

is exactly of the same black mud, or rich soil, as the adjacent low cypress swamps above and below the bluff; and here, in the cliffs, we see vast stumps of cypress and other trees which, at this day, grow in these low, wet swamps, and which range on a level with them. These stumps are sound, stand upright, and seem to be rotted off about two or three feet above the spread of their roots; their trunks, limbs, &c., lie in all directions about them. But when these swampy forests were growing, and by what cause they were cut off and overwhelmed by the various strata of earth, which now rise near one hundred feet above, at the brink of the cliffs, and two or three times that height, but a few hundred yards back, are inquiries perhaps not easily answered. The swelling heights, rising gradually over and beyond this precipice, are now adorned with high forests of stately *Magnolia*, *Liquidambar*, *Fagus*, *Quercus*, *Laurus*, *Morus*, *Juglans*, *Tilia*, *Halesia*, *Æsculus*, *Callicarpa*, *Liriodendron*," &c.\*

Dr. Carpenter, in 1838, or sixty-one years after Bartram, made a careful investigation of this same bluff, having ascertained that in the interval the river had been continually wearing it away at such a rate as to expose to view a section several hundred feet to the eastward of that seen by his predecessor. I shall first give a brief abstract of Dr. Carpenter's observations, published in Silliman's Journal.†

"About the level of low water, at the bottom of the bluff, a bed of vegetable matter is exposed, consisting of sticks, leaves, and fruits, arranged in thin horizontal laminæ, with very thin layers of clay interposed. Among the fruits were observed the nuts of the swamp hickory (*Juglans aquatica*) very abundant, the burr-like pericarp of the sweet gum (*Liquidambar styraciflua*), and walnuts, the fruit of *Juglans nigra*. The logs lying horizontally are those of cypress (*Cupressus thyoides*), swamp hickory, a species of cotton wood (*Populus*), and other trees peculiar to the low swamps of Louisiana. Besides these there were a great number of erect stumps of the large deciduous cypress (*Taxodium distichum*) sending their roots deep into the clay beneath. This

\* Bartram, "Travels in North America," p. 433.

† Vol. xxxvi. p. 118.