XXV. Open-Air Vegetation at the Royal Botanic Garden

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XXV. *Open-Air Vegetation at the Royal Botanic Garden.*
By JAMES M'NAB, Curator.

(Read at the Monthly Meetings, 1878.)

It has been observed that the year 1877 was remarkable for the untimely flowering of many plants, arising, with trees and shrubs, from the unripened state of the wood at the proper time, occasioned by the recent sunless summer, and with herbaceous and bulbous plants from the undeveloped state of their roots, caused in most cases by excessive moisture. The mild autumn and early winter of 1877-8 induced many plants to blossom later than usual. On January 31 the leaf-buds of Lilacs, Scarlet Ribes, *Cydonia japonica*, and Roses, were far advanced, the last still flowering in the open air, and in some places near the sea very fine. This unnatural state of matters will much influence the report on open-air vegetation. In most seasons a period of rest between autumn and spring takes place, from long and severe frost and snow, or continued drought, all of which are essential to vegetation, particularly after a good and productive summer. If all is favourable, spring plants advance regularly and successively, and their dates of flowering can be recorded. This winter many plants have flowered in December and January, viz., *Veronica rupestris*, *Lithospermum fruticosum*, *Potentilla alba*, *Gentiana acaulis*, *Helleborus* of sorts, *Hepatica triloba*, *Aubrietia grandiflora*, *Primula vulgaris*, *P. polyanthus*, Stocks, and Wallflowers, *Arbutus unedo*, *Erica carnea alba*, also *Senecio pulcher*, which has been fine, and is flowering on the rock garden.

In 1877 the Hazel flowered throughout January, but no fruit was produced, the male catkins being destroyed while in perfection. This year, although the Hazels were covered with catkins, no flower was expanded in January; while *Garrya elliptica* (male) has been in flower since December 25, while last year no flowers were produced before the middle of January. *Jasminum nudiflorum* has been in flower most of the winter. Several herbaceous plants, usually in bloom in January, are not yet out, as *Tussilago fragrans*, *Sternbergia lutea*, *Leucojum vernal*, *Crocus Imperati*, *C. Susianus*, also *Galanthus nivalis*, except a few on a lawn close to the Palm-

house wall, where frost never reaches them. Several shrubs which usually flower about the middle of January are also late, as *Viburnum Tinus*, *Daphne Mezereum*, *Rhododendron atrovirens*, *R. Nobleanum*, and *Cornus mascula*.

On 31st January, fruit buds on many trees seem well formed, and in all likelihood the smaller kinds will ripen freely. With the Apple, Pear, and Plum, blossom-buds appear plentiful, probably in consequence of having little fruit to mature last year. The seeming immature state of the wood, however, from the sunless summer, followed by recent frosts, may operate against the proper ripening of the fruit, unless the season prove exceptionally fine. It often occurs to me that when a large amount of blossom is produced, and all allowed to open, the excess of bloom tends to deteriorate the strength of the wood. In several instances I have recommended that a quantity of blossoms should be cut off while in bud, leaving only sufficient for the trees to mature.

In October the thermometer was six times at or below freezing, amounting collectively to 15°. The lowest markings were on the mornings of the 3d, 9th, 12th, 17th, 18th, and 19th, indicating respectively 31°, 31°, 32°, 27°, 24°, and 32°; while the six highest morning temperatures were on the 7th, 14th, 15th, 22d, 30th, and 31st, indicating 50°, 53°, 55°, 49°, 45°, and 45°.

In November the thermometer was six times at or below freezing, amounting collectively to 32°, while in 1863 110° were registered. The lowest during 1877 were on the 21st, 24th, 25th, 26th, 28th, and 30th, indicating 23°, 24°, 25°, 28°, 31°, and 29°. The six highest morning temperatures were on the 1st, 2d, 4th, 5th, 6th, and 15th, indicating 44°, 44°, 41°, 44°, 45°, and 41°.

