upper and lower members of the girder are shown in
general elevation and details in the drawings.
The following are the sizes of the plates employed:

First bay... 7 in. x ½ in.
Second bay... 7 in. x ¾ in.
Third bay... 7 in. x ½ in.
Fourth bay... 7 in. x ¾ in.

The diagonals, one of which passes on each side of
the vertical struts, are secured to the top boom through
the heads of the verticals by keys 4½ by 1½ in.; the ends of
the diagonals being enlarged from a width of 7 in. to
8½ in. to allow of the necessary slot (Fig. 16). At their
lower ends the diagonals are secured to the curved plate
and to the verticals by bolts, as shown in Figs. 14, 18,
and 19. A distance piece, shown in Fig. 15, connects
the two diagonals at the point of intersection.
The bottom member of the girder is built up of five
tiers of plates, as shown in sections, Figs. 10 and 21.
Its total width is 36 in., and it is built up as follows:

First row 2 plates... 18 in. x ½ in.
Second row 3 plates... 12 in. x ½ in.
Third row 2 plates... 12 in. x ¾ in. + 2 T-irons 5 in. x ¾ in.
Fourth row 3 plates... 12 in. x ¾ in.
Fifth row 2 plates... 18 in. x ¾ in.

Figs. 3 and 4 show the manner in which the top and
bottom members are fastened together over the pier, and
the form of the cast-iron saddle upon which they rest.

Light longitudinal girders run along the whole length
of the bridge, as shown in the elevation, Fig. 1, and sec-
tions, Figs. 2, 10, and 21. They are each 2 ft. 8 in. deep,
with a bottom flange 15 in. by ½ in., a web ½ in. thick,
and connecting angle irons 34 in. by 24 in. by ½ in. The
top flange, 15 in. by ½ in., is curved round, as shown
in the section, and is secured to the inner side of the
vertical strut, the bottom of which is flush with the
bottom of the longitudinal girder.

The cross girders, which are rivetted to the longi-
tudinals, are placed 5 ft. 2 in. apart; they are 2 ft. 6 in.
deep, with flanges 15 in. by ½ in., angle irons 3½ in. by
3½ in. by ½ in., and webs ½ in. thick in the centre, in-
erased to ⅛ in. at the ends. Intermediate girders also
15 in. deep are placed between those to carry the floor,
which is formed of ⅜ in. sagged plates, as shown in
Fig. 8; intermediate T-irons, 4 in. by 4 in., by ⅛ in. also
being employed at the points where the sagged floor
plates are joined. The areas between the last verticals
and the piers are covered with flat ⅛ in. plate.

It is to be regretted that the new arrangements made
by the Metropolitan Railway Company prevented this
design of Mr. Fowler's from being carried into execu-
tion. In placing it before our readers, however, we
believe that we render them a service, because the
design, novel in most of its details, is one that may be
well adopted where cheapness of construction and ele-
gance of appearance are desired.

THE METROPOLITAN DISTRICT RAILWAY.

Plates XXXI to XXXVII.

The Metropolitan Railway, extending from Bishop's-
road to Moorgate-street, forms but the northern side
of the irregular “circle” of underground railways which
nearly surround that part of the metropolis lying be-
tween the existing line and the Thames. Of this “inner
circle,” as it is called, the Metropolitan District Railway
forms the southern side, whilst the western portion is
formed by an extension of the Metropolitan Railway.
Acts for the construction of these additional lines, of
which Mr. John Fowler and Mr. T. Marr Johnson were
the joint engineers, having been obtained in 1884.

At the eastern end, it was proposed that the extension
of the Metropolitan Railway should be carried under
Bishopsgate-street, near Houndsditch, and then curve to
the south, extending, under Aldgate High-street and
the Minories, to Trinity-square, at which point the
Metropolitan District Railway was to have commenced,
and proceeded nearly parallel to the river until it cut
the line of Queen Victoria-street running from Blackfriars
Bridge to the Mansion House. Following the line of
this street, the railway was to reach the river at Black-
friards, and be carried along the entire length of the Em-
bankment as far as Westminster Bridge. The intention,
however, to construct that part of the line known as the
Tower-hill Extension was abandoned, and the “circle”
remains broken, eastward from Moorgate-street, where
the Metropolitan ends, while the District Railway ter-
mminates at the Mansion House Station, of which we
shall speak subsequently. From Westminster Bridge the
line leaves the river side, and, curving to the west, pro-