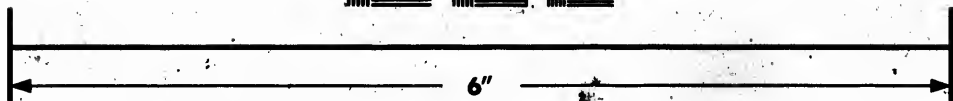
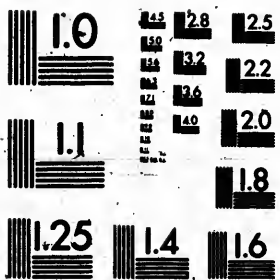


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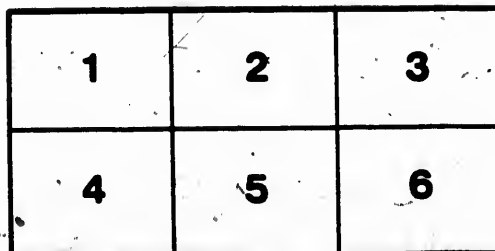
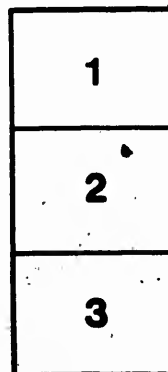
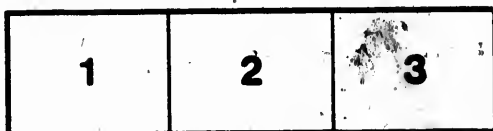
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*218*  
Great Western Railway.

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SPECIFICATION

FOUR-WHEELED

THIRD-CLASS CARRIAGE,

WITH FOUR COMPARTMENTS FOR TEN PASSENGERS EACH.

N. G.

September, 1865.

# Great Western Railway.

## SPECIFICATION

OF A

### FOUR-WHEELED THIRD-CLASS CARRIAGE,

WITH FOUR COMPARTMENTS, FOR TEN PASSENGERS EACH,

4 FEET 8½ INCH GAUGE.

FORTY CARRIAGES ARE REQUIRED.

	ft.	in.
Length over the panels ... ..	21	0
Width over the panels ... ..	7	6
Width between the Timber side frames ... ..	6	1
Length over the Under-carriage frame ... ..	20	10½
Height from floor to underside of roof boards in centre ... ..	6	6
Height from floor to underside of top side frame ... ..	5	9
Height from rails to the top of floor ... ..	4	1
Distance of wheels apart centres ... ..	12	0
Distance of side-chains ... ..	2	0
Height from rail to centre of buffers, draw-bar, and side-chains ... ..	3	3
Diameter of wheels... ..	3	6
Distance of Buffers apart centres ... ..	5	8½
Length of the compartments in the clear ... ..	5	0½

### Framing.

**BOTTOM FRAME.**—The bottom side-frames to be 3 inches deep by 9 inches wide, rebates formed in them for the doors to be shut against, and for receiving the floor boards and grooves for the panels.

The bottom end-frames to be 3 inches deep by 7 inches wide, rebates to receive the floor boards, and grooved to receive the panels. The bottom sides and ends to be framed together, and secured by strong wrought-iron knees inside, and a wrought-iron angle plate sunk flush outside. The floor-boards to be 3 inches by 1½ inches, mortised into the side-frames with bare-faced tenons, the shoulders cut level and let into the lips of the mortises.

**FLOOR.**—The flooring to be in two thicknesses of ½ in. red deal 9 inches wide, laid crossing each other at an angle of 45° with the sides, the top boards to be matched.

**UNDERFRAMING.**—The side-frames to be 11 inches by 4 inches, all the wood underframing to be of the same kind. The end frames to extend the full width of the body at the base, and cut to the shape at the ends, as shown by the Drawing, to be secured to the side-frames by corner brackets and bolts. The transverse bearers to be as shown on Drawing. The diagonal bearers to be stump-tenoned into the transverse bearers and end frames, and secured to the end frames by two wrought-iron knees, 11 inches deep by  $\frac{1}{2}$  inch thick, with holes for the passage of the buffing-rods.

The end longitudinal bearers, the one over the draw-bar to be  $5\frac{1}{2}$  inches by  $3\frac{1}{2}$  inches, the other under the draw-bar to be  $3\frac{1}{2}$  inches by  $2\frac{1}{2}$  inches, stump-tenoned into the end-frames and transverse bearers, to have corner brackets  $\frac{1}{2}$  inch thick, formed in one piece to lay hold of the longitudinal, diagonal, and transverse bearers.

