

PALEONTOLOGY.—*A caddis case of leaf pieces from the Miocene of Washington.*¹ EDWARD W. BERRY. (Communicated by JOHN B. REESIDE, JR.)

The aquatic larvae of the so-called caddis flies (*Trichoptera*) construct a variety of protective cases of a variety of materials. These are frequently fossilized, and are especially liable to be encountered in continental deposits, since the larvae inhabit all sorts of fresh water environments.

Last year I described² a new type of fossil caddis case constructed of leaf pieces, which occurs very abundantly in the lower Eocene (middle Wilcox) of western Tennessee, in what were interpreted as lagoonal deposits. These cases were broad and depressed, and were neatly constructed of symmetrically cut pieces of drift leaves.

The habit of utilizing leaf fragments in the construction of the cases of the larvae—the so-called caddis worms or caddis fly worms—has, of course, been frequently noted among existing forms, and is especially pronounced in the family Limnophilidae. The architectural plan adopted varies both with the species and with the seasons, but in no case are the leaf pieces known to be as symmetrically uniform as in this lower Eocene form, although this is approximated in the genera *Glyphotaelius* and *Pycnopsyche*. Consequently the pseudo-generic term *Folindusia* was coined for the fossil form made of leaf pieces, in conformity with the term *Indusia*, which has long been used for generically indeterminable fossil caddis cases of the familiar sand grain type.

The new Miocene species which is the subject of this note may therefore be referred to *Folindusia*, and described as

***Folindusia miocenica* Berry, n. sp.**

Cases relatively large, depressed, two faced with sharp edges, somewhat over 3 times as long as wide, decreasing slightly in width from in front backward, amounting to about 1 millimeter in a length of 2.5 centimeters. Size ranging from 1.5 to 2.5 centimeters in length by 4 to 7.5 millimeters in width. Constructed entirely as far as observed of relatively small vegetable fragments. In the specimen figured these are all small and irregularly cut fragments of leaf blades, but in smaller cases fragments of small sticks or perhaps pieces of petioles ("ballast sticks") are incorporated, and in one specimen a long piece of this kind occupies one margin. Both monocotyledonous and dicotyledonous leaves are mined and there is apparently no selection since, although the fragments are much too small to be determined,

¹ Received December 12, 1927.

² EDWARD W. BERRY. U. S. Nat. Mus. Proc. 71(14): 1927.

observed differences in texture and areolation of the pieces in a single case show that several species of leaves are represented, and that the "worm" did not get all of its building material from a single leaf. The number of pieces on one face of a case amounts to slightly in excess of 50, which is in striking contrast to the Eocene species *Folindusia wilcoxiana* in which the number was from 5 to 8.

Folindusia miocenica was found in the fine grained, diatomaceous clays of the Latah formation at the Brick-yard exposure in Spokane, Washington. These clays carry an especially rich, varied, and well preserved mesophytic terrestrial flora of later Miocene age amounting to over 150 species. The conditions of deposition have been interpreted by Pardee and Bryan³ as lacustrine, and due to stream damming by flows of the so-called Columbia lavas.

The philosophy of such flat cases is obviously to prevent them from being readily capsized or rolled to the consequent discomfort of the relatively small occupant, and consequently such cases may be considered as evidence of some current action.

The present species is obviously distinct from *Folindusia wilcoxiana* in the larger number of much smaller and more irregular leaf pieces used. It probably belongs in the same family, Limnophiliidae, incidentally a rather large and widely distributed group, which is especially prominent in the faunas of ponds and slow streams.

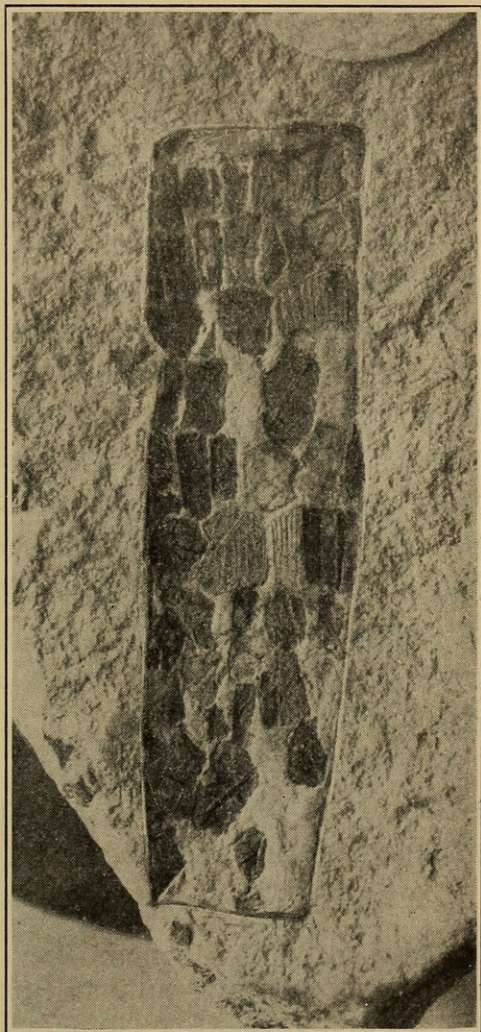


Figure 1.—*Folindusia miocenica* Berry, n. sp. $\times 3$. Miocene of Spokane, Washington.

BOTANY.—*Studies of Venezuelan Bignoniaceae.—I. Ceratophytum, a new genus of vines.*¹ H. PITTIER, Caracas, Venezuela.

The genus *Adenocalymna* was fully described for the first time by P. de Candolle² from notes and Brazilian specimens left by von Martius. It included originally 19 species, one of which (*A. bra-*

³ J. T. PARDEE and KIRK BRYAN. U. S. Geol. Survey Prof. Paper 140: 15-16. 1927.

¹ Received December 9, 1927.

² D.C. Prodr. 9: 199.



1928. "A caddis case of leaf pieces from the Miocene of Washington." *Journal of the Washington Academy of Sciences* 18, 60–61.

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