

to the imperial forests of the Russian Czar in Lithuania. It is said to exist also in the Caucasus. The now extinct *Bos primigenius* is supposed to be the same with the *Urus* (Ure-Ox, or *Bos Urus*, described by Cæsar in his Commentaries, and stated to abound in the Gallic forests), and is a distinct species from the Aurochs, with which it has been confounded. It is said to have continued in Switzerland into the sixteenth century.

The American Buffalo (*Bos Americanus* Gm.) formerly covered the eastern part of the continent, to the Atlantic, and extended south into Florida, Texas, and Mexico; but now it is practically an extinct species, except so far as it is under human protection.

The giant *Sequoia* or Redwood of California is sure to become extinct as a native plant.

GENERAL OBSERVATIONS ON THE QUATERNARY.

BIOLOGICAL PROGRESS.

Culmination of the type of Brute Mammals. — The biological progress of the Quaternary as it appears in Brute Mammals was but a continuation of the types of the Tertiary onward to their culmination in the course of the Champlain period. The great average size of the species, in connection with the evidence of unimpaired powers, and also the large number of the species as well as the dense population, are good evidence that Brute Mammals have passed their maximum development. More than half of the species that then existed are probably yet unknown. But the facts are sufficient, nevertheless, to sustain the above statement. The area occupied by the great Mammals extends from Alaska to Patagonia, from Great Britain, and the Siberian shores, to southern Australia. A species best thrives in the region of fittest climate. In the Pleistocene, the fittest climate was universal. Geologists have attributed the extinction of most of the species and the dwindling of others to the cold of the Reindeer epoch. It is the only explanation yet found, though seemingly insufficient for the Americas.

The era of Fishes, as has been stated, was the time of *urosthenic* Vertebrates, species in which the posterior extremity of the body serves as the locomotive organ; and the era of Amphibians and Reptiles, the time of *merosthenic* Vertebrates, the hind legs of the species being the stronger limbs in locomotion. Under the era of Mammals the *merosthenic* species comprise the Herbivores, and many of them are made to serve Man as draught-animals, because of their strong hind limbs; but the higher Mammals, the Carnivores and Quadrumana, are *prosthentic*, the anterior limbs being not simply locomotive organs, but having some prehensile power, and in the most of the species eminently serviceable in this way. Only carnivorous and herbivorous species that have taken to a water life are *urosthenic*, and this they have become by returning to the element that is especially fitted for Fish-like locomotion.

Relation of the Quaternary to the Tertiary Mammals. — The Quaternary types of fauna and flora on a continent were to a large extent closely related in kind to those of the Tertiary. South America in Pleistocene time was prominently the land of Edentates; and so, during the Tertiary, Edentates