

The nature of the boiler repairs undertaken in the various workshops on the New Zealand railways ranges from the fitting of new fireboxes and the fitting of superheaters in boilers not previously superheated, to minor repairs such as renewal of stays. Other work dealt with in the boiler-shop includes engine-frames, tender underframes and tanks, ash-pans, cabs, smoke-boxes, and all new and repair riveted work on locomotives. The acetone and electric welding plants are under the Foreman Boilermaker.

*Blacksmiths' Shop.*—The bulk of the blacksmiths' work in the larger shops is general smiths' work at open fires, each smith being provided with a striker, and heavy work being forged at a steam hammer. The only forge turning out heavy forgings is at Addington, and this is principally occupied on buffer-heads, blooms for draw-hooks and forging foundation-rings, a few heavy forgings for new locomotives also being dealt with. The smiths' shop at Hillside has the only hydraulic-forging plant. No drop forging is done in any of the shops.

*Foundry.*—The only workshops provided with foundries are Newmarket, Petone, Addington, and Hillside, the most important being at Addington, which is the only one turning out steel castings in addition to iron and brass. At Hillside no brass work is undertaken, and the work carried out is not of a heavy character, but at Petone and Newmarket both iron and brass castings are made. In addition to the Foreman Moulder, there is a leading ironmoulder and a leading brassmoulder in charge of the respective classes of work, while at Addington there is also a leading steelmoulder. As most of the ironwork is for repairs and renewals, the majority of the moulding is hand-moulding, the scope for machine-moulding being limited.

#### *Method of Dealing with Locomotives under Repair.*

Locomotives are not sent in to the workshops for overhaul on any basis of mileage run. The practice is for Locomotive Foremen to advise the shops what repairs are considered necessary to engines. As a consequence there is no uniformity regarding the extent of repairs required to engines sent to shops, the work to be done ranging from the renewal of a few broken boiler-stays, boring of cylinders, or repairs after a breakdown, to complete overhaul of engines. As soon as it is ascertained in the shops exactly what work is required to be done to an engine, the practice is for the Works Manager and Foreman to confer and fix a date for the completion of the work.

Having regard to the number of different types of locomotives in use on the New Zealand railways, no steps are taken in the direction of anticipating requirements by stocking in shops spare parts of locomotives that require replacing from time to time.

Where an engine is sent to the shops for repair the Locomotive Foreman supplies to the workshops a list of repairs to be carried out. This list is given to the leading fitter to whom the engine is allocated, and the repairs referred to on the list are carried out in addition to any other work which may be found necessary when the engine is dissembled.

#### *Boiler Repairs.*

The Boiler Inspectors report direct to the Chief Mechanical Engineer the result of their examination of every boiler. Copies of these reports are sent to the district officers, who in turn distribute them to the workshop and locomotive-running officers concerned, to indicate what boiler repairs are required. Any repairs specified on these reports must be carried out when the engine is in the shops, and a certificate must be rendered that such repairs have been completed. The leading boilermaker will also carry out any additional repairs which are found necessary when the boiler is under observation.

Owing to the variation in the quality of the water in the several districts, boiler repairs and tube renewals are in some places much heavier and more frequent than with similar engines in other districts.

At the annual inspection of locomotive-boilers defects are noted by Boiler Inspectors, who may specify that certain repairs must be done before a given date, failing which the boilers may not be used after such date.