BRIDGES OF THE SEVERN VALLEY RAILWAY.

Plates I., II., and III.

THE Severn Valley Railway, from Shrewsbury to Bewdley, traverses a district of much interest, and which in many places possesses great natural beauty. Coalbrookdale, so long famous for its productions in metal, is at the same time one of the most picturesque spots in Shropshire. It has been thus described: "Coalbrookdale is a winding valley, wooded and well watered. On wooded knolls, backed by sombre wood or verdant fields, by streams and pools, nestling in shady nooks and deits, or half embowered by trees, are seen neat cottages, substantial homesteads, and wealthy mansions. In few places grouped within the same limits will you find so many features of interest. The triple syllable 'Coalbrookdale' is indicative of the distinctive features and natural advantages for which the place is remarkable. The ring of the hammer and noise of the forge reveal no less the source of the prosperity you see around, and tell that house and land, field and garden-plot, wealth and contentment, have been won upon the great battle-field of labour, in wrestling with the sternest elements of earth. 'Coalbrook' is composed of two streams that come in two opposite directions, and upon making the passage of the 'dale' combine their forces. It is not so much a brook as a series of lakes or pools, made to pay at easy stages the tribute of its strength on its journey to the river. Thus ponded up it presents a mechanical force which our fathers, before the introduction of the steam-engine, knew so well how to appreciate, and which to them was so essential to successful iron-making operations."

It is our present object to describe the two great railway bridges, constructed by Mr. John Fowler, across the Severn, the one at Arelley, near Bewdley, the other on the Coalbrookdale line, which is a short, but costly, branch of the Severn Valley Railway, the line of two miles having, in consequence of its difficult works, cost £80,000. The first-named structure was completed in 1861, and is known as the Victoria Bridge; and the latter, opened in October, 1864, was named the Albert Edward Bridge. The two are of identical dimensions, and are the largest cast-iron arched spans yet erected for carrying railway traffic.

With a span of 200 ft. in the clear, and a width of 27 ft. 6 in., each bridge stretches from abutment to abutment, giving a headway from the surface of the water to the underside of the main ribs of 40 ft. The rise of the arch in the centre is 20 ft., or one-tenth of the span, and the depth of the curved girders 4 ft.

The arrangement of the abutments will be ascertained from an inspection of Figs. 10, 11, and 12, Plate III., which are respectively longitudinal, horizontal, and transverse sections. The foundations are entirely surrounded with sheet piling, which encloses an area 66 ft. long by 34 ft. 9 in. wide and 19 ft. 6 in. deep. This space is filled with 1650 cubic yards of concrete, and forms the foundation on which the abutments are constructed. The level of the ground is 3 ft. above the surface of this mass of concrete, and 14 ft. below the springing of the main ribs, to which height the face of the abutment is built in solid brickwork 8 ft. thick. The arrangement of the moulded stone course beneath the springing and the skewback shown, Fig. 10, the brickwork behind the skewback being set in cement, and bonded with iron, while convenient recesses are left beneath for the reception of the holding-down bolts, which secure in their places the cast-iron shoes in which rest the rounded ends of the main ribs. From the top of the skewback to formation level the abutment has merely to retain the earth contained within the face and wing walls, and the thickness is gradually decreased from 8 ft. to 2 ft. 7½ in. The face of the abutment is strengthened by concrete backing, increasing from a thickness of 1 ft. 6 in. at formation level to 33 ft. at the foot of the brickwork (Fig. 10); and three rows of