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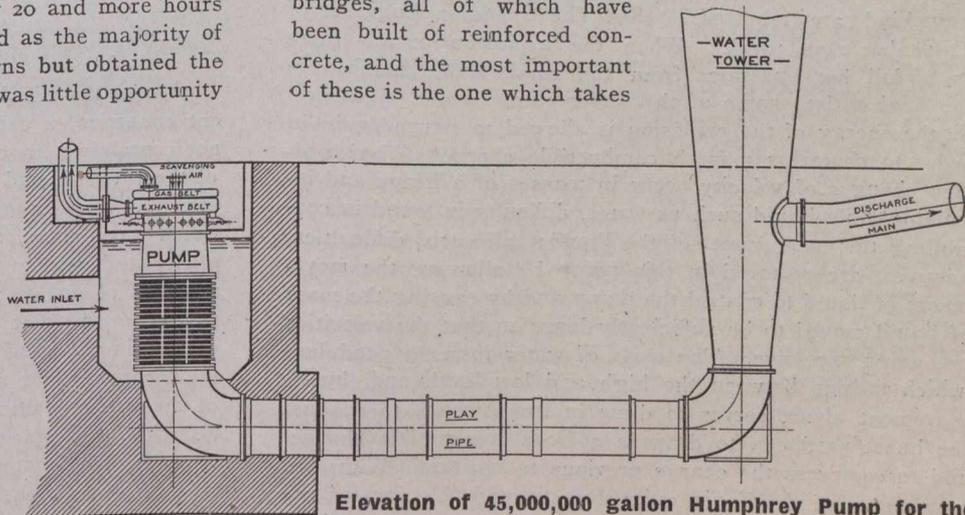
WATER SUPPLY FOR LONDON—LARGE HUMPHREY PUMPS.

A few years ago the water supply of Greater London was in the hands of various companies scattered throughout the suburbs; consequently, with so many suppliers, which varied in size and influence, and of course monopolized the business in their own particular districts, it is not surprising that the service for such an enormous collection of humanity, as is contained in the London area, left much to be desired. In many instances the companies did not increase the capacity of their plant in proportion to the growth of population, and during the prevalence of drought it was not unusual for the supply to be subject to great irregularity. In one particular area, in the north-east of the metropolis, serious inconvenience and danger to health were caused during dry summers by the supply being so inadequate that the water was occasionally cut off at the mains for 20 and more hours per day for many days in succession, and as the majority of the houses were not provided with cisterns but obtained the supply from the service pipe direct, there was little opportunity for the inhabitants to store any useful quantity. It was not uncommon to find that while conditions prevailed in some districts which closely resembled a water famine, only a short distance away—perhaps in the next street—plenty of water was available owing to the supply having been controlled by another authority who were placed in more fortunate circumstances.

In order to overcome these unsatisfactory conditions the various companies were merged into the Metropolitan Water Board at a cost of about £47,000,000 (\$235,000,000), and it may be said that since then vast improvements have taken place in the service, and that, at least in comparison with the former conditions, the supply is now as nearly perfect in its regularity as it could be. However, to avoid a recurrence of the old difficulties the Board immediately started on the reorganization of the various plants and on the construction of several large reservoirs to form additions to those that then existed.

The largest of these reservoirs, which is situated at Chingford in the north-east of London, was begun in April, 1909, and is now practically completed. It is anticipated that it will be opened by the King towards the end of the year. The capacity of the reservoir is 3,000,000,000 gallons, as against 2,468,000,000 gallons, which was the total capacity of 12 reservoirs formerly belonging to the East London

Water Company who supplied the district. The area of the new reservoir is 416 acres. It has $4\frac{1}{2}$ miles of puddle core embankment, it is $1\frac{3}{4}$ miles long, about one-third of a mile wide at its narrowest part, and $\frac{3}{4}$ mile at its broadest. It has been constructed in the valley of the River Lee, a tributary to the Thames, and to make room for it the Lee has been diverted from its course for a length of three miles by a channel 55 ft. wide and 5 ft. deep, with side walls of concrete faced with Kentish rag stone and surmounted by a coping of concrete blocks. A smaller channel $3\frac{1}{2}$ miles long has been provided to divert the contaminated water from the hill side and to discharge it into the old river channel clear of the site of the reservoir. The work has necessitated the construction of several bridges, all of which have been built of reinforced concrete, and the most important of these is the one which takes



Elevation of 45,000,000 gallon Humphrey Pump for the City of London, England.

the public road over the river diversion. This structure is built on the skew and has three spans of $27\frac{1}{2}$ ft. with 5 ft. rise and a width of 40 ft. between parapet walls. The embankment of the reservoir has been formed of material excavated from within its area, and it contains 2,000,000 cu. yds. of earthwork and 253,000 cu. yds. of puddle. The top of the embankment is 15 ft. wide, and is 5 ft. above top water. The outer slope is $2\frac{1}{2}$ to 1, and the inner slope is 3 to 1 for a portion which is lined with concrete, beyond which the slope is 4 to 1. The core is 5 ft. wide at the top—three ft. below bank level—and is battered on both sides for a depth of 23 ft. 6 in., at which point it is 9 ft. wide. This thickness continues for $2\frac{1}{2}$ ft. below the ground surface, and then it batters in with slopes of 1 to 1 on both sides to a thickness of 6 ft. until the London clay is reached. It then