ceal the hunters; or trenches ten feet long are dug, the middle being covered with stout logs that an elephant may pass over without breaking, and, well concealed by earth thrown over them, the ends are left open. Here the hunters watch or sleep by turn, each with one or more spare rifles lying beside him, till the animals approach to drink; when, from a few yards, or it may be only a few feet of distance, the deadly streak of fire flashes upward from the earth, and the creature falls either upon the spot, or retires to die at a short distance. By these or other modes of hunting, or by purchase from natives who have learned the use of firearms, the cargo of ivory is at length completed, and the hunter turns homeward to realise in Graham's Town, or other frontier markets, or in the Cape itself, the hard-earned reward of his labour.

SUBMERGED ISLANDS.

Our readers will remember the sensation caused last November by the announcement that the island of Tortola had been submerged, and the relief experienced when the statement was proved to be incorrect. Tortola —one of the Virgin Islands, a cluster forming part of the West India Group—it was found had not been submerged, but the neighbouring island of St. Thomas had experienced a catastrophe only less disastrous. A fearful hurricane had burst upon the island, sweeping before it every object that lay in its course. Unhappily, such an occurrence was by no means unprecedented. The little island (until recently a Danish possession, but now American) had before been similarly devastated. The year 1837 is still memorable in the history of its calamities. Then, as recently, ruined dwellings overspread the land, and shattered vessels covered the neighbouring seas.

Those who have paid some attention to the influence at work on and beneath the surface of the globe, would feel but a qualified degree of surprise at the first announcement of the supposed submergence. Geology has done much to invert our notions of the relative stability of sea and land. The "ever-changing ocean" has been found to preserve a nearly uniform level;* while in relation to the land, which we are so accustomed to regard as the very type of fixity, the poet's words are amply verified—

> "New worlds are still emerging from the deep,
> The old descending, in their turn to rise:"

When movements of the earth's crust are spoken of, the majority of persons immediately think of earthquakes. But these terrific phenomena form but one class of terrestrial fluctuations, although the suddenness of their action renders them more conspicuous and impressive than agencies which are slow and gradual in their operation. They are closely connected with the phenomena of volcanoes. The latter may be defined as openings in the earth's crust, through which the products of igneous action make their escape into the atmosphere. As Strabo sagaciously remarked, eighteen centuries ago, they act as safety-valves for the gaseous and liquid emanations of the interior, and thus tend to diminish the violence of those convulsions which even now bury in ruins the proudest works of man, and carry the solid "earth into the midst of the sea."

Some two hundred volcanic vents have been observed in different parts of the world, but they are by no means uniformly distributed. Numerous regions have been mapped out by geologists as areas of volcanic action. The region of the West Indies is one of these areas, many of the islands being themselves the products of volcanic upheavals in past ages. A volcano in St. Vincent's poured out ashes and lava early in the present century; and Jamaica and St. Domingo have often suffered from shocks of earthquake. Scarcely three weeks had passed since the hurricane at St. Thomas's, when that shattered little island was visited by a sharp but transient earthquake, thus described by a correspondent of the "Times" newspaper:—"A faint roar was heard from seaward. Houses groaned and creaked; the earth heaved, and reeled, and danced beneath us, so that we could scarcely keep our feet. I have been in several earthquakes, but never felt one of greater intensity; and the inhabitants of St. Thomas, as well as of other islands, declare that they never felt one nearly so severe." This occurred on the 18th of November last; but, happily, the actual amount of damage done was comparatively slight.

That an earthquake should have followed so rapidly upon a hurricane, seems to support the view enunciated by some geologists, including no less an authority than Sir Charles Lyell. "Many of the storms termed hurricanes," he observes, "have evidently been connected with submarine earthquakes, as is shown by the atmospheric phenomena attendant on them, and by the sounds heard in the ground and the odours emitted. Such were the circumstances which accompanied the swell of the sea in Jamaica in 1780, when a great wave desolated the western coast, and, bursting upon Savanna la Mar, swept away the whole town in an instant, so that not a vestige of man, beast, or habitation, was seen upon the surface."

