On the Occurrence of *Beekite* in connection with "Fossil Organic Remains," in N. S. Wales.

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[Plate XVI.]

Among the many mineral substances replacing the original carbonate of lime composing what are generally known under the name of "fossils," are iron-pyrites, iron-oxide, sulphur, malachite, magnesite, talc, and silica of various forms, such as *Beekite*, chalcedony, and both common and precious opal. "By far the commonest mode of replacement is that whereby an originally calcareous skeleton is replaced by silica. This process of 'silicification'—of the replacement of *lime* by *silica*—is not only an extremely common one, but is also a readily intelligible one; since carbonate of lime is an easily and flint a hardly soluble substance. It is thus easy to understand that originally calcareous fossils, such as the shells of Mollusca, or the skeletons of Corals, should have in many cases suffered this change, long after their burial in the rock, their carbonate of lime being dissolved away, particle by particle, and replaced by precipitated silica, as they were subjected to percolation by heated or alkaline waters holding silica in solution."*

"In a large number of cases of silicification," continues Prof. Nicholson, "the minute *structure* of the fossil which has been subjected to this change is found to have been more or less injuriously affected, and may be altogether destroyed, even though the *form* of the fossil be perfectly preserved. This is the rule where the silicification has been secondary and has taken place at some period long posterior to the original entombment of the fossil in the enveloping rock; whereas if the original fossilisation has been effected by infiltration with silica in the first instance, then the minute structure is usually perfectly preserved. In secondary silicification, as seen in corals and shells, the carbonate of lime of the original fossil is gradually more or less completely replaced by silica, the process beginning on the exterior and gradually extending inwards."†

In New South Wales we are at present acquainted with three methods of replacement of carbonate of lime—by iron-pyrites,

* H. A. Nicholson, Man. Pal., 3rd Edit., 1889, I., p. 7.
† *Loc. cit.*, p. 7.