AIR-LIFT PUMPING

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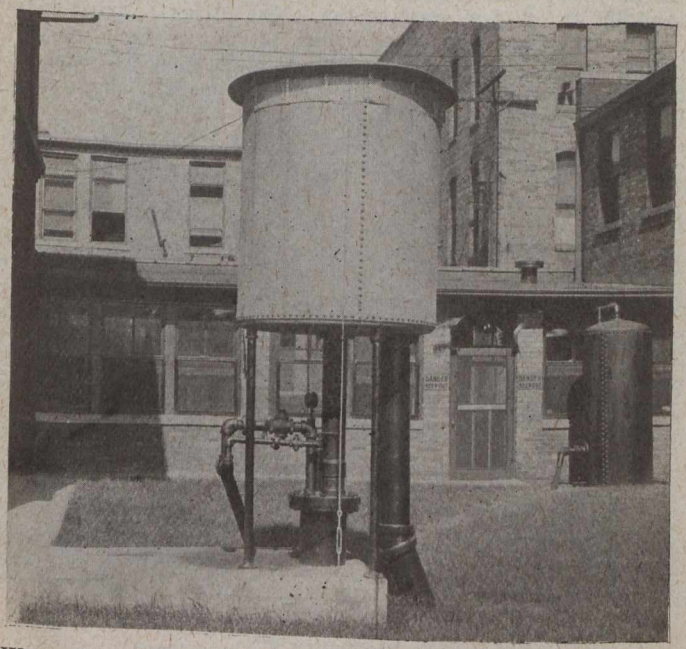
WHILE I am not going to enter at this time into the principles of air-lift pumping, I would like to call your attention to the advisability of a perfect emulsion of air and water at the footpiece in order to secure the best economy, and also to lay stress upon the care with which should be calculated the diameters of the water and air pipes for different lifts and different submergences.

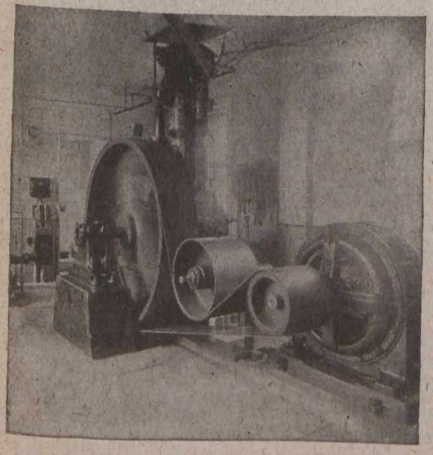
While it is a fact that there are several types of mechanical deep-well pumps that, up to certain depths, will give



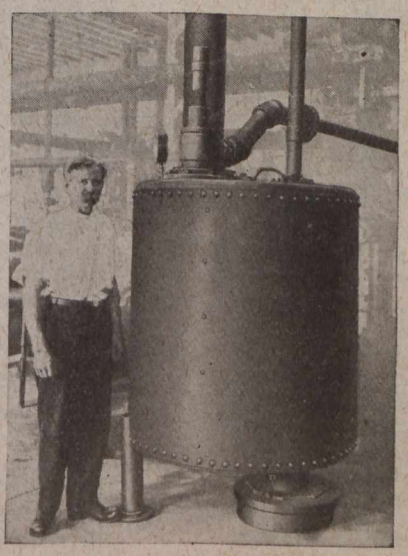
Well-Head and Separating Tank at Galesburg, Ill.—Air Receiver at the Right

theoretically a higher efficiency than air-lift, yet this difference in efficiency is theoretical rather than practical. It has been demonstrated time and again that air-lift, even with its lower theoretical overall power efficiency, but with immunity from derangement, has been placed ahead of the deep-well pumps under many conditions of operation.

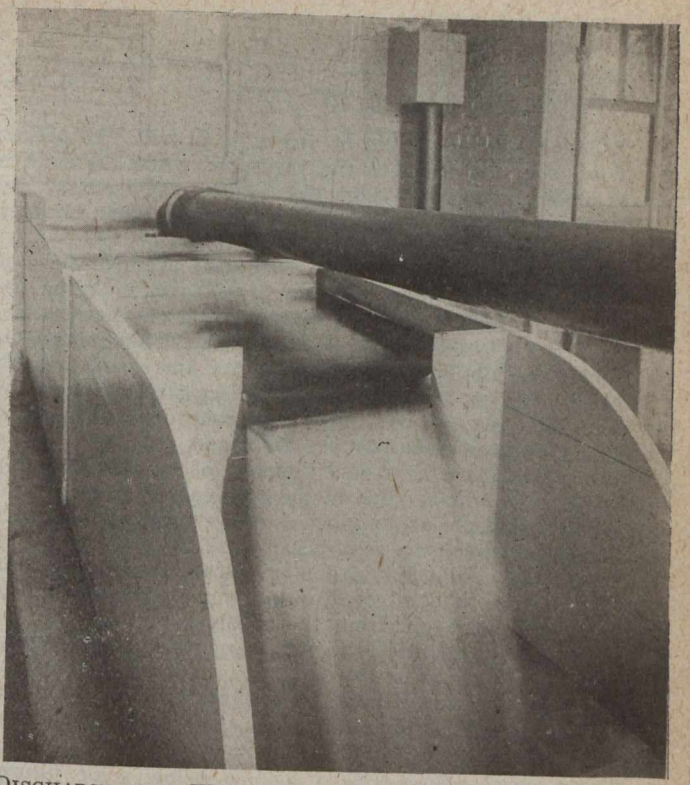
The village of Maywood, a suburb of Chicago, has a compressor handling a single well, pumping at the rate of 700 gals. per min., with a lift of over 300 ft. This compressor has been operating for



Belt-Connected Air Compressor at Galesburg, Ill.



Air-Lift Booster at Maywood Water Works

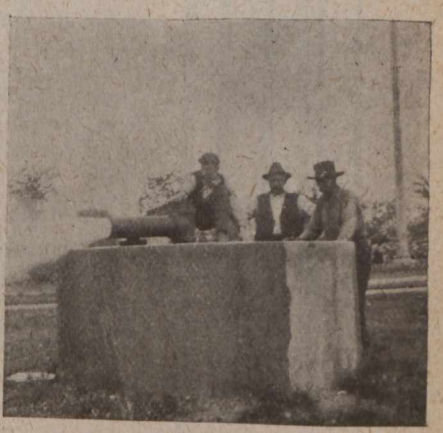


Discharge into Weir Box over Concrete Storage Basin at Galesburg, Ill.

four years, 24 hours per day, with a stoppage of only a few minutes during the 24 hours for necessary examination and adjustments. This plant has been operated at the above capacity continuously at absolutely no cost for repairs and no shut-downs, except those above indicated. I believe this would compare favorably with the operation of a mechanical deep-well pump even at its higher rated efficiency.

There are a great many occasions where the air-lift can be used as an auxiliary to a high-duty suction plant pumping from deep wells. Such a case came up over a year ago at Clinton, Ill., where they secure their water by suction from deep wells, and for ordinary purposes secure a sufficient amount by this method. But in case of peak loads in the summer, and in case of fire, it was found that the supply secured by suction was not sufficient to cover their requirements.

The supply is secured from some half-dozen wells, having a surface flow of limited volume. These are connected so as to flow into a surface reservoir, or may be direct-connected to mains by means of suction pumps. Experience showed that when suction was resorted to, the supply for



Flushing a Well at Clinton, Iowa