

country, in public documents and reports, in contributions to the transactions of scientific Societies, or in the possession of such of the inhabitants as might have devoted observation to geological facts in districts immediately surrounding them; and considering that the meeting of the Legislature in the commencement of September, when so many persons of intelligence might bring contributions from different and distant localities, would afford a valuable opportunity for concentrating the floating knowledge bearing on the subject, I was induced to remain some time at the Seat of Government to avail myself of it. I was enabled at the same time to form a collection of such maps of the country as were within the controul of the various departments of the Government, and to have them mounted and prepared for service in the field. For these my thanks are due to the Provincial Secretaries, the Surveyor General, the Commissioner of Crown Lands, the President of the Board of Works, and others. But among the documents which have come into my hands, I have especially to express my obligations to His Excellency, the Governor General, for the published reports he has been instrumental in procuring for me on the Geology of various States bordering on Canada.

The value of these reports cannot be over-rated, and the study of them will tend to save a vast amount of labour and difficulty in the geological investigation of the Colony. The final reports of the surveys accompanied by maps, geologically coloured, have not yet been placed before the world, and though the want of such maps often renders it tedious and perplexing to trace out with accuracy the range of the formations described, enough is already given to teach a geologist what succession of rocks he has to search for in this portion of North America, and what subordinate mineral contents he may expect them to possess. Their range too is generally indicated sufficiently, where they abut upon the shores of the lakes and rivers that separate the two countries, to enable him to conjecture at what point they may strike into Canada; and were some one member of the series of deposits, well marked by its organic contents, accurately traced through the Province, a few general transverse sections would in as short a time as is practicable, bring out the main features of Canadian Geology.

From the labours of the American geologists, as detailed in these reports, it would seem that a gigantic trough of transition deposits, conformable from the carboniferous era downwards, extends longitudinally from Cape Tourment below Quebec to some point beyond Alabama in the Southern States, and transversely from the northern shores of Lake Huron, to within no very great distance of the borders of the Atlantic Ocean.

Confining attention to those regions which more immediately serve to illustrate the probable structure of Canada, it appears that a nucleus of coal measures coming from the south west is greatly spread out in Ohio and Pennsylvania. That portion of the deposit which belongs to Pennsylvania alone extends in an unbroken body from the south-west corner of the State, a distance of 200 miles in a north-east direction, while it occupies a breadth of 120 miles, from within twelve leagues of Lake Erie to the Appalachian range of mountains. Its line of contour exhibits on the north east a number of salient portions, pointing like fingers in that direction, and separated from one another by the effect of a series of parallel anticlinal axes, along which have been worn deep valleys in the various soft deposits below. These salient portions in the carboniferous outcrop are therefore minor coal troughs subordinate to the great one,

and though as parts of the great unbroken body of the deposit they reach no further than the road between Buffalo and Philadelphia, there continues from the extremity of each a series of outlying patches resting on sinclinal mountain-tops, which in some cases run quite across the State and enter that of New York. The most eastern out-lier is the anthracite coal region of Wyoming, the position of which is within 20 miles of the Delaware river, where it forms the dividing line of the two States mentioned, at the north-eastern angle of Pennsylvania.

From beneath this enormous coal-field, with all its outlying patches, there crops out in succession a variety of conformable deposits, which on the surface roughly follow the contour of their carboniferous central nucleus, in parallel belts of unequal breadth, and accommodate themselves to all the sinuosities occasioned by geological or geographical undulations.

These zones of course take a wider and wider sweep as the deposits descend in the series, and the range of those at the base shew that the accumulated thickness of the whole must be very considerable, however flat the trough, may be. As measured on the south side of the trough, this thickness has been ascertained to amount to 30,000 feet, and though it is possible several members of the series may thin down towards the north, it cannot fail to be of great amount on that side also.

The lowest of these conformable deposits consists of silicious and calciferous sandstones of variable quality, which give support to a thick and conspicuous formation of blue limestone and associated shale, well marked by its organic remains. In its southern development, this limestone has been traced across the State of Pennsylvania into that of New York, where gaining the Hudson River, it passes on to Lake Champlain and thence runs into Canada.

Having, when in this country upwards of a year past, made a considerable collection of the fossils of this formation and subsequently submitted them to the inspection of British geologists, they have examined them with much interest, and pronounced them with some degree of cautious hesitation to belong to the lower Silurian rocks of Murchison. The collection is, at present, in the possession of Mr. John Phillips of York, Palaeontologist to the Ordnance Geological Survey of Great Britain, who is at this time engaged in making an extensive review of the fossils of the Silurian epoch generally, and the favourable opportunity thus occurring for accurate comparison, will, it is hoped, enable him to pronounce a decided opinion on the question. But whatever be the precise equivalent of this rock in Britain, it is strongly marked by its organic remains in this country, and the formation is of a very persistent character. The surface over which it spreads in Canada is very great. Commencing at Lake Champlain, its southern margin keeps considerably to the south of the St. Lawrence. Of the distance between its outcrop and the river, however, I am, as yet, doubtful, not having, either from personal inspection or the information of others, ascertained it lower down than Yamaska, where I understand a stratified limestone answering its character is quarried for building and burning. This is about twenty-five miles from the bank of the St. Lawrence, and whatever be the distance further on, the base of the formation ultimately reaches the vicinity of Cape Tourment below Quebec.

Turning at this point, and following its northern outcrop up the St. Lawrence, it is found to run along the foot of a range of syenitic hills of a gneissoid order which preserve a very even and direct south-