sediments never have so wide an extent as the strata which underlie a continent; nor are they generally so evenly bedded as our ordinary rock-strata. We must conclude, therefore, that the watery action which arranged the sediments from which our rock-strata have been formed, was a very widely operating action. There is no watery action known sufficiently wide-spread except the action of the ocean. In the ocean, sediments are now settling down in sheets a thousand miles broad. This conclusion is a somewhat startling one. It implies that, wherever rocky strata exist, there the ocean's waters have stood. Rocky strata are found hundreds of feet above the level of the ocean, and the fact seems incompatible with our conclusion. The average level of all the northern and northwestern states is from six hundred to a thousand feet above the sea. If the underlying strata were deposited by the ocean, then either the ocean has greatly subsided in later times, or regions which were once sea-bottom have been extensively uplifted.

These subjects have attracted the attention of thoughtful observers for a century—indeed, for two or three centuries. The question has been much discussed; but no doubt is longer entertained that the sea has covered all the land, and that the exposure of land has resulted from upheaval of portions of the ancient sea-bottom. Many confirmations of this view will be discovered as we proceed. Thus by a very simple and easy process of observation and reasoning we have reached a very fundamental principle in geological science; and you understand the evidence on which it rests.

Now, if all the strata which underlie the land are formed from marine sediments, the time required for their accumulation must have been enormous. We have made observations along the sea-shore, and have formed some conception of the rate of sedimentation over a belt near the land. There are times when violent winds cause the waves to wear down the shore at such a rate that the sea, for a mile from shore, becomes turbid with sediments. This has been seen often at Long Branch and Coney Island. But these periods are of