

FIELD EXCURSIONS.

PLEASURE excursions to various points of attraction in the vicinity of Halifax, have of late years formed the staple of the summer amusements of its people. Obeying the prevailing instincts, but with a difference, and combining instruction with relaxation, the Council of the Nova Scotian Institute of Natural Science invited the members of that body to meet at Steele's Pond, on the morning of Saturday, Aug. 3, for a cursory examination, geological and otherwise, of that portion of the peninsula embraced between the place of meeting and the Point Pleasant ferry, crossing by which the intention was to travel along the shore to York Redoubt. They were kindly furnished by the military authorities with a pass, permitting entry to the forts on the route—a privilege which proved a very interesting feature of the day's proceedings.

The geological peculiarities of the harbour of Halifax on both sides are of much interest, and through the medium of the Institute and other sources, have been often noted. On the Halifax side the rock formation is a highly metamorphosed clay slate and quartzite, probably of an age below the Lower Silurian; but all organisms, if any ever existed*, are obliterated. From the starting point, as before mentioned, onward, the strata have been much disturbed, presenting a series of short synclinals and anticlinals, sufficiently conspicuous, with erratic boulders. The surface, wherever exposed, is found to have been denuded in a remarkable manner by the glacial action of a period ever so much more recent, which has smoothed and covered it with striæ—its compact hardness sustaining, first, the enormous pressure and the gradual south-easterly movement which have caused the striæ; and next, it refers us from the nineteenth century to evidence of a period when probably no living thing existed in this ice-clad region, save such arctic animals as the seal and polar bear. It tells also of another period, when possibly under circumstances of elevation or depression, and certainly of amelioration of

*Dr. Honeyman asserts that he has found tracks of annelids on the rocks below Fort Ogilvie.

climate, the ice disappeared, leaving as a legacy the present Nova Scotia, and progressive fauna, and probably the fishing banks off the coast, now teeming with their finny millions. Since then no further geological disturbance has taken place.

The gradual melting of the glaciers, which at one time must have given this region an appearance similar to that of Greenland at the present day, left also the boulder clay and drift deposits, by which the rock is more or less overspread. At Point Pleasant, just below Fort Cambridge, may be found by diligent seekers, specimens of amygdaloid and other minerals, which show that no small portion of the deposit has been borne by a long continued ice movement, from the trap districts of the Bay of Fundy, reaching the ocean by the coast, as the glaciers and icebergs of Greenland now do by Baffin's Bay and Davis' Straits.

A visit to the Forts, although not intimately connected with natural science, affords good evidence of the perfection to which *military* science has attained within a comparatively short period, and the permission was highly appreciated. Judging by their commanding position, and likewise by the support they would receive from McNab's Island and Fort Clarence, on the opposite shores, and from George's Island further on, to say nothing of modern torpedo warfare—the charge at Balaclava would be a small affair compared with the temerity that would attempt a hostile passage. It was thereupon agreed, *nem con*, that so far as Halifax is concerned, no one's sleep need be ever disturbed, by threats of, or actual invasion. The thought was also intruded, that we owe much to the Mother Country, which after such a fashion has ensured our safety, seeing that all the resources of the Dominion are scarcely adequate to fulfil that duty. Yet does our geographical and strategical importance fully counterbalance the cost of these defences, and the enormous artillery and other warlike appliances which compose their armament; for Halifax, held by a first rate naval power, is the key, not alone of the Dominion, but also to the West Indies and the neighboring United States.

So far the excursion was all that could be desired; but here the pleasure was fated to come to a rather sudden termination.

The wind blew and the rain fell, while searching for *calluna vulgaris*, which it was understood grew hereabout. The plant may be found fringing the new road a little below Fort Cambridge. It is a vexed question whether it is indigenous or an exotic. Several papers have been read before the Institute by Professor Lawson and others, and these contain the best possible evidence on the subject. It is found in Newfoundland, Cape Breton, several parts of Nova Scotia proper, and also in some of the northern States of the adjacent Republic. It may be an imported plant, and meeting with congenial soil have spread; but nowhere in America does it present the expansive propensity of the heather of Scotland or the English heath. The evidence appears just as strong for its being indigenous. But as in connection with *our* heather we have a not very pleasing remembrance of a walk in heavy rain from Point Pleasant to the City, we must leave the further discussion of such a knotty point in botanical science to those who may choose to fight over it.

