STATE OF NEW YORK.

Adirondack Survey.

VERPLANCK COLVIN,
Superintendent.

FROM THE SEVENTH REPORT.

(BOTANY.)

PLANTS OF THE SUMMIT OF MT. MARCY.

BY

CHAS. H. PECK,
State Botanist.

ALBANY:
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The subjoined list of plants, found on the open summit of Mount Marcy, has been prepared at the request of the Superintendant of the Adirondack Survey. A brief notice of some of the characteristic or peculiar species has been added.

The summits of the high peaks of the Adirondack Mountains are destitute of the forest trees that clothe their slopes. A few of the most hardy species do spring up in these elevated places, but they do not attain the stature of trees. They are dwarfed into mere shrubs, and are sometimes so transformed in appearance that they are not readily recognized by those who are unaccustomed to close observation. These open summits are inhabited by various species of plants that do not grow on those mountains whose tops are covered with trees. The line of demarkation between the open summit and the wooded slope is not always well defined, since the trees gradually diminish in size as the altitude increases, and in some depressed and sheltered places, where there is greater depth of soil, they continue farther up the slope than in others. Hence, the line of tree-limit is not always at the same altitude. It varies somewhat on different slopes of the same mountain, as well as on different mountains. In the Adirondacks the altitude of this line is between 4,200 and 4,800 feet above tide. Generally the higher the mountain, the greater the extent of its exposed surface, and the greater the number of species of plants that inhabit it. As Mount Marcy surpasses its neighbors in altitude and extent of open
summit, so it also surpasses them in the number of its species of plants. With few exceptions a list of the plants of its summit would include the species found on any of the high peaks of this region. On the other hand, several species occur on the summit of Mount Marcy that have not been found on any of the neighboring mountains. About thirty species of flowering plants have been found on the White Mountains which have not been detected on the Adirondacks. The greater altitude of those mountains gives them a greater extent of exposed surface and consequently a more varied flora. None of my visits to the summits of the mountains have been made before the middle of July. Possibly an examination earlier in the season might reveal a few species that escape detection at a later period. About forty years ago the little Moss plant, *Cassiope hypnoides*, was found by Dr. Parry growing in a sheltered depression on the summit of Mount Marcy, but it does not appear to have been found there since. Some years ago Prof. Lesquereux found a rare Moss, *Tetraplodon mnioides*, near the summit, but in my subsequent visits to the mountain I failed to rediscover it. Other plants, such as *Rhododendron Lapponicum*, *Betula glandulosa*, *Juncus trifidus*, *Aulacomnion turqidium*, *Myurella jualacea*, and *Hypnum sarmentosum* are in such small quantity that they are in danger of being exhausted from the locality if taken too freely by botanists and other visitors. The following list contains the names of species seen by the writer on the open summit of Mount Marcy:

Phænogamia or Flowering Plants.