The middle longitudinal bearers, four in number, to be stump-tenoned into the transverse bearers, and secured thereto by corner brackets and bolts, the corner brackets to have holes for  $\frac{3}{8}$  tie-bolts,  $\frac{3}{16}$  in. diameter, to pass through.

**MATERIAL.**—The bottom and top sides, bottom end frames, and floor bearers, to be of Quebec oak, each in one length.

**SCROLL BRACKETS FOR SPRINGS.**—The spring-scroll brackets, six in number, (two being double) to be of the best scrap-iron, forged out of a single piece or use of the form and dimensions shown on the Drawing. The eye of the scroll to be bored out of the solid, perfectly true.

**AXLE-GUARDS.**—The Axle-Guards, four in number, to be of the best hammered scrap-iron,  $\frac{1}{2}$  in. thick, free from cracks and flaws.

**AXLE-BOXES.**—The axle-boxes to be clean, sound, and well made castings, with brass bearings, in every respect according to the pattern box, which will be supplied.

The holes in the axle-boxes must be quite true, to receive the spring straps.

The spring straps to be clean and well made, the flat part 1 inch by  $\frac{1}{2}$  inch, the bolt  $\frac{1}{2}$  inch diameter, with a nut and check-nut underneath, and a split pin to prevent them from working off.

**STEPS AND STEP-IRONS.**—The step-irons, for bottom steps, 8 in number, to be of round iron, and made to the form shown on the Drawing, and bolted to the frame.

The bottom step to be of red deal, and extend to the whole length of the body,  $1\frac{1}{2}$ -in. thick, with a back ledge-piece, 3 in. by  $\frac{1}{2}$  in., and a recess cut for the axle-box, the step to be strengthened at recess by a piece of iron,  $1\frac{1}{2}$  in by  $\frac{1}{2}$  in, the outer corners rounded off, as shown.

The top step to be of ribbed plate,  $\frac{1}{2}$ -in. thick, of an approved pattern, riveted to brackets fastened underneath the frame.

**BUFFER RODS.**—The buffer rods, 4 in number, to be of the best Staffordshire wrought iron, with solid wrought iron heads, made as shown on the Drawing, to pass through a cast-iron gland. The gland fixed to the end frames with four  $\frac{3}{16}$  in. bolts, screwed outside as shown. The buffer rods to be  $2\frac{1}{2}$  in. diameter in the socket.

**DRAW BAR.**—The draw bar to be of the best hammered scrap-iron. The hook to be forged out of the solid, and, if welded on to a bar, such weld to be at least 12 inches from the hook.

**SIDE CHAINS.**—The side chains, four in number, to be of the best  $\frac{1}{2}$  in. cable iron, 2 ft.  $3\frac{1}{2}$  in. long from centre of the eye-bolt to inside of hook and link respectively.

Two to have hooks, the other two to have links, 6 in. long at their extremities, and fixed to the end frames by eye-bolts, with square necks passing through them, and a  $\frac{1}{2}$  in. washer plate outside with nuts to be screwed inside against a  $\frac{1}{2}$  in iron, and  $\frac{1}{2}$  in. Warne's mineralized india-rubber rings. When fixed to be equidistant from the centre line of frame, and in a right line with each other.

## Body.

**SIDES.**—The four corner pillars to be 4 $\frac{1}{2}$ in. square, rebated on the outside for the panels, and on the inside for the lining boards, tenoned into the bottom frames, and strengthened by a strong wrought-iron knee, firmly bolted on each side at the bottom.

The standing pillars to be bevelled and rebated for the door to shut against, the tenons to have screws through the shoulders to strengthen them, and wrought-iron knees bolted to them, and to the bottom siles, and rebated to receive the side lights and panels.

The middle pillars to have grooves to receive the ends of the horizontal partition boards, into which they are to be screwed. The lips of the grooves to have screws through them, 6 inches apart, to strengthen them; thin wrought-iron angle plates to be screwed to these boards, and to the pillars, at intervals of 6in. centres, and wrought-iron knees bolted to them and to the bottom sides.

The intermediate standing pillars and side-light rails to be rebated to receive the glass and panels.

The top side-frames to have rebates for the tops of the doors, middle, and intermediate standing pillars, notches for the roof principals, and grooves for the panels, also a groove to form a water drip.

**SIDE LIGHTS.**—The side lights to be of the height and width shewn on the Drawing, the glass well bedded and kept in place by a bevelled bead outside, firmly screwed in with brass screws.

**GLASS.**—The glass to be of the best plate, free from stains and air bubbles, and not less than  $\frac{1}{4}$ in. thick.

