still gave no passage to coarse sediments; for the rocks formed over the channel were mainly limestone.

So again, over the continental border from New York to Georgia, since Upper Silurian rocks are unknown along the border region, no sediments were supplied to the interior sea across this border from the Atlantic. Upper Silurian beds may exist there beneath the Cretaceous or Tertiary formations, or in the sea bottom outside; but if so, the broad region of Archæan making the protaxis, without Upper Silurian beds, lies between. The Continental Interior received no Atlantic sediments.

It has further been shown that the Upper Silurian formations of New England and eastern Canada and Newfoundland were in general made, not on the borders of the open ocean, if so at all, but within the limits of channels or bays bounded by Archæan ridges, or ridges of Archæan and Lower Silurian rocks. Of Pacific sea-border beds belonging to the Upper Silurian nothing has come to light. In the Arctic regions the rocks occupy a large basin or area, quite distinct from that of the Continental Interior. Its limits are unknown.

Influence of the Cincinnati geanticline. — The influence on the eastern interior sea of this barrier of emerged land and shallow seas was strongly marked. Owing to changes in level that were in progress, shifting the areas of deepest water, large changes were made from time to time in the courses of the tidal movements, in the character of the depositions, the clearness or foulness of the water, and accordingly in the character of the life. With clear, deep waters, life of great variety abounded and limestones were formed; but with sediment-laden waters, or waters half freshened by contributions from the land, the living species were only those that could survive under such adverse circumstances.

Abrupt variations in the rocks and the life become thus intelligible. It is hence easy to understand that a Niagara epoch might be followed, through a wide shallowing of the seas, by a region of immense salt-pans (evaporating sea-border flats) over a large part of New York, making the Salina group of rocks, while to the eastward, southward, and westward a tide-washed region existed, — that of the Water-lime group, — free from saline deposits because the tides had access; and that fresh-water and brackish-water flats, containing species of Eurypterids, might well have been a feature, at the same time, of the sea borders. Then the occurrence of a slight subsidence would account for clearer seas again, for a restored fauna, and the making of Lower Helderberg limestones, and also for the extension of the limestones over eastern New York to Montreal in the St. Lawrence Channel, and southward over western New Jersey and part of Pennsylvania. Such salt-evaporating basins are due to local conditions and caunot be a universal feature of a period.

Large shallow-water and emerged areas over the continent characteristic of the Upper Silurian era. — The absence of Upper Silurian formations from much of the region west of the Mississippi, and their thinness where present,