<table>
<thead>
<tr>
<th>Botanical Names</th>
<th>Common Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coptis trifolia <em>Salisb</em></td>
<td>Goldthread</td>
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<tr>
<td>Arenaria Greenlandica <em>Spreng</em></td>
<td>Greenland Sandwort.</td>
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<tr>
<td>Oxalis Acetosella <em>L.</em></td>
<td>Wood Sorrel.</td>
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<tr>
<td>Potentilla tridentata <em>Ait</em></td>
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<tr>
<td>Rubus strigosus <em>Mx</em></td>
<td>Red Raspberry.</td>
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<tr>
<td>Pyrus Americana <em>D. C.</em></td>
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<tr>
<td>Spiraea salicifolia <em>L.</em></td>
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<tr>
<td>Epilobium angustifolium <em>L.</em></td>
<td>Willow-herb.</td>
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<tr>
<td>Cornus Canadensis <em>L.</em></td>
<td>Fire Weed.</td>
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<tr>
<td>Linnea borealis <em>Gronov</em></td>
<td>Dwarf Dogwood.</td>
</tr>
<tr>
<td>Houstonia cærulea <em>L.</em></td>
<td>Bunchberry.</td>
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<tr>
<td>Solidago thyrsoidea <em>Meyer</em></td>
<td>Sugarberry.</td>
</tr>
<tr>
<td>Solidago thyrsoidea <em>Meyer</em></td>
<td>Mountain Goldenrod.</td>
</tr>
</tbody>
</table>
Nabalus nanus D. C. Dwarf Nabalus.
Vaccinium uliginosum L. Bog Bilberry.
V. cespitosum Me. Tufted Bilberry.
V. Pennsylvanicum Lam. Low Blueberry.
Chiogenes hispida T. & G. Creeping Snowberry.
Cassandra calyculata L. Leather-leaf.
Ledum latifolium Ait. Labrador Tea.
Kalmia glauca Ait. Swamp Laurel.
Rhododendron Lapponicum Wahl Lapland Rosebay.
Rhinanthus Crista-galli L. Yellow Rattle.
Melampyrum Americanum Me. Cow Wheat.
Diapensia Lapponica L. Lapland Diapensia.
Gentiana linearis Fr. Narrow-leaved Gentian.
Empetrum nigrum L. Crowberry.
Betula glandulosa Me. Dwarf Birch.
B. papyracea Ait. Paper Birch.
Alnus viridis D. C. Green Alder.
Salix Cutleri Tuck. Cutler’s Willow.
Abies nigra Poir. Black Spruce.
A. balsamea Marshall Balsam Fir.
Juniperus communis L. Common Juniper.
Habenaria dilatata Gray Small White-flowered Orchis.
Streptopus amplexifolius D. C. Smooth Twistfoot.
Clintonia borealis Raf. Northern Clintonia.
Veratrum viride Ait. White Hellebore. Indian Poke.
Luzula parviflora Desv. Small flowered Woodrush.
Juncus trifidus L. Slender-fringed Rush.
Scirpus cespitosus L. Tufted Clubrush.
Eriophorum vaginatum L. Sheathed Cottongrass.
Carex scirpoidea Me. Rush-like Sedge.
C. vitilis Fr. Braided Sedge.
C. rigida Good. v. Bigelowii Gr. Bigelow’s Sedge.
C. irrigua Sm. Moist Sedge.
Agrostis canina L. Bentgrass.
Calamagrostis Canadensis Be. Bluejoint.
C. Pickeringii Gr. Pickering’s Bluejoint.
Stipa Richardsonii Lk. Richardson’s Feathergrass.
Poa laxa Hunk. Loose-flowered Poa.
Aira flexuosa L. Common Hairgrass.
Hierochloa alpina R. & S. Alpine Holygrass.
Appendix: Seventh Report on the Survey of

Cryptogamia or Flowerless Plants.

Clubmosses.
Lycopodium Selago L.
L. annotinum L. v. pungens Spring.

Mosses.
Sphagnum cymbifolium Ehrh.
S. acutifolium Ehrh.
S. Pylesii Brid.
S. Pyl. v. sedoides Sullie.
Andrea petrophila Ehrh.
Aretoa fulvella Bry. Eur.
Dicranum polycaarpum Ehrh.
D. scoparium Hedw.
D. elongatum Schwægr.
D. congestum Brid.
Fissidens osmundioides Hedw.
Ceratodon purpureus Brid.
Barbula tortuosa W. & M.
Grimmia conferta Funk.
G. ovata W. & M.

Jungermannia connivens Dicks.
J. trichophylla L.
J. scutata Web.
J. barbata Schreb.
J. Taylori Hook.

Hepaticæ.
Jungermannia obtusifolia Hook.
Scapania nemorosa Nees.
Sarcoscyphus Ehrhartii Cd.
Ptilidium ciliare Nees.

Mastigobryum deflexum Nees.