The party returned to the city at full speed, with a determination to carry out the second part of the programme at an early and more hopeful day.

In pursuance of the determination above expressed, another meeting was summoned to assemble at the Tower, Point Pleasant, on Saturday, the 24th ult., cross the Ferry, and work the shore onward to York Redoubt.

The day was beautifully fine, but a fewer number was present than on the previous occasion. There were, however, more pleasurable incidents connected with the jaunt. Mackerel had struck in to the mouth of the Arm, seines had been shot, and the fishermen were busy at work. One of these seines had stopped, by computation, eighty barrels of fish, and others were more or less expectant. It is to be hoped that a gracious Providence will realize to the fishermen an abundant harvest of the deep. With spirits raised by the prospect, the party landed at Purcell's Cove, when a beautiful aquatic vision met their gaze. The "Bellerophon," flag ship of Admiral Inglefield, was seen, steaming leisurely

down the harbour, outward bound, attended by her consorts, the "Sirius" and "Argus," and followed by a part of the Halifax Yacht Squadron, intent on a kindly adieu for a season. In half an hour the Admiral had rounded Chebucto Head, out of sight, and the yachts were running back to their moorings with the accommodating westerly wind.

Following the shore, over rocks and boulders, attention was directed by Dr. Honeyman to a conglomerate recently formed by the accumulated debris of granite, gneiss and slate, cemented with oxide of iron derived from the pyritous gneissoid rocks. The kelp on the beach also attracted attention, with its clusters of *eschara* and *spiroorbis*, and called forth interesting explanations from a member of the Institute. Proceeding along the shore, the granite appears *in situ* and in large boulders, coarsely porphyritic to the eye of the geologist, but a beautiful mixture of perfectly formed small crystals of quartz and felspar, intermingled with lustrous mica—doubtless the material, if fairy legends are worthy of credence, with which Poseidon embellishes his submarine palaces, and the nereides and mermaids their crystal grottos. We are not aware that it can be made useful in any other way.

Onward, scrambling over and leaping the granite and gneissoid boulders, at a little more than half way to Falkland village, a patch of gneissoid strata is conspicuous, lying directly on the granite, having by clinometer a dip 40° N. 10° W. It was noticed by Dr. Honeyman as important, confirming a geological theory connected with the locality, of which we shall probably hear more at the next ordinary session of the Institute. Ledges of gneissoid and quartzose rocks and heavy boulders, were continuous. In the former were observed numerous weathered cavities of pyritous crystals, and in the quartzose formation andalusite; at one spot the latter appeared ranged in groups, in stellar form—probably a not unfrequent occurrence.

We have read a good deal of Alpine climbing, but before the traveller takes too much credit for ascending Mont Blanc, should like him to try the shore line of Halifax Harbor, from Purcell's Cove to York Redoubt, without shirking the difficulties, or (in

some few places) the peril of the undertaking. It is, however, far from impracticable, and when he arrives at the latter point (it took us *in all* three hours and a half to do so), if he then feels inclined he can go further, and will no doubt find objects of interest to compensate his energetic perseverance.

Here we scaled the heights, and soon found ourselves at York Redoubt, where, by virtue of the *pass*, we became at once free of the premises, and were showed round with much courtesy and attention. The most striking objects in the Fort are the heavy ordnance, those nineteen ton guns, which we were assured would carry the conical shot and shell piled around, across Thrum Cap and as far as Devil's Island, more than four miles distant, while they could be depressed to bear upon an object half a mile from the shore. We forgot to enquire how the guns got there, and are still somewhat anxious to learn the process, if they were first landed at the foot of this eminence. The knowledge may help to solve the problem of the mechanical appliances by which the old Egyptian engineers got their big stones to the top of the pyramids.

It now only remained to get back to the city by the easiest route. The main road from York Redoubt to the Ferry, barely, if at all passable, for a carriage, is susceptible of great improvement, which is certainly due to the inhabitants of the villages in this direction, who number several hundreds, and depend entirely upon their boats for communication with Halifax. It is not, however, bad exercise for the pedestrian, and will always be preferred to the boulder route by the shore. The ferry was soon gained, and crossing the party reached the city, delighted with the excursion, only regretting that a larger number of the members had not been present to share the pleasure, and so to manifest their approval of an enjoyable feature of the work of the Institute.

W. G.