

anchor-men, who have nothing to do, when required, but to jerk a cord, which traverses the field, and by withdrawing a bolt, and disengaging a sliding bar, shifts the driving strap from either of the two pulleys in connection with the drums, to the loose one between them. There are points about this invention which are well deserving of notice. Messrs. Howard employed a 10-horse engine, and set his pretty windlass beside it. A connecting shaft fitted with vulcanised india rubber universal joint drove the latter with great ease and regularity. The implement used was the cultivator, so fitted with shares as to cut all the land. The depth of the work was 6 inches, the measure of about 6 feet, the length of the plot 304 yards, and its breadth 54 yards.

Mr. Fowler came out in quite a new, or to speak more properly a new *old* guise. He started from the stationary engine system, and has been at much pains to improve upon it, as he considers, by the introduction, 1st of engine and anchors, traversing the headlands, and then of engine and single anchor, traversing opposite headlands, the plough simply being driven up and down between them. There were many men however who entertained a great objection to a headland upon a headland, because they urged that the headlands were thereby rendered unfit for cultivation and would grow nothing. There were others who said they could not afford to buy an engine especially adapted to steam cultivation, but would be glad to adventure upon a simple apparatus to be driven by an engine suitable for other work. Mr. Fowler very wisely therefore set about doing what he was asked to do, and having simplified his tackle, introduced the clip drum, and contrived to work his plough with a taut endless rope perfectly suspended, made one other step, and produced a separate windlass or drum, capable of being driven by any 8-horse engine whatever.

Like Howard, he drives the drum with a spindle and universal joint. He works with an 8-horse single cylinder limited to 45 lbs. pressure, and carried 3 furrows 7 inches deep. On looking over the work it struck me as very good—There was a good inch difference between Howard's and Fowler's, but Howard finished in less time than Fowler, the former being 4 hours 36 minutes about his work, and the latter about 6 hours. That inch difference in depth indicates more power than is generally imagined, the ratio of power required increasing in inverse proportion to the depth. Howard's working appeared better broken, Fowler's to be in the largest clods. Howard  $3\frac{1}{2}$  acres, ploughed five to six inches deep in 4 hours 36 minutes, excluding headlands, shows the work to have been done at the rate of 8 acres in 10 hours. Fowler's  $3\frac{1}{2}$  acres, broken up in six hours, 7 inches deep, shows a rate equal to  $6\frac{1}{2}$  acres in 10 hours. But we must remember that while Fowler worked with an 8-horse single cylinder engine, with 45 lbs. of steam pressure, Howard employed one of

12-horse power, double cylinders, with from 4 to 50 lbs. of steam pressure.

It is difficult to come at results, but as near as we can estimate, the Howard did three root per day for every horse power engaged, while Fowler did pretty much the same, only his work was deeper and his power less. The work on both sides, however, was of a very superior kind and such as gave great satisfaction. Both Messrs. Howard and Mr. Fowler secured several customers, and certainly made great way with the public.

But while Howard was doing this cultivating, Fowler had set out his big tackle to plough a 8 acre piece of the same clover ley. He commenced this on Thursday afternoon, but was obliged to give up after he had made two boots in consequence of a breakage. On Friday he continued, and finished it in 8 hours 10 minutes exclusive of the work done on the previous day. Messrs. Howard moved to an adjoining plot like dimensions on Friday, and competed with Fowler for the production of a seed furrow. They worked for the first time during the trial their turn-over plough, which takes three furrows. The work it performed was exceedingly good, having what some people would call much better harrow-edge than Fowler's, and being more compressed. There were those of the ground who preferred Fowler's furrow, however, shattered as it was; it was certainly a foot deeper than Howard's. He employed a 12-horse engine, carrying four furrows at once 7 inches deep. Howard employed a 10-horse double cylinder engine, took three furrows 6 inches deep, and was  $14\frac{1}{2}$  hours engaged upon the piece, allowing for stoppages, with sixty lbs. pressure. Headlands