

*Whangamomona.*—The main road through this settlement will be described under heading of Stratford—Ongaruhe. The by-roads (service roads) are parts of Mangare, Prospect, Whangamomona, Marco, Kohuratahi, Whitianga, Mangaowata, and Toi. But little new work has been done on these roads during the year, but the portions formed have been maintained in passable order.

*Huiroa.*—The only roadwork done in the settlement during the year was the formation and culverting of about 30 chains of Douglas Road. The settlement is accessible by way of Makuri Road and by Douglas Road.

*Stratford—Ongaruhe—Ohura Road.*—The road is now open (and has been since December last) for coach traffic from Stratford to Whangamomona Township site, a distance of forty-two miles. In addition to this, a further length of about five miles of dray-road is constructed, but cannot be utilised for coach traffic until the Whangamomona bridges (three) are erected. A portion of the road completed this year, to the south of Whangamomona Township (thirty-nine miles to forty-one miles from Stratford), was the heaviest work we have had or will have on Ohura Road between Stratford and Ohura. The road had to be hewn out of the solid papa rock—in many cases a precipice—over 116,000 cubic yards of rock having to be blown or hewn out of the above two miles. This in explosives and labour involved a very heavy expenditure, and the progress made was proportionately slow. The work is now proceeding at a more rapid rate, and by next December I expect the coach will be able to travel a distance of about fifty-three miles from Stratford. The formation also includes 210 culverts, of a total of 5,048 lineal feet; dray-bridge over Mangare Stream, near Whangamomona, 100 ft. in length (main span 60 ft.); and dray-bridge over Awahoe Stream, 56 ft. in length (main span 40 ft.). As the experiment tried last season of coating the road with a dry yellow sandstone which abounds in some of the cuttings appeared to be a success so far as light traffic is concerned, the work has been continued this year, and over six miles of bad parts of the road has been sanded 12 ft. wide and 1 ft. deep. The sand will only answer for light traffic and on level or easy grades. On grades sharper than 1 in 30 I am afraid it would be washed away by storm-waters in winter. In all cases it will make a splendid dry bed for metal, and enable us to lay a lighter coat of metal than would otherwise be safe. On parts of the road where neither metal nor sand is available, and where blue papa rock is abundant, we intend trying the burning of papa as a substitute. At present we do not know of any shell rock further north than Pohokura (about twenty-six miles from Stratford) until we arrive at the second crossing of Tangarakau, about 64½ miles from Stratford. For this middle part, unless metal is discovered, we will have to rely upon sand or burnt papa for a coating on the road. Without some covering the road would be available for coach traffic only about six months in each year.

*Tangarakau River Clearing.*—This work is under charge of Mr. G. T. Murray, Road Surveyor, Wanganui.

*Waiweranui.*—Roads in Parihaka District: The money at our disposal only enabled us to do 40 chains of engineering survey and 31 chains of dray-road formation—cuttings, embankments, culverts, and draining on bad parts of Parihaka and other roads in that district.

*Tikorangi Bridge.*—During the year a suspension dray-bridge has been erected over Waitara River, on Bertrand Road, Tikorangi, about twelve miles from New Plymouth. The span to centres of towers is 200 ft.; total length of bridge, 220 ft. The bridge is supported by two wire cables, each cable containing 396 straight wires, No. 9 gauge. The cables are secured at the ends to blocks of concrete sunk into the ground, each block weighing about 35 tons, the total weight of anchors and superincumbent earth being over 200 tons. Each cable is bound with fine wire at every 2 ft. of its length, thus making it into one solid rope, each wire, however, taking its fair strain. The towers over which the cable rests are 12 ft. wider apart than the trusses of the bridge, and, as the cables are drawn in towards the centre of the bridge, they form lateral guys, which prevent oscillation. A strong truss is built on each side of the bridge to stiffen it and prevent undulation, and the bridge was built with a 2 ft. camber to allow for deflection, stretching of cables, shrinkage of timbers, &c. Since being erected the bridge has stood some very severe strains, on two occasions heavy mobs of cattle being driven across in a tumultuous rush. The last of these I have heard of numbered seventy bullocks, weighing over 30 tons, in addition to which the impetus of their rush would add a strain of fully 10 tons more. Ordinary dray traffic, with 2- or 3-ton loads, has no appreciable effect on the bridge. I mention these matters to show that the bridge is fully up to the work for which it was built. Over streams of large span, where foundations in the middle are difficult to obtain, or where the bridge has to be erected at such a height as to necessitate heavy and expensive piers, I would strongly recommend the suspension principle, as by it no obstruction is put in the waterway, heavy and expensive piers are avoided, and repairs can always be easily effected by taking up strains on special points with union screws from the cables. Where the anchors are of sufficient weight, the towers built of the best durable material, and the cables of sufficient strength, and kept painted to prevent rust, the remainder of the bridge could be of any fairly good material, as any part can be easily and cheaply repaired. With a pier bridge, on the contrary, especially on our mountain streams, the foundations are rarely safe, as the stream-beds are continually lowering through scour. Heavy piers are also expensive and difficult to replace.

*Tracks and Huts, Mount Egmont.*—This amount was a revote of a grant made in 1895–96 out of the vote for development of thermal springs and natural scenery, and has been used in improving tracks from various centres to Mount Egmont for the convenience of tourists and others, and in building or improving tourist accommodation-houses high up on the mountain-slopes. At present the mountain-slopes and Forest Reserve is divided into four parts, three of them—North Egmont, East Egmont, and South Egmont—being under charge of separate Boards of Conservators, who expend the money granted by Government as well as other moneys raised by subscriptions, charges for use of houses, &c., make roads, tracks, build houses, &c. This past year the North Egmont Board, New Plymouth, has formed a coach-road, on continuation of Egmont Road, two miles within the Forest Reserve, also improved about three miles of bridle- and foot-track, and made some