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IV.—ON A NEW FOSSIL FUNGUS FROM THE NEBRASKA PLIOCENE

BY A. C. WHITFORD

While studying the fossil woods of Nebraska, under the direction of Dr. E. H. Barbour, it was my good fortune to find an interesting specimen. This specimen is in the collection of fossil woods in the Nebraska State Museum, and was collected by Dr. Barbour from the Pliocene, or Snake Creek beds, about 20 miles south of Agate, Nebraska, during the summer of 1911.

The specimen itself is about six inches long by four inches wide and two inches thick. It has the appearance of typical agatized wood, but has numerous limonite streaks running through it. Upon sectioning the specimen, there was no woody structure to be seen, except very isolated cells of resistant tissue, such as the separate cells of tracheae. It showed all the signs of complete decomposition save in exceptional places. From a series of sections, it seems that the specimen is an Angiosperm of the diffuse porous type, but no further classification is possible.

Many spores and hypha were found upon closely examining the sections to ascertain the cause of the decomposition. These were in a nearly perfect state of preservation, and showed the various phases of the fungus in an excellent manner, save that the cell walls were slightly crinkled. It was also observed that the spores were generally in the brown streaks, although a few were found in clear parts. On the other hand, hypha were common in the clear parts of the specimen.

The structure of the fungus at once suggested that of *Cladosporium,* and close comparison established the similarity. Dr. Felix has described a specimen of *Cladosporites,* which he says is very closely related to the *Cladosporiums.* He has called this species *Cladosporites bipartitus* from the fact that all of the spores were two-celled. His description is as follows: " Conidia, elliptical

or pyriform. From .0102 to .0119 mm. long and from .0051 to .0068 mm. wide. Smooth, brown, divided into two parts by a septum, the upper round, and the other roundish-pyriform. The filaments of the mycelium are septate and ramifying, and at these places are protuberances upon which the conidia are formed. No conidiophores are known." This plant was found in the Eocene of Austria in a specimen of *Helitoxylon roemeri*. The description of the above shows it to be similar in the main features to the one under consideration. The differences may be noted from the following description:

Cladosporites ligni-perditor, sp. nov.

Hypha.—Septate branched, some of the branches smaller. Color, clear brown. The upper ends, where the conidiophores are attached, are swollen. The cells of the smaller hypha are .023 to .029 mm. long and from .021 to .023 mm. wide. The larger hyphal cells are from .0044 to .0046 mm. wide and from .03 to .046 mm. in length. See Plate I, figs. 1 and 2.

Conidiophores.—Septate nodulose, and of a clear brown color. These are common and serve as a mark of distinction, or else the specimen under consideration is a more complete plant than that described by Dr. Felix. See Plate I, figs. 3 and 4.

Spores.—Two kinds. First, one-celled. These are globose or elliptical, smooth, of a light brown color, and grow in chains. Length .0046 to .0115 mm. and width from .0023 to .0069 mm. See Plate II, figs. 1, 2 and 3. Second, two-celled spores. Divided near the middle by a septum, upper part globose, lower triangular to triangular-globose. Smooth and clear brown. These were not found in chains. Length from .0161 to .0253 mm. and breadth from .0069 to .0115 mm. See Plate II, figs. 5, 6 and 7. In the modern genus, the one-celled spores are formed by a breaking up of the two-celled. This may perhaps be found in the fossil species, as shown in Plate II, fig. 4*a*, *b*, and *c*, which seems to show progressive stages of division.

COMPARISON WITH CLADOSPORITES BIPARTITUS FELIX

	C. bipartitus	*C. ligni-perditor* sp. nov.
One-celled conidia—Absent		Present
Two-celled conidia, length	.0102–.0119 mm.	.0161–.0253 mm.
Two-celled conidia, width	.0051–.0068 mm.	.0069–.0115 mm.

Hypha in both are the same, although more complete in c.

Acknowledgments are due to Doctors Barbour, Bessey, and Walker for suggestions, and for placing material and equipment at the disposal of the writer.

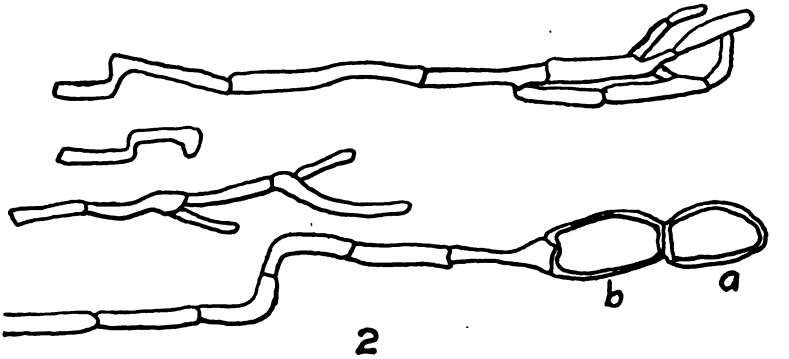
EXPLANATION OF PLATE I

FIG. 1. Large hypha with conidiophores, *a*.
FIG. 2. Large and small hypha, branching with one-celled spores, *a* and *b*.
FIGS. 3 and 4. Conidiophores.