In December the thermometer was fourteen times at or below freezing, making in all 63°. The lowest markings were on the mornings of the 3d, 14th, 25th, 26th, 27th, and 28th, indicating 28°, 28°, 21°, 17°, 26°, and 23°; while the six highest morning temperatures were on the 10th, 16th, 17th, 19th, 21st, and 22d, indicating 43°, 40°, 44°, 40°, 44°, and 46°.

In January the thermometer was seventeen times at or below freezing, indicating collectively 101°; while in

January 1864 no less than 394° were registered. The lowest markings were on the mornings of the 10th, 11th, 22d, 25th, 30th, and 31st, indicating 22°, 23°, 22°, 14°, 21°, and 23°; while the highest morning temperatures were on the 4th, 6th, 14th, 15th, 16th, and 20th, indicating 40°, 40°, 41°, 41°, 41°, and 40°.

February was an enjoyable month, with little wind and frequent sunshine. East wind was only experienced on two successive days; little rain and no snow fell. Vegetation made rapid progress, but in most instances is not robust. Excepting *Rhododendron atrovirens*, *R. dahuricum*, and *R. præcox superbum*, which were particularly fine this season, the buds of early scarlet Rhododendrons are scarce and weakly. The forcing of many of the plants of *R. Nobleanum* has been precarious, when compared with forcing the same kinds whose buds were ripened after a fine summer. The same remark holds good this year with plants of *Deutzia gracilis*, *D. crenata*, *Astilbe japonica*, Lilacs, &c. Buds are far advanced on standard Apples, Pears, and Gooseberry bushes, and many buds of Jargonelles on walls are expanded. The Scotch or Wych Elm is in flower, and leaves are forward on many deciduous trees, as Thorns, Lilacs, *Nuttallia cerasiformis*, *Ribes sanguineum*, Willows, Elder, &c., and even the Larches have a greenish tinge. Numerous herbaceous plants have made growths several inches long—i.e., Crown Imperial, 10 inches; *Papaver orientale*, 8 inches; *Symphytum tauricum* and *caucasicum*, each 18 inches; *Hemerocallis fulva*, 12 inches; *Orobis elegans*, 6 inches; *Verbascum longifolium*, 10 inches; Ferulas, 12 inches; and the Bunch-grass (*Elymus condensatus*), 14 inches. Many of the Cabbage tribe are running to flower, which ought now to be useful for culinary purposes. Grass lawns are beautiful and green, as well as the foliage of all evergreen trees and shrubs. *Thuja elegantissima* and *T. aurca* have already passed into their spring phase, the brown or winter hue having disappeared. The dryness of the ground without frost, along with the comparatively mild weather, has caused many herbaceous plants to flower—not usually observed in February. Many bulbous plants flowered during the month, while others were later, the bulbs having rotted from excess of moisture.

The following twenty-one plants flowered in February:—

	1878.	1877.
<i>Eranthis hyemalis</i> , . . .	Feb. 2	Jan. 26
<i>Galanthus nivalis</i> , . . .	" 4	" 16
<i>Crocus Susianus</i> , . . .	" 6	" 20
<i>Galanthus plicatus</i> , . . .	" 7	" 26
<i>Leucojum vernum</i> , . . .	" 8	" 18
<i>Rhododendron atrovirens</i> , . . .	" 8	" 25
<i>Dondia Epipactis</i> , . . .	" 9	Feb. 11
<i>Tussilago fragrans</i> , . . .	" 9	Jan. 3
<i>Corylus Avellana</i> , . . .	" 10	" 1
<i>Sisyrinchium grandiflorum album</i> ,	" 10	Feb. 17
<i>Aubrietia grandiflora</i> , . . .	" 13	" 17
<i>Nordmannia cordifolia</i> , . . .	" 15	" 16
<i>Tussilago alba</i> , . . .	" 15	Mar. 8
<i>Crocus vernus</i> and varieties, . . .	" 17	Jan. 28
<i>Scilla sibirica</i> , . . .	" 18	Feb. 20
<i>Sisyrinchium grandiflorum</i> , . . .	" 19	" 20
<i>Draba aizoides</i> , . . .	" 19	Mar. 11
<i>Daphne Mezereum</i> , . . .	" 22	Jan. 26
<i>Scilla præcox</i> , . . .	" 22	Feb. 16
<i>bifolia</i> , . . .	" 28	" 24
<i>Tussilago nivea</i> , . . .	" 28	Mar. 18

On February 26 *Aponogeton distachyon* first flowered in the pond.

