

The signalling of a railway is generally subdivided under the following heads—viz.: (1.) Interlocking of signals and points. (2.) All fixed signals not interlocked. (3.) Electric telegraph. (4.) Electric block system.

INTERLOCKING POINTS AND SIGNALS.

The use of this system is one of the Board of Trade requirements under which railways are operated in Great Britain, and to show the extent of its application one example may suffice. The London and North-western Railway Company has 1,600 signal-boxes and interlocking-machines, with an aggregate of 36,000 point and signal levers, and 18,500 fixed signals. The system aims at the prevention of collisions at junctions, yards, and such places through misplaced points or conflicting signals. This is accomplished by concentrating all point and signal levers in one machine, and so interlocking them as to mechanically prevent the formation of any dangerous combination of points and signals. Interlocking is performed by machines operated either by manual force or by mechanical force. The latter class may be further subdivided—viz.: (1) The electric system; (2) the hydraulic system; (3) the electro-pneumatic system; (4) the pneumatic system.

More than twenty years ago interlocking was introduced at one or two points in New Zealand, but since that time the system has not been extended, except in one case. It is now proposed to manufacture the apparatus with signals and point appliances in the railway workshops, and take in hand the various yards and junctions in order of their importance. To this end a complete set of designs and drawings has been prepared, and the first sample machine has just been finished.

FIXED SIGNALS AT STATIONS.

There are at present seventy-five stations with fixed semaphore signals, and 154 stations remain to be similarly equipped. These signals will be interlocked.

Expenditure for the year on new work in connection with this branch was £1,066 17s. 8d. The annual maintenance cost is included in the maintenance accounts of Engineering Department.

TELEGRAPH.

The salient feature about railway telegraph circuits is the large number of intermediate instruments. The through wire is the exception.

On single lines of way, especially those not worked under some good form of block system, it is important, where the extent of the traffic is such as to make the same liable to derangement, that there should be direct and ample telegraphic communication between the Traffic Manager's office and all important stations at which trains may cross. At present the New Zealand lines are not as well equipped in this respect as is desirable, and of the present telegraphic facilities only about 1,049 miles of wire are operated exclusively, while about 2,202 miles of wire are used conjointly by the Postal and Railway Departments.

In Great Britain the railways have constructed 105,000 miles of telegraph-wire, which they use exclusively.

The extent to which the single-needle telegraph instrument is used on the railways in Great Britain is shown by the following figures—viz.: Single-needle sets, 13,494; Morse-sounder sets, 431. The sounder is used exclusively on the New Zealand lines.

Greater facilities are, however, being added in New Zealand to suit pressing requirements, to the extent of about £3,000 per annum, and this should in a few years bring us up to efficiency. In many cases the telephone is used instead of the telegraph, and as soon as the obsolete second-hand instruments have been replaced by new instruments of the latest design, to suit the large number of instruments usually found on railway circuits, very satisfactory results may be looked for. Below is a tabular statement of the telegraph statistics:—

TABULAR STATEMENT OF ELECTRICAL SYSTEM.
Owned and used exclusively by Railway Department.

District.	Instruments.					Length of Lines.			
	Block.	Telephone.	Telegraph.	Signal Repeaters.	Light Indicators.	Miles of Wire.	Miles of Poles.	Miles of Railway.	Miles of Telegraph.
Kawakaīwa ... ..	...	...	...	...	...	...	...	7	...
Whangarei ... ..	...	...	...	...	...	...	...	21	...
Kaihu ... ..	...	...	...	...	...	...	...	17	...
Auckland	8	40	10	12	...	217	6	328	129
Wellington	16	76	60	26	...	579	84	451	468
Napier									
New Plymouth									
Christchurch	4	22	34	8	4	45	2	455	26
Dunedin	26	61	22	30	4	118	13	375	24
Invercargill ... ..	...	6	9	...	...	1	...	324	...
Greymouth ... ..	...	25	...	...	1	76	62	32	...
Westport ... ..	...	5	...	...	...	13	...	30	...
Nelson ... ..	...	...	...	...	...	...	...	23	...
Picton ... ..	...	...	...	...	...	...	...	21	...
	54	235	135	76	9	1,049	167	2,084	642