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SATURDAY, FEB. 19, 1887.

"MUSCIE"

A TALK ABOUT MOSSES.

Written for the Tribune:

"The tiny mosses, whose silken verdure clothes The time worn rock, and whose bright capsules rise Like fairy urns on stalks of golden sheen. Demands our admiration and our praise. As much as cedar kissing the blue sky. Or Krubal's giant flower. God made them all: And what He deigns to make, should ne'er be deem'd Unworthy of our study and our love."

The poet says much that is true in the lines above. All of our readers may not understand the reference to "Krubal's giant flower." It is the blossom of a huge tropical parasitic plant infesting the trunks of the gigantic trees of those regions, and incredible as it may appear, this flower is three feet in diameter. A little moss seems very humble when mentioned in the same breath with such an enormous flower, and, yet, no matter how lowly a plant may be, it was created by the same great Power that called us into being; for that reason, if for no other, it should not be beneath our notice.

The mosses belong to the Cryptogamia—a word compounded of two Greek words meaning, to conceal and upwards. This name is applied to the great division to which the mosses are referred, because all plants belonging to it are wholly devoid of true flowers and seed. They all propagate by means of spores and co-related bodies, which, sometimes, are quite evident, but very often are not found at all. So the scientific name is very applicable.

Mosses have two kinds of fructification. The first is the most conspicuous, containing the spores or seeds in a receptacle called an urn. The second kind is not so conspicuous. It is usually minute and of ten wanting entirely. It consists of cylindrical bodies clustered in the axils of the leaves. These bodies are supposed to answer the same purpose as the stamens in flowering plants and may occur on the same plants with the urns or grow on different individuals. They open at their points irregularly and discharge a more or less sticky, granular substance, supposed by some to answer the same purpose as pollen, viz.—the fertilization of the young seeds.

The urn is, however, the most important organ of fructification and receives more particular attention than the other organs of the plant. Its presence adds greatly and sometimes wholly, to the beauty of some mosses. It is usually borne at the summit of the slender stalks which generally arise either from the end or the side of a branch, but there are numerous exceptions to this rule. Its shape varies as much as its position. Sometimes it is round and almost globular, or it may be egg-shaped, or four-sided, and so on. Its color likewise varies with the species to which it belongs. It may be all shades of green, red, or brown, and varying all the way from dirty white to jet black. Sometimes it is very small and inconspicuous, and again it is so large in proportion to the rest of the plant that, at a first glance, one would notice nothing else.

While the urn is young, that is, before the little spores within are fully developed it is more or less completely enveloped by a hood, called a veil; when the spores are nearly ripe this veil falls off, (in some species it falls off while the urns are quite young) revealing the naked urn surmounted, and closed by a lid, (There are a few species that have no lid) and when the spores are fully ripe the lids drop off and the spores are discharged. When the lid is removed we can examine the mouth of the urn. Important generic descriptions are founded upon its character. It is usually surrounded by a fringe, single or double, but some species are destitute of this appendage. The individual parts of this fringe are called teeth, and the number of teeth in a fringe is often employed by botanists in describing the essential

differences between one species and another. This fringe affords the most beautiful object imaginable under the microscope.



I have had the above cut made to illustrate the urn. The engraver has not made his work as accurate or distinct as the original drawings but he has preserved the essentials of the illustration. The central figure represents a moss known as Polytrichum juniperinum, or Juniper-leaved wheat moss bearing an urn at its apex still inclosed by the hood or veil; at the upper right hand corner we see this veil as it appears after removal. Its rim splits into diverging segments giving it a pretty appearance; and in between is shown the unveiled urn with its lid removed, the lid appearing just above it to the left. The urn it will be perceived is four-sided. This moss is common everywhere in this country and in Europe. The figure at the lower left hand corner shows a goblet shaped urn with its lid detached.

Mosses, like lichens grow almost everywhere; they may be found on dry sun-scorched rocks as well as in the shady woods or along the banks of streams. While there are kinds that will grow nowhere but on those dry rocks there are others that can live only in the water. Example: The beautiful mosses in the Giant Spring. Thus we see that the All-wise Creator has caused to exist, even in the mosses, nature adapted to every imaginable habitat; yet, each kind flourishes only in its natural abode. The rock-growing kinds would die and decay if kept in water, while the aquatic kinds would be destroyed by the scorching sun and wind if exposed to their influence. It is no doubt mainly by this law that the great diversity in nature is maintained.

These lowly plants have called forth the praise of many a poet and have been often used as illustrations by them. In an unscientific article of this kind it will not be amiss to introduce a few fragments as examples of the poets' praises of the mosses. Tennyson puts into his poem "The Miller's Daughter," the following. It is the husband of the miller's daughter who utters it:

"And oft I heard the tender dove In fiery woodlands making moan; But ere I saw your eyes, my love, I had no notion of my own, For scarce my life with fancy play'd Before I dreamed that pleasant dream— Still hither, father, thy spray'd Like those long mosses in the stream."

Even the most churlish soul would say that the Giant Spring had lost its greatest beauty if those long mosses which sway in its current were dragged out. What a rich appearance the mosses and "excellent greens" give to that spring! How refreshing and attractive to the eye they make it! There is an old distich which says:

"The ferns loved the mountains, the mosses the moor, The ferns were the rich, the mosses the poor."

