tively. The rise of the main arch at crown is 90 ft., the depth being 15 ft. at centre, and 105 ft. at bearings. The total height from rail level to water level in the dry season being roughly 420 ft.; the level in wet season being, say 40 ft. less, or 380 feet. This measurement will make the Zambesi bridge the highest in the world; the nearest to it being the Viaduct du Viaur in France (recently finished), which is 375 feet above the bottom of the valley it crosses. The ends of the arched trusses rest on steel skewbacks resting on concrete pedestals. It is estimated that the thrust on each foundation rock will be 1,600 long tons. The width at the springing of the arch is 53'-9" between the centres of booms; at the top 27'-6"; and between parapets 30 feet. There are two lines of rails, although the existing railway track from Cape Town to the bridge is only a single line of 3'-6" gauge. But a width sufficient for a double line across the bridge was necessary, in order to provide for lateral stability. Acid open-hearth steel was employed throughout: classified as "rolled steel" and "rivet steel." The rolled steel was required to contain not more than 0.06 per cent. phosphorus, and be capable of sustaining an ultimate tensile stress of 67,000 lbs., rivet steel 58,240 to 67,200 lbs. per square inch U. T. S. Holes drilled throughout, and machine rivetting wherever practicable. The total weight of steel in the bridge is 1,650 tons, and the approximate cost —including erection—was £70,000. North of the Falls, 170 miles of line have already been constructed, and the laying of the track is proceeding at a pace so remarkable that during the twelve working hours of September 27th, 5¾ miles of track were laid—said to be a world's record.

The planning of the bridge was carried out by the Rhodesian Railway Company, under the supervision of, and in accordance with, the specifications of the company's engineers: Sir Douglas Fox, M. Inst. C.E., Hon. M. AM. Soc. C.E., and Partners; Sir Charles Metcalfe, Bart., M. Inst., C.E., and Mr. G. A. Hobson, M. Inst, C. E., who were represented on the spot by Mr. Townsend, Mr. Tower, and Mr. C. Beresford Fox. The contractors were the Cleveland Bridge and Engineering Company, Darlington, England. The method of erection of the arch span was devised by Mr. A. C. Imbault, in charge for the contractors.

"The line reached the Zambesi and its wonderful falls on April 25, 1904. The engineers began operations by firing across the gorge a rocket, to which a fine string was attached. After three attempts they succeeded, and by means of the string were able to pull a cord across, then a wire, and eventually a ⅝-inch diameter steel wire rope 900 ft. long, the cable being supported at each end by a solid post 2 ft. in diameter, let down into the rock some 7 or 8 feet. When strained tight by means of a running pulley, and a "bosun's chair"—a piece of wood suspended by four ropes, with a canvas back and a sack and board as foot-rest—persons were able to get across, Mr. Beresford Fox being the first to make the hazardous journey through the air."

From Mr. Francis Fox's "River, Road, and Rail."

Fig. 3.—The Gorge of the River Zambesi, Victoria Falls. Mr. C. Beresford Fox crossing the Gorge for the first time on the wire rope, Nov., 1903.

The British South African Company—which owns the land on both sides of the cataract—is arranging to reserve a large area of the forest extending for some six miles on each side of the river in the vicinity of the Victoria Falls, as a public park, to be preserved forever in its natural beauty.

When the Cape to Cairo route of 6,000 miles—4,000 rail, 2,000 water—is completed, it will be the most remarkable trans-continental railway system on the globe; and this half-way stopping place at the Zambesi River, in sight of the Victoria Falls—which ranks in grandeur with the New Zealand geysers; Canadian Horseshoe Falls, and Alps; Kyber Pass and Himalayas of India—will make available to the traveller another scenic wonder within the bounds of the British Empire. The Engineer has made this possible.

[For the technical data in this description, we are indebted to "Engineering," London, July 7th and 21st, 1905; "Engineering News," New York, October 5th, 1905; "Public Works," London, October-December, 1905; Mr. Francis Fox's "River, Road and Rail," published by John Murray, London, and other sources.]