

Walker's; ^{William} Little Salmon River,

Sat. Sept. 3, 1881.

My dear Father,

We have now got pretty well through with all that can be done from this as a centre. From Porter's Lake to this point, the "slate" country forms a belt 8 or 10 miles wide, between the coast and the granite inland. The granite now ends, at about this meridian; and there is a wide cape of land between Bow Bay & Halifax Harbour, to the southward; and the country to be surveyed thus stretches in two directions from here, making it somewhat difficult to decide in which direction to move. This region is further complicated by a bay of the Shubenacadie Basin which runs into it from the north, making it necessary to keep a sharp look-out to determine the line of watershed, although affording at the same time additional interest to the work. The streams have a way here of "making under =

spersed, separated by wooded gullies. These pieces of bed-rock always stand on their true strike and do not seem to have been loosened by the granite from the general mass. On one hill-top the "slate" and granite were all intermingled like a mosaic, but the ~~rule~~ remark held true for all pieces large enough to show bedding. The eruption of granite must have been under a large superincumbent mass, accompanied probably with heavy north + south pressure. How far denudation had progressed before the north + south cracks were formed it would be hard to say, unless the bottoms of these cracks could be reached to ascertain how they are filled. They could not have resulted from mere cooling or shrinkage of any ordinary kind, as the two classes of rock would not then have fused alike. The cause must have been strictly mechanical; and the movement probably took place some time after the other, although it may have been prior to the Devonian, geologically; and it does not seem to have been accompanied by any

ground" as they say, often for considerable
distances, owing to the ~~gap~~ valleys so often
being filled with loose boulders. A lake will
often be formed by a ridge of boulders, with
a certain amount of soil covering them, forming
a barrier in a narrow valley; through this
there will be a soakage from the lake, becoming
a brook perhaps half a mile from it; while
the ostensible outlet of the lake will be in
the opposite direction. Some lakes too, have
a way of running out at the upper end
in the spring, or during freshets.

I have been keeping the structure of
the country in my mind as I go along,
but find it little guide to the topography.
The beds from here to Porter's Lake are practically
on edge with a very persistent east + west
strike. The whole of the main water courses
on the contrary run north and south. I can-
not remember even a ridge of high ground that
runs east + west for any distance. The

only topographical consequence of the strike of the rocks is that the streams are often broken by "still-waters" on their course; and that the number of lakes is so great. As I understand it, the belt of granite on the north must be an eruptive mass, to be correlated with the upturning of the bed-rock and its high dip. Subsequently to this, the country has been broken transversely, probably by the settlement of the crust on some resisting convex mass below. This has produced a series of parallel cracks from north to south, on which the present topography of the country is based. These cracks are in no way affected by the position of the limit of the granite. On the contrary; the granite is broken by them just as the slate is, & on the continuation of the same lines. The granite I consider to be eruptive from the appearance of the ~~limb~~ limit between it and the bedded rock. On the summit of a rocky hill near the limit, peaks of granite and quartzite may often be seen inter-

have paid for. I would be glad to know
what you think. I will of course have no
time for this till the winter; and then it
will be a question whether it would be worth
my while in any case. It might be more
to my advantage to make drawings of a
~~latitude~~ machine for calculating latitude &
departure which I have thought out, and which
might be published in some Engineering periodical.
I am not so foolish as to think of spending
my money in having one made; or to think
of worrying myself about patents, and establish-
ing "claims" in the "teeth of clenched antagonisms."
But I think it might be of some ^{service} ~~use~~ to my
reputation to have it figured & described, as I
think it would excite a certain amount of in-
terest. It would cost \$200 or \$300 to make,
& its sale would never be large; so there is
not much "money in it." I was led to con-
sider the matter after spending the best part of
a wet day working out a few miles of road

granite & half in the slate country; and it is exceptional to find the edge of the granite indicated by a line of water flow, although it would usually follow the strike of the bed-rock were this the case -

It seems to me it might be well to prepare a short report to accompany my map I would make it entirely descriptive, however; & avoid these theoretical points as far as possible. What would be the best term to designate the stratified rocks as a whole? The people here call them "bed-rock" and "blue-stone" although these names are a little indefinite & somewhat inapplicable. I was asked by the Editor of the "Mining Review" to let him know how this survey progressed; & it has occurred to me that some interesting descriptive articles might be made from what I have seen of the country. I am not sure that this would be proper for me to do, as it would be giving away information that others

lateral pressure. It is a little difficult to understand how this second movement could have taken place, with a mass of cold granite to deal with, which one would imagine ought to extend to the "very bottom" of all things. With the depth of solid material there must necessarily have been, how did the cracks happen to be so numerous? they occur one or two miles apart throughout this whole area. It would be possible to suppose that no such transverse movement as I speak of had occurred; & that the north & south valleys were the result of denudation; but this the lines of watershed appear to belie, as many streams rise north of the granite belt and flow completely across it on their way to the Atlantic coast. Several long lakes, comparatively narrow, lie half in the

traverse, to establish the position of an inland point.

The wind has been backing from N.W. to North, East and South-east during the last three days; & I therefore expect as many more days of broken weather. The wind now goes quietly round all the way. Earlier in the season, it would only get as far as N.E. when it would suddenly chop round to the south, bringing up mist and fog. It has been playing this game for the several weeks now, the cycle being a little more than 7 days. The fog used to begin on Thursday. Now the wind is not fairly south till Saturday. On the whole there is a considerable excess of fine weather. I do not think we have been kept in more than one whole day since the work began, although the average loss from wet weather has been about $1\frac{1}{2}$ days in the week.

Your affectionate son,

William.