houses. The system of construction adopted is shown in Plate XXXV.

The arrangement of the girders supporting the houses is shown in the plan, Fig. 1, and from this figure it will be seen that the line of the railway intersects that of the row of houses very obliquely. The manner in which the operation of underpinning was carried out is as follows: Two trenches to receive the side walls of the covered way were first formed right through beneath the houses, the walls of the latter, where they were cut by the trenches, being supported by balks 14 in. or 18 in. square; these balks being placed across the trenches, one on each side of each wall, and the weight of the latter being received by transverse balks or “needles” passed through it above the main balks, and made to rest upon the latter. The ends of the main balks spanning the trenches either rested upon the solid ground or upon props carried down to it.

The trenches having been formed, the side walls were built, and the wrought-iron girders were got into their places. The whole of the excavations were made in a clay soil; and as the level of the rails is at this point 20 ft. below the level of the street, and between 10 ft. and 11 ft. below the foundations of the houses, the greatest care had to be exercised.

As will be seen by the plan, Fig. 1, the houses were carried by twenty-one wrought-iron girders spanning the railway, these girders being arranged in groups connected by cross girders, and the spaces between the latter, and between the main girders where there are no cross girders, being filled in with arches of brickwork set in cement. The spandrels of the arches are, in most cases, filled in with concrete covered with a layer of asphalt; but in some parts a different arrangement became necessary. The arches between the girders were put in as the work proceeded, and the centering on which they were turned was left in its place for a considerable time.

Figs. 2, 3, 4, 5, 6, and 7, are various sections of the arches and girders, which show very clearly the system of construction adopted. From these sections it will be seen that the tops of the main girders are immediately beneath the kitchen flooring of the houses, and indeed this flooring had to be raised about 15 in. above its original level in order to clear them. The joists of the floor rest upon the cross girders and brick arches, as shown in the various sections. The holes in the walls through which the girders were put in their places were made as small as possible, and after the girders were fixed the holes were made good. All the openings in the walls, such as windows or doorways, were also strengthened by frames whilst the underpinning was going on.

The main girders vary in span from 25 ft. in the case of those which cross the line at right angles to 27 ft. in the case of some which cross on the skew. With the exception of the sixth and twelfth girders from the right-hand side of the plan, the main girders are all of the single-web form shown in section in Fig. 9, the depth between flanges being in some cases 2 ft. and in others 2 ft. 3 in. Girders Nos. 6 and 12 are of the box form shown in section in Fig. 8, whilst the cross girders, which are 18 in. deep, are formed of a ¾ in. web-plate with double angle irons 4½ in. by 3 in. by ¾ in. at top and bottom. The distance apart of the main girders forming each group varies from 8 ft. to 9 ft. ½ in. between centres.

From Pembridge-square the line is made in ordinary covered way with openings here and there, and a ventilating station at Chapel Side, Bayswater, to the Queen’s-road Station, which is of the ordinary type, with two platforms 308 ft. long, covered with a light arched roof. The rails here are about 24 ft. below street level. Beyond Queen’s-road, and as far as Porchester-terrace, the line is in covered way made strong enough to carry buildings. Between Inverness-terrace and Craven-hill, much delay occurred owing to the difficulty of acquiring property. From the east side of Craven-hill ordinary arched and girder covered way alternate according to circumstances, and beneath Gloucester-terrace is another crossing of the Banelagh Sewer, similar to that of the Count’s Creek Sewer at Warwick-road, which was altered in section, on account of the limited space available, the circular form being changed for one with straight sides and a semicircular invert, while the rails are carried in wrought-iron trough girders on longitudinal timbers. The sewer is covered with wrought-iron plates, stiffened with T and angle irons, fastened down to the side walls of the sewer with holding down bolts.

Beyond Gloucester-terrace to Spring-street, Paddington, the line is an ordinary covered way, except a short length with a strengthened section of nine rings for carrying shops and warehouses. At Spring-street is the Paddington Station, opposite the Great Western Railway Hotel, and a low level communication is to be opened between the Paddington Station and the arrival and departure platforms of the terminus of the same name. About fifty yards more of covered way, and a bell-mouthed junction with the existing Metropolitan Railway at South Wharf-road, Paddington, complete the works of the Metropolitan Extension Railway.

A very considerable delay attended the completion of the Thames Embankment length of the Metropolitan District Railway, and for a long time Westminster