

CHAPTER VI.

DOCTRINE OF THE DISCORDANCE OF THE ANCIENT AND MODERN
CAUSES OF CHANGE CONTROVERTED.

Climate of the Northern Hemisphere formerly different — Direct proofs from the organic remains of the Italian strata — Proofs from analogy derived from extinct quadrupeds — Imbedding of animals in icebergs — Siberian mammoths — Evidence in regard to temperature, from the fossils of tertiary and secondary rocks — From the plants of the coal formation — Northern limit of these fossils — Whether such plants could endure the long continuance of an arctic night.

Climate of the Northern hemisphere formerly different.—PROOFS of former revolutions in climate, as deduced from fossil remains, have afforded one of the most popular objections to the theory which endeavours to explain all geological changes by reference to those now in progress on the earth. The probable causes, therefore, of fluctuations in climate, may first be treated of.

That the climate of the Northern hemisphere has undergone an important change, and that its mean annual temperature must once have more nearly resembled that now experienced within the tropics, was the opinion of some of the first naturalists who investigated the contents of the ancient strata. Their conjecture became more probable when the shells and corals of the secondary rocks were more carefully examined; for these organic remains were found to be intimately connected by generic affinity with species now living in warmer latitudes. At a later period, many reptiles, such as turtles, tortoises, and large saurian animals, were discovered in European formations in great abundance; and they supplied new and powerful arguments, from analogy, in support of the doctrine, that the heat of the climate had been great when our secondary strata were deposited. Lastly, when the botanist turned his attention to the specific determination of fossil plants, the evidence required the fullest confirmation; for the flora of a country is peculiarly influenced by temperature: and the ancient vegetation of the earth might have been expected more readily than the forms of animals, to have afforded conflicting proofs, had the popular theory been without foundation. When the examination of fossil remains was extended to rocks in the most northern parts of Europe and North America, and even to the Arctic regions, indications of the same revolution in climate were discovered.

It cannot be said, that in this, as in many other departments of geology, we have investigated the phenomena of former eras, and neglected those of the present state of things. On the contrary, since the first agitation of this interesting question, the accessions to