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**LANCASHIRE & YORKSHIRE RAILWAY**

Operational Documents & Pamphlets.

1924

Garrett Locomotive Builders Brochure.

As received by the Chief Mechanical and Electrical Engineer  
of the London, Midland & Scottish Railway at Horwich  
Works.

(10 Pages).

“GARRATT”

ARTICULATED LOCOMOTIVE  
FOR INDUSTRIAL PURPOSES



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24/5/1924*



BEYER, PEACOCK & CO. LTD.  
MANCHESTER

“GARRATT”

ARTICULATED LOCOMOTIVE  
FOR INDUSTRIAL PURPOSES

*With Compliments*

*Mr. Robert H. Whitelegg.*

*General Manager,  
Beyer, Peacock & Co. Ltd.,  
Gorton Foundry,  
Manchester.*

BEYER, PEACOCK & CO. LTD.  
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# PREFACE

THERE are many locomotives of the "Garratt" patent articulated type working very successfully in many parts of the world. Great Britain is now turning its attention to the advantages to be gained by the adoption of such locomotives; and it has been left to the foresight and enterprise of Messrs. Vivian & Sons, Ltd., of the Hafod Copper Works, Swansea, to obtain the first "Garratt" locomotive for service in this country. This locomotive is illustrated herein and is now in daily operation.

The lines in and around Hafod Copper Works are of a particularly severe nature, the gradients being 1 in 20 and the sharpest curve having a radius of 90 ft.

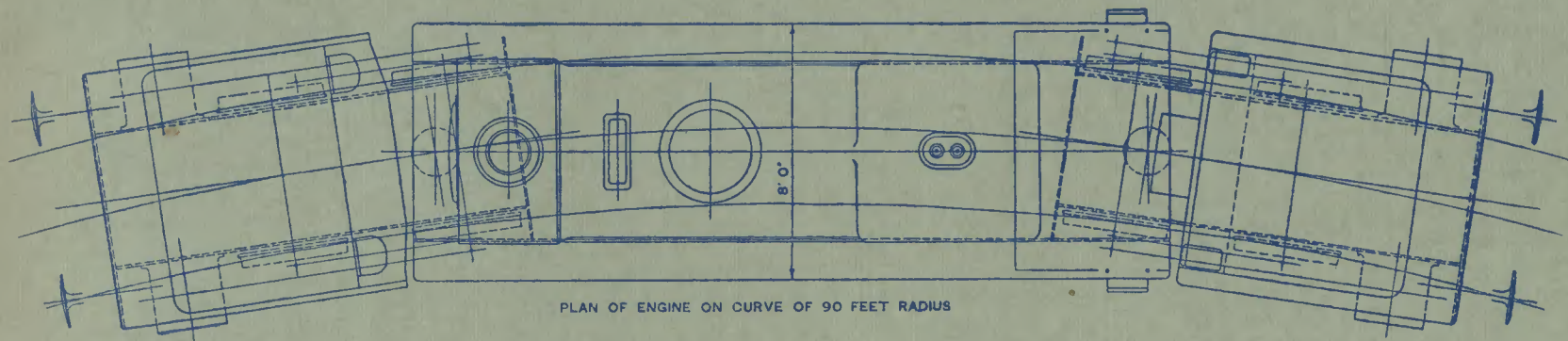
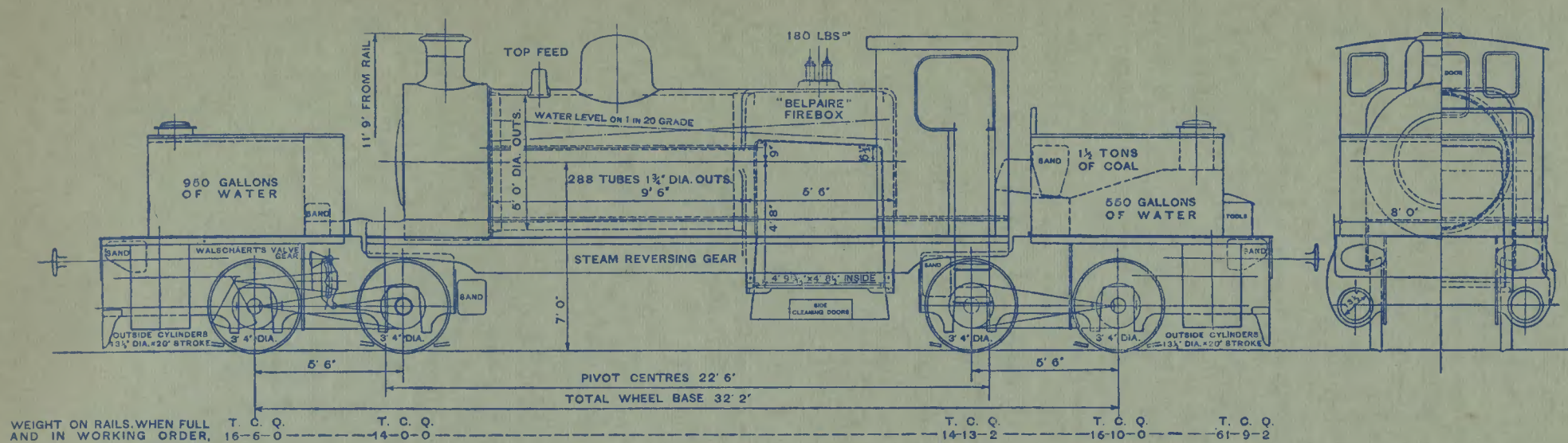
Formerly two 0-4-0 tank engines had been employed, a load of 9 or 10 loaded wagons being hauled up the 1 in 20 gradient. It was decided from a purely economical standpoint to obtain a "Garratt" locomotive, and the expectations have since been fully realized, as this new locomotive is now easily hauling even more than the load previously hauled with two engines on the 1 in 20 gradient and is MORE THAN DOUBLE the load possible to handle with one engine. This fact has also eliminated an engine crew and effected a considerable saving in coal, as it is an undoubted fact that the large grate and firebox of the "Garratt" engine is more economical in comparison with the result obtained in the use of two ordinary engines for doing the same duty.

