

On the coast of Maine, especially on the plains of Kennebunkport where boreal plants are so common, I found large areas of it mostly about a foot high. On August 8, 1901, I saw near the Town House large patches which had red and purple fruit. In a few days this had darkened a great deal and was wrinkled and dull, while the normal fruit was plump and shining. In all cases the leaves and pedicels were glabrous.

It is evident that these plants need much further study and I should be pleased to hear from others in regard to them.

WESTMINSTER, VERMONT.

NOTES ON LYCOPODIUM.

R. G. LEAVITT.

LYCOPODIUM CLAVATUM, VAR. MONOSTACHYON ON MT. MONADNOCK. — In driving through elevated pasture land on the outlying southern slopes of Mt. Monadnock, New Hampshire, in November, 1901, I was attracted by a growth of *Lycopodium clavatum* covering a plot of dry open ground 12 or 15 feet in diameter, and noticeable even at some little distance for its unusual appearance. The plant differed from ordinary *clavatum* in having an exceedingly stiff habit, the secondary shoots being shorter and more erect, the lateral segments of these shoots less divergent, and the leaves far less spreading than in the type. The later leaves of each season were closely appressed, the latest particularly so, and thus the annual growths of the branchlets being plainly marked off the plant had a conspicuously articulated appearance. I found in all 70 peduncles bearing in each case a single strobile.

Analogous forms of *L. complanatum* and *L. obscurum* are to be seen where these species occur in open, dry situations. In *complanatum* we get short, sparingly branched, more or less erect segments, and reduction in the number of strobiles to each peduncle; in the *obscurum*, similar effects on the general habit, with certain resultant changes in the plan of the lateral segments. These variations, which are often very pronounced, are due to physiological causes. On the contrary the characters distinguishing the form of *L. clavatum* in question seem to be constitutional. The specimens taken agree with plants from further north, of the variety *monostachyon*. This

variety was the subject of a note in RHODORA for September, 1901. Dr. B. L. Robinson, the writer, found var. *monostachyon* abundant along with the type in northern Aroostook County, Maine, and at Grand Falls, New Brunswick, and states that in some places it becomes the prevailing form. Its range is indicated by the localities and regions cited, — Prince Edward's Island, Katahdin, Alstead, N. H., Lake Winnipeg, and the Rocky Mountains of British North America.

THE GEMMAE OF *L. LUCIDULUM*. On a sloping rock partly covered with leaf mold I found 25 young plants of *L. lucidulum*, of various ages, derived from gemmae. I was interested in noting that some of these plantlets were 3 feet from the nearest adult growth of the species, and at a level one foot higher. How did the gemmae reach this distance and elevation? They are said by various writers to "fall" or to be "spontaneously loosened" from the parent stems. Some time later when I found *L. lucidulum* with the propagative buds undisturbed, I was able partly to answer the question. Pressing down gently at the extreme edge of the cotyledon-like leaf of one of the buds I broke the gemma off. It did not fall but snapped, and landed 11 inches away. The second flew 25 inches, the third an equal distance. It seems then, that elastic recoil from some source may throw the ripe gemmae a little distance when these bodies are struck, as by rabbits or birds or perhaps by rain drops. The shape of the bud, which is slightly concave above and is held out as it were like the hollowed hand, palm upwards, lends some degree of plausibility to the idea that drops of rain or the heavier drip from trees may be the usual means of loosening the gemmae. The range of the trajectory may be 3 or 4 feet, at the greatest. This, I take it, is about 40 times the annual advance by growth. The time taken for bud-derived plants to mature, before another saltus of this kind can occur, must very greatly reduce the relative gain in dissemination as effected solely by snapping of the gemmae; perhaps the ratio of gain may be 3 or 4.

Archangeli says that the gemma, or "bulbil," of *L. Selago* — very similar to that of *L. lucidulum* — falls off, and that, without any disarticulation by cellular disintegration, the tissues of the short pedicel bearing the bulbil are ruptured through the pressure of cushion-like swellings arising on the bases of the fleshy side leaves of the bulbil and jutting against the upper leaves of the pedicel. When the stress due to the growth of the swellings is greatest, a downward blow may convert the pressure into an efficient propulsive force.

