

# LEPTOLEGNIA FROM NORTH CAROLINA

(WITH PLATE 16, CONTAINING FIVE FIGURES)

W. C. COKER

*Leptolegnia caudata* De Bary, the only known species of the genus, was found twice by De Bary from mountain lakes in Germany in 1881 and 1884, and has not certainly been seen since. In Rabenhorst's *Kryptogamen Flora* (1<sup>4</sup>: 346) Dr. Fischer refers to a sterile plant that he thought might be this species, and Dr. Roland Thaxter writes me that he has seen a form without sexual reproduction that resembled *Leptolegnia*.

The genus was defined by De Bary as follows:\* "Eine Oospore, das ganze Oogon lückenlos erfüllen; sonst wie *Saprolegnia*"; and the species was described in some detail a little later.†

At Chapel Hill, North Carolina, in the fall of 1908 I found in a culture jar of algae, that had been brought into the laboratory from pools in the vicinity, a species of water mold that proved to belong to this genus. It has now been cultivated for almost a year and carefully studied in all stages.

At the last meeting of the North Carolina Academy of Science in May of this year (Reported in *Science* 30: 188. Aug. 6, 1909) I referred our plant to a new species, and I still think that from some points of view it might be so considered. But further cultivation in different media shows so great a variability that I have decided to take the conservative course and refer the North Carolina plant to *L. caudata*.

In my observations certain facts have been established that add to or are at variance with De Bary's description, and it may be well to record them.

My observations on the sporangia agree with De Bary's except that in old cultures the sporangia may become very complex from

\* *Botanische Zeitung* 46: 609. 1888.

† *Botanische Zeitung* 46: 631. 1888.



the extension of a single sporangium into a number of adjoining branches. In Fig. 1 is shown such a sporangium that was observed before and during the discharge. All the spores emerged from the tip of one of the branches (at *a* in the figure) and the spores at the tips of the other branches had to travel all the way down these and out at *a*.

De Bary does not mention the shape or behavior of the spores, but I found them to exhibit some remarkable peculiarities. In nearly all cases they emerge from the sporangium much drawn out, as long, more or less cylindrical rods, with the two cilia attached to the center on one side. As soon as they escape, the two ends of the rod begin to fold backward, away from the cilia, and fuse as they go, until by complete fusion they lose their identity and form a pear-shaped spore with the cilia near the tip, and the long axis at right angles to the original rod. By killing the spores during emergence they were caught in all stages of this transformation and drawn to illustrate the process, as shown in Fig. 5; in which *a* shows several spores that were killed in the sporangium. They become more elongated as they pass out and on emergence have the shape shown in *b* or *c*.

The dimensions of the oögonia were not given by De Bary, but I find them to be  $30\mu$  or  $40\mu$  in diameter, and essentially spherical except where modified by slight protuberances to meet the antheridia. Judging from the figures, the oögonial branches as seen by De Bary were shorter than I found them to be, but in other respects not different. Two, three, or even more antheridia to the oögonium were common in my material. In one case I counted five. More than two are not mentioned by De Bary. The antheridial branches are generally borne as rather short offshoots from a slender main branch that shows a marked tendency to twine about the larger female branches (Figs. 2 and 3), but they may terminate a long branch. They are always of diclinous origin.

The transference of material from antheridium to oöspore was left in doubt by De Bary, and I have not seen the actual passage of such material. The evidence however is convincing that fertilization does take place. The antheridium is full of protoplasm when it is cut off, and is empty a little later; and the amount of



Coker, William Chambers. 1909. "Leptogenia from North Carolina." *Mycologia* 1, 262–264.

**View This Item Online:** <https://www.biodiversitylibrary.org/item/173516>

**Permalink:** <https://www.biodiversitylibrary.org/partpdf/246164>

**Holding Institution**

Smithsonian Libraries and Archives

**Sponsored by**

Biodiversity Heritage Library

**Copyright & Reuse**

Copyright Status: Not in copyright. The BHL knows of no copyright restrictions on this item.

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.