the peculiar compression curve $a\ b$. This was at first thought to be the fault of the indicator; but the instrument was new and worked perfectly well on other engines, and gave this line at three distinct tests, the indicator working perfectly on other engines between these tests. The corner $a$ was not so sharp at times, and the trouble was undoubtedly due to the large quantity of water in the cylinder not having the means of escaping as freely on this end as on the other, the quantity of water varying at times. The piston of the engine striking the water on the return stroke caused a sudden rise in pressure, which became so great that the water was forced through the piston rings and exhaust valve, the falling of pressure to $b$ at the end of the stroke indicating such leaks. Owing to the lost motion in the stem of the steam valve of the right-hand diagram, the valve was not fully opened, and the pressure being on this account reduced, we do not get so high an admission line as on the other diagram. The rise at $c$ in the expansion curve of the right-hand diagram was undoubtedly caused by the steam blowing through the piston rings as soon as compression commenced on the other side of the piston.

The diagram in Fig. 3 was taken from a large beam engine in the rolling mill of the Bay State Iron Works at South Boston. The engine drives the iron rolls, and when the iron runs through, has to do a large amount of work; but when the iron drops out, the engine has nothing to do but drive the rolls. The figure shows in reality two diagrams, the pencil being held to the paper during two consecutive revolutions; the diagram above the atmospheric line being taken while the iron was in the rolls, and the iron rolling out on the return stroke. The diagram for the next stroke for this end of the cylinder was the one shown below the atmospheric line. The governor controls the engine by opening the steam valves more or less as occasion requires. When the iron was out of the rolls, very little steam was needed, and the pencil rose only to the point $f$; so that as the piston receded from the end of the cylinder, the pressure dropped by expansion below the atmospheric line. In this case, during the latter part of the stroke the atmospheric or back pressure on one side of the piston is greater than the steam pressure on the other side, and hence tends to stop the engine, which is just what is wanted to prevent the engine from running too fast when the iron is out of the rolls. It will be noticed that the back pressure lines of both diagrams meet at $g$, and coincide on the return stroke. The diagrams were taken just before the engine stopped working, and the steam pressure was low.

\[ H. G. M. \]

**Book Notices.**

**HAMLET: A Tragedy.** By W. Shakespeare.

The plot and execution of this production, though excellent in some things, are nevertheless open to grave objections. The hero, a hypochondriac Dane, is altogether too sluggish to suit modern ideas; he has nothing of the dash and vigor of Oliver Doud Byron in "Across the Continent." The dialogue and rhetorical figures are also quite faulty in several places. For instance, this same Dane asks whether he shall "take arms against a sea of troubles," when everybody knows a man would say, "Dam a sea of troubles." Another evidence of the poor taste of the author is his excessive use of quotations. However, he is doubtless young; and if he should conclude to try his hand again at dramatic writing, his growing wisdom will, we hope, prevent a repetition of these crudities.