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AN ELECTRICAL SEWAGE DISPOSAL PLANT.

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In order to render odorless and innocuous the sewage of a city, a system has been perfected for treating it by the electrolytic process, at slight expense and with complete success. Two such plants are in operation in the West, and a third, of three times the capacity, is being constructed at a cost of \$45,000, so that the device is no longer in the experimental stage. These plants may be seen in service at Santa Monica, near Los Angeles, California, and in Oklahoma City, and in the latter town a second plant was ordered after a thorough trial of the one now operating.

The purifying of water by electrolysis has been known for some time, but it was only in late years that experiments were successfully made with the view of destroying the disease germs in sewage and eliminating offensive odor by the use of electrodes.

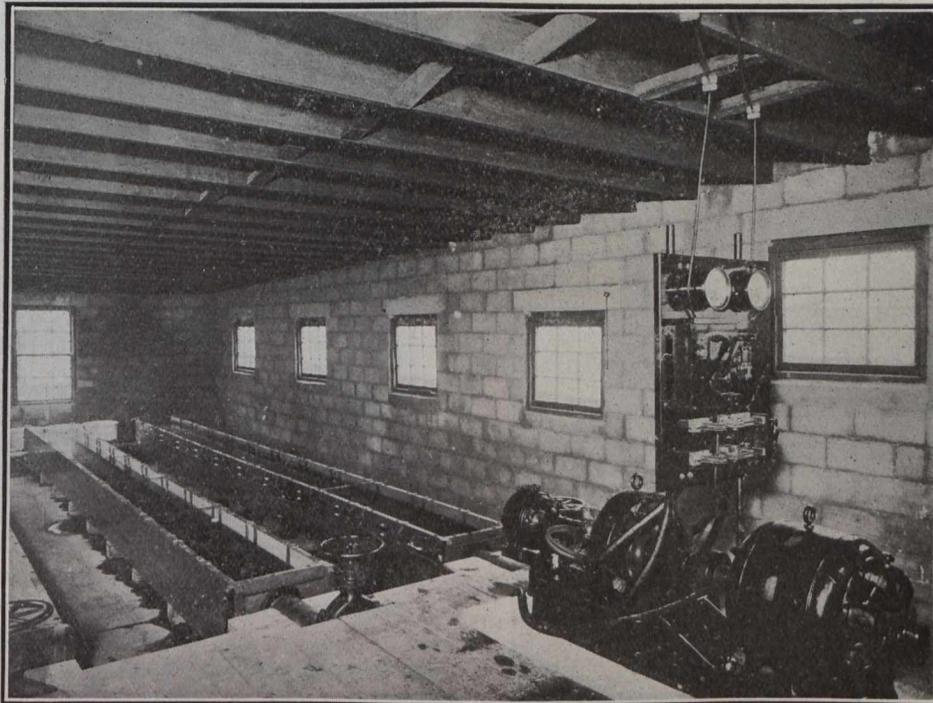
The process may be described briefly as follows: The raw sewage is allowed to flow through

wooden flumes having a length of thirty feet, width of 22 inches and depth of 18 inches. Ten sets of electrodes are placed in each flume, being composed of cast iron plates set half an inch apart and having the dimensions of nine inches by 24 inches, and a thickness of $\frac{3}{16}$ of an inch. These electrodes receive a current of two to three volts and seven to eight hundred amperes, and as the sewage flows slowly through the flumes it is speedily purified. The odor is instantly "killed," so that there is no offence to the nostrils, even to one standing directly over the flumes. But this is not all, the liquid is clarified as well and practically all the germs are destroyed, preventing further putrefaction and

making it possible to discharge the sewage into a river or upon land for irrigation purposes without danger to health. This is not a case of the germs being electrocuted, but is due to chemical changes brought about by the decomposition of the metal in the electrodes. Just how this is done has been determined by chemical analysis, but the results are plain to the most casual observer.

The electrical equipment of the Oklahoma City plant is

described by Howard V. Hinkley, consulting and supervising engineer, as follows: "The drive consists of a $7\frac{1}{2}$ h.p. alternating current motor using commercial current at 220 volts. This motor is direct connected, under the switchboard, to a 3 kw. multipolar direct current generator and exciter, all resting on a single bedplate 2 x 5 feet. The combination is designed and built for this special service and delivers to the copper cable conductors of 1,000-



Interior of Oklahoma City Plant.

000 circular mills 800 to 900 amperes at a voltage of $1\frac{1}{2}$ to 3, these being the limit between which the desired results are obtainable, varying somewhat with the character of the sewage. A double pole, double throw knife switch allows the reversal of the current at pleasure and a knife switch at the upper end of each flume cuts on or off the current for that flume. Owing to the high amperage as compared to the low voltage the switches and conductors are necessarily heavy. If only one flume is used the ammeter is set at 270 or 300."

The Santa Monica plant has in addition a centrifugal pump, which is operated by electricity, and used for raising