HYDRAULIC LIFT LOCK ON THE TRENT CANAL.

A pump having a capacity of about 20 cubic feet per minute is provided for the continual unwatering of the lock-chamber pits and is placed in the lower gateway engine chamber discharging into the lower reach. It will doubtless be impossible to keep the lockchamber pits perfectly dry, owing to the height of the water back of the walls. This, together with a certain amount of leakage from the presses and other machines, as well as from the gates, will accumulate in the lower portions of the pits around the main presses. When this water reaches a level very nearly the floor of the pits at this place, this pump will be automatically started and work until the water is taken out to the desired level.

THE TURBINES.

The turbines operating the pressure pumps are located in the pump-room and derive their power from the 65-foot head of the upper reach. This water is taken in through a screen or rack at the side of the reach, and down a vertical penstock leading into the pump-room, the wheels discharging into the two draft tubes embedded in the concrete wall separating the pump-room from the culvert into which they empty. The culvert conveys the water to the level of the lower reach, where it will be utilized to make up for the evaporation and percolation on this short stretch of the canal. Each of the turbines is 16 inches in diameter and is of the "Croker" type. The turbines are built in the most substantial manner and have bronze steps. It is ordinarily intended that one of the turbines shall be utilized to operate one of the pumps, while the other will generate electricity for lighting the lock and for supplying electrical power for any other object which may be deemed advisable within reasonable distance of the lock, such as the operating of the swing bridges and the guard gates. The turbines are arranged so that each can work either pump. The working of one pump is all that will ordinarily be required; if necessary, however, both may be operated at the same time.

THE DYNAMO.

The type of dynamo has not yet been decided upon, but it will be sufficient to provide about 100 arc lamps. It is intended to install this machine in the central chamber of the pump-room, belting it directly to the turbine nearest to it.

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