

tice, which is becoming general in that country, of boring for water, to form what are called Artesian wells, has greatly facilitated the investigation.\*

M. Cordier has particularly directed his attention to this subject, and from numerous experiments made by himself and others in mines and Artesian wells, he has drawn the following conclusions:—1st. that there exists a subterranean heat in the terrestrial globe independent of solar radiation, and which increases rapidly with the depth:—2nd. that the increase of heat does not follow the same line in all parts of the earth; indeed, he supposes the differences may be twice or three times as great in one country as in another:—3rd. these differences are not in constant relation with the longitudes and latitudes of places where the experiments have been made:—4th. that the heat increases with the increase of depth, in a much greater degree than was previously believed. M. Cordier farther maintains, that there is a source of intense heat in the earth, and that the external crust may be from 50 to 100 miles in thickness, and that all within this crust is a mass of melted matter: that originally the whole globe was an entire mass of melted matter before the external crust became solid, by throwing out its heat into space; and that, in this manner, the solid crust is constantly growing thicker, and the internal heat diminishing.

The spheroidal form of the earth indicates an original state of fluidity, and whatever might be the tenacity of the fluid matter, the rapid rotation of the earth on its axis, would swell out the equatorial parts, and form a spheroid of rotation. Intense heat appears to be the only natural agent we are acquainted with, that could retain the mass of the earth in a fluid state:—farther, the granitic crust of the globe most probably owes its crystalline structure to slow refrigeration from a state of igneous fusion. Thus both the form of the earth, and the structure of its crystalline crust, are favorable to the theory of central heat. If this theory can be established, it will offer a satisfactory explanation of the former high temperature of the globe, and of its subsequent progressive refrigeration:—also of another circumstance equally remarkable; for it would appear, from the fossil remains of vegetables in different latitudes, that every part of the globe once enjoyed nearly the same degree of heat; the cause of this equality must have been independent of solar radiation, and derived from the earth itself. There are certainly numerous circumstances that favour the theory of central heat, but it must be con-

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\* Boring for Artesian wells has become general in many parts of Italy and Germany. In France, it is found that the average increase of heat, above the mean temperature of the surface, is about one degree of Fahrenheit's thermometer, for every forty-five feet in depth; or one degree of the centigrade scale, for twenty-five metres: but this is liable to variation of increase or decrease in different situations. For a further account of the temperature of mines and wells see Appendix.