Mr M'Nab exhibited specimens of 118 species in flower in the open air, March 14.

On the rock garden in February were Hepaticas of sorts, particularly fine, and flowering profusely between the crevices of the stones with a northern aspect; in similar situations *Primula vulgaris rubra* was in exquisite beauty, and since November; *Primula denticulata*, *P. purpurea*, *Rhododendron præcox superbum*, *Daphne Mezereum*, *Erica carnea alba*, and *Andromeda floribunda* are flowering freely. Besides these we have in bloom *Crocus Imperati*, *C. etruscus*, *C. nivalis*, *C. biflorus*, *C. annulatus*, and *C. suaveolens*; *Leucojum vernum*, *Galanthus nivalis*, *G. plicatus*, *G. Elwesii*, *Sisyrinchium grandiflorum album*, *Dondia Epipactis*, *Helleborus colchicum*, and other varieties; also *Aubrietia grandiflora*, *Veronica rupestris*, *Lithospermum fruticosum*, &c.

In no instance up to February 28 has open-air vegetation suffered from frost, and in consequence slugs and other vermin are beginning to appear.

The thermometer during February was eight times at or below freezing, indicating collectively 35°—the lowest markings being on the mornings of the 2d, 3d, 9th, 11th, 12th, and 13th, indicating 23°, 25°, 27°, 28°, 27°, and 25°; while the six highest morning temperatures were on the 16th, 17th, 20th, 21st, 22d, and 28th, indicating 41°, 44°, 42°, 41°, 45°, and 42°.

In March the thermometer was fifteen times at or below freezing, indicating collectively 132°. The six lowest markings were on the mornings of the 9th, 15th, 26th, 27th, 28th, and 29th, indicating 23°, 23°, 24°, 23°, 28°, and 18°; while the six highest morning temperatures were on the 1st, 2d, 3d, 4th, 11th, and 21st, indicating 45°, 43°, 45°, 47°, 43°, and 44°.

The weather in the early part of the month was particularly fine, and favourable for open-air work and vegetation; while the latter part was cold and frosty, accompanied by frequent hail and snow, but little or no rain. It is feared that damage is done to the fruit crop by recent frosts, many trees being in blossom owing to the previous fine weather.

One hundred and eighteen species of plants were collected in the open-air on March 12, while on the 31st only eighty-five species could be procured, many of them in miserable condition. Open-air *Rhododendron* flower-buds, chiefly *R. Nobleanum*, have been destroyed, also the young leaf-buds on the larger centre growths of the finer or Sikkim sorts, which are expected to produce flowers for the following year; many of them are quite black in the hearts, and will ultimately fall off; the smaller side-buds will come forward, but are never sufficiently strong to produce flower-buds, unless the superfluous shoots are removed. This neglect of disbudding is the cause of many plants of Sikkim varieties getting into a twiggy condition, which is against their flowering.

Many trees and deciduous shrubs are far advanced in leaf. Roses, both pruned and unpruned, are much cut up; the power of the sun after frosty nights has told on them, as well as on species of Conifers, particularly the genus *Pinus*, by severely browning their leaves.

On the rock garden seventy-five species flowered this month. the most interesting being *Corbularia nivalis*. *Fritil-*

laria arvensis, *Iris persica* and *reticulata*, *Chionodoxa Forbesii*, *Puschkinia scilloides*, numerous *Scillas*, all the varieties of *Saxifraga oppositifolia*, *Corydalis angustifolia*, *Primulas*, *Epigaea repens*, *Soldanella montana*, *Hutchinsia alpina*, and *Polygala Chamæbuxus*.