**DOORS.**—The doors to have sliding lights, a pattern of which will be supplied. The doors to have brass plating of proper size, and to be made to fit accurately. The under rebates in the side frames to be faced with iron,  $\frac{1}{4}$  inch thick, the width of the rebates.

**VENTILATORS.**—Sliding ventilators to be placed over the doors, with louvre outside; to be made with slot openings, with a sliding cover inside.

**PANELS.**—The panels for the sides and ends to be of papier maché 5/16-inch thick, (manufactured by J. S. Isaac, of Maidstone, Kent), in one piece from the top side to the middle rail, and in one piece from the middle rail to the bottom of the groove in the bottom side-frames.

The panels to be of even and sound surface and regular thickness, well oiled and hard oaked.

All papier maché panels to be left with the joints about  $\frac{1}{16}$  inch open where covered with beading to allow of their expanding.

**BEADING.**—Oak beading, 1 inch wide and 5/16in. thick, to be fixed over the joints, and up the standing pillars. All the panels and beading to be fixed with round brass or copper pins.

**MATERIALS.**—The four corner pillars, the door styles and standing pillars, to be of well-seasoned English oak. The roof and partition boards to be of American yellow pine (the roof boards to be in one length, matched).

**ROOF.**—The roof principals to be of ash, 2 $\frac{1}{2}$ in. by 2in., cut to the proper sweep, and strongly screwed to the top side-frames, as before described. The boarding to be 1in. thick, grooved and tongued in single lengths; to be covered with three thick coats of white-lead paint outside before being covered with the roof cloth, which must be put on while the last coat is wet. The roof cloth to be equal in quality to the sample supplied, in one piece, well stretched in laying, and fastened under the eaves, and secured by filleting.

Each Carriage to have a roof lamp, to pattern, let through the roof in the centre of each compartment.



**PARTITIONS.**—The partition between the compartments to be in two thicknesses of  $\frac{1}{2}$  inch boards, grooved and tongued, crossing each other at right-angles, vertically and horizontally. The horizontal boards to be fitted and screwed into the grooves in the middle standing pillars, and fastened in addition with thin wrought-iron angle-plates, as before described. The vertical boards to be fitted and screwed into the grooves in the roof principals, secured to the floor by fillets. The boards to be well and closely screwed together.

### Trimming.

**SEATS.**—The seats to be framed and supported as shown upon Drawing, and covered with American-leather cloth, the stuffing being  $\frac{1}{2}$  in boiler felt.

Strong brown leather stop straps to be screwed to all the doors, with approved fastening, to prevent the doors opening too far.

Umbrella nets of Manilla cords to be fixed over the seats of each compartment. The rods to be of ash, grained; the brackets of approved design.

### Mountings.

Brass plating to be put on all the doors, gun-metal commode and door handles; private locks with brass escutcheons to the key-holes; side lamps; iron staples to be fixed on the side of the Carriage for attaching "Station" and "Ladies' Carriage" label boards.

### Painting and Varnishing.

The whole of the woodwork outside to be painted with three coats of white lead, and five of filling up after dressing down; four coats of white to the upper parts and two to the lower; then three coats of brown to the lower parts of body, and one coat of brown to the under frame; three coats of varnish over the body, and one on underframe; the wheels, axle-boxes and springs to be black.

The whole of the sole bars to be stopped; filled up, rubbed down and painted to pattern. Step irons and steps to be painted black, the side springs brown, and coupling chains to be painted black.

The outside of the roof to have three coats of white-lead, the edges black. "G. W. R." to be written in gold in a monogram on the panel of the doors, and the Company's arms and crests on the lower panels between the lights, as may be directed.

"Third Class" to be written on each door over the window. The number to be written on each Carriage as may be directed.

### Materials and General Observations.

The Company will supply the wheels and axles, the bearing and buffing springs, to the Contractors.

The whole of the materials to be of the best description of their respective kinds.

The wood to be sound, dry, and free from knots and sap.

The framing to be clean and well made, and strongly put together, accurately square and straight, and the whole of the detail parts fixed equidistant from the centre line.

