The question of decay cannot be regarded as a factor in the present case since there is no alteration of structure such as it would be liable to produce, and in consequence, I find that the organic matter has not suffered redistribution, but occupies its original position. I have stated that the cell walls are thin. This is true with reference to the carbonaceous residue, but on the whole, the walls, as they appear in the specimens, are very thick and the cell cavaties small or none. This great increase of thickness is stated, in the original description cited, to be due to a "ligneous deposit."

The appearance of the cells is just that exhibited by a cross section of Laminaria stained with logwood, in which a thin outer wall is seen to be stained, while the inner and thicker wall remains colorless, showing an obvious differentiation of the cellulose substance. In *N. crassum* a similar differentiation may have been developed, and the inner thick layer may have become replaced by the siliceous cast as now found.

Treatment of a section with hydrochloric acid discloses the presence of calcite, which is almost wholly located in the intercellular regions, as upon its removal the whole section breaks up into separate cells.

In longitudinal section the cells are found to be tubular, non-septate and somewhat strongly vermicular, rather more so, perhaps, than in *N. Logani*. The open tracts are now seen to be somewhat elongated longitudinally so that they become two to four times as long as broad. The siliceous deposits are also seen to be continuous, although embracing the fractures peculiar to such formations. These fractures are the many narrow, tortuous lines or pores of the original description; and the deposits, as a whole, are the counterparts of those siliceous casts upon which the description of *N. Hicksii* is based.

The most significant fact so far observed, consists of the discovery of a distinctly branching system, similar in its general character to that of *N. Logani*, though differing from it in some important respects. In one case I found a branch projecting from the side of a large cell with a diameter of of 5.8 μ and a length to the point where cut off, of about 3.5 μ. Two other branches near together were each 4.6 μ; two more were 2.3 μ and 4.6 μ; another, 6.9 μ in diameter. These were all I could find within this range of dimensions, and all, with one exception, were found in transverse section. Numerous other secondary filaments may be readily observed, especially in cross section, and they are found to have a diameter which varies but little from 10 μ. It is, therefore, clear that the larger cells of this plant branch into a secondary plexus as in *N. Logani*, and as all of the instances, in which the branches were seen to emanate from the larger cells, occurred in the open tracts above described, it would appear that these latter serve as the special regions in which the branching is effected, as in *N. Logani*. My measurements show, however, that the secondary filaments of this latter plant are smaller on the average, much more uniform in size, and more numerous than in the plant now under consideration; and this explains what is stated in the original description, that the cells "are destitute of their (*N. Logani*) peculiar markings."

The silicified thickenings of the cells are seen in the longitudinal section to be continuous, though traversed by occasional fissures, the "tortuous lines or pores" of the original description as pointed out above. So far, none of the specimens I have examined show any evidence of structural markings in the cell walls, which are perfectly continuous. I have, however, frequently noted small round bodies of a refractive nature and a deep reddish brown color, suggesting small aggregations of resinous matter elsewhere referred