

inch, with the steam superheated 180°F., 90% vacuum in the condenser.

Recent large contracts for and installations of Curtis turbines include—

Commonwealth Station, Chicago.. . . .	1 unit	5,000 K.W.
Lane Cotton Mills, New Orleans.. . . .	3 units	500 " each
Fulton Bag and Cotton Mills, Atlanta, Ga. 2	"	500 " "

In all, 200,000 H.P. of Curtis turbines are said to be under contract.

These figures show that the turbine must now be seriously considered a rival of the reciprocating engine. For, while it is true that in America it is used almost entirely for driving electric machinery, yet in England it has already been employed as a blowing machine (the air compressor being a counterpart of the turbine) for driving centrifugal pumps with high lifts, for ventilating purposes, and for marine work. In these various positions its steady growth is the best indication of its performance; and it need not be restricted to these alone, for it is excellently adapted to other services, where its high speed is not a positive disadvantage.

Comparing the steam turbine with the reciprocating engine, it is seen that the former has the following points of advantage:—The turbine has no valve gear, no vibration, is very light, and requires only sufficient foundation to bear its weight. It is the more simple of the two. The torque on the shaft is uniform, and there are no moving parts to be brought to rest and accelerated twice in every revolution. Condensation should be small, and full advantage is taken of low exhaust pressures. With three cylinder reciprocating engines, on the other hand, about the same results are obtained, with a 70%, 80% and 90% vacuum. The turbine is compact. It is impossible to give figures of general application, but it has been calculated that it requires about 80% of the floor space of the vertical engine of the same power and one-half the engine room capacity; about 40% of the floor space required by a horizontal engine and a correspondingly smaller amount of engine room capacity. It is a comparatively simple matter to erect and test at the maker's plant. It is admirably suited for the use of superheated steam. The steam consumption is about the same as that of the reciprocating engine when new, but since there are no rubbing parts, the wearing of which causes leakage, this consumption should be approximately constant throughout the life of the turbine. Its consumption varies less than that of the reciprocating engine over wide ranges of loading. No cylinder lubrication is required by the turbine, in consequence of which the exhaust is pure, a matter of