LYCOPODIUM COMPLANATUM, VAR. FLABELLIFORME.—The main stem of *L. complanatum* is spoken of by Gray's Manual as "extensively creeping (often subterranean)." The *L. complanatum* of the Manual is the variety *flabelliforme*, Fernald. By my observation the main stem is very much oftener unbranched—the vertical secondaries aside—than branched. On the average of many plants examined, it divides less than once in five or six years. And I have never found it subterranean. It creeps onward in a single line, as a rule reaching forward annually a foot more or less, and always running over the surface unless by accident the tip meets an obstruction. If the way is barred the tip may make a detour and become for a short distance in a manner subterranean. Otherwise it lies upon the surface. The duration of the stem is five or six years; that is, the oldest part, which is about to be overtaken by decay, is five or six years old. Naturally in the course of so many years the stem often becomes covered with leaf mold. It does not, however, seek a subterranean path, so far as I have been able to find.

These points with regard to var. *flabelliforme* are of some value in determining the standing of the variety (?), or species (?), *chamaecyparissus*.

The number of strobiles to the peduncle I find very variable, according to local conditions. Strong light and dry soil tend to restrict the branching of the fruiting axes, and this effect is often marked. For example a plant collected without particular attention to the number of spikes proves to have the following strobilation.

Strobiles per peduncle	1	2	3	4
Cases found	3	9	2	0
The average number of strobiles is 1.9 —				

At Jaffrey, New Hampshire, I gathered a good number of spikes from a variety of situations in order to obtain some idea of the tendency of the plant in that region in the matter of branching of the inflorescence (if we may so speak or the "fruiting" parts). The count shows such a degree of variation that one may probably conclude that the influence of soil, light, etc., is greater than that of geographical position. At least it indicates that it would be a very arduous task to make even an approximate determination of the general tendency in any district. Spikes gathered in an open fallow field, in moderately dry soil, where there was no shade, gave the following figures:

Strobiles per peduncle	1	2	3	4	5	6
Cases found	1	67	249	195	1	0
Prevalent number 3, average 3.25.						

In low, rich woods the following results were obtained:

Strobiles per peduncle	1	2	3	4	5	6
Cases found	0	10	74	457	32	2

The fours predominate strongly; the average number is 3.9.

THE AMES BOTANICAL LABORATORY, North Easton, Massachusetts.

PLANTS NEW TO EASTERN MASSACHUSETTS.—On June 14, 1901, I found in a rocky path on the south side of one of the Blue Hills in Milton, several specimens of *Carex glaucoidea*, Tuckerm. This plant has not before been reported east of Mt. Holyoke, Massachusetts, in the Connecticut Valley, when Tuckerman discovered it in June, 1865, in a similar rocky path on the south side of the mountain; from this point it has been found west and south to Illinois and Arkansas. July 9 I noticed near the roadside in Milton a new *Hieracium*, *H. vulgatum*, Fries. The plants were in abundance behind an old wall on land that had not been cultivated for twenty years or more and included specimens of very varying size from three to thirty-two inches high.

On Aug. 15, at Scituate, I saw a singular looking brown *Juncus* resembling *J. nodosus*, L., which I took to be *J. scirpoides*, Lam., but on examination it proved to be *J. brachycarpus*, Engelm. This quite southern species is reported in the February RHODORA as found near New London, Connecticut, the past season by Dr. Graves, both stations new to New England. At Scituate it grew on a gravelly ridge about a third of a mile from the ocean, and in a patch of peculiar reddish soil quite different from the general soil of the ridge. The gravel was in small equal sized particles with a peculiar greasy feeling to the hand; and neither the plant nor the soil were observed elsewhere.

As an explanation of one possible distribution of plants I have never seen any notice taken of the transportation of soil from any distant place to another locality; but some years ago while walking in Wareham, Massachusetts, I noticed a bit of fossil rock in the highway much like the stones on the Potomac shore near Mt. Vernon,



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