granitoid gneissic series of Laurentian age, nor an intrusive mass. Dr. Dawson has shewn (Acadian Geology, 1868), that in different parts of its course it comes successively into contact with Lower Silurian, Upper Silurian and Devonian rocks, and the manner in which these sedimentary strata are affected at the lines of contact scarcely leaves room to doubt the posterior origin of the granite; but whether as an intrusive mass, or by the metamorphism *in sitû* of the stratified rocks, (in part by a process of molecular re-arrangement of their original component particles,) is perhaps uncertain. From personal observation, I have not much knowledge of the distribution and relations of the granitic and gneissic rocks in the eastern counties. They have, however, been observed at so many points from near Waverley, eastward to Cape Canseau, that it seems probable they will eventually be found to constitute a band almost as uninterrupted as they do in the western counties. But in any case they undoubtedly occupy a much more extensive area than is assigned to them on the published geological maps.

RELATIONS OF GRANITE TO GOLD ROCKS.

The relations of the granite and gneissic rocks in Nova Scotia to the surrounding auriferous strata, are perfectly analogous to what is observed in this respect in the Australian gold-districts, most of which are in close proximity to similar granitic centres. In one instance an auriferous quartz vein, which had been worked close up to the boundary of a large granite area, was found to pass gradually, by the addition of feldspar and mica, into granite, losing its auriferous character and becoming a vein of ordinary grey granite exactly resembling the rock of the neighboring granite mass, into which it eventually merged. It will be interesting to trace out the manner in which the quartz beds in Nova Scotia terminate in their strike towards granite masses. This could probably be most advantageously studied at Mooseland, where massive quartz veins occur only a few hundred yards distant from the granite.

BARREL-QUARTZ.

In reference to the peculiar barrel-quartz already adverted to, and which, in various modified forms, is very characteristic of numbers of leads in Nova Scotia, though it has frequently been described, no very satisfactory explanation has yet been given of the cause to which it may probably be ascribed. During the past summer I have made some observations which will perhaps help to throw a little light on this question: much careful observation, and the collection of a much greater number of facts is, however, yet required for the complete elucidation of the subject, which is one involving intricate questions of geological dynamics. The facts I have observed, however, all seem to lead to the conclusion that the corrugation of the quartz is intimately connected with, and dependant on the operation of the forces which produced the slaty cleavage; the same forces have likewise, in all probability, caused the openings between the beds in which the quartz has been deposited; and also the great parallel east and west synclinal and anticlinal foldings of the strata.

In every corrugated vein which I have examined, the axes of the corrugations or barrels always coincide with the strike of the cleavage. If the walls are of sandstone (whin), they are rarely corrugated, and seldom show any cleavage-planes; though their surfaces, especially if in immediate contact with the quartz, frequently show ridges or parallel undulations, which strike with the cleavage and seem to have impressed corresponding swells or undulations on the quartz. Where cleavage and bedding coincide in strike and dip, no corrugations occur, nor are they observed in layers which are enclosed between walls of hard whin.

CORRUGATED LODES.

All those veins which are sharply corrugated and contorted, lie within the limits of beds of highly cleaved soft slates of from three to five feet wide, between beds, either of whin and a hard compact slaty rock, which constitute the walls of the veins, but in no instance exhibit corrugations corresponding with those of the vein, and are commonly perfectly smooth and even throughout. Beautiful examples of such veins occur at Oldham in the Schaffer lead; in the Fish lead; and in the works at No. 1 Shaft of the Stirling Company. Also in the Free Claim at Renfrew; and in the Dominion Company's mine at Sherbrooke.

In veins of this character the distance between the corrugations, as well as their size is very irregular, producing forms resembling a number of badly shaped letters S strung together, or like the course of an exceedingly tortuous brook in its windings through an alluvial flat. The slaty laminæ in proximity to the quartz conform more or less to the convolutions of the latter, and the beds in which the veins lie afford abundant evidence of great pressure, and of motion of one plane upon another, the surfaces being all more or less polished, striated, and slickensided.

The cleavage intersects the stratification at all angles, but is invariably at a higher inclination than the bedding. It varies in strike from about N. 10° E. to east and west, but is generally much more nearly east and west than north and south.

JOINTS IN LODES.

Some veins have a structure as if two sets of different sized corrugations crossed each other diagonally, dividing the vein into a series of rhombic or rhomboidal blocks. A cross section however shows that this structure is not due to the corrugation of a quartz layer of uniform thickness, but that the whole vein is composed of a very regular series of bulges, and that the longitudinal furrows are thinnings of the vein corresponding to the strike of the cleavage-lines in the wall-rock; and the similar, though smaller cross furrows correspond with a set of close joints which intersect the strata in directions more or less parallel to the dip of the latter. In such veins the quartz breaks out in blocks resembling in form the well-known septarian nodules or "turtle-stones" of the English Lias.

LEARY LEAD.

The Leary lead at Tangier shows a good example of this kind of structure. The foot-wall is of dark lead-grey slate, and has a perfectly smooth even face through the entire length of the workings, dipping S. 5° E. ∠70°. Between it and the quartz there are about two and-a-half or