

If these little streams carry away material from the high places, and deposit it on the low places, will not larger streams do the same thing? The effect will certainly be the same, though it may be so slow we cannot perceive it. As the rain falls upon the land, it is continually wearing it away, and carrying it down to lower levels. Erosion, as this wearing away is called, is constantly going on. Some parts are more easily worn away than others, and valleys and river courses are formed, leaving the hills cut up into numberless peaks and crags. The gorge of the Colorado River has been cut down in many places, to an immense depth, by the erosive action of water. The walls of the gorge are not worn down as most river valleys are, because there is no rain in the surrounding country, and therefore no erosion except at the bottom of the canon. The effects of erosion by Niagara Falls may easily be observed. For many years they have been known to be working themselves back toward Lake Erie, at from one to three feet a year.

The rivers carry down the eroded material and deposit some of it in their lower courses, and the rest they carry to their mouths. Here it is deposited year after year, elevated by lateral pressure, and new land is formed.

Do the waters of the ocean help in this great work of changing the surface of the earth? Undoubtedly they have much to do with it. While the waves produce no effect in deep water, at the coast line their work is incessant and powerful. They beat upon the rocks until some portions are loosened, and hurl these fragments, together with the sand and pebbles on the beach, against the shore, and by this grinding action they can wear away the hardest rocks. Some writer says, "Every wave carries, as it were, a number of stone hammers, with which it bruises and batters the cliffs." Ocean currents carry out detritus brought down by rivers, to the sea-bottom, though the greater part is deposited near the shore. When two currents meet a bank is formed. The Banks of Newfoundland are formed by the meeting of the Polar current and the Gulf Stream.

Water in another form also plays an important part in these changes of surface. In the form of ice, it does a great amount of work. In cold regions, where snow accumulates faster than it melts, its weight finally becomes so great that it is crowded down the mountain into the ravines. It moves along very slowly but perceptibly, and

with great force. It makes a path for itself as it goes, and thus wears out valleys, and scoops out hollows, in which water may be accumulated to form lakes. And this glacial action has taken place, not alone where glaciers are now found, but in many other parts of the world during past ages. Marks of glacial action are very abundant in the Sierra Nevada Mountains. Besides their erosive power, glaciers carry down great quantities of detritus on their surfaces, which is deposited where the glacier melts.

Icebergs are formed when the glacier reaches the sea coast, and portions are broken off. As they float away, they carry with them the detritus brought down on the surface of the glacier. There it remains until they melt. Icebergs coming down from the North Atlantic with the cold Polar Current meet the warm water of the Gulf Stream. The ice is melted, the detritus deposited, and the Banks of Newfoundland are formed.

Water, as it flows through the soil, dissolves and carries with it to the sea calcium carbonate, which is there used for making shells. When the little creatures which inhabit them die, these shells fall to the bottom of the ocean, and are there used in forming limestone rocks. The little coral polyps, too, take from the waters of the ocean this dissolved calcium carbonate, and build the wonderful coral islands.

Volcanoes are now supposed to be caused by the action of water when changed to steam. Volcanoes build up the land around them, and are thus instrumental in causing changes of surface.

And so, seeing what great changes are produced by the one agent, water, we must conclude that, after all, the surface of the earth is not the unchangeable thing it seems, but that it is constantly changing, and to such an extent that in many places we can perceive it, even during our short lives. And if, in our lives, which are so short, geologically speaking, such effects have been noted, how great must be the results of the forces which for untold ages have been acting on the earth.

C. M. P.

EDUCATIONAL DEPARTMENT.

DO INSTITUTES PAY?

Do Institutes pay? is a question that the Legislature of this state will be called upon to settle the present session, and it might be well to give it a careful consideration. Patrick was asked whether he knew young Jones. He promptly re-