It is curious to observe *Leucojum vernum*, *Galanthus plicatus*, and *G. nivalis*, and other early flowering bulbs covered with fruit, caused by fine dry weather while in bloom.

Of the forty-two plants whose time of flowering has been recorded, the following flowered in March:—

	1878.	1877.
Bulbocodium vernum, . . .	March 1	Feb. 16
Arabis albida, . . .	" 1	March 18
Iberis gibraltarica, . . .	" 2	" 17
Scilla bifolia alba, . . .	" 4	" 8
taurica, . . .	" 4	" 4
Rhododendron Nobleanum, . . .	" 4	Feb. 23
Narcissus pumilus, . . .	" 7	March 12
Arabis vernus, . . .	" 8	" 27
Iris reticulata, . . .	" 8	" 10
Erythronium Dens canis, . . .	" 10	" 23
Symplocarpus foetidus, . . .	" 11	" 27
Mandragora officinalis, . . .	" 15	" 17
Corydalis solida, . . .	" 16	" 28
Symphytum caucasicum, . . .	" 16	April 5
Narcissus Pseudo-Narcissus, . . .	" 18	" 8
Hyoscyamus physaloides, . . .	" 23	" 16

April, although variable, was on the whole pleasant, much work in garden and field being accomplished. On the 1st snow fell, which lay on the morning of the 2d 6 inches deep. Its weight was injurious to evergreen trees throughout the country, bending and breaking their branches. The snow soon disappeared, and on the 10th, the foliage of several trees, particularly Planes, began to unfold; no check from frost took place after the 9th.

During most of the month the wind was easterly. The sun brought forward vegetation rapidly. Showers were frequent, but of short duration, very unlike the continued cold April showers of the two past years. The foliage has every appearance of being full and strong. Fruit tree blossom, both on walls and standards, is abundant and apparently vigorous, and at present bids fair to yield a

plentiful crop. Herbaceous plants are still behind, as well as the foliage of many deciduous trees.

In April the thermometer has been nine times at or below freezing, indicating collectively 44°. The lowest markings were on the mornings of the 2d, 3d, 5th, 6th, 7th, and 9th, indicating 28°, 28°, 25°, 23°, 23°, and 26°; while the six highest were on the 14th, 15th, 17th, 20th, 21st, and 23d, indicating 44°, 48°, 44°, 45°, 45°, and 43°.

On April 30, 130 species of plants were in flower on the rock garden. The following is a list of the most conspicuous:—

Adonis vernalis.	Lithospermum prostratum.
Andromeda fastigiata.	Menziesia coerulea.
Anemone apennina.	empetriformis.
nemorosa pleno.	Orob. elegans and varieties.
Robinsoniana alba.	Podophyllum Emodi.
violacea.	Polygala Chamæbuxus.
Arnebia echioides.	Primula capitata.
Aubrietia conspicua.	ciliata purpurata.
Hendersoni.	cortusoides amæna alba.
purpurea grandiflora, and	integrifolia.
others.	nivalis.
Bryanthus erectus.	pedemontana.
Coptis trifoliata.	purpurea, and many
Erica hibernica alba.	others.
vernalis.	Pulsatilla bracteata.
Erythronium giganteum.	vernalis.
roseum.	Puschkinia vernalis.
Nuttallianum.	Ranunculus amplexicaulis.
Gentiana alpina.	Rhodothamnus Chamæcistus.
verna.	Scilla sibirica.
Helonias bullata.	Tulipa pulchella.
Hutchinsia alpina.	Trillium grandiflorum.

Pulsatilla vernalis, besides flowering in the ordinary stone compartments, is also blooming vigorously between the stones round the base of higher portions of the rockery, being placed there three years ago in a seedling condition. Tubers of *Anemone coronaria* have been freely planted in similar situations, where they bid fair to grow better than in open borders, where damp often destroys them.

Darlingtonia californica stood the winter on the rock garden, and is coming into bloom.