EXPLANATION OF PLATE II

FIGS. 1, 2 and 3. One-celled spores singly, and in chains.
FIGS. 4, 5, 6 and 7. Two-celled spores.
FIG. 4*a*, *b* and *c*. Showing one-celled spores produced by the breaking apart of the two-celled forms.

PLATE I.



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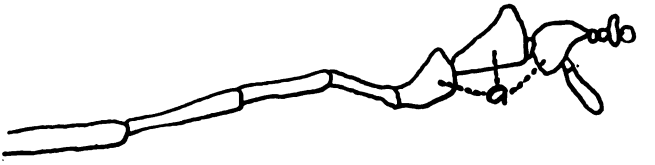

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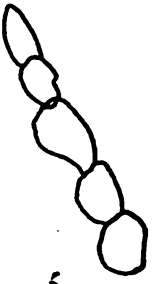

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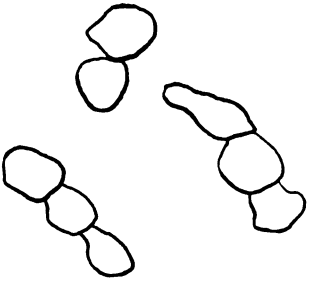

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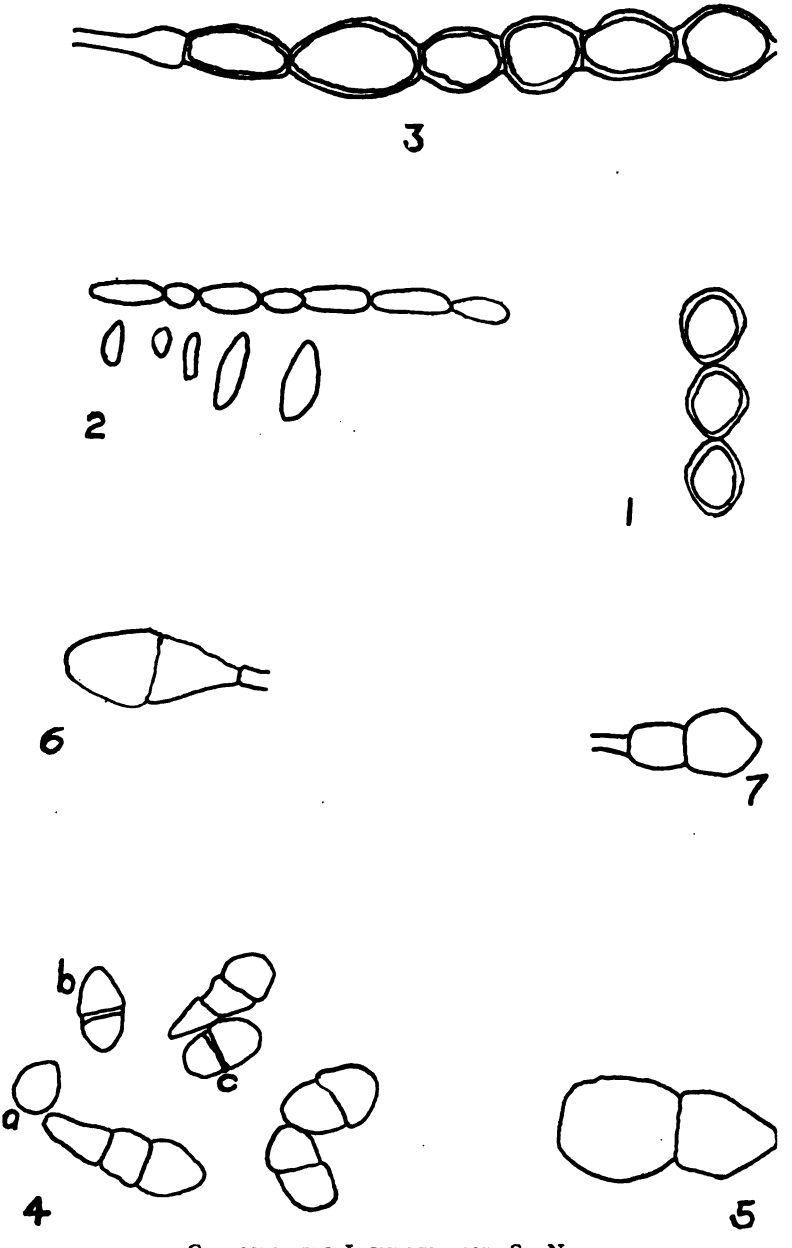
CLADOSPORITES LIGNI-PERDITOR, Sp. Nov.

PLATE II.



CLADOSPORITES LIGNI-PERDITOR, Sp. Nov.