All mortises and tenons to be painted with white-lead and oil, before being put together. The whole to be put together, and finished in the most substantial and workmanlike manner, to the satisfaction of the Company's Superintendent or his Inspector, who shall have full power to reject all, or any such Carriage, or parts that are not in full accordance with the spirit and intention of this Specification, as respects materials and workmanship; and to be delivered complete.

and ready for use (free of charge,) on the rails at

Station,

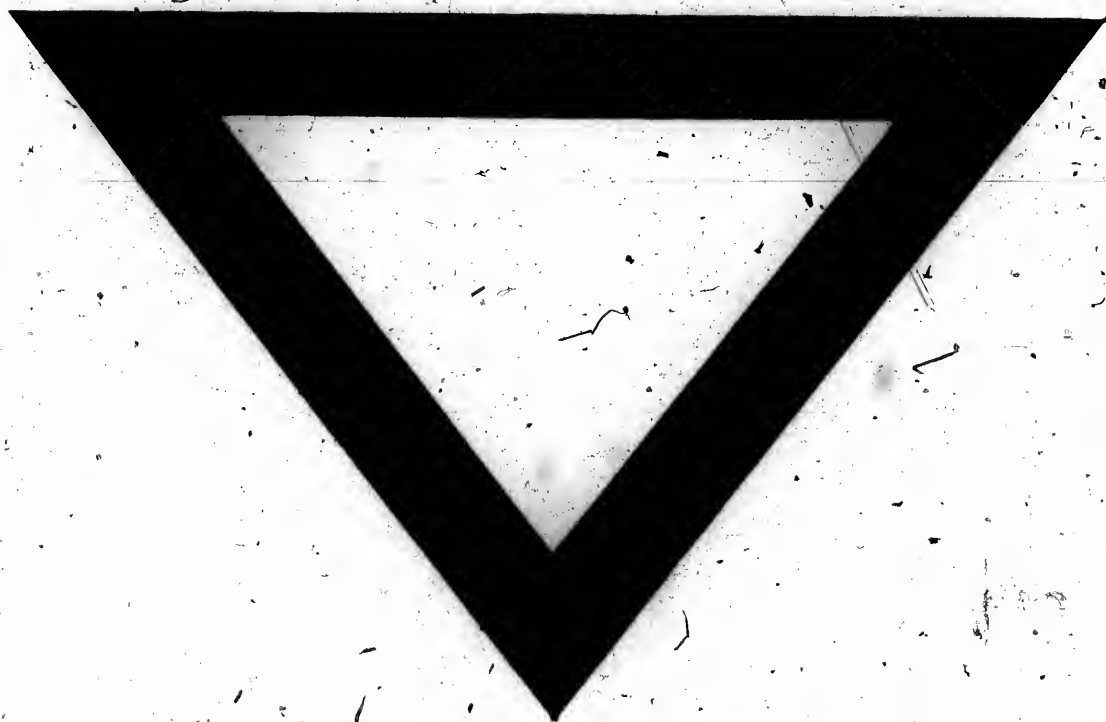
and if not so delivered complete within the above periods respectively, the Contractor shall forfeit to the Company, as ascertained damages, the sum of per Carriage.

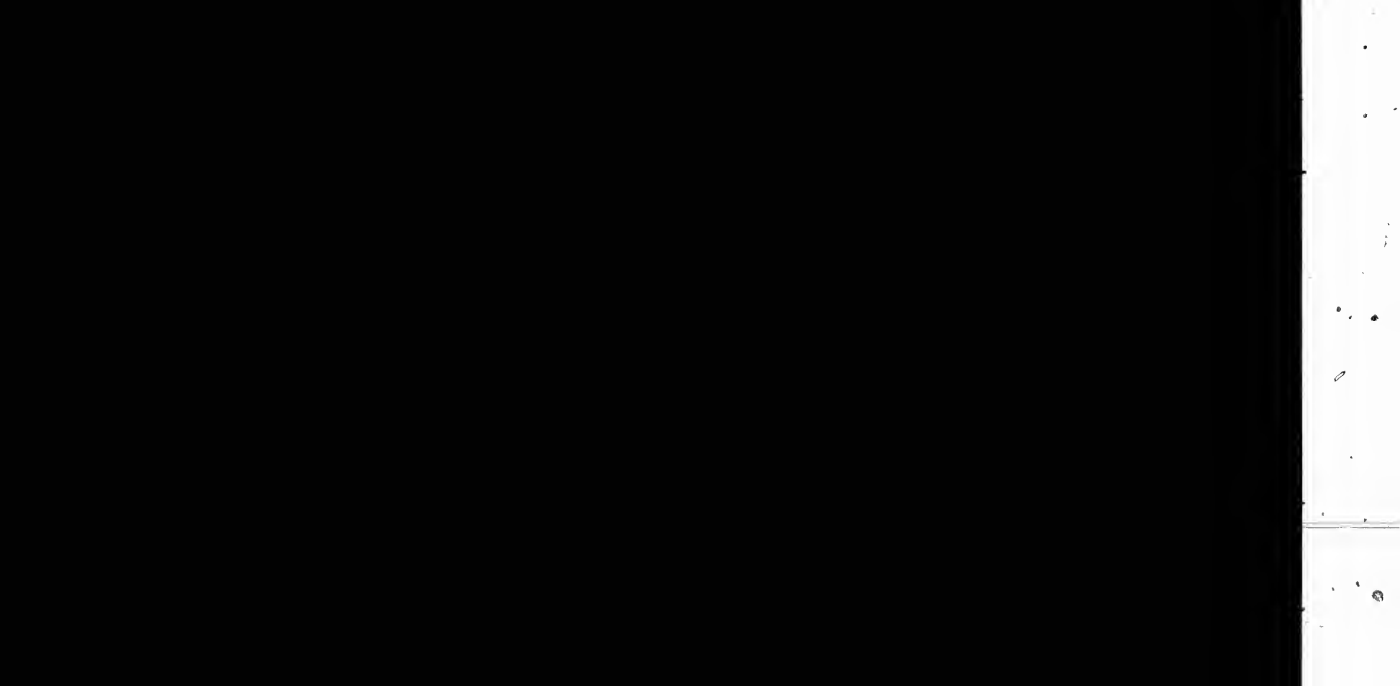
The colours, and style of painting and lettering, the mode of trimming, and the quality of the trimmings to correspond and match with the First Class Carriages of the Great Western Railway.

