waterproof by ashlar work, backed with burnt bricks laid in Parker's cement.

Interesting, however, as this fine bridge must ever be, it is eclipsed by the Ponteysylte Aqueduct, which crosses the Dee, and adds new beauty to the picturesque valley of Llangollen. In the design of this magnificent work, which was completed in 1805, at an expense of £47,018, Mr. Telford adopted a new method of construction, which has since been generally followed. The height of the canal was no less than 127 feet above the Dee; and after the width of the valley had been shortened by embankments, 1,007 feet still remained to be crossed. Mr. Telford saw the risk, as well as the enormous cost, of constructing an aqueduct of such length and height by piers and arches of stone, and therefore conceived the idea of carrying the canal over the valley in a cast-iron trough, supported on cast-iron arches, and resting on stone piers. The piers are twenty in number, including the two abutment ones; and are united by nineteen arches of forty-five feet span. The piers are of solid masonry to the height of seventy feet, but the upper fifty feet of them are built hollow, with one cross inner wall—a device which not only saved masonry, but lowered the centre of gravity of each pier. The parapet of both the Whisk and Ponteysylte aqueducts is an iron railway, which gives lightness and elegance to the structure."

A greater work than the Ellesmere Canal soon called for the utmost exertions of Mr. Telford's talents. The commissioners of the forfeited estates in Scotland had formed the idea of opening a navigable communication between the eastern and western seas, and the lochs of the great glen of Scotland, extending over a distance of nearly 200 miles. In 1773 the celebrated James Watt was employed in making surveys for this purpose, and reported favourably of its practicability. The restoration of the forfeited estates, however, delayed the execution of the plan. In 1801 Government again reverted to the design, along with other plans for promoting improvements in the Highlands, and Mr. Telford was "directed to survey the coasts, as well as the interior of Scotland, in reference to the establishment of naval stations, the improvement or formation

of harbours, the construction of roads and bridges, and the practicability of a canal along the great Caledonian glen. This task was executed with his usual promptitude and ability; and after the propositions which he made to the Government had been submitted to Parliament, and undergone the fullest examination, two boards of Parliamentary commissioners were appointed—the one for executing the Caledonian Canal, and the other for making roads and bridges in the Highlands. Both these commissions concurred in appointing Mr. Telford their engineer." With characteristic energy and wonderful ability he set to the execution of the greatest work of the kind ever undertaken. "The Caledonian Canal," writes the author already quoted, "which was begun in 1803, and opened in 1822, is doubtless the greatest specimen of inland navigation in the world. Its total length is sixty miles, twenty-three of which are formed artificially, the other thirty-seven being the united lengths of the three fresh-water lakes, namely, Loch Ness, Loch Oich, and Loch Lochy, through which it passes. As it was intended to admit the largest vessels that trade between Liverpool and the Baltic, West Indiamen of an average size, and frigates of thirty-two guns when fully equipped, its dimensions were necessarily great. The width of the water surface was to be no less than 120 feet, the bottom width fifty, and the depth twenty; while the locks, which are twenty-eight in number, are no less than 170 or 180 feet long, and forty wide. Although the three fresh-water lakes, which we have mentioned, greatly facilitated the formation of the canal, yet the construction of eight junctions with the canal itself occasioned much labour and expense, as well as great embarrassment to the engineer. These junctions, as well as the shallows at Loch Oich, have been cleared by dredging machines to the depth of fifteen feet; but in various places a further excavation of five feet was necessary to obtain the intended depth of twenty feet. The canal was opened in October, 1822, when the late Mr. Charles Grant, formerly member for the county, and one of the most zealous of the commissioners, gave a grand *fête* to seventy gentlemen who had accompanied him in a steam-barge from sea to sea. But

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