

DISCUSSION.

Mr. James Shirra said he had very great pleasure in moving a vote of thanks to the author for his very suggestive paper, especially for the last few slides he had shown. It was certainly very gratifying to know we had ingenuity enough in Sydney to bring out a machine of this sort, quite apart from its mechanical efficiency, whether it gives out 30 h.p. or $2\frac{1}{2}$ h.p. He did not think it is quite claimed that the former power is given with a boiler of the latter power; but at any rate it is an ingenious device, and the mechanical combination is worth studying. It represents the rotary engine he came to hear about—a prime mover where a moving fluid acts by pressure on a revolving piston. The author defined the subject much more widely. He remembered where he first served his time a fitter came back to the shop after working some time with a big marine firm in Glasgow. He was blowing about the piston rods he had fitted, and an old workman took him down with, "You could not fit the piston rod of a grindstone." It was rather sarcastic, but, after all, a grindstone should not be despised: it is a rotary engine, by the author's definition.

The turbine is a rotary engine in a sense, but it cannot be called a piston engine. Before it got so popular, nearly every inventor was working at a rotary engine; he thought there was not an ingenious mechanic but had some notion of inventing one. They nearly all worked on the same basis—a cylindrical casing and eccentric piston with sliders (really, the slider is the piston). This can be made to go round, certainly, but there is usually a great waste of steam. A great many

small fittings and packings are needed to make it steam-tight, and there is a great deal of friction. He noticed a large grease-cock on the engine shown; it would never do for a condensing engine if you wanted to recover the condensed steam for feed—you would want a large oil filter, anyway.

He thought we have all seen pistons in text-books on the steam engine of Branca's engine (the first engine that did useful work); it was a turbine working like De Laval's. There was a boiler in the shape of a bust and head of a negro, of brass, and a tube like a cigarette in the figure's mouth, with flames all round the boiler. Steam came out of the mouthpiece and impinged on the vanes of a wheel, driving it round and working pestles in mortars, by gearing. It looks well in the picture, but he did not think it could have worked well. A great many rotary engines are the same way—they look well on paper; but this one of Mr. Lee's is actually constructed and works, and he would be very pleased to get a record of what it does, and of its steam consumption per horse-power hour.

After all, he considered that this concluding part of the paper is the most valuable—what we are doing locally in rotary engines, and the mechanical ingenuity we have amongst us; and we will all be very pleased to see more of this engine, no doubt.

The vote of thanks was seconded by Mr. W. Reeks and carried by acclamation.