

## Trichomanes Gametophytes in Massachusetts

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The final event in the 1976 New England Fern Conference convened by area pteridologists was a morning field trip to Mt. Toby, in Franklin County, Massachusetts. An unexpected find on this foray was the filamentous gametophytes of an unknown species of *Trichomanes*. These were growing far back in crevices in non-calcareous, conglomerate rocks (pH 7) exposed along a small creek at the base of Mt. Toby. This is the habitat typical of the *Trichomanes* and *Vittaria* gametophytes found commonly in the southern Appalachian Mountains (Farrar, 1967, 1971). By shining a flashlight into the dark recesses, plants were seen to be relatively abundant, although individual clones were not extensive. The largest clone occupied an area approximately 50 cm<sup>2</sup>, whereas most were less than two cm in diameter. A subsequent foray provided additional specimens from this site.

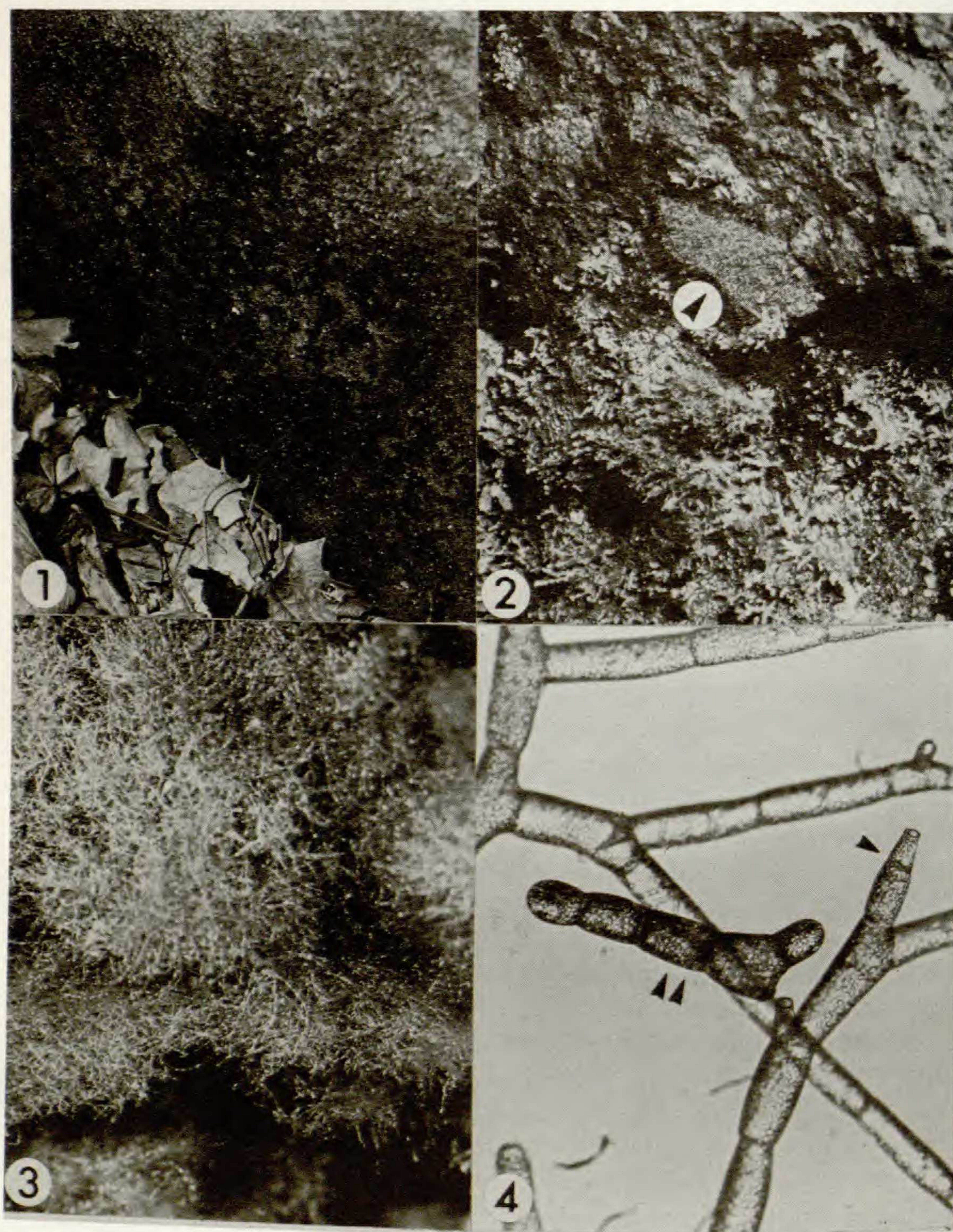
The discovery of *Trichomanes* gametophytes in Massachusetts is of considerable significance. This site is over 400 miles northeast of the most northerly stations previously known in Hocking County, Ohio and Pendleton County, West Virginia. It is also the first collection of *Trichomanes* from a site well within the area glaciated during the Pleistocene. All previous collections, which extend from West Virginia and Georgia westward to northwest Arkansas, are from unglaciated areas which have existed as dissected uplands at least since the late Tertiary.

Throughout their range in the temperate United States, the gametophytes are sterile. They often lack sex organs and apparently never produce sporophytes. Their reproduction is by vegetative buds, called gemmae (Fig. 4). Sporophytes of two species of *Trichomanes*, *T. boschianum* Sturm ex v. d. Bosch and *T. petersii* A. Gray, occur in the same non-glaciated range as the *Trichomanes* gametophytes. A few diploid populations of *T. boschianum* produce viable spores, but most populations of *T. boschianum* and possibly all populations of *T. petersii* in this area are polyploid and produce aborted spores. Sporophytes of both species produce dispersable vegetative buds.

Although the *Trichomanes* gametophytes in the temperate United States have generally been assumed to be of the same species as these sporophytes, this has not been proven. The occurrence of gametophytes in Massachusetts, over 400 miles from either sporophyte species, decidedly increases the probability that species other than *T. boschianum* and *T. petersii* may be represented. This collection also points out the need for further search in the northeastern United States. It is likely that discovery of *Trichomanes* gametophytes will enlarge the pteridophyte flora of most New England states. We thus encourage field workers in this area to search for these small, alga-like plants (Figs. 1-4) and to report to us any additional discoveries. Specimens from Mt. Toby have been sent to the Gray Herbarium, the U. S. National Herbarium, and the Herbarium of the New York Botanical Garden.

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FIGS. 1-4. *Trichomanes* gametophytes. FIG. 1. Dark, overhanging rock outcrop nearly covered by clones of gametophytes,  $\times 1/5$ . FIG. 2. Clone of gametophytes (arrow) surrounded by various bryophyte species,  $\times 1/2$ . FIG. 3. Clone of gametophytes demonstrating growth habit,  $\times 10$ . FIG. 4. Gametophyte filaments with characteristic gemma (double arrow) and gemmifers (arrow),  $\times 150$ .

#### LITERATURE CITED

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