

chief agent; whereas we can hardly account for the formation of the coarse drift without the aid of ice in some form.

Dispersion of Drift.—It is a characteristic of drift, by which it is distinguished from disintegrated rock, that it has been removed from its original position, it may be only a few rods, but more often a great many miles. And by the bowlders and trains of gravel and sand which it has left along the way we can trace it back to its origin.

In the dispersion of drift we find the evidence of two distinct phases of action, which may, however, have been the result of the same general cause, operating in different circumstances. In the first case, the drift has been carried out from the summits and axes of particular mountains along the valleys, and spread over the neighboring plains.

An example of this mode of dispersion exists in the Alps. The bowlders there have usually been carried down the valleys, and they exist in the greatest abundance opposite the lower opening of those valleys.

Northern Scandinavia is another example of a centre of dispersion for drift. Norwegian bowlders are found in a southwest direction, in England and Denmark; in a southerly direction they are found in Prussia; east and northeast, in Russia, and northerly in Russian Lapland.

In the second phase of this action the force seems to have operated on a wider scale, having driven the materials in a southerly direction, over most of the northern part of the American continent, and over a part of Europe. It is probable, however, that if we could learn more of the drift in high latitudes, where the ground is covered with snow most of the summer, we should find a point beyond which the bowlders took a north direction. Indeed, in McClintock's explorations in search of Sir John Franklin, from 1857 to 1859, he found several examples in North Lat. 74° , where bowlders had been transported from 100 to 200 miles north and northwest of the parent rock. If we could be sure that there is no mistake as to these facts, it would settle the question as to the northern direction of the drift on this continent. At any rate, we have reason to suppose that some of our high mountain chains may have been centres or axes from which glaciers, as in the Alps, have proceeded outwardly. We attempt elsewhere to prove that the range of the Green and Hoosic Mountains in New England, once formed such an axis. The White Mountains, in New Hampshire, and the mountains of Essex county, in New York, also, may be found in future to have been such centres of dispersion.