The dates on which the following plants flowered complete the list annually given :—

	1878.	1877.
<i>Fritillaria imperialis</i> , . . .	April 6	April 14
<i>Adonis vernalis</i> , ...	" 12	" 12
<i>Hyoscyamus physaloides</i> , . .	" 23	" 16

May commenced with fine dry weather, west winds prevailing, and changing to the east about the 7th, and continuing more or less till the end of the month. Showers were frequent, and rough gales were experienced, damaging the young leaves of trees. Occasional hot sunny blinks brought forward the foliage as well as the blossoms of many trees. The following varieties bloomed :—

May 2. Perfumed Cherry.	May 20. Scarlet-flowering
" 4. Gean tree.	Thorn.
" 6. Double - flowering	" 21. Large-flowered Medlar.
Cherry.	" 22. Common white Haw-
" 12. Purple Lilac.	thorn.
" 15. Scotch Laburnum.	" 23. Bird Cherry.
" 18. White Lilac.	" 24. Yellow - flowering
" 19. Common Horse-Chest-	Pavia.
nut.	" 27. Mountain Ash.

The double-flowering Cherry has been remarkably fine. Excepting the perfumed Cherry, double-flowering Cherry, and Gean, none of the above were in flower last year till June. The early flowering this season is probably owing to the fact that only 2° of frost were registered in May.

The scantiness of bloom observed on some trees was evidently caused by the immature state of the wood during the last two seasons. Some peculiarities observed on ornamental trees and shrubs are worthy of record. Rhododendron blooms have been scarce this spring. Lilacs have produced few flowers, as well as the scarlet Hawthorn, while some trees of white Hawthorn have been tolerably full. Blossom on English Laburnums are scarce, as well as some of the Scotch variety (*Cytisus Laburnum alpinus*), some, however, which produced no flowers last season, are entirely covered with bloom, while many this year have no flowers, being covered with seed-pods of last year's blooms.

The Scotch Laburnum was in full flower last year on June 30. Mountain Ash, although in flower, is very scanty, as well as many Service trees. The common Horse-Chestnut showed its first flowers this year on May 19, but was poor except in favourable situations. No flower-buds are observable on the scarlet Horse-Chestnuts, and few on *Pavia flava*. The Norway Maple, the common Sycamore, Elm, and other forest trees show little flower. The Gean, which was in full flower on May 10, shows little sign of fruit.

Many American trees, as usual, are late in coming into leaf. This is observable in the Liquidambar, Tulip tree, scarlet American Oaks, deciduous Magnolias, *Ostrya virginica*, *Celtis occidentalis*, *Robinia* of sorts, *Taxodium distichum*, and the *Catalpa* tree.

During May the thermometer was only once at or below freezing, viz., on the 10th, and indicated 2°. The six lowest markings were on the mornings of the 10th, 20th, 21st, 25th, 26th, and 27th, when 30°, 36°, 35°, 36°, 36°, and 35° were indicated; while the six highest were on the 1st, 4th, 7th, 15th, 16th, and 17th, when 47°, 48°, 47°, 48°, 48°, and 49° were indicated.

Table showing the Number of Degrees of Frost registered in the Royal Botanic Garden, Edinburgh, during each Month, from October 1, 1854, to May 31, 1878.

Months.	No. of mornings the thermometer was at and below the freezing-point.	Degrees of frost registered in each month during 1877-78.	Degrees of frost registered during each month from 1854-78.
1877.			
October, . . .	6	15	367
November, . . .	6	32	1160
December, . . .	14	63	1905
1878.			
January, . . .	17	101	2285
February, . . .	8	35	1527
March, . . .	15	132	1384
April, . . .	9	44	514
May, . . .	1	2	190

The thirteen species of hardy herbaceous plants, showing no flowers in May 1877, have bloomed this year.

