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“Tests of a Westinghouse Engine.”

By STEPHEN ALLEY.

For many years the Author has given considerable attention to high-speed single-acting engines of the Westinghouse type, and has made several tests with these engines; these all go to prove that great economy can be attained in the consumption of steam if careful attention is paid to details in their design and construction. One of the most difficult sources of waste to overcome, is that due to long ports and clearances at the ends of the stroke. The great speed at which these engines run makes this detail of design the more important, as this waste is multiplied by the number of revolutions.

The advantages of high-speed engines of comparatively short strokes and high numbers of revolutions, were due to the fact that the temperature of the walls of the cylinders, in short-stroke high-speed engines, is subject to much less possibility of variation than in engines of long stroke and comparatively few revolutions. If the cylinders are properly covered with good non-conducting material the loss by radiation is very small indeed.

The accompanying Table gives a series of tests made in February 1888, at Pittsburg, U.S.A., with a Westinghouse Compound Engine

TABLE OF TESTS OF A WESTINGHOUSE ENGINE, 14 inches and 24 inches by 14 inches Compound.

Water Rates per Brake HP. at varying Pressures and Loads.

Condensing.					Non-Condensing.				
Brake HP.	Boiler Pressure.				Brake HP.	Boiler Pressure.			
	120	100	80	60		120	100	80	60
200	19·62	22·53			200	23·94			
160	18·86	20·02			160	25·50	25·20		
130	18·38	19·56	21·32	24·30	130	24·32	26·24	27·70	
100	19·14	19·44	20·34	23·10	100	25·57	27·75	29·80	
70	19·80	20·05	21·43	22·57	70	26·51	28·30	29·80	31·70
40	22·90	23·12	24·75	25·25	40	29·40	30·77	32·48	36·00
					40	40·05	39·30	42·75	45·82

Unjacketed and uncorrected by calorimeter.

The amount of water consumed was arrived at by a surface condenser, so constructed that it condensed all the steam from the engine, and discharged it into a tank in which it was measured and weighed. Mr. Westinghouse rated the consumption of water on the brake HP., or the power developed after deducting the friction of the moving parts of the engine. While working on a condenser the consumption when using 120 lbs. of steam was on a prolonged trial 19.62 lbs. per brake HP., and when exhausting into the atmosphere, 23.9 lbs.

The Table gives the consumption of water and power developed with the engine working at pressures varying from 60 lbs. to 120 lbs. per square inch.
