

NOTES FROM BOTANICAL LITERATURE.

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A very interesting Bulletin of eight pages on the Chrysanthemum Rust has been issued by J. C. Arthur, botanist of the Indiana Agricultural Experiment Station. It is No. 85, and is dated October, 1900. Dr. Arthur gives a general account of Uredineae or Rusts, explaining that the typical forms have three prominent sets of spores, namely (1) aecidiospores, usually red or orange in little white cups, (2) uredospores, generally of a rusty yellow color and abundant (hence the group name, Rusts), and (3) teleutospores, or the Winter spores, usually dark brown or black. He further states that only uredospores have yet been found in Europe and America, and since the fungus is an annual, it is puzzling to see how it escapes extermination in winter and spring when Chrysanthemum plants are latent.

The assumption that this was the well known and common *Puccinia hieracii* or *Puccinia tanacetii* he proves to be incorrect by inoculation experiments. Uredospores from Chrysanthemums he sowed on Chrysanthemums and obtained a crop of uredospores. Similar uredospores sowed on Dandelion, Burdock, and Ox-eye Daisy produced no infection; uredospores from the latter hosts sown on Chrysanthemum likewise produced no infection. Uredospores from Dandelion sown on Dandelion produced uredospores. Others have tried similar experiments, using Tansy, Costmary, Orange Hawkweed, Giant Daisy, and Marguerite, besides the host plants named above, but the Chrysanthemum Rust refuses to grow on any of them. This Rust, which is common and well known on the Chrysanthemum in Japan, has been named *Puccinia chrysanthemi* by Rose.

In connection with suggestions relative to combating the disease, Dr. Arthur says that "so long as the teleutospores do not make an appearance in this country, the careful cultivator may feel assured that a moderate amount of timely effort will enable him to rid his establishment of the Rust, if he is so unfortunate as to have it donated to him by some careless florist. Observations made by the writer and others show that the tendency is for the disease to disappear of itself, to run its course in an establishment and die out, which is very likely to some extent due to the absence of teleutospores."

BRYOLOGY.—Mrs. Britton's popular articles on the Mosses and how to study them, that have appeared from time to time, furnished the directions and incentive to many who before had taken little or no interest in this group of plants. Her purpose and plan are imitated and extended in a charming little book, that has been prepared

and published by Dr. A. J. Grout, of the Boys' High School, Brooklyn, New York, called "Mosses with a Hand-Lens." The author says that many years of study of Mosses in the field and in Herbaria have convinced him that "any person of average intelligence can easily learn to recognize seventy to one hundred common mosses, with the aid of a hand-lens of ten to fifteen diameters magnifying power."

I have Dr. Grout's permission to reproduce two illustrations, which represent fairly that phase of his valuable book. Figure 9 shows *Ceratodon purpureus* L., and the text pertaining to the same is as follows: "*Ceratodon* is one of the commonest of all our mosses. It is found on the edges of paths, roofs of old buildings, sand by the seashore, and in general any barren compact soil is its favorite habitat. The plants are short and grow close together, forming dense thin mats of dark green. The lance-like young sporophytes appear early in spring as soon as the snow is melted. By the middle of summer the capsules often decay beyond recognition, and the seta breaks from the plant at the touch.

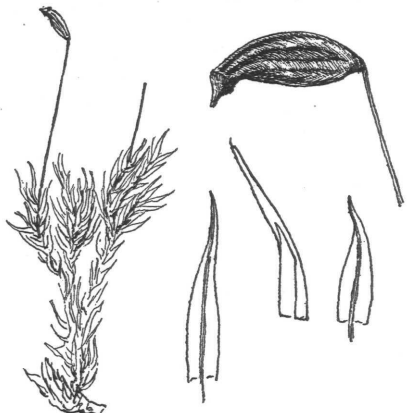


Fig. 9, *Ceratodon*.

Unless one has become very familiar with *Ceratodon* it is not always easy to recognize it without mature capsules. When the capsules have fully matured they shrink when dry and become furrowed. This peculiar furrowing, the dark rich color of the capsules, a color called purple by the older botanists, but which is really a very dark chestnut or red-brown, make it easy to recognize this species."

