TDH/3 7th November, 1955.

MEMORANDUM

PERMANENT WAY NEAR TUNBRIDGE

For some time past, the Railway Department have been concerned with the condition of the permanent way both to the North and South of Tunbridge and a request was made to this Department for an investigation into possible geological conditions affecting the deterioration.

I think I should state at the outset that there are no extraordinary geological features along this section of the line and the rock underlying the permanent way is that which underlies probably 30% of the main line, that is Jurassic dolerite. I think also it should be noted that the extreme deterioration of the line occurs over one particular gang length and suggests that it is in the placing of the ballast and arrangement of the drainage rather than in any natural feature that the trouble lies.

This gang length may be divided into two sections from a geological point of view; that to the South of Tunbridge and that to the North of the town. The southern section traverses fairly flat country underlain at no great depth by dolerite and covered by dolerite boulders and clay weathered from the rock. For some distance the line is built up a few feet with this clay material covered with a ballast of river gravel, sand and ash. It would appear that large cracks occur in the embankment beside the line in the summer, while in winter water lies frequently alongside the track, on the embankment. It seems to me that the cracks on the impervious clay become filled with sand and gravel ballast which provides an excellent channel way for the surface water that accumulates in the line in the winter. This water seeps down through the ballast in the cracks and lubricates the clay causing subsidence.

Two remedies suggest themselves. The first is obvious. The shoulder of clay and ballast on each side of the embankment should be chopped off so that water can be drained off and will not lie on the embankment in the winter. The second is to prevent the cracks from forming by keeping the line moist in the summer, or if this is not possible by seeing that they are closed by clay and not allowed to be filled with ballast.

To the north of the town the geological conditions are slightly different. Here the line runs along the edge of a small alluvial flat at the base of a dolerite hill. Rainfall falling down the hill cannot soak far into the soil before it encounters the impervious rock and so there is a large run off with a head of up to 400 feet. Consequently the railway embankment at the foot of the hill is very wet

throughout the winter and spring and the sleepers require constant lifting. The only remedy here is more efficient drainage of the track and this can be accomplished by a combination of three things:-

1. The cutting off of the shoulders as in the southern section.

2. The digging of a deep drain to the west of the line.

3. The construction of small drains below the permanent way in the worst sections.

Sgd. Terence D. Hughes

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