Lichens.
Stereocaulon paschale Ach.
Cladonia pyxidata Fr.
C. gracilis Fr.
C. grac. v. elongata Fr.
C. grac. v. taurica Hoffm.
C. amaurocrea Fr.
C. uncialis Fr.
C. rangiferina Hoffm.
C. rang. v. alpestris Fl.
C. cornucopoioides Fr.
C. cristatella Tuckm.
Buella lactea Mass.
B. petraea Tuckm.
B. geographica L.
Umbilicaria proboscidea D. C.
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Algae.
Sirosiphon Crameri Brugg.

Fungi.

Agaricus montanus Pk.
A. umbelliferus L.
A. Hyphorum Batsch.
Puccinia Scirpi Lk.

Peridermium decolorans Pk.
Sphæria Marciensis Pk.
S. Crepini West.

Sixteen of these I have observed in no other locality, viz.:

Rhododendron Lapponicum.
Betula glandulosa.
Stipa Richardonii.
Poa laxa.
Arctoa fulvella.
Dieranum polycarpum.
Conostomum boreale.
Aulaeomnion turgidum.

Myurella julacea.
Hypnum sarmentosum.
Ephebe pubescens.
Lecidea Diapensie.
Sirosiphon Crameri.
Agaricus montanus.
Puccinia Scirpi.
Sphæria Marciensis.

The following occur on neighboring mountains but were not seen on Mount Marcy:

Nabalus Bootii and Cetraria aculeata on Mount Whiteface, Jungermannia setiformis on Mount McIntyre, Cladonia papillata on Mount Skylight, Larix Americana, Thuja occidentalis and Hypnum Oakesii on Mount Haystack, Vaccinium Oxycocceus on Mt.'s Dix and Whiteface.

The following flowering plants of the list may be regarded alpine or sub-alpine, although two or three of them occur far down the slides, in the elevated passes or on the boggy shores of the mountain lakes:

Nabalus nanus.
Vaccinium cæspitosum.
V. uliginosum.
Rhododendron Lapponicum.
Arenaria Grœnlandica.
Diapensia Lapponica.
Empetrum nigrum.
Salix Cutleri.

Juncus trididus.
Scirpus cæspitosus.
Carex scirpoidea.
C. rigida v. Bigelovii.
Agrostis canina.
Calamagrostis Pickeringii.
Poa laxa.
Hierochloa alpina.

Several of the species usually occur in swamps, bogs or wet places and they indicate a similarity between the summit flora of Mount Marcy and the marsh flora of the lower lands. Indeed, the frequent rains, the investing clouds, and the low temperature which retards evaporation, all conspire to produce that prevalence of
moisture which imitates the conditions of the marshes. The following may be mentioned as examples of marsh plants:

Cassandra calyculata.  
Ledum latifolium.  
Kalmia glauca.  
Habenaria dilatata.  
Veratum viride.  
Carex irrigua.  
Calamagrostis Canadensis.

Among the mosses, the species of Sphagnum or peat moss indicate the same marshy character of the locality. The abundance of these mosses on the summit is to the botanist one of the most noticeable features, and almost causes a feeling of surprise in his mind when beholding it for the first time.

The following plants are deserving of special notice:

The Greenland Sandwort, Arenaria Groenlandica, is one of the most attractive little plants of the mountain summit. It grows in tufts two to four inches high. The leaves and stems are slender, but the beautiful white flowers are rather large for the size of the plant. By its blossoms the attention of the tourist is for a time withdrawn from the scenes of grandeur and magnificence that surround him, and directed in spite of himself to the charming little beauty beneath his feet. It imparts a home-like appearance to this lofty and lonely locality. Its most constant companion is the Bluets, Houstonia carulea. It grows to nearly the same size but its leaves are smaller, and its smaller four-parted flowers are blue with a yellow center. The two plants are often found together on the upper parts of the slides, but lower down they separate, the one to appear again farther to the north, in Canada, Labrador, and even Greenland, as its name implies; the other to appear in the valleys and lower lands and warmer regions.

