our hot-houses, can however give us but a faint idea of the stately and splendid frondose ferns of the primary period, whose mighty trunks, densely crowded together, then formed entire forests. These trunks, accumulated in super-incumbent masses, are found in the coal seams of the Carboniferous period, and between them, in an excellent state of preservation, are found the impressions of the elegant fan-shaped leaves, crowning the top of the trunk in an umbrella-like bush. The varied outlines and the feather-like forms of these fronds, the elegant shape of the branching veins or bunches of vessels in their tender foliage, can still be as distinctly recognized in the impressions of the palæolithic fronds as in the fronds of ferns of the present day. In many cases even the clusters of fruit, which are distributed on the lower surface of the fronds, are distinctly preserved. After the carboniferous period, the predominance of frondose ferns diminished, and towards the end of the secondary period they played almost as subordinate a part as they do at the present time.

The Calamariæ, Ophioglossæ, and Rhizocarpeæ seem to have developed as three diverging branches out of the Frondose Ferns, or Pteridæ. The Calamariæ, or Calamophyta, have remained at the lowest level among these three classes. The Calamariæ comprise three different orders, of which only one now exists, namely, the Horse-tails (Equisetaceæ). The two other orders, the Giant Reeds (Calamiteæ), and the Star-leaf Reeds (Asterophylliteæ), are long since extinct. All Calamariæ are characterized by a hollow and jointed stalk, stem, or trunk, upon which the branches and leaves (in cases where they exist) are set so as to encircle the jointed stem in whorls. The hollow joints of the stalk are