

116 ft. of culverting was laid, varying in size from 9 in. by 9 in. to 15 in. by 15 in. Two grants of £200 each were made to the Hutt County Council for this road.

Paikakariki-Waikanae-Hadfield Road.—A subsidy of £453 7s. 11d. has been given by the Government to the Horowhenua County Council for the prosecution of this work, and it is now in progress. A sum of £500 has also been granted to the Hutt County Council for this road. When this road is completed the connecting-link on the main road from Wellington to Palmerston North will be formed, and will prove of great benefit to the settlers for stock-driving purposes, as at present cattle have to be driven round by the sea-beach.

GENERAL.

The total number of contracts let during the past period was 426. In addition to these, thirty-one were in progress at the beginning of the year, making a total of 457. Completed contracts numbered 353, and seventy-four are in various stages of completion. 13 miles 38 $\frac{3}{4}$ chains of dray-road and 45 miles 54 chains of horse-road has been made, and 4 miles 15 $\frac{1}{2}$ chains of dray-road and 4 miles 2 chains of horse-road has been widened; 76,097 cubic yards of rock has been excavated; 10,432 cubic yards of slips removed; fifty-three bridges, with a total length of 2,506 ft., constructed; and 506 culverts laid, totalling in length 8,969 lineal feet. 87 miles 54 $\frac{1}{4}$ chains of bushfelling and clearing have been done, besides scrub-clearing, widening, tunnelling, corduroying, fascining, &c. 112 miles 54 $\frac{1}{4}$ chains of water-tables were cleaned out and opened up, and 4 miles 62 $\frac{1}{2}$ chains of road metalled. 110 miles 18 chains of dray-road and 107 miles 55 $\frac{1}{2}$ chains of horse-road was maintained; and various other work done, such as road-grassing, stumping, erection of fencing, willow-planting, and sawing timber.

In dealing with such a large number of contracts, a heavy strain has been placed upon my staff generally. The Road Overseers are deserving of thanks for the manner in which they have one and all performed their respective duties. In many cases they are called upon to do Rangers' work, such as reporting upon sections and farm and village settlements.

In the office the draughting work has been severe, which may be inferred from the fact that 101 miles 5 chains of engineering plans have been dealt with during the year, including a large amount of bridging. The number of vouchers checked and paid was 1,324, involving an expenditure of £28,670. The correspondence inward and outward, besides reports upon improved-farm settlements, monthly and quarterly returns, together with other work of a varied kind, has kept the clerical staff busily engaged, their time being very fully occupied.

ALFREDTON-TIRAUMEA ROAD-BRIDGES.

The Alfredton district is one of the oldest-settled parts of the Wairarapa North County, and, owing to the absence of roads, and consequent "inaccessibility," it was to the early pioneers and travellers a *terra incognita*, and it was not until comparatively recently that a system of roading and bridging was taken in hand which has enabled the settlers to send their produce to market. The roads thus opened afford access to large areas of Crown land (principally forest) on the eastern slopes of the Puketoi Ranges, where a large number of settlers are now located, clearing the bush and preparing the land for sheep and pasture.

The arterial line connecting this district with the railway system of the North Island is the Eketahuna and Tinui Road, situate between the Township of Eketahuna and Tinui, which connects these two places, *via* Alfredton and Tiraumea. This line is formed as a dray-road throughout most of its length, fourteen of fifteen miles being metalled, and most of this work has been accomplished by the settlers themselves, through the Road Boards and County Councils, aided by loans advanced by Government under the Loans to Local Bodies Act, supplemented occasionally by grants direct. Under this system works of great magnitude have been undertaken, not the least of which has been the bridging of the three crossings of the Tiraumea, which is a rapid and at times dangerous river, and which joins the Manawatu River at Ngawaparua, about four miles south of Woodville. These bridges, which are shown in the plates accompanying this report, are from photographs taken on the spot by Mr. George R. H. Ibbetson, of the Roads Branch of the Wellington District Office. They are constructed on the Howe principle of a combination of diagonal struts and vertical ties, and consist each of one main span and one or two short spring spans. The first two views (Nos. 1 and 2) are of the bridge commonly known as "Napier's Crossing," and are taken from the opposite banks of the river. The bridge consists of a main span of 126 ft., with two smaller approach spans 22 ft. and 12 ft. respectively, and is 14 ft. between the girders, and 16 ft. in height over upper and lower booms. The Government grant for this bridge was £1,000. Views Nos. 3 and 4 are of the same kind of bridge, known as "Saunders's Crossing" and "Tiraumea Bridge No. 3." Each bridge occupied about six months in building, and was constructed from designs by Mr. C. E. Bremner, Wairarapa North, County Engineer, ably assisted by Mr. Duncan McLachlan and staff.

BURNT PAPA AS METAL.

Owing to the absence of road-metal on the Alfredton-Weber Road, it was decided to ascertain if papa rock, after being subjected to a great heat in a kiln, would not serve as a substitute, and accordingly a kiln was built, the capacity of which was 150 cubic yards.

After a burn, the metal was placed on the road last April, and has had a fairly severe twelve months' test, owing to the bullock-dray traffic which has passed over it. So far good results have been obtained, the metal having stood the wear remarkably well. A larger kiln was then excavated out of the side of a hill, of a capacity of 400 cubic yards. When everything was ready, and the kiln about to be fired, the exceptionally heavy rainfall experienced at the time caused immense slips of liquid mud and timber *débris* to descend and completely fill the kiln on two separate occasions, causing considerable expense. After surmounting these difficulties the kiln was charged with the blue papa, and a successful burn obtained. This material has been used in metalling the roadway in the vicinity 12 ft. wide and 10 in. deep, the total length laid now being 25 chains, at a cost of about £3 10s. per chain, not including the expense of the excavation of the kiln, and this will be put to a fair test, which will, I trust, prove satisfactory.