

We have an opportunity of seeing in the Bermuda islands the manner in which the waves of the Atlantic have worn, and are now wearing out, deep smooth hollows on every side of projecting masses of hard limestone. In the annexed drawing, communicated to me by Capt. Nelson, R. E., the excavations *c, c, c*, have been scooped out by the waves in a stone of very modern date, which, although extremely hard, is full of recent corals and shells, some of which retain their color.

When the forms of these horizontal grooves, of which the surface is sometimes smooth and almost polished, and the roofs of which often overhang to the extent of 5 feet or more, have been carefully studied by geologists, they will serve to testify the former action of the waves at innumerable points far in the interior of the continents. But we must learn to distinguish the indentations due to the original action of the sea, and those caused by subsequent chemical decomposition of calcareous rocks, to which they are liable in the atmosphere.

I shall conclude with a warning to beginners not to feel surprise if they can detect no evidence of the former sojourn of the sea on lands which we are nevertheless sure have been submerged at periods comparatively modern; for notwithstanding the enduring nature of the marks left by littoral action on calcareous rocks, we can by no means detect sea-beaches and inland cliffs everywhere, even in Sicily and the Morea. On the contrary, they are, upon the whole, extremely partial, and are often entirely wanting in districts composed of argillaceous and sandy formations, which must, nevertheless, have been upheaved at the same time, and by the same intermittent movements, as the adjoining calcareous rocks.

CHAPTER VII.

ALLUVIUM.

Alluvium described—Due to complicated causes—Of various ages, as shown in Auvergne—How distinguished from rocks *in situ*—River-terraces—Parallel roads of Glen Roy—Various theories respecting their origin.

BETWEEN the superficial covering of vegetable mould and the subjacent rock there usually intervenes in every district a deposit of loose gravel, sand, and mud, to which the name of alluvium has been applied. The term is derived from *alluvio*, an inundation, or *alluo*, to wash, because the pebbles and sand commonly resemble those of a river's bed or the mud and gravel washed over low lands by a flood.

A partial covering of such alluvium is found alike in all climates, from the equatorial to the polar regions; but in the higher latitudes of Europe and North America it assumes a distinct character, being very frequently devoid of stratification, and containing huge fragments of rock, some angular and others rounded, which have been transported to great distances from their parent mountains. When it presents itself in this form, it has been called "diluvium," "drift," or the "boulder formation;" and its prob-