

## 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 - - - - - Page 75

## CHAPTER VII.

FARTHER EXAMINATION OF THE QUESTION AS TO THE ASSUMED DISCORDANCE OF  
THE ANCIENT AND MODERN CAUSES OF CHANGE.

On the causes of vicissitudes in climate — Remarks on the present diffusion of heat over the globe — On the dependence of the mean temperature on the relative position of land and sea — Isothermal Lines — Currents from equatorial regions — Drifting of icebergs — Different temperature of Northern and Southern hemispheres — Combination of causes which might produce the extreme cold of which the earth's surface is susceptible — Conditions necessary for the production of the extreme of heat, and its probable effects on organic life - - - 93

## CHAPTER VIII.

## ON FORMER CHANGES IN PHYSICAL GEOGRAPHY AND CLIMATE.

Geographical features of the northern hemisphere, at the period of the oldest fossiliferous strata — State of the surface when the mountain limestone and coal were deposited — Changes in physical geography, between the carboniferous period and the chalk — Abrupt transition from the secondary to the tertiary fossils — Accession of land, and elevation of mountain chains, after the consolidation of the secondary rocks — Explanation of Map, showing the area covered by sea, since the commencement of the tertiary period — Astronomical theories of the causes of variations in climate — Theory of the diminution of the supposed primitive heat of the globe - - - - - 113

## CHAPTER IX.

THEORY OF THE PROGRESSIVE DEVELOPMENT OF ORGANIC LIFE AT SUCCESSIVE  
GEOLOGICAL PERIODS.

Theory of the progressive development of organic life — Evidence in its support inconclusive — Vertebrated animals, and plants of the most perfect organization, in strata of very high antiquity — Differences between the organic remains of successive formations — Comparative modern origin of the human race — The popular doctrine of successive development not established by the admission that man is of modern origin — Introduction of man, to what extent a change in the system - - - - - 130

## CHAPTER X.

## SUPPOSED INTENSITY OF AQUEOUS FORCES AT REMOTE PERIODS.

Intensity of aqueous causes — Slow accumulation of strata proved by fossils — Rate of denudation can only keep pace with deposition — Erratics, and effects of ice — Deluges, and the causes to which they are referred — Supposed universality of ancient deposits - - - - - 150

## CHAPTER XI.

## ON THE SUPPOSED FORMER INTENSITY OF THE IGNEOUS FORCES.

Volcanic action at successive geological periods. — Plutonic rocks of different ages — Gradual development of subterranean movements — Faults — Doctrine of the sudden upheaval of parallel mountain-chains — Objections to the proof of the suddenness of the upheaval, and the contemporaneousness of parallel chains — Trains of active volcanos not parallel. — As large tracts of land are rising or