It has occasionally happened that one of the results of an earthquake has been permanently to alter the level of the district in which it has operated. After the great earthquake which visited the coast of South America in 1822, a portion of Chili was found to have been upheaved to a height of from three to seven feet. Reckoning the area of elevation at 100,000 square miles, Sir C. Lyell computes that this convulsion gave to the land an addition of fifty-seven cubic miles of rock. In 1837 the shore near Valdivia, more to the south, was elevated to an extent of eight feet. In February, 1835, Conception, another Chilian town, was thrown down, and the island of Santa Maria, distant twenty-five miles, was raised some nine feet. At Talcahuano the coast was raised about four feet in February, but appears to have subsided again to half that extent by the month of April.

In 1819 a large district at the mouth of the Indus experienced an extensive oscillation. One of the estuaries of the river was deepened in parts some ten or twelve feet. A tract of country, 2,000 square miles in extent, sank down, and the sea rushing in, it speedily became a vast lagoon. At the same time a neighbouring plain rose about ten feet, converting a long strip of level ground into an artificial mound fifty miles in length, and in some parts sixteen in breadth. A further subsidence afterwards took place in the year 1845.

It will be seen that phenomena of this kind, further illustrations of which might readily be adduced, are adequate to the production of extensive and terrible convulsions. Tortola happily was not submerged; but several authentic instances of the appearance and subsequent disappearance of islands in mid-ocean are on record. Volcanic eruptions and earthquake movements occur at sea as well as on land, and occasionally a submarine Etna or Vesuvius is seen to rise amid the watery waste, and rear its rocky crest, canopied with fire and smoke, above the surface.

* Hugh Miller has shown that the sea-level is not absolutely unchanging, as some geologists have asserted.

To take an example not far from our own country:—Iceland is well known as a region of volcanic disturbance. In its neighbourhood a volcano burst forth in the year 1783, and produced an island bordered by high cliffs, while smoke and cinders were emitted from the interior. It was claimed by the Danish monarch, and dubbed Nyöe, or the New Island; but the sea reclaimed Nyöe, so that nothing remains but a reef of rocks some fathoms below the surface. Another small island was upheaved in the year 1830.

A volcanic cone appeared in 1811 near to the island of St. Michael's, one of the Azores, and gradually rose to the height of 300 feet; but it was in a short time washed away by the action of the waves.

A more noticeable instance is that of Graham's Island, thrown up in 1831 at a point in the Mediterranean some thirty miles from Sicily, and therefore within another well-known volcanic region. It seems to have risen gradually to a height of 200 feet, with a circumference of three miles. This was its maximum size; it then began to yield to aqueous action, and by the end of the year but a slight vestige remained above the sea-level. In a short time this also disappeared. Many islands, which are to us as permanent as the surrounding continents, exemplify the same structure, and point to the same mode of formation as the more transitory ones just alluded to. The Lipari Isles, north of Sicily, are of volcanic origin, and one of them, Stromboli, is still in a state of eruption, and has been so for ages; another volcano now emits only sulphureous vapours. This group was regarded in ancient fable as the abode of winds and tempests; and is celebrated by Virgil, at the opening of the "Æneid," as "the restless regions of the storm:—

> "Where, in a spacious cave of living stone,
> The tyrant Æolus, from his airy throne,
> With power imperial curbs the struggling winds,
> And sounding tempests in dark prisons binds."

Barren Island, in the Bay of Bengal, and St. Paul's, in the Indian Ocean, exhibit a similar conformation.

