

At 69 m. 20 ch. and 72 m. 40 ch. there was also approximately six months' work remaining, and all the other gaps up to the 82 m. mentioned above would have been completed within the same time.

The cutting at 72 m. 40 ch., which was being excavated by hand, with the assistance of pneumatic drills, was also being worked on shifts, the material going to form the approach to the Owen River Bridge.

Had operations been continued as anticipated a start would have been made with platelaying and ballasting within the next few months, and this would then have proceeded without interruption, at least, as far as Mangles River, at 82 m., and probably to Murchison itself, at 84 m. 50 ch.

Overbridges at 66 m. 60 ch. and 67 m. 59 ch. were completed, and approaches metalled, while the necessary foundation tests for bridges over Owen River and Doctors Creek were completed.

The road-deviation from 69 m. 10 ch. to 69 m. 50 ch. along a steep precipitous rock bluff was completed and metalled.

Nine concrete culverts, varying from 12 in. wide to 8 ft. wide, were built.

One hundred and sixteen single men's huts were erected during the period, and the machine-shop installed and fitted at Grassy.

Since the work has stopped all plant has been collected, overhauled, and stored or transferred where necessary, fencing restored, and works cleaned up generally.

The average number of men employed over the period was 298.

WESTPORT-INANGAHUA RAILWAY.

Cascade Section (5 m. 70 ch. to 8 m. 78 ch.; length, 3 m. 8 ch.).—This section, although practically complete, is still under the control of the Public Works Department, and has been maintained by it for the coal traffic from the Cascade Mine.

Hawk's Crag Section (8 m. 78 ch. to 18 m.; length, 9 m. 2 ch.).—All bushfelling and clearing has now been completed on this section, and the earthwork has been finished for a total distance of 7 m. 43 ch.

The portions unfinished involve in most cases long leads, where the progress is slower. At such places the actual excavation is carried out by manual labour, but the haulage of spoil is effected by means of small petrol-locomotives, five of these of a special type being employed on this section, each hauling a rake of from four to six steel side-tipping trucks. The nature and location of the cuttings exclude the use of any mechanical loading-devices.

From 11 m. 10 ch. to 11 m. 26 ch., where the first petrol-locomotive is stationed, there are several cuttings which block the advance of platelaying, as all the material from these cuttings is required to fill a large bank of 50,000 cubic yards between 11 m. 43 ch. and 11 m. 54 ch., and none of it can be spoiled. To expedite the completion of this portion of the line, shift-work was started early in the year in the advance cutting. This involved the installation of an electric-light plant to illuminate the rugged cuttings and the long leads, and to enable tipping to be carried out from the trestles with safety at night.

A start was made with the driving of bottom heading for the tunnel at 13 m. 41 ch., but unfortunately a disastrous accident occurred, involving the death of three men. Following this, work was held up for some time on account of the negotiations regarding tunnel prices. The parties have now been reorganized and a fresh start is being made.

In order to facilitate the supply of shingle and cement for tunnel-lining and for adjacent culverts and bridges, a cableway transporter has been erected at the tunnel-mouth, by means of which the shingle and cement will be conveyed across the river.

Four culverts and a concrete retaining-wall have been constructed and several are in hand, but the transport of shingle across the river is expensive, and a great deal of the culvert-work has to wait until the rail-head advances.

The concrete-metal supply for this section of the railway is one of the difficult problems, on account of the inaccessibility of the structures to be built. As far as possible the aggregate will be brought by rail from a shingle-pit 3 m. out of Westport, where a stock of good metal has been accumulated throughout the year. Bridges and culverts will be taken in a face as the railroad advances, but, as this cannot proceed very quickly, other means of obtaining metal in the isolated sections ahead of the rails have had to be resorted to. In several places shingle from a convenient river-beach has been carted by lorry to a point on the Main Gorge Road where a cableway transporter has been erected, the shingle being taken over by this means and then redistributed over the completed formation to the sites of such bridges and culverts as were accessible.

The most important work on this section, however, has been the construction of the Cascade Creek Bridge at 9 m. 0 ch. This bridge is 446 ft. in length, and consists of five 80 ft. and one 40 ft. spans, all on a $7\frac{1}{2}$ ch. curve. The piers are of concrete, each founded on three concrete cylinders arranged in the form of a triangle. This work has proceeded steadily, and the gorge has been spanned by a temporary bridge, which also serves as a staging for the sinking of the cylinders, the construction of the piers, and erection of the steel superstructure. Cylinder-sinking at one pier has been completed, and the others are well in hand.

The erection of the temporary bridge, although primarily designed to facilitate the construction of the permanent bridge, enables the construction train to deliver plate-laying material to the rail-head at 10 m. 20 ch., as well as to convey concrete, metal, and material to structures ahead of Cascade Creek. It is expected that the permanent bridge will be completed in about twelve months.

At 10 m. 24 ch. the construction of a three 30 ft. spans steel-girder bridge on concrete piers is in hand. The excavation for the piers is almost completed, while the combined temporary bridge and staging is in hand.