On May 31, of 295 species in flower on the rock garden, the following were conspicuous :—

Andromeda fastigiata.	Linnæa borealis, American.
Anemone alpina.	Scotch.
Arnebia echioides.	Menziesia Drummondii.
Aubrietia, of which many	polifolia versicolor.
species are now in	Meconopsis aculeata hybrida.
bloom, the most con-	nepalensis.
spicuous being A.	Myosotis alpestris.
Hendersoni.	Narcissus triandrus albus.
Chlorogalum Brownii.	Pentstemon humilis.
Leichtlinii.	procerus.
Cyclobothra cœrulea.	Pernettya angustifolia speciosa.
Daphne Cneorum.	Phlox Nelsoni.
Darlingtonia californica.	setacea violacea.
Draba tricuspidata.	Polemonium humile.
Dryas Drummondii.	Potentilla alpestris.
octopetala.	dubia.
Erigeron alpinum.	lupinoides.
Roezlii.	peduncularis.
Erinus alpinus.	Primula capitata
hispanicus.	cortusoides amoena.
Fragaria lucida.	luteola.
Fritillaria kamtschatica.	sikkimensis.
Gentiana verna.	Rhododendron lepidotum.
Geum coccineum, double.	Rubus arcticus.
Helianthemums, the earliest	Saponaria ocyroides major.
and most conspicuous	Sarothamnus scoparius pen-
being Bride, Royalty,	dulus.
and Queen of Spring.	Saxifraga peltata.
Helonias asphodeloides.	pyramidalis, with others.
Hippocrepis helvetica.	Silene acaulis.
Hutchinsia alpina.	Smilacina bifolia.
Iberis corifolia.	Symphphyandra Warneri.
Iris cristata.	Uvularia stellata.
Ledum buxifolium.	Veronica Guthrieana.
Linaria alpina.	rupestra.

June was mild and pleasant, somewhat hot towards the end, when a severe thunderstorm, accompanied by rain and hail, damaged the leaves of herbaceous plants, such as

Rheum officinale, Vegetable Marrow, &c. Easterly winds were prevalent, with occasional showers.

Arboreous vegetation, although earlier than 1877, is still ten days behind, few trees being seen with their leaves thoroughly developed. The greatest display of foliage is on Plane trees, Limes, Elms, Service trees, Horse Chestnuts, and Thorns, already noticed for scarcity of flowers. The Lime is not yet in bloom, and gives little promise of flower, owing to the points being destroyed by caterpillars. Easterly winds have been very destructive to the blossoms of fruit trees; and there is prospect of little fruit. Early in May the leaves of many trees were scorched by lightning. Greenfly is numerous and destructive, though slugs as yet are scarce.

A large tree of the flowering Ash (*Fraxinus Ornus*) in the centre of the garden, which generally blooms freely, came into flower on June 18, while the first flower opened on the 28th last year, but instead of 400 or 500 heads being expanded at one time, not more than eighty could be counted, and these small and of short duration. Many Service trees which fruited last season have few flowers. A large tree (*Sorbus domestica*), noticed for its systematic flowering, exhibits the same peculiarity, but in a less degree. The top of the tree is divided into two leading heads, which flower alternately each year. Last summer the western half was loaded with flower and fruit; this year, only three or four dozen heads were visible, and on the eastern half. On the *Sorbus terminalis*, particularly noticed in 1877 for the abundance and brilliancy of its fruit, not a flower is to be seen. The foliage on all the Service trees is perfect. Walnut trees look as if they would be barren. Their foliage is poor; many of the leaves fell off early, quite black.

The Elder (*Sambucus nigra*) is not overloaded with flower; the first flower appeared on the 15th, while the same plant bloomed last year on the 27th. The Portugal as well as the Bay Laurel, often in bloom at this time, has no flowers and scarcely any buds. Holly, which last winter gave such a show of fruit, and which ought to be in full flower now, has very few yet visible, while clusters of last year's berries still adhere to many plants. Yew berries were also abun-

dant in the autumn of 1877, but very few are now seen, even in the green condition.