The Wood Sorrel, Oxalis Acetosella, though found on the mountain summit, is by no means peculiar to it. It occurs in great abundance in the woods of the Adirondack region, though sometimes it appears to be in a sterile condition, no fertile plants being seen, even in patches of great extent. The leaves themselves are objects of beauty and consist of three heart-shaped leaflets attached by their points to the summit of a common petiole or foot-stalk. Their cooling acid taste is very grateful to the thirsty tourist if perchance he at any time fails to find water with which to quench his thirst. The whole plant is but a few inches high, and the white flowers, which are scarcely half an inch broad, are beautifully striped within with red or purplish lines. The seed vessels, when mature,
burst elastically, after the manner of the pods of the Touch-me-not, and throw the seeds to a considerable distance.

The Dwarf Dogwood, *Cornus Canadensis*, sometimes also called Bunchberry and Sugarberry, is another plant that is very abundant throughout this region. It occurs both on the mountains and in the valley, in the woods and in open places. Although our other species of Cornus are shrubs or small trees, this one is herbaceous and is usually about four inches high. The leaves are somewhat clustered near the upper part of the stem which bears at its summit a cluster of small flowers surrounded by four white petal-like bracts in such a way as to resemble a single rather large white flower. The berries are densely clustered, and when ripe are bright red or scarlet and by some are deemed edible.

Another very common plant, and one characteristic of the whole mountain region, is the Northern Clintonia, *Clintonia borealis*. The stem is not conspicuous, the tuft of two to five smooth, glossy parallel-veined leaves, appearing to rise directly from the ground. From the center of this tuft a flower-stalk rises to the height of six or eight inches, upon the summit of which are three or more somewhat bell-shaped, nodding, six-parted, greenish-yellow flowers. The berries, when ripe, are of a deep blue color. The tourist who visits the mountains in July or early in August, may see in this plant a beautiful illustration of the effect of altitude in retarding vegetation. On the same day he may see it at the base of the mountain bearing ripe fruit, half way up the mountain bearing green fruit, while on the top of the mountain it will yet be in flower.

The Mountain Goldenrod, *Solidago thyrsoides*, is very characteristic of the mountain flora. What the Wood Sorrel, the Dwarf Dogwood and the Northern Clintonia are to the whole mountain region, this Goldenrod is to the summits of the higher mountains. There is probably no peak of the Adirondacks which attains an altitude of 4,000 feet on which this Goldenrod does not occur. It is not limited to the open summits, but springs up everywhere among the small scattered balsams of these high elevations. In ascending the high mountains we are sure to be notified of our near approach to the summit by the appearance of this plant, which half-sheltered and half-exposed among the balsams, is sure to attract our attention by its numerous golden-yellow flowers and its tall wand-like stem. It is generally two or three feet high, and bears its flowers along the upper part of the stem. There are a few in the axil of each of the upper leaves. They are supported on short
footstalks, and are more numerous and dense at the top of the stem. The leaves are ovate and sharply toothed on the margin and pointed at the apex. Its congener and companion on the open summit of Mount Marcy is the Alpine Goldenrod, Solidago Virga-aurea v. alpina; but this does not accompany it in the woods. The flowers of the two are very similar, but the stems of the Alpine Goldenrod are much shorter, rarely a foot in length, half prostrate or scarcely erect, and the leaves are either blunt or barely acute, and never taper out into a long, sharp point. They are more narrow than those of the Mountain Goldenrod, and gradually taper downwards to their point of attachment to the stem. The Mountain Goldenrod occurs also on the highest summits of the Catskill Mountains, but the Alpine Goldenrod does not follow it there.

Another companion of the Mountain Goldenrod, and one which usually accompanies it among the balsams, is the White Hellebore, Veratrum viride. It is sometimes called Indian Poke. The two grow together in great abundance about the camp near Lake Tear. The White Hellebore is a coarse and unsightly plant, with a stout leafy stem two or three feet high. It bears at its top a loose cluster or panicle of numerous rather small, greenish or yellowish-green flowers of little beauty. Its leaves are large, parallel-veined, somewhat plaited, and are attached to the stem by a clasping or sheathing base. Its forbidding aspect and dangerous qualities give it an unenviable reputation. Nevertheless it is said to be nearly or quite equal to the European Hellebore as an antidote to currant worms and other noxious insects. It is not strictly a mountain plant, but grows freely in low wet lands and extends far southward.

