

The Canadian Engineer

An Engineering Weekly

THE FINAL COMPLETION AND OPERATION OF THE LOS ANGELES AQUEDUCT.

The Los Angeles aqueduct, which for the past eight years has been under construction, is now nearing completion. Late in February the system should be completed and ready for operation. The enterprise has excited international attention; first, because of its magnitude; second, by reason of the unusual difficulties of operation which have been overcome; third, that with the exception of one comparatively small contract, all the work has been done by the municipality itself; fourth, that it is a public work which will be completed in advance of the time for which it was promised and at a cost well within the original estimate; fifth, the great economic value of the water for irrigation and domestic use and the development of hydro-electric power. In the following paragraphs each of these features will be discussed briefly, the object being to give a general description of the whole work, the economies of construction which

have been worked out on a large scale and the economic importance of the enterprise to the whole of Southern California.

The city of Los Angeles, a municipality of 400,000 population and growing at the rate of 40,000 per year, in 1904 was confronted by a diminishing water supply, at present obtained from the surface and subterranean flow of a stream called the Los Angeles River. No municipality has greater need for an abundant water supply, for it is situated in a semi-arid region where the average precipitation does not exceed 15.67 inches annually and no rain falls from April to the last of October. The per capita consumption of Los Angeles is 140 gallons daily; the daily per capita consumption of London amounts to only 28 gallons.

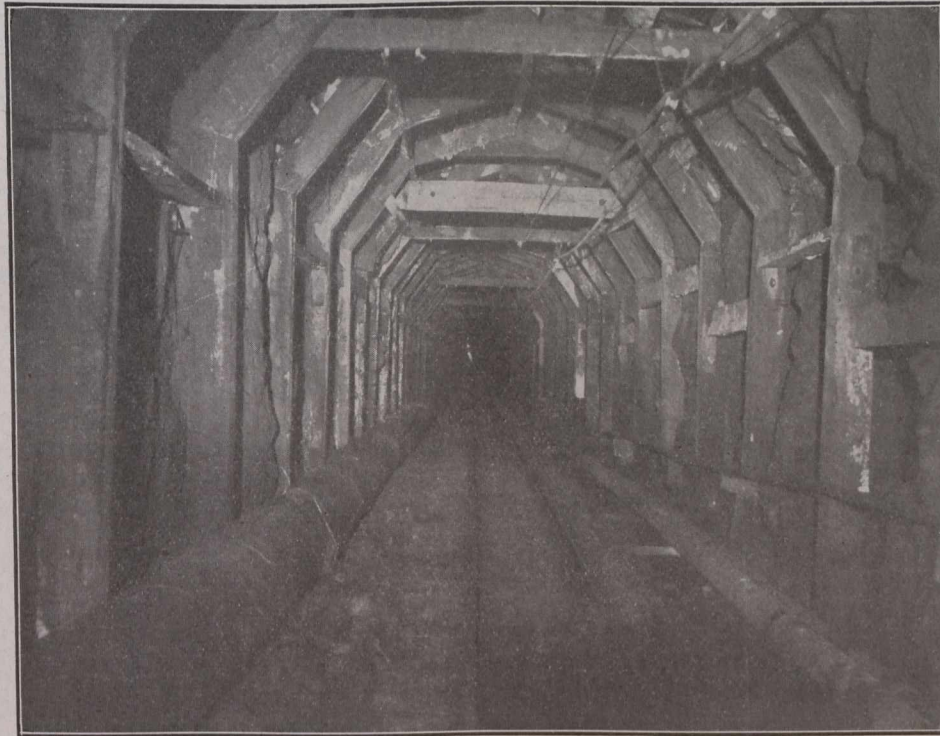
After federal and Los Angeles engineers had investigated the conditions for a period extending over several years, the nearest adequate source of supplementary supply was found to lie in the Owens River, a stream draining the eastern face of the Sierra Nevada Range which forms the roof-shed of the United States. To this source the city has gone. Purchasing 120 square miles of territory in the Owens Valley and

with the active co-operation of the United States government in the way of public lands and helpful legislation, Los Angeles has undertaken to carry a daily supply of 280,000,000 gallons from this source into the Fernando Valley, at the mouth of which the city is situated.

To accomplish her purpose the city is constructing a concrete aqueduct across the great Mojave Desert and under the Coast Range (Sierra Madre) of mountains. The aqueduct is reinforced by an extensive system of storage and regulating reservoirs.

The length of the aqueduct from the intake to the impounding reservoir at the outlet is 234 miles. From the latter point the water will be distributed for irrigation or carried 10 miles further through steel force mains to be connected with the city's present waterworks. The system is gravity throughout. The intake is 3,812 feet above sea level; the outlet of the lowest reservoir is at elevation 1,020 and the elevation of the Los Angeles city hall is 276 feet above sea level. The total estimated cost of the aqueduct proper, exclusive of other features yet to be discussed, is \$24,500,000. This, in a word, is the Los Angeles aqueduct, or, as it is quite popularly known, the Owens River project.

The economic value of the aqueduct lies in the fact that it will provide domestic water for 1,000,000 people; through



Interior of Elizabeth Tunnel.

(Photograph taken 2½ miles within the tunnel. Point of light in centre of picture is north portal of the tunnel)