

CHAPTER XXIV.

ON THE ANCIENT TEMPERATURE OF THE EARTH.—ON CENTRAL HEAT, AND ON ASTRONOMICAL PHENOMENA ILLUSTRATIVE OF GEOLOGICAL THEORIES.—CONCLUSION.

It is now generally admitted by geologists, that the temperature of the earth was, at a former epoch, at least in northern latitudes, much higher than at present. The facts on which this opinion is founded are very numerous, but they are dependent chiefly on the organic remains found in a fossil state. The animal remains of the large mammalia, such as the elephant, the rhinoceros, and hippopotamus, are abundant in some of the tertiary and diluvial beds. The bones and teeth of elephants in Siberia, and the borders of the Icy Sea, are so numerous, that it is evident the animals must once have existed in immense multitudes in these high latitudes. On the Oyster Bank, off Hasburgh, on the Norfolk coast, many hundred grinders of elephants have been found, and a vast quantity of their bones. (*S. Woodward's Syn. Tab.*) Teeth of the elephant have also been found in almost every county in England, and in all the northern kingdoms of Europe. Remains of lizards of enormous size occur in many of the English strata: these animals, in a peculiar manner, seem to require a high temperature for their full development.

The fossil remains of vegetables prove the high temperature of the countries in which they flourished, more decidedly than animal remains. Fossil trunks and leaves of the palm tree, the tree-fern, and of gigantic reeds, analogous to what are now growing in equatorial climates, abound in the coal strata of northern latitudes. It may be objected, that the large mammalia, (such as the elephant or hippopotamus,) belong to the order of Pachydermata, or thick-skinned animals, and like the pig, which belongs to that order, might be constituted for living both in polar and equatorial regions. Indeed, it is known, that some of the fossil elephants had a covering of hair or wool, which must have been intermixed as a defence against cold. A race of elephants with shaggy hair, (according to Bishop Heber,) inhabit the cool regions of the Himmalaya Mountains. From the remains of these large mammalia alone, we could not therefore prove the high former temperature of northern latitudes. But these animals would require a constant supply of food throughout the year, which they could scarcely obtain in a frozen climate; and when we farther observe, that the vegetation of the ancient world was analogous to the vegetation of the warm regions which the elephant and the rhinoceros now chiefly inhabit, we can scarcely refuse our assent to the position, that the temperature of the earth at a former period