

by the fact that the estimated profits from the extensions now under construction would be about 100 per cent. Figures showing the growth of the power plant give 15,278 h.p., with earnings of \$130,936 for the year 1908, while, in 1915, these figures had reached 55,640 h.p. and \$932,566, respectively. Although the authorized diversion is but 4.167 cubic feet per second, it is notorious that about 8,000 cubic feet per second is actually flowing through the Chicago River.

LINING AN IRRIGATION CANAL WITH GUNITE

SEVERAL years ago D. C. Wheeler, Inc., stock-growers and ranchers at Reno, Nevada, erected a wooden bench flume for irrigation purposes. After serving its purpose it was discovered a short time ago that the cost of keeping it in repair and the loss of water



Fig. 1.—Showing Retaining Wall on Downhill Side of Canal

consequent upon leaks was becoming quite a serious source of expense.

This flume has now been replaced by a form of construction which is fully illustrated herewith, and which has solved the problem so far as that part of the canal system is concerned.

The new ditch is about four thousand feet long, and is all of the same character as shown in the photographs.

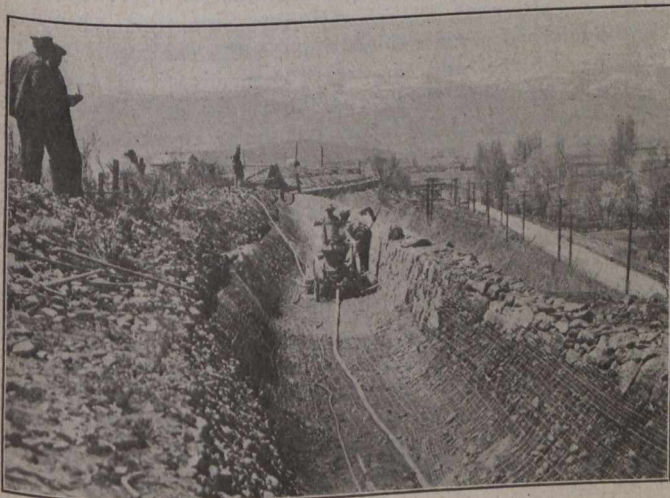


Fig. 2.—Reinforcing in Place Ready for Gunite

The cross-section is five feet wide at bottom, from eight to ten feet wide at the top, with an average depth of four feet.

After the wooden flume which had been in use for many years had been dismantled levelling was done and the bottom and bank side trimmed to grade.

The ditch, it will be seen, runs along the side of a hill. The wall on the lower side was built of boulders and rock taken from the side of the hill, laid up dry in most of the length, mortar only being used in a few places where the



Fig. 3.—Shooting Gunite

wall is quite high and thick enough to form a gravity section retaining wall, as shown in Fig. 1.

For reinforcing fencing No. 11 wire was used throughout. This was placed on the bottom and sides with end and side joints thoroughly lapped and wired. (See Fig. 2.) After the reinforcing was placed the gunite was shot to a thickness of two inches on the bottom and uphill side of the ditch, while on the wall the open joints were shot full inside and out and to a thickness of about half an inch over the reinforcing. (See Fig. 3.) No reinforcing was used on the outside of the wall.

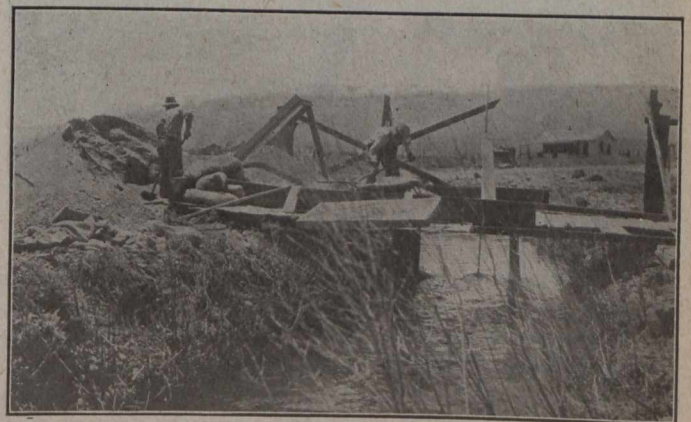


Fig. 4.—Mixing Plant

Sand had to be hauled a considerable distance and was delivered on the hill above the ditch. Another canal parallels the south side canal a short distance above it and about the crest of the hill. This made it necessary to mix the material above the upper canal and chute it across to a hopper located over the canal which was being lined and from where it was brought to the gun in wheel-