The "Garratt" engine can be so designed and constructed to cope with the severest conditions of service, and in addition to main line work is eminently suitable for such conditions as exist in the vicinity of docks, industrial yards and collieries, and it is to be expected that the "Garratt" locomotive, with its remarkable flexibility, great power and running properties in both directions and general efficiency, will appeal to many who are confronted with the problem of reducing operating costs.

## PREFACE—*Continued*

Reflect on the possibilities and advantages of the "Garratt" locomotive :

- (1) If you are employing two locomotives on a train, effect a reduction in coal consumption of from 15 to 25 per cent. and eliminate an engine crew and reduce your general repair account by the employment of one "Garratt" locomotive.
- (2) The power of your present locomotive can be doubled without increasing the axle load and the weight per foot run decreased at the same time.
- (3) The flexibility of the "Garratt" locomotive reduces wear and tear on the permanent way.
- (4) The "Garratt" locomotive is excellent for suburban working as the engine is a true double ender and need never be turned, and its acceleration is considerably better than the ordinary engine, owing to its double engine.
- (5) The "Garratt" locomotive is eminently suitable for shunting and heavy marshalling work as all the power required is easily obtained without going to an excessive axle load, a most important factor in yard work where turn-outs are often sharp and the permanent way of indifferent nature.
- (6) The "Garratt" locomotive, owing to its haulage power being developed in two engine systems, is a beautifully controlled machine, and this is a very important factor in shunting operations, as the breaking of couplings is thereby reduced to a minimum.



Gauge of Rails 4' 8 1/2".

Heating Surface. Tubes	1299 sq. ft.
Firebox	107 "
Total	<u>1406 "</u>

Grate area 22.7 sq. ft.

Tractive Power 182.25 lbs. per 1 lb. M.E.P. in the cylinders.

Tractive Force at 75% boiler pressure = 24,600 lbs.

Ratio of Tractive Force (75%) to Adhesive weight (Tanks full) = 1 to 5.6

Steam and Hand Screw Brakes to all wheels.

Vacuum Brake for Train.

Steam Sanding.

Total Water Capacity 1,500 Gallons.



"GARRATT" ARTICULATED LOCOMOTIVE standing in Great Western Railway sidings near Swansea.



" GARRATT " ARTICULATED LOCOMOTIVE ascending 1 in 20 grade and about to negotiate 90 ft. radius curve, hauling 140 tons 8 cwt.





“GARRATT” ARTICULATED LOCOMOTIVE negotiating 97 ft. radius curve. This curve, as is seen, crosses the rails of the Great Western Railway and is, therefore, without super elevation.



“ GARRATT ” ARTICULATED LOCOMOTIVE leaving Great Western Railway sidings and negotiating 97 ft. radius curve prior to descending 1 in 20 grade. The three distinct parts of the “ Garratt ” engine, which make up its flexibility can be distinctly seen in this photograph by following one’s eye along the running board.