Ghent Azaleas have been full of blossom, and the beautiful *Rhododendron hirsutum* and *ferrugineum* were perhaps finer than for many years. Of 50 plants of *Kalmia latifolia*, in the garden, not one is in flower, though all are healthy, and vary from 2 to 36 feet in circumference. Some large plants of *Wistaria sinensis*, usually covered with flowers, are this year bloomless, though the plants are vigorous.

The scarcity of bloom is mainly owing to the unripened state of the wood for want of sun during the last two summers. In those instances where the bloom has been plentiful, as the Ghent Azaleas and alpine Rhododendrons, the flowering growths were unusually short.

In the rock garden 360 species and varieties were in flower on June 30. Perhaps the most striking are varieties of *Orchis foliosa* and *O. maculata superba*, usually cultivated in dampish soils, but here they flower freely in the comparatively dry stone compartments. Many plants put in with single roots are now tufts, with many heads of flowers. *O. maculata superba* has heads of flowers 5 inches long and $5\frac{1}{2}$ inches in circumference.

The alpine Poppies are very beautiful, being crosses between *Papaver alpinum*, *P. nudicaule*, and others. They are white, yellow, and orange, and vary in size and colouring.

Orobanche rubra (Red Broom Rape), which flowered last year with eight spikes of flowers, has this year forty-two heads. It is parasitic on the roots of the white Thyme. This tuft of *Orobanche* is 16 inches square. A portion of the Thyme is growing on stone and on the ash-walk as well as on the soil; some flowers of *Orobanche* are seen on each place.

Calculating the night temperatures above freezing during June, I find that the aggregate is 493° , while the corresponding month of 1877 indicated 485° , showing a difference of 8° above last year.

The six lowest night temperatures above 32° amount to 236° , while the six lowest last year made 241° . The aggregate of the six highest this year was 334° , while 325° is the amount recorded last year.

The six lowest night temperatures were on the 4th, 5th,

6th, 11th, 13th, and 14th, indicating 36°, 38°, 42°, 41°, 39°, and 40°; while the six highest were on the 20th, 23d, 27th, 28th, and 30th, indicating 54°, 55°, 57°, 56°, 58°, and 54°.

The following are some of the conspicuous plants blooming in the rock garden :—

Allium Macnabianum.	Gentiana gelida.
oreophyllum.	Helonias asphodeloides.
Androsace lanuginosa.	Iris filifolia.
Arnebia echioides.	Linnæa borealis, American.
Arenaria laricifolia.	Scotch.
Aster alpinus albus.	Meconopsis nepalensis.
Astragalus alpinus.	Wallichii.
vaginalis.	Menziesia polifolia versicolor.
Campanula turbinata and	Nierembergia rivularis.
varieties.	Orchis foliosa.
Van Houttei.	maculata superba.
Chrysobactron Hookeri.	Oxytropis cyaneus.
Cypripedium spectabile.	Papaver alpinum aurantiacum.
Delphinium Belladonna.	Potentilla alchemilloides.
cashmerianum.	Primula capitata.
Dianthus alpinus.	luteola.
neglectus.	scotica.
Dracocephalum grandiflorum.	sikkimensis.
speciosum.	Rosa pyrenaica.
Epilobium obcordatum.	Saponaria cæspitosa.
Eriogonum aureum.	Saxifraga, many sorts.
Eriophorum alpinum.	Sempervivum, many sorts.
Erodium Manescavi.	Silene alpestris.
Fragaria lucida.	Veronica rupestris.
Galax aphylla.	Watsonia splendens.

XXVI. *On the Genus Halophila.*—By BAYLEY BALFOUR,
Sc.D., M.B. (Plates VIII.—XII.)

(Read July 1878.)

Amongst the plants I collected at Rodriguez when I visited the island, in 1874, as naturalist accompanying the 'Transit of Venus' expedition, are two species of marine Phænogam, both of the Naiadaceous genus *Halophila*.

They occur abundantly in widely extended patches on the reefs surrounding the island. One, *H. ovalis* (R. Br.) Hook. fil., grows on spots which are just uncovered at full ebb tide; the other, *H. stipulacea* (Forsk.) Aschs., prefers localities