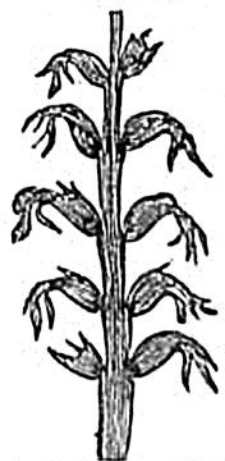


growth of some plants, and as they appear in many acrogens, they do not seem to mark a high development. In fine, there is much ambiguity in deciding what should or should not be called *high* or *low* in vegetable structure, and physiologists entertain very different abstract ideas as to the perfection of certain organs and their relative functional importance, even where the function is clearly ascertained. It is enough for the geologist to know, that fossil Coniferæ abound in the oldest rocks yielding a considerable number of vegetable remains, and that plants of this order lay claim, if not to the highest, at least to so high a place in the scale of vegetable life, as to preclude us from characterizing the carboniferous flora as consisting of imperfectly developed plants.

Although our data are confessedly too defective to entitle us to generalize respecting the entire vegetable creation of this era, yet we may affirm that so far as it is known it differed widely from any flora now existing. The comparative rarity of Monocotyledons and of Dicotyledonous Angiosperms seems clear, and the abundance of Ferns and Lycopods may justify Adolphe Brongniart in calling the primary periods the age of Acrogens.* ("Le règne des Acrogens.") As to the Sigillariæ and Calamites, they seem to have been distinct from all tribes of now-existing plants. That the abundance of ferns implies a moist atmosphere, is admitted by all botanists; but no safe conclusion, says Hooker, can be drawn from the Coniferæ alone, as they are found in hot and dry and in cold and dry climates, in hot and moist and in cold and moist regions. In New Zealand the Coniferæ attain their maximum in numbers, constituting $\frac{1}{8\frac{1}{2}}$ d part of all the flowering plants; whereas in a wide district around the Cape of Good Hope they do not form $\frac{1}{1600}$ th of the phenogamic flora. Besides the conifers, many species of ferns flourish in New Zealand, some of them arborescent, together with many lycopodiums; so that a forest in that country may make a nearer approach to the carboniferous vegetation than any other now existing on the globe.

Angiosperms.—Some of the grass-like leaves termed *Poacites*, having fine longitudinal striæ, are conjectured to belong to Monocotyledons; but the determination is doubtful, as some of them may be the leaves of *Lepidodendra*, others the stems of Ferns. The curious plants called *Antholithes* by Lindley have usually been considered to be flower-spikes, having what seems a calyx and linear petals (see fig. 488). But Dr. Hooker suggests that these may be rather tufts of scarcely opened buds with the young leaves just bursting. He suggests that they may be coniferous, although he cannot connect them with any known fossil conifer.

Fig. 488.



Antholithes. Felling Collery, Newcastle.

* For terminology of classification of plants, see above, note, p. 265.