

1. **The Atmosphere.**—The gaseous envelope to which the name of atmosphere is given, extends to a distance of perhaps 500 or 600 miles from the earth's surface, possibly in a state of extreme tenuity to a still greater height. But its thickness must necessarily vary with latitude and changes in atmospheric pressure. The layer of air lying over the poles is not so deep as that which surrounds the equator.

Many speculations have been made regarding the chemical composition of the atmosphere during former geological periods. There can indeed be no doubt that it must originally have differed very greatly from its present condition. Besides the abstraction of the oxygen which now forms fully a half of the outer crust of the earth, the vast beds of coal found all over the world, in geological formations of many different ages, doubtless represent so much carbon-dioxide (carbonic acid) once present in the air. According to Sterry Hunt, the amount of carbonic acid absorbed in the process of rock-decay, and now represented in the form of carbonates in the earth's crust, probably equals two hundred times the present volume of the entire atmosphere.<sup>1</sup> The chlorides in the sea, likewise, were probably carried down out of the atmosphere in the primitive condensation of aqueous vapor. It has often been stated that, during the Carboniferous period, the atmosphere must have been warmer and with more aqueous vapor and carbon-dioxide in its composition than at the present day, to admit of so luxuriant a flora as that from which the coal-seams were formed. There seems, however, to be at present no method of arriving at any certainty on this subject.

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<sup>1</sup> Brit. Assoc. Rep. 1878, Sects. p. 544.