

species of shells, such as now inhabit Louisiana, has been upraised, and made to occupy a wide geographical area, while a newer delta is forming;* and the possibility of such movements, and their effects, must not be lost sight of when we speculate on the origin of the Wealden.

If it be asked where the continent was placed from the ruins of which the Wealden strata were derived, and by the drainage of which a great river was fed, we are half tempted to speculate on the former existence of the Atlantis of Plato. The story of the submergence of an ancient continent, however fabulous in history, must have been true again and again as a geological event.

The real difficulty consists in the persistence of a large hydrographical basin, from whence a great body of fresh water was poured into the sea, precisely at a period when the neighboring area of the Wealden was gradually going downwards 1000 feet or more perpendicularly. If the adjoining land participated in the movement, how could it escape being submerged, or how could it retain its size and altitude so as to continue to be the source of such an inexhaustible supply of freshwater and sediment? In answer to this question, we are fairly entitled to suggest that the neighboring land may have been stationary, or may even have undergone a contemporaneous slow upheaval. There may have been an ascending movement in one region, and a descending one in a contiguous parallel zone of country; just as the northern part of Scandinavia is now rising, while the middle portion (that south of Stockholm) is unmoved, and the southern extremity in Scania is sinking, or at least has sunk within the historical period.† We must, nevertheless, conclude, if we adopt the above hypothesis, that the depression of the land became general throughout a large part of Europe at the close of the Wealden period, and this subsidence brought in the cretaceous ocean.

FLORA OF THE LOWER CRETACEOUS AND WEALDEN PERIOD.

The terrestrial plants of the Upper Cretaceous epoch are but little known, as might be expected, since the rocks are of purely marine origin, formed for the most part far from land. But the Lower Cretaceous or Neocomian vegetation, including that of the Weald Clay and Hastings Sands, is by no means scanty. M. Adolphe Brongniart, when dividing the whole fossiliferous series into three groups in reference solely to fossil plants, has named the primary strata "the age of acrogens;" the secondary, exclusive of the cretaceous, "the age of gymnogens;" and the third, comprising the cretaceous and tertiary, "the age of angiosperms."‡ He considers the lower cretaceous flora as displaying a transitional character from that of a secondary to that of a tertiary vegetation, *Coniferæ* and *Cycadeæ* (or Gymnogens) still flourished, as in the preceding oolitic and

* See above, p. 84; and Second Visit to the U. S. vol. ii. chap. xxxiv.

† See the Author's Annivers. Address, Geol. Soc. 1850, Quart. Geol. Journ. vol. vi. p. 52.

‡ In this and subsequent remarks on fossil plants I shall often use Dr. Lindley's terms, as most familiar in this country; but as those of M. A. Brongniart are