visit to Cabbage Bay, and examined the coal-seam then recently discovered in that district. In his report he says his object was "to trace the relations between the coal series, auriferous greenstone trachyte, and the Tertiary trachyte series of Beeson's Island." Of the Beeson's Island rocks, he says, "In the direction of Cabbage Bay these breccias rest on the coal formation, which in turn rests unconformably on the slates."* The description which follows states that a seam of coal 5 ft. in thickness had been found on the slope of a hill descending to the low grounds at the head of Cabbage Bay; but among other particulars he gives at this time no description of the associated rocks other than what has been stated above. In his principal report dealing with the rocks of the Cape Colville Peninsula, dated the 10th June, 1882, which has already been largely quoted from, he again describes the coal-beds at Cabbage Bay, and he seems to have associated the coal found near the track from Tokatea Hill to Cabbage Bay with the trachytic rocks of Beeson's Island, and to have confounded with these the slates of Carboniferous date also. At all events, we have no better description of the rocks than in the preceding report; and the section shown at page 19 of the report does not very clearly represent what is to be seen in the vicinity of the coal outcrop. No rocks are described that give the least hint of the presence of Cretaceo-tertiary coal-measures, to which the coal-seam at this place undoubtedly belongs.

During the latter part of 1883 I was directed to make an examination of the coal-bearing beds in the neighbourhood of Cabbage Bay, and reported on the same on the 30th of December of that year. Near the outcrop of coal on the descent from the Tokatea Range to the low grounds of the Umangawha Valley, the rocks associated with and of the same series were at best indefinite, and the section generally immediately above and below somewhat of a puzzling character. Apparently the coal-seam dipped so as to pass under the volcanic rocks lying higher on the range, and there could be no mistake about their resting on slates, that are well exposed on the slopes of the hills, right down to the bed of the Umangawha River. Some sandy shales and a bed of the same mixed with small well-rounded quartz pebbles here and there, forming a grit or pebble-bed, are associated with the coal at this place, and, such being insufficient to determine the age of the coal-beds, it was necessary to examine other parts of the district in the hope of finding other outcrops of coal and a more complete section of the rocks of the same age with which these might be associated.

With this object in view the west branch of the Umangawha was examined, where marly shales and traces of coal were found to be overlain by fossiliferous limestones resembling those of Abbey Rocks at Whangarei, and overlying the coal-measures at Kawakawa. But the sections here exposed are fragmentary, and the coal-bearing series obscured by overlying volcanic rocks belonging to the Beeson's Island group, and further explorations had to be made to make clear the sequence and general relations of the different members of the sedimentary series. For this purpose the coast-line at Torihine was examined, and here a section was found displaying the coal-bearing series more completely than any other yet discovered in the district.

The younger series is there seen resting on Palæozoic rocks. Towards the west the lowest rocks seen consist of conglomerates, formed almost wholly of well-rounded sandstone material, and show no trace of the presence of volcanic rocks such as are to be met with in the hills adjacent. The conglomerate belt has a thickness of from 20 ft. to 25 ft. or more; it dips in a N.N.E. direction, and in its upper part shows traces of coaly matter in beds of finer grain. Dark sandy shales succeed the conglomerates; but these were, when the place was last visited, covered over with beach-sand and could not be examined. This is the horizon in which the coal should occur, but in this section neither on the beach nor inland along the strike of the beds could an outcrop of coal be detected; yet, a little more to the south-west, an outlier of the same beds, tilted to a considerable angle, and in near contact with a massive dyke of intrusive rock, showed the presence of a thin seam of coal. The associated rocks were grey sandy beds that sufficiently corresponded with the beds interposed between the conglomerates and the limestones on the other or west side of the bluff. Dipping at a moderately low angle, these beds, after an exposure on the beach of from 2 chains to 3 chains, pass under calcareous sandstone or limestone rock, and near the contact with these become more marly in character, and contain concretions of a calcareous character. The limestone dips to the north-east, and its lower beds contain fossils. The lower part of the limestone forms a brownish-grey calcareous sandstone, while in the upper part it is coralline and foraminiferous. Towards the north-east end of the section a thick band of fossil oysters are seen on the beach, and a little way inland soft brown sandstones are met with in the lower spurs of the hills. These may possibly be the same beds that appear from beneath the limestone towards the opposite end of the section. Whether or not this merely affects the arrangement of beds belonging to the same series, or indicates the occurrence of another argillaceous band above the limestone, similar to what lies below: in either case all these beds, from the conglomerates at the base of the section to the highest in the same sequence, belong to one series of rocks, and are stratigraphically connected with the coal-bearing beds. The fossils collected from these beds on the coast-line include *Pentacrinus stellatus*, *Hemipatagus tuberculatus*, *Ostrea wullerstorphi*, *Turritella*, *Fusus*, *Cucullæa*, and other mollusca, while from the limestones on the coast and within the west branch of the Umangawha may be obtained numerous *Foraminifera* and small corals.

The beds from the coast-line at Torihine extend east and south-east, under volcanic rocks, till they again appear in the west branch of the Umangawha, and are doubtless continuous between the two places; and more to the south they appear in the upper part of both branches of Tawhetarangi Stream. This latter locality was examined during the past summer, good coal having been reported as occurring in the upper part of the main branch of the creek. Only a thin streak of impure coal was found, resting on some 10 ft. or 12 ft. of sandy carbonaceous beds that in turn reposed on the slates. The conglomerates of the coast-line were absent, and upwards in the section, after passing a moderate thickness of sandy and marly clays, earthy argillaceous limestones

* Geological Reports, 1881, pp. 36 and 41.