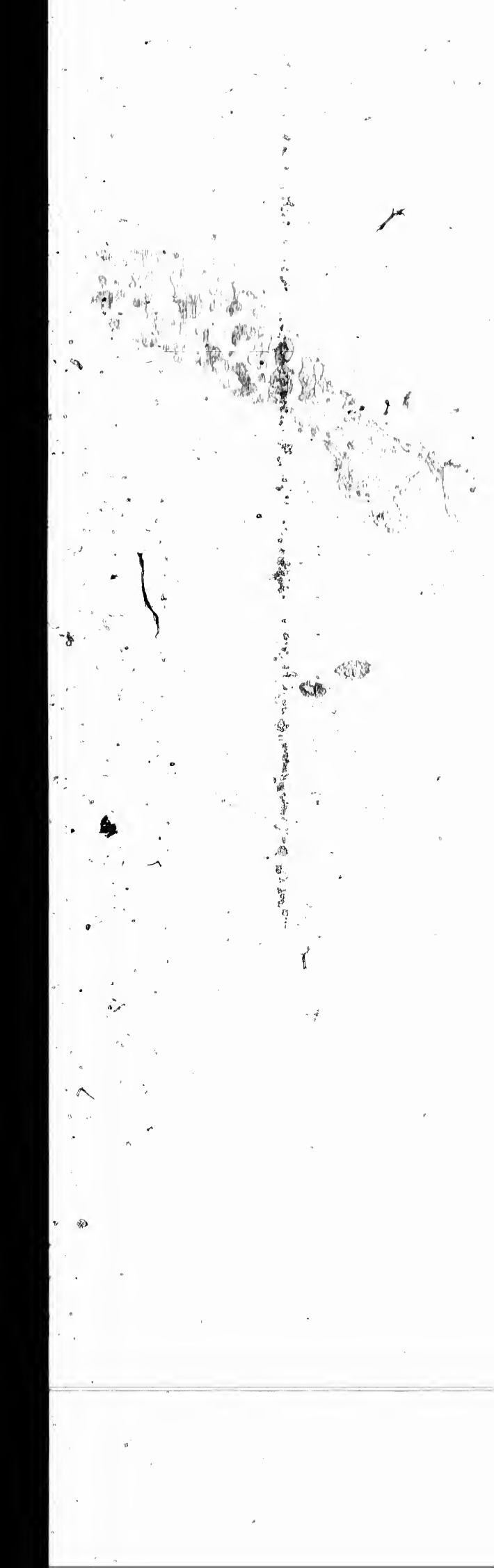
No advantage to be taken of any omissions of detail in the Drawings, or in this Specification, as full explanation will be given, should any part not be sufficiently shewn or understood.

### Conditions of Contract.

The Contract is to include the supply of all materials and parts (exclusive of those to be supplied by the G. W. R. Co.) for, and the building and finishing complete the Carriages according to this Specification and Drawings herein referred to. The Contractor to pay all patent rights and royalties—fitting the springs to the axle boxes; mounting the Carriages on the wheels; painting all the parts and the delivery of the whole complete, free of charge, on the rails at the Station of the Great Western Railway.









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