

of connection between the higher cryptogams and the phænogams, one leading from the lycopods by the Sigillariæ, another leading by the Cordaites, and the third leading from the Equisetums by the Calamites. Still further back the characters afterward separated in the club-mosses, mare's-tails, and ferns, were united in the Rhizocarps, or, as some now, but I think somewhat unreasonably, prefer to call them, the "heterosporous Filicinæ." In the more modern world, all the connecting links have become extinct and the phænogams stand widely separated from the higher cryptogams. I do not make these remarks in a Darwinian sense, but merely to state what appear to be the lines of natural affinity and the links wanting to give unity to the system of nature.

Of all the trees of the modern world, none are perhaps so widely distributed as the pines and their allies. On mountain-tops and within the Arctic zone, the last trees that can struggle against the unfavourable conditions of existence are the spruces and firs, and in the warm and moist islands of the tropics they seem equally at home with the tree-ferns and the palms. We have already seen that they are a very ancient family, and in the sandstones of the coal-formation their great trunks are frequently found, infiltrated with calcareous or silicious matter, and still retaining their structure in the greatest perfection (Fig. 60). So far as we know, the foliage of some of them which constitutes the genera *Walchia* and *Araucarites* of some authors (Figs. 60, 63) was not dissimilar from that of modern yews and spruces, though there is reason to believe that some others had broad, fern-like leaves like those of the ginkgo. None of them, so far as yet certainly known, were cone-bearing trees, their fruit having probably been similar to that of the yews (Fig. 61). The minute structures of their stems are nearer to those of the conifers of the islands of the southern hemisphere than to that of those in our northern climes—a cor-