The Tufted Clubrush, Scirpus coespitosus, grows, as its name indicates, in dense tufts, after the manner of the Common Bullrush. The plants are slender and wiry, and are usually six to eight inches high. They bear at their tips a small, yellowish-brown, bud-like spike of inconspicuous flowers. It is abundant on the summit of Mount Marcy, but occurs, also, on nearly all the high peaks and slides of the Adirondacks. The fierce blasts of wind, as they sweep over the summits and blow through these tufts of rushes, produce a peculiar, shrill, whistling noise. Two or three fungi inhabit the dead or dying stems of this rush, of which Peziza scir-pina and Puccinia Scirpi are examples.

The grasses are well represented on Mount Marcy, seven species occurring there. Four of these, the Bentgrass, Richardson's Feathergrass, the Loose-flowered Poa and the Alpine Holygrass, I
have seen on the mountains only. The Bluejoint is common in wet places in the low lands as well as on the mountains. On the other hand, Pickering's Bluejoint lives among the mountains, although not always on the summits. It occurs at Lake Tear, Boreas Ponds and Lake Sanford.

The Red Raspberry, *Rubus strigosus*, occurs sparingly on the open summit, whither its seeds have been carried, probably by birds or small animals. No fertile plants were seen, and it is doubtful if it is sufficiently hardy to fruit in this bleak locality. The Black Spruce is an example of a plant that can live here, but its struggle for existence seems to require all its energies, for no fruiting plants are seen. They are indeed unable to develop themselves into trees, for they remain in the form of low, half-prostrate, matted bushes, bearing but a faint resemblance to the noble spruces of the slopes and valleys below. It is on the leaves of these starved and stunted spruces that the spruce rust-fungus, *Peridermium decolorans*, occurs. The Mountain Ash and the Paper Birch are also examples of trees sufficiently hardy to live here in a dwarfed condition, but not to produce fruit. The Balsam Fir, though generally dwarfed and sterile, has a constitution a little more hardy and in some depressed or sheltered places attains a height of four or five feet and bears a few small cones. Such shrubs as the Low Blueberry, Leather-leaf, Labrador Tea and Green Alder, though not limited to the mountain summits, are sufficiently at home there to bear fruit.

The most noticeable undershrubs are the Bog Bilberry, Cutler's Willow, the Crowberry and Lapland Diapensia. The first has a very bushy aspect, its branches being numerous, its leaves roundish and small, and its berries blue or bluish-black. It occurs also on the slides and at Lake Tear. The second and third are nearly prostrate in habit, and form close mats over the surface. The willow may be known by its round leaves and cottony aments, the Crowberry by its numerous small oblong leaves, black berries and heathlike aspect. The Lapland Diapensia grows in tufts or dense patches. It is almost herbaceous in aspect and but two or three inches high. Its leaves are very narrow, blunt, and scarcely more than half an inch long. They stand out in every direction from the stem, and are sometimes strongly curved. The stem is surmounted by a flower stalk which bears a single erect white flower about half an inch in diameter. The petals generally have disappeared by the time summer visitors reach the mountains.
Passing now to the notice of some of the cryptogamic or flowerless plants, it may be remarked that the summit of Mount Marcy is the only locality in which I have met with the peculiar variety of the Interrupted Clubmoss, *Lycopodium annotinum*, mentioned in the list. It differs from the ordinary form in its smaller size and shorter, more rigid and less spreading, sharp-pointed leaves. It is not plentiful.

Of the peat mosses the most singular is *Sphagnum Pylesii*, together with its variety *sedoides*, which scarcely differs from the type except by its simple unbranched stems. They are sterile here, and form soft mats of small extent on the wet surfaces of the rocks. The color is vinous red, sometimes tinged with yellow or green. Starting from the thin soil at the upper margin of an exposed sloping surface of the rock, the plants lie prostrate on the surface and parallel with each other, their tips pointing downward. Other species of peat moss have an erect mode of growth and are generally much paler in color.