An old legend says that once upon a time each of these plants kept within its own locality; but, old Sol scorched the mosses and the wind dried up the roots of the ferns. Thus, by affliction they become sensible of their duty and agreed to help each other. The tall ferns shielded the mosses from the sun and the mosses covered the roots of the ferns keeping them from the wind, thereby preserving their moisture. This story teaches a moral, viz: That man, rich or poor, is dependent upon his fellow beings. The rich need the services of the poor, while the latter need some of the wealth of the rich.

Byron, in Childs Harold's Pilgrimage, Canto IV says:

"The mosses of the fountain still are sprinkled, With thine Elysian water-drop."

And who is there who has not seen the pleasant cave with its dripping roof festooned and covered with soft green mosses, like green plush, only far more handsome? Who has not sat in such a retreat on a hot day, listening to the hum of the bees and the songs of the birds without enjoying the fresh green coloring of the mosses and the silvery tinkle of the little rill within? Montana, the land of mountains, abounds with such inviting nookeries fashioned by the hand of Nature. Hear what the poet has to say of such pleasant retreats:

"Drip, drip, drip, In that cool and shady cave, From the basin in which the moss and fern Their crumpled edges lave, Roofed by the living rock That arches overhead, Ever by night, and ever by day, Trickle that crystal thread. Ever in Summer's heat, Ever in Winter's cold, Ever in Spring's young verdure, Ever in Autumn's gold— Welling up from its secret urn."

Purling its wreath of moss and fern, Pure and cool to the thirsty lip,— Ages have echoed that ceaseless drip."

We are accustomed to the sight of vegetation blending into one harmonious effect with the rocks and the water, and we do not stop to consider each distinct part that goes to make up the beautiful whole. There is too much hurry in these days to permit, in most cases, of more than generalized ideas and impressions of anything; a strict examination of individual parts would take up too much time. But, does anyone stop a minute to speculate as to what the appearance of our most beautiful springs and grottos and laughing water-falls and shady banks would be if the paltry little mosses were swept away at one blast! As the preachers often say, "throw not!" Not until such an unlikely event occurred would people understand or appreciate the wonderful charm that these plants give to the scenes to which they belong. And then they would miss them with a great miss. Wordsworth has spoken of the thorn all overgrown with lichens and mosses, calling it "a melancholy crop," then he says that:

" * * * Close behind this aged thorn, There is a fresh and lovely sight, A beauteous heap, a hill of moss Just half a foot in height. All lovely colors there you see, All colors that were ever seen; And mossy network too, is there, As if by hand of lady fair. The work had woven been."

Perhaps he was in a melancholy mood when he called these plants a melancholy crop. Perhaps he had some such sentiment as this:—

"The night is mother to the day, The winter of the spring And ever upon old decay, The greenest mosses cling."

But never mind what his sentiments were. Our talk is supposed to be about mosses. My readers may expect some descriptions of our Montana mosses; if they do, they will expect in vain. We have many mosses here, but very few of them have common names, and a lot of italicized Latin names would be of no use to the general reader. I suppose that the Mr. Robt. S. Williams and myself between us have collected in this locality, thirty or forty kinds of mosses. This is only a small proportion of what may be still expected, for we have paid heretofore, no special attention to the collecting of these plants.

That wonderful and daring African explorer, Mungo Park, who finally lost his life at the hands of the natives while exploring the river Niger, was a medical doctor and possessed an ardent love for botany. He could appreciate the mosses, as will be seen from the following that I have transcribed from his "Life." It will be best to describe the circumstances of the case first. He was travelling alone in the heart of Africa, for his only companions, who were Negroes, had fled. He was sick from exposure and need of food, and his clothing was not in the best repair. The sole of one boot was tied to the upper by a broken bridle rein. Here was this undaunted man still pushing onward in the interior of Africa among hostile Negroes and more hostile Moors, all alone and with nothing to eat. He was travelling in this fashion one day when a party of banditti surrounded him, led him to a wood, robbed him of everything he had, and stripped him naked. I give his own words from this point on:

"Humanity at last prevailed: they returned me the worst of the two shirts and a pair of trousers; and, as they went away, one of them threw back my hat, in the crown of which I kept my memorandums; and this was probably the reason he did not wish to keep it.* After they were gone, I sat for some time looking around me with amazement and terror. Which-ever way I turned, nothing appeared but danger and difficulty. I saw myself in the midst of a vast wilderness, in the depth of the rainy season, naked and alone, surrounded by savage animals and men still more savage. I was five hundred miles from the nearest European settlement. All these circumstances crowded at once on my recollection, and I confess that my spirits began to fall me. I considered my fate as certain, and that I had no alternative but to lie down and perish. The influence of religion, however, aided and supported me. I reflected that no human prudence or foresight could possibly have averted my present sufferings. I was indeed a stranger in a strange land, yet I still was under the protecting eye of that Providence who condescends to call himself the stranger's friend. At this moment, painful as my reflections were, the extraordinary beauty of a small moss in fructification irresistibly caught my eye. I mention this to show from what trifling circumstances the mind will sometimes

*The Africans and Moors have a great belief in charms—saphires, as they call them, and it is likely the bandit, seeing the memorandums, threw back the hat, thinking it contained a saphire, fearing that harm might come to him if he stole the white man's charm.—R. W. A.

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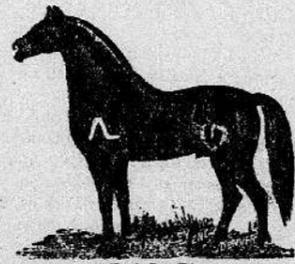
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