

V.—NOTES ON RECENT SEDIMENTARY FORMATIONS ON THE
BAY OF FUNDY COAST.—BY R. W. ELLS, LL. D.,
F. R. S. C., &c.

(Read May 14th, 1894.)

Ever since the commencement of the study of the rock formations in Nova Scotia and New Brunswick, nearly sixty years ago, the red sandstones and associated trap rocks, more especially seen along the south side of the Bay of Fundy, have been regarded as the newest member of the geological scale, and presumably of Triassic age. Along the north shore of the Bay, in New Brunswick, small isolated areas of similar rocks occur at several places, but the red cliffs of Cape Blomidon, and the several points in eastern Kings County which project into the waters of the Basin of Minas may be taken as typical of the sedimentary portion of this formation for this area.

On the north side of the Basin scattered outliers of Triassic sandstone also appear from Partridge Island eastward. As we approach the upper part of Cobequid Bay these become more extended and form a band along the north shore of several miles in breadth which extends from the head of the Bay along the valley of the Salmon River for some distance east of Truro. The most prominent feature connected with this formation however is the great ridge of trappean rock, which, rising like a wall, several hundred feet in height, cuts off the lovely valley of the Cornwallis and Annapolis Rivers from the waters of the Bay of Fundy. The debris of these trap rocks, when mingled with the red loam of the valley, has produced a soil especially favourable to the growth of apples and other fruits, and the same peculiar soil is found in the finest orchard centres of the Province of Quebec, such as the district surrounding the trappean mountains of Montreal, Abbotsford, St. Hilaire and Rigaud, the soils of these localities from the destruction of

the trappean rocks being apparently very similar to those found in the Annapolis Valley, and being also favourable to the growth of fruit trees.

The extension of the trap ridge of Kings County to the eastward is seen in a scattered group of islets known as Five Islands, and Partridge Island, near Parrsboro, while to the west the bold bluffs of Capes Sharp and d'Or, and further down the Bay the cliffs of Isle Haut represent further outbursts of similar igneous rocks along the northern margin of this area of disturbance and volcanic activity.

The relations of the volcanic rocks, generally known as Trap, to the associated sandstone are well seen at several points, and from the study of these it would appear that the former is the more recent. The intrusion of the volcanic into the sedimentary is clearly seen, and the sandy layers along the contact are not only pushed upward on either side of the dykes, but the red rock is metamorphosed to a certain extent, as seen in the discoloration of the beds and by their alteration to a more quartzose condition. In fact the whole range of the North Mountain is practically only an immense sheet or overflow of igneous rock which has issued through a line of fissure, traversing both the red Triassic beds and the underlying Carboniferous strata, and spreading out northward in the direction of the waters of the Bay of Fundy. This trap ridge consists of a series of layers of various kinds, in which are found heavy columnar rocks, forming pillars as regularly shaped as those of the Giant's Causeway. These can be well seen at various places along the north side of the promontory between Capes Blomidon and Split. Other layers are ashy and soft, others again reddish and felspathic or amygdaloidal, and certain beds contain masses of beautiful zeolites, amethysts and agates, which have caused this belt of rocks to be celebrated far and wide among mineral collectors.

At several places along the Bay of Fundy shore of the North Mountain, the trap, which for the most part forms an unbroken wall for seventy miles, is overlaid by newer sedimentary beds. Probably the most conspicuous deposits of these are situated a short distance west of Scot's Bay. One of these is well seen in

a small cove known locally as Ira Woodworth Bay, and from some notes, taken at this place during a hurried trip along the shore in 1876, the following points of interest may be stated for the purpose of stimulating further investigation on the part of those students more particularly interested in the study of the geology of the district.

At this Bay the trap rock is very amygdaloidal, and a small cove about forty rods across is hollowed out of the shore line. The cliff here is quite low, the erosion having been very considerable, and the amygdaloid is overlaid by a green sandy looking shale about four feet in thickness, having a dip to the south east of about ten degrees. This is in turn overlaid by a greyish sandy calcareous rock which is interstratified with beds of nearly pure limestone. Certain bands of the series hold concretionary masses, often of large size, of jasper and chert, which frequently contain beautiful crystals of amethyst. The thickness of the calcareous beds exposed at this place is about ten feet, and the whole is covered by soil. The purer calcareous layers have been locally burned for lime and the stone is said to have yielded an article of very fair quality.

Admitting then the Triassic age of the soft red sandstone and the more recent age of the trappean rocks which have broken through these, it would follow from the superposition of the beds just described upon the latter, that these limestones and shales must be of still more recent date. No fossils have however yet been found at this locality, probably through lack of search in this direction. It may be of interest to note in connection with this that greyish calcareous sandstone and impure limestone have been recently noted by Prof. Bailey in association with the trappean rocks of Digby neck. In these, impressions of plant remains were clearly visible though the species are as yet undetermined. Should these rocks prove on examination to be similar to those of Ira Woodworth Bay, the formation would appear to have been at one time quite widely distributed.

The occurrence of these recent rocks is of very considerable interest, geologically speaking, and from their proximity to the

educational institutions at Wolfville they could be readily examined by the scientific staff of that University. This would be very desirable so that the presence of fossils, if such exist, may be recorded and the age of the strata in question fully determined, seeing that they represent, in so far as our present knowledge extends, the highest group of stratified sedimentary rocks in Eastern Canada.