One of the true mosses, the Shining Feather Moss, *Hypnum splendens*, found almost everywhere in mountains or hilly districts, also occurs here under the starved balsams of the summit. It is found growing in the woods on the ground, on rocks, or on decaying trunks of trees. In some places the ground is literally covered with its feathery carpet for long distances. Its stems are not straight and erect, but made up of a succession of peculiar curved segments. By this character it may be easily known. The first year it makes a curved growth of one or two inches. The next year it sends forth a shoot a little below the apex of the stem. This forms another curved portion similar to that already produced. Thus a new curve is added to the stem each year, their projecting tips all pointing in the same direction. This process is repeated indefinitely, but there is a limit to the length attained by the stem, for after a few years it begins to decay at the base and thus to counterbalance the yearly additions made above. Were it not for this decay, the stem would in time become of great length, and the age of the moss could at any time be ascertained by counting the number of arches in its stem.

The celebrated Iceland Moss, *Cetraria Islandica*, and the well-known Reindeer Moss, *Cladonia rangiferina*, scarcely need any special notice. Both are lichens, not true mosses as might be inferred from their common names. The latter is not at all peculiar to the mountains but occurs elsewhere in great abundance. Another Clad-
Cladonia occurs not only here but on all the open summits of the higher peaks, and is quite characteristic of the lichen flora of these localities. It consists of smooth white hollow stems two to four inches high, pointed at the apex, rarely slightly branched, and generally about as thick as a goose quill. They grow on the ground among mosses and other lichens, sometimes singly, sometimes in loose tufts or clusters. They at once attract attention by their white color. The plant was referred by Acharius to Cladonia vermicularis as a variety under the name taurica, but it is regarded by our own most excellent lichenologist, Prof. Tuckerman, as a variety of Cladonia gracilis. It is scarcely distinguishable from sterile forms of Cladonia gracilis v. elongata, as he justly observes, except by its white color. I have never seen it fertile.

Another noticeable lichen is Buellia geographica. It grows on the exposed surface of dry rocks and sometimes even on pure quartz. It is attractive by reason of its remarkable contrast of colors, its bright yellow dots or areoles being thickly scattered over a jet black background.

A few plants worthy of notice occur near the top of the mountain but do not reach its open summit.

One is found on the boggy shore of Lake Tear, a beautiful but diminutive sheet of water lying in the pass between Mounts Marcy and Skylight at an altitude of about 4,300 feet. It is a small shrub, scarcely more than a foot high. Its leaves are small, blunt, longer than broad and placed opposite each other on the branches. The flowers are yellow and open early in the season. The berries are blue, and in this locality are ripe in August. The plant is called the Mountain Fly-Honeysuckle, Lonicera caerulea. Its companions are the Bog Bilberry, Narrow-leaved Gentian, Bluets and other plants which occur also on the summit. Pickering’s Bluejoint was here found to be affected by a fungus smut, Ustilago Salvei.

Near the starting point of the slide is a station where the beautiful clubmoss known as Ground Fir, Lycopodium sabinafolium, is found. It is extremely scarce in the Adirondack region, and care should be taken by those finding it not to destroy or exhaust the localities. Fortunately the trail now does not follow the slide and there is less danger than formerly that this lovely clubmoss will be disturbed in its mountain retreat.

Under the sheltering balsam trees between the camp near Lake Tear and the open summit of the mountain, fine specimens of the typical form of the Bristly Shield-fern, Aspidium spinulosum,
were found. This form is somewhat rare, though other varieties of the species are common enough everywhere. Here also the leaves of the Dwarf Dogwood were spotted by the attacks of a parasitic fungus. The spots when fertile are suffused or frosted by a white mealiness which under the microscope is found to be masses of fungus spores. The fungus is a peculiar one to which I have been obliged to give both a generic and a specific name. I have given it the name *Glomerularia Corni*. 