Changes of level of a much more gradual kind than those which have now been detailed are in progress in some parts of Europe. The shores of the Baltic, it would seem, are undergoing a slow process of upheaval, while the western coast of Greenland is sinking; and doubtless, if observations were multiplied, these imperceptible movements would be found much more general than we might at first be inclined to suppose. These phenomena, at all events, form part of the great series of conservative and reparative agencies by which new land is continually being won from the ocean, and the balance of terrestrial nature maintained. Thus regarded, we gain an insight into the place and power of the earthquake and the volcano, and are able intelligently to recognise them as contributing to the "general good," though "partial evil" is incident to their operation.

SKATING IN HALIFAX, N.S.

During my short stay in Halifax, Nova Scotia, it was my good fortune to witness several very curious and certainly extraordinary sights. In January, 1859, we had, as usual, some very severe frost, but accompanied with heavy falls of snow, succeeded by rapid thaws and heavy rains. The wind afterwards shifted to the north, and then fell to a dead calm. The thermometers fell rapidly, until in the city they registered five degrees below zero, and in the citadel as low as fifteen degrees below zero, Fahrenheit. The result of this alternation of snow, thaw, rain, and frost was, that the harbour was completely frozen from the head of Bedford Basin to George's Island, a distance of about twelve miles. Twice was the harbour frozen, and on the second occasion the ice was formed as smooth as a looking-glass.

For the information of those unacquainted with Halifax Harbour, I had better state that it is about twenty-five miles in length, with a depth varying from five to sixty fathoms; it contains several large and valuable islands, and altogether ranks as one of the finest havens in the world; the rise and fall of the tide never exceeds six feet, and averages from three to four feet only. The city stands on a peninsula formed by the north-west arm and the harbour itself. George's Island lies at the end of this peninsula, and commands the whole harbour, southward from the city, being surmounted by a small but formidable battery. From this little island to the Narrows is about three miles; at the Narrows the waters are suddenly contracted from 1,500 to 200 yards, and then again suddenly expand into the basin—a truly magnificent sheet of water, being nine miles long and eight miles wide. At the time of which I write, the whole of this vast sheet of water was frozen to a depth of six feet, and from the Narrows to George's Island to four and a half inches; the latter, as I have before stated, was frozen as smooth as ice could possibly be.

On a Wednesday morning the large ferry steamer plying between Halifax and Dartmouth was compelled to stop on account of the extreme frost, for the ice closed up behind her as she passed along. At eleven she stopped running, and at twelve I crossed her track, so rapidly had the water frozen.

All Halifax was out on the ice, on foot or skates, or in little sleighs or sledges, or "coasters," as they are termed by the natives. The sight was a magnificent one: this huge sheet of ice, with thousands of people running, walking, or skating; ladies being dragged about on their little sleighs; and all life, motion, and gaiety; a bright sun overhead, the ice smooth, black, and starred with innumerable crystals; the dark-green fir-trees fringing the banks, and on the western side the city with its churches, steeples, and citadel: altogether it was a spectacle which once seen could never be forgotten.

One old gentleman told me that he had seen the harbour frozen two or three times, but never smooth enough for skating. Necessarily, the freezing of so large a surface of salt water must be of very rare occurrence.

At this time a great trotting-match was got up and held on the basin. There were twenty-four horses and sleighs entered for the match, each sleigh drawn by one horse only. It was certainly a singular spectacle to see a sleigh-race on the very spot that one was accustomed to sail over in the summer: the horses, with their jingling harness and gaudy trappings; the drivers, each with his distinguishing colour; crowds of gaily-dressed ladies and talkative gentlemen; sounds of merriment on all sides mingling with those of the sleigh bells.

It may seem strange that ice formed on salt water is much stronger and tougher than that which is formed on fresh water; that is, taking the same thickness of ice in both cases. I remember on that Wednesday morning, I and about a dozen of my friends were all standing together on the ice, chatting about the beauty of the weather and the fine skating, when one of the party suggested that we should try the thickness of the ice; we bored a hole, and found that it was only one inch and a third. On making this discovery we separated with as much alacrity as possible, each man skating in a different direction. A man may skate over fresh-water ice of only one inch thickness, but it will not support