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RESULTS OF EXPERIMENTS WITH A FIFTY HORSE-POWER SINGLE NON-CONDENSING BALL AND WOOD ENGINE TO DETERMINE THE INFLUENCE OF COMPRESSION ON THE WATER CONSUMPTION.

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IN a paper presented to this Society at the recent Chicago meeting by Mr. F. H. Ball,† a theory was advanced in regard to the probable effect of compression on the economy of the steam engine, and a law was suggested for determining the most economical compression curve. Since that meeting, an opportunity has been afforded, at the Stevens Institute of Technology, for investigating this subject by experiment, and the following pages are a record of the facts thus obtained.

The engine used for this purpose, which will be more fully described further on, was provided with two valves for alternate use, one of them being a special valve arranged for obtaining full compression to initial pressure, as shown in Fig. 1. Owing to the rather large clearance of this engine, it was found impracticable to obtain the compression curve sought, if any later cut-off was used than the one shown, giving only about 20 lbs. M.E.P., and thus limiting the M.E.P. of Fig. 3 to about 30 lbs., which is considerably below the rated capacity of the engine at which it is supposed to give its highest economy. It was also found necessary to reduce the pressure to about 71 lbs. to obtain the desired compression, and the temporary foundation made it

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