Plate II. shows the Hair-cap Mosses, *Polytrichum*, the largest of all our species. There are four common species all having square capsules which character distinguishes them from *Pogonatum*s, the latter having cylindric capsules. "The Ohio Hair-cap without the sporophyte (seta and capsule, commonly called fruit) is not readily distinguished from the Common, as the leaves and general appearance are very similar. But with the sporophyte present, the distinctions are clear. In figs. b and d (Plate II.) note that the capsule of the Common Hair-cap is almost cubical, that the lid has a *very short beak*, and that the capsule is entirely covered by the calyptra. The capsule of the Ohio Hair-cap (e) is elongated, slender with a tapering neck, and with a much longer beak to the lid. The lid and the calyptra of the Ohio Hair-cap fall early in June, very soon after the spores are ripe, and it is not always easy to find either in position, but if the calyptra be found, it will be seen to cover the upper portion of the capsule only. The Common Hair-cap, although occurring in woods, is most common in open fields; the Ohio Hair-cap being

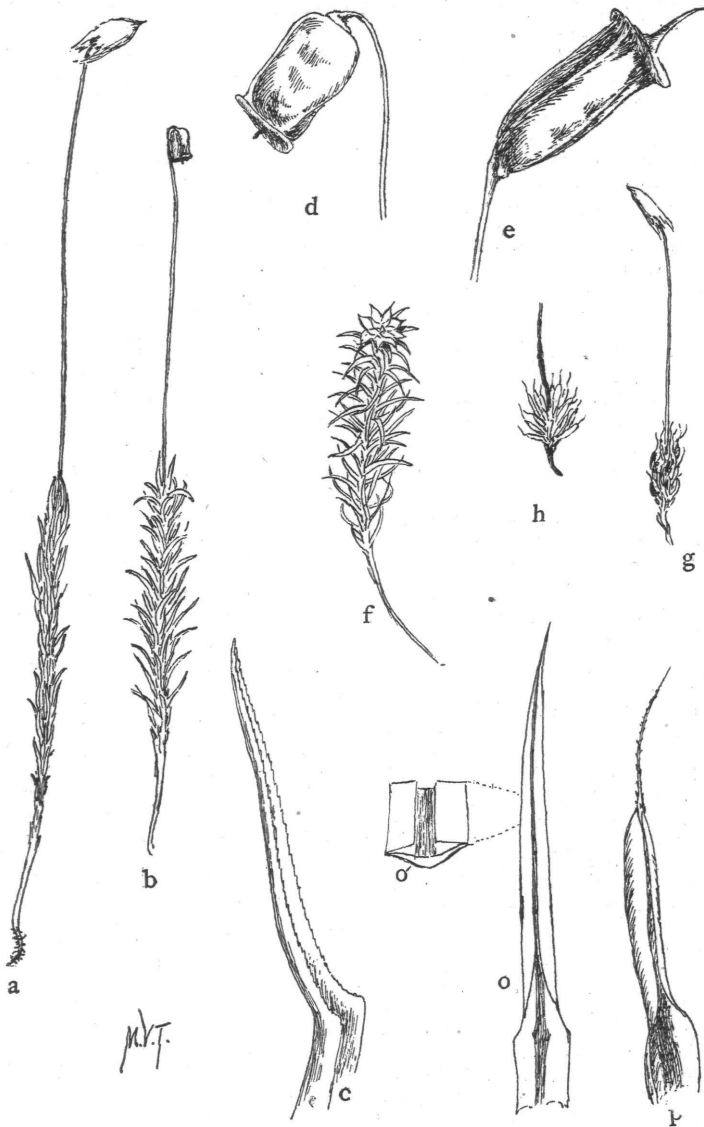


Plate II., Polytrichum or Hair-cap Moss.

Figs. a (dry), b (moist), c (leaf), d (capsule) and f are *P. commune*;Fig. e, capsule of *P. ohioense*;Figs. g, h and p, *P. piliferum*;Figs. o and o', *P. juniperinum*.

most frequent in shady, more moist spots, often in deep woods. The remaining two species are easily distinguished from the two mentioned above by the margins of the leaves, which are thin and membranaceous, and are folded in over the central portion of the leaf, as illustrated in o, o' and p."

I can not too strongly commend "Mosses with a Hand-Lens" (price \$1.10) prepared with the purpose of giving "by drawings and descriptions the information necessary to enable any one interested to become acquainted with the more common mosses with the least possible outlay of time, patience and money." The book contains a key to the genera based mainly on structural characters and one mainly on habitat, also many keys under the genera; copious illustrations, clear and accurate on almost every page of the text and eight full-page plates from drawings by Mary V. Thayer; and an illustrated glossary of bryological terms.