

New England, where the erosions are not as long and deep, but the rock is much harder, and may have required a longer time for their excavation. And what shall we say of the cañons on Red River and the Colorado, a mile deep ! Such facts indicate great antiquity to the latter part of the alluvial period only. What then must have been the duration of the unmodified drift period, and all the great systems of earlier date !

During the historic period numerous organic agencies have been producing geological changes, which we will now consider.

AGENCY OF MAN IN PRODUCING GEOLOGICAL CHANGES.

The human race produce geological changes in several modes :
 1. By the destruction of vast numbers of animals and plants to make room for themselves. 2. By aiding in the wide distribution of many animals and plants that accompany man in his migrations. 3. By destroying the equilibrium between conflicting species of animals and plants ; and thus enabling some species to predominate at the expense of others. 4. By altering the climate of large countries by means of cultivation. 5. By resisting the encroachments of rivers and the ocean. 6. By helping to degrade the higher parts of the earth's surface. 7. By contributing peculiar fossil relics to the alluvial depositions now going on, on the land and in the sea ; such as the skeletons of his own frame, the various productions of his art, numerous gold and silver coins, jewelry, cannon balls, etc., that sink to the bottom of the ocean in shipwrecks, or become otherwise entombed.

The best known examples of the entire extinction of the larger animals coëval with man, and probably through his agency, are the following : 1. The *dodo*, a bird larger than the turkey, which existed in Mauritius and the adjacent islands when they were colonized by the Dutch, 200 years ago ; but it is no longer to be found ; and even all the stuffed specimens that were brought to Europe are lost ; so that a head and a foot of one individual in the Ashmolean museum, at Oxford, and the leg of another in the British museum, are all that remains of it, except some fossil bones lately found in the Isle of France. 2. The *Notornis* and *Apteryx australis*, of New Zealand, appear to be on the point of extinction, if not actually extinct. 3. The eleven species of *Dinornis* formerly inhabiting New Zealand. 4. The *Epiornis maximus*, a still larger bird, whose bones are found in Madagascar. 5. The *Great Auk*, (*Alca impennis*), of northern regions, "existed in the last century ; no specimen has been obtained within the present." (*Owen*.) 6. The large Sirenian animal, like the Manatee, called *Stelleria*, which formerly inhabited the shores of Siberia is now believed to be extinct.

In particular countries it is a more common occurrence for species to become extinct, as the beaver, wolf, and bear in England. In this country the