ceous period had made some progress, the waters of the Mexican Gulf began to spread northward over the subsiding Continental Interior; and before its earlier half had passed, the submergence had reached its maximum. A vast Mediterranean Sea extended from the inner portion of the Mexican Gulf, probably to the Arctic Ocean. The Atlantic border, south of New York, as the map shows, was also submerged, and a wider portion of the Gulf border; and along the valley of the Mississippi the waters stretched northward beyond the present mouth of the Ohio, making a great Mississippi Bay, which was 100 miles wide in the latitude of Memphis. But in Mexico, at this time, the large Lower Cretaceous area over which the Atlantic and Pacific had been exchanging waters, was, to a great extent, emerged. Over the Pacific coast region there was a narrow strip of water — narrower than in Jurassic time because of the making, at its close, of the Sierra Nevada and other mountain ranges to the north.

At the time of maximum submergence during the Upper Cretaceous, the American Mediterranean Sea of the period had a length, if extending to the Arctic Ocean, of about 3000 miles. The decline in depth and size began perhaps by the middle of this later half of the Cretaceous period. As explained in detail beyond, there were successively: a shallowing of the sea and an emergence of dry land far north in British America, cutting off connection with the Arctic Ocean, and thus converting the waters on the south into a Mexican Gulf, 2000 miles or more in length; a contraction of the great gulf commencing along the eastern border; the conversion of the gulf, while still 1500 miles in length, into a region of alternating brackish waters and fresh waters and low marsh-covered lands, situated along and just east of what is now the Rocky Mountain section of the Western Continental Interior; the disappearance of the salt waters, leaving only fresh waters; and, finally, the disappearance of these waters over the mountain region, and the end of Cretaceous deposition, with a change in the events to mountain-making.

The preceding map, illustrating North America in the Cretaceous period, was prepared for this work chiefly by J. S. Diller and T. W. Stanton, of the U. S. Geological Survey, from the map by C. A. White in his paper *On the Correlation of the Cretaceous* (*U. S. G. S. Bulletin*, No. 82, 1891), and from those for British America by G. M. Dawson in the *Transactions of the Royal Society of Canada* for 1890, and largely from later papers since published, and more recent results in possession of the U. S. Geological Survey. White's *Bulletin*, which contains a review of the literature, facts, and theories pertaining to the North American Cretaceous formation, has been of much service in the preparation of the following pages.

Subdivisions.

No general subdivisions of either the Lower or Upper Cretaceous for all the regions in North America have been adopted, on account of the wide diversity of the regions as to conditions. Part of the deposits being fresh water, and the marine fossils of the Atlantic and Pacific borders and of the