red iron-bark.

This summer I have further, through William Stewart, Esq., been favoured by receiving from Baron von Mueller, Government Botanist, Victoria, seeds of *E. coccifera*—these have germinated; also of *E. pauciflora*, the white gum already mentioned as growing well in Arran. I have received a similar favour from Mr Bailey, Government Botanist, Queensland, who has sent the seeds of “a rare and most valuable lemon-scented iron-bark” (*E. staigeriana*) from the Palmer River, Queensland. This has germinated under the kind care of my friend, Mr Gray, gardener, Newfield.

I may add that plants of several of the hardy gums, as *E. pauciflora*, *E. Gunnii*, *E. urnigera*, and *E. coccifera*, are now growing at various places on the west coast of Scotland—at Knockdolian and Auchearne near Ballantrae; at the Manse, Roseneath, and at Ballinakill, Cantyre.

DICKSONIA.

At one time I imagined that tree ferns were remarkably slow in growth, and that no one could hope to raise them from spores, and see them worthy of the name “tree ferns.” All such ideas have been dissipated by my experience in growing them in the open air in Arran, as the following notes show:—

The great Bush Tree Fern (*Dicksonia antarctica*).—This plant was probably sown in 1865, as it was very small when I planted it at Cromla, Corrie, in 1867. It took about eight years to acquire its full girth of stem. The stem

then began to ascend at the rate of about 3 inches yearly, while during this period the plant formed heads of fresh fronds both in spring and autumn. About the year 1880 the fronds began to bear spores, and since then it has grown annually about 2 inches, and it has also sent out yearly only one crown, developed in spring, and consisting of eighteen or more fronds, each of them about 6 feet in length and 2 feet in breadth. The stem is now 2 feet 2 inches high, and 2 feet $3\frac{1}{2}$ inches in girth; it is a magnificent plant.

Dicksonia squarrosa.—This plant was brought from Canterbury, New Zealand, and was given me by Mr Gray, Newfield. It is in perfect health. The fronds are 3 feet $3\frac{1}{2}$ inches in length, and 14 inches in breadth.

CORDYLINE.

The plants of this genus receive in Australia the name of "the Victoria palm," or "the cabbage palm." At Cromla, Corrie, where three species grow, they are worthy of the name "palm," as the largest, a plant of *Cordyline indivisa*, sown by me in 1873, and planted in 1875, is now, including leaves, 13 feet in height, and has a stem 1 foot 3 inches in girth. It may be expected soon to bloom.

ACACIA.

The most graceful and beautiful of all evergreen shrubs are the pinnatifid species of this genus. That they are so considered in Australia, from which most of them come, appears from the name there given them "feather-leaf." I am happy to report most favourably of them in Arran. The Black Feather-leaf (*Acacia decurrens*), one of the most beautiful, and also the most delicate in foliage, is now growing at Craigyard, Lamlash. It is, like the other species, a standard, 7 feet 10 inches in height, and is growing in great luxuriance. It grows also at the Lamlash Cemetery. Another variety, named the Feather-veined Feather-leaf (*Acacia penninervis*), of a blue-green shade, which does not close its pinnules at night, and in dull weather, as does the other, also grows at Craigyard, Lamlash. A third Feather-leaf (*A. longifolia*) grows at

Strabane, Brodick. The Broad-leaf Acacia (*A. pycnantha*) grows at Craigyard.

Miscellaneous Plants.—The broad-leaved Chinese Fir (*Cunninghamia sinensis*), the New Zealand Bramble (*Rubus australis*), *Pittosporum undulatum*, whose flower is so fragrant, and the oak or Beef Wood (*Casuarina equisetifolia*), all grow in the Castle Garden, Brodick. Camellias, Myrtles, and *Desfontainea spinosa* (7 feet 8 inches high), all bloom freely at Cromla, Corrie. *Agalina tomentosa* has just been planted at Craigyard, Lamlash. I have also plants of the Bottle Tree of Australia (*Brachychiton diversifolium*), the Grass Tree of Australia (*Xanthorrhæa arborea*) of *Libertia grandiflora*, and of a *Dasyllirion* from Mexico, which I hope ere long to transfer to Arran.

The Marine Algæ of Joppa, in the County of Mid-Lothian.

By GEORGE WM. TRAILL.

(Read 8th April 1886.)

I have prepared the following paper, in the hope that it may be useful to those of our members who are commencing the study of marine algæ; and also that others may be induced to turn their attention to this branch of botany when they learn how many rare and beautiful species await them at a locality so easy of access as the rocks of Joppa.

Before giving the list in detail, it may be interesting to refer to several species which, on account of their rarity and luxuriance, may be viewed as specialties of this locality.

Of these, *Sphacelaria plumigera* holds a prominent place. This occurs in muddy pools near low water, almost immediately below the salt works. The species is perennial, and unilocular sporangia are found in winter. Agardh, in writing to me, states that he never saw any specimens so perfect as those I sent him from Joppa.

Owing to the rigidity and dryness of the plant,—features which it possesses in common with the other members of the genus,—it does not readily adhere to paper; but