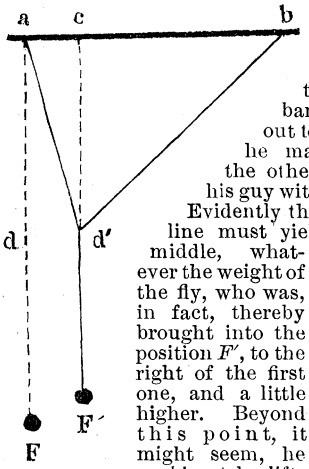
for the complexity of the scheme seems to belong less to what we ordinarily call instinct than to intelligence, and that in a degree we cannot all boast ourselves.

The reader who questions the propriety of the last remark may be invited to pause, before hearing the spider's device, to consider how *he* would proceed to lift a whole ox hanging vertically beneath him at the end of a hundred-fathom cable, if he had no appliances whatever except some spare rope.

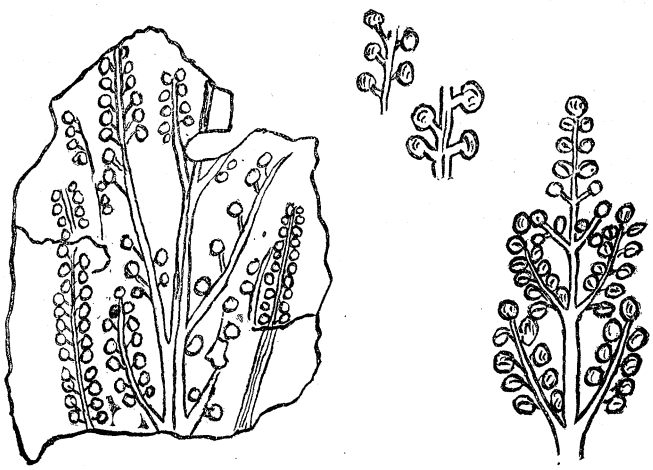
The little spider proceeded as follows (*a b* is a portion of the window-bar, to which level the fly was to be lifted from his original position at *F*, vertically beneath *a*): the spider's first act was to descend halfway to the fly (to *d*), and there fasten one end of an almost invisible thread; his second, to ascend to the bar and run out to *b*, where he made fast the other end, and hauled on his guy with all his small might. Evidently the previously straight line must yield somewhat in the middle, whatever the weight of the fly, who was, in fact, thereby brought into the position *F'*, to the right of the first one, and a little higher. Beyond this point, it might seem, he could not be lifted; but the guy being left fast at *b*, the spider now went to an intermediate point (*c*) directly over his victim's new position, and thence spun a new vertical line from *c*, which was made fast at the bend (at *d'*), after which the now useless portion *a d'* was cast off, so that the fly now hung vertically below *c*, as before below *a*, *but a little higher*.



The same operation was repeated again and again, a new guy being occasionally spun, but the spider never descending more than about halfway down the cord, whose elasticity was in no way involved in the process. All was done with surprising rapidity. I watched it for some five minutes (during which the fly was lifted perhaps six inches), and then was called away. L.

Two species of tertiary plants.

In looking over the plates of Mr. L. Lesquereux's Tertiary flora (U. S. geol. and geogr. surv., F. V. Hayden in charge), I noticed on plate xiv. a figure which seemed to have a familiar appearance. It was like the fruiting-frond of a fern, but the explanation called it Caulinites fecundus, Lesqx. The description on p. 101 referred to it as probably representing the undeveloped flowers of some palm. Turning to Gray's Botany, plate xviii., I was struck with the resemblance between his figure of Onoclea sensibilis and that given by Mr. Lesquereux. I have shown the two species side by side in fig. 1, and there is no doubt in my mind that the Caulinites fecundus is nothing but a part of the fertile frond of Onoclea sensibilis.



a, Caulinites fecundus, Lesqx. FIG. 1. *b*, Onoclea sensibilis, L.

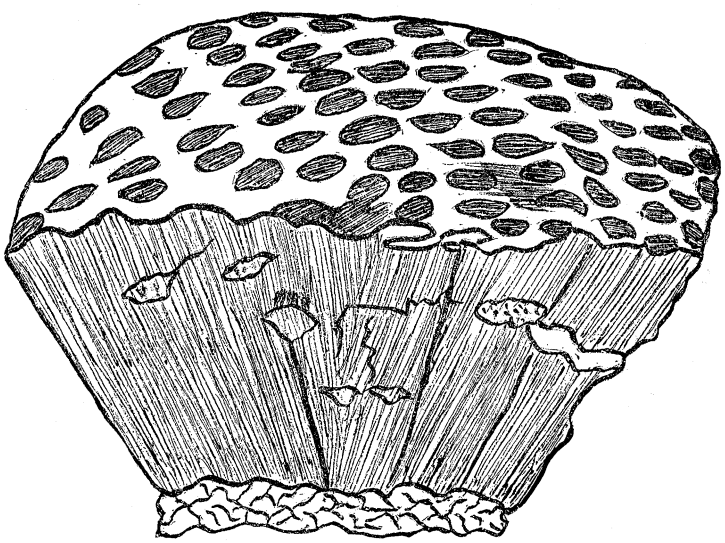


FIG. 2. — Zamiostrobus mirabilis, Lesqx.

In the Annals of the lyceum of natural history, New York, vol. ix. p. 39, Dr. Newberry records the finding of the sterile fronds of Onoclea sensibilis in strata of miocene age at Fort Union, Dakota. He considers that "there is little room for doubt, . . . that during the miocene age a species of Onoclea flourished in the interior of our continent, of stronger habit than either of the living varieties, and holding a mid-

dle position between them." He has based his determination of the species upon the sterile fronds only; but in the figure of Lesquereux we have the fertile frond, or a portion of it, of the same species. This fragment was found at Erie, Col. Should not the Caulinites fecundus be considered Onoclea sensibilis?

On plate lxiii. of the same volume we have a fossil called Zamiostrobus mirabilis, and on p. 70 is the description. Mr. Lesquereux has referred the fossil to the Gymnospermae, and considers it probably to be the cone of one of the Zamieae. Compare, now, the copy of his figure (fig. 2) with that of the longitudinal section of the fruit of Nelumbium luteum (fig. 3), and the resemblance is striking, — so striking is it,

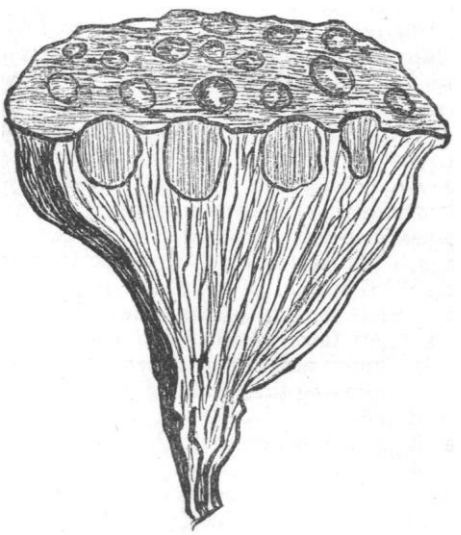


FIG. 3. — Longitudinal section of Nelumbium luteum.

in fact, that I do not hesitate to say that both belong to the same genus. Mr. Lesquereux's specimen was found on the surface at Golden, Col.

Turning to p. 252 of the same volume, we find two species of Nelumbium described from the leaves. One was found at Golden, and the other at Sand Creek, Col. The fact of finding leaves of a Nelumbium in the same locality as the fossil here figured, strongly comfirms the idea that the Zamiostrobus is only the capsular fruit of a Nelumbium, probably that described as N. Lakesii. It differs only slightly from the other species, N. tenuifolium; and the two should probably be united. JOS. F. JAMES.

Spool-shaped ornaments from mounds.

As the spool-shaped copper ornaments occasionally found in mounds — one of which is figured by Dr. Rau (*Arch. coll. U. S. nat. mus.*, p. 61, fig. 235), and others by Professor Putnam (*Rep. Peabody mus.*, xv. 110, figs. 18 and 19) — have attracted the attention of archeologists, it may not be amiss to notice some additional specimens of the same kind, recently obtained by the assistants of the bureau of ethnology.

Three of these were obtained by Dr. Palmer, of Mr. J. D. Miller, Marshall county, Ala., who discovered them in an ancient grave in that county. As yet no description of the grave, nor any further statement as to the conditions under which they were found, has been obtained.

These copper spools, as also the others to be mentioned, are of the form represented in the figures alluded to, consisting of two concavo-convex disks joined together by a hollow cylindrical axis. One of the specimens is quite perfect. The disks are one and a half inches in diameter, formed of copper plate that is very smooth and even throughout. The hollow cylindrical axis is about seven-tenths of an inch long, and a little less than two-tenths of an inch in diameter, and has the ends slightly expanded outside of the disks, so as to hold the latter in position. The other specimens found by Mr. Miller are of larger size; being about two inches in diameter, and closely resembling that figured by Professor Putnam. The plate is not more than half the thickness of that of which the preceding specimen was made, being almost as thin as writing-paper; but the cylindrical axis is of the same form and dimensions.

The method of connecting and fixing the disks in these, as will be seen from the description, is slightly different from that described by Professor Putnam. The cylindrical axis is simply passed tightly through the holes made in the centre of the disks, and the ends expanded, as though done with a punch, so as to clasp the outer faces.

Four other specimens, very similar to that figured by Professor Putnam, were discovered by Mr. Middleton in a mound in Jackson county, Ill. The mound in which these were found is one of a group situated in the Mississippi bottom, a short distance from Grand Tower: it is about ninety feet in diameter, and six feet high. In excavating it, human bones were found at all depths, from six inches to six feet below the surface. Below this no human bones were observed; but at the depth of nine feet, that is, three feet below the original surface of the ground, some animal bones were discovered.

The copper specimens were found at the depth of three feet, lying by the side of a skeleton. The four are of the same form and size, being about one inch and a half in diameter: the axis is short, bringing the disks rather closer together than usual, the attachments being as described by Professor Putnam. All the specimens mentioned, except the first, are much corroded and very brittle. The first is also somewhat corroded, but not to the same extent as the others, and is probably the best formed and most perfect specimen of the kind so far discovered. CYRUS THOMAS.

[These so-called 'spool-shaped ornaments' have been shown by Mr. Putnam to be enormous ear-studs, his examinations of the altar-mounds in Anderson township, O., having brought to light over thirty made of copper, together with figurines in which similar objects were *inserted in the ears*. See *Science*, i. 348, 349.]

Unio forms a byssus.

If your correspondent at Holston River, Va., will consult my 'Observations on the genus Unio,' he will find most of his queries answered. The subject is treated in vols. i., iii., vi., x., xi. The byssus is not attached to the shell, but to the foot of the included soft parts. ISAAC LEA.

Philadelphia, March 24, 1884.

Illusive memory.

James Sully, in his 'Illusions,' suggests that a good way of testing for recollections of ancestral experience would be to find out whether children of seafaring men, who have been brought up far from the coast, have the feeling, when they first see the sea, of having seen it before.

Paul Radestock seems to consider that the question is settled by the fact, that while he was writing his