

Along with this a great change was in progress in vegetable and animal life. The flora and fauna of the Palæozoic gradually die out in the Permian and are replaced in the succeeding Trias by those of the Mesozoic time. Throughout the Permian, however, the remains of the coal-formation flora continue to exist, and some forms, as the *Calamites*, even seem to gain in importance, as do also certain types of coniferous trees. The Triassic, as well as the Permian, was marked by physical disturbances, more especially by great volcanic eruptions discharging vast beds and dykes of lava and layers of volcanic ash and agglomerate. This was the case more especially along the margins of the Atlantic, and probably also on those of the Pacific. The volcanic sheets and dykes associated with the Red Sandstones of Nova Scotia, Connecticut, and New Jersey are evidences of this.

At the close of the Permian and beginning of the Trias, in the midst of this transition time of physical disturbance, appear the great reptilian forms characteristic of the age of reptiles, and the earliest precursors of the mammals, and at this time the old Carboniferous forms of plants finally pass away, to be replaced by a flora scarcely more advanced, though different, and consisting of pines, cycads, and ferns, with gigantic equisetæ, which are the successors of the genus *Calamites*, a genus which still survives in the early Trias. Of these groups the conifers, the ferns, and the equisetæ are already familiar to us, and, in so far as they are concerned, a botanist who had studied the flora of the Carboniferous would have found himself at home in the succeeding period. The cycads are a new introduction. The whole, however, come within the limits of the cryptogams and the gymnosperms, so that here we have no advance.\*

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\* Fontaine's "Early Mesozoic Flora of Virginia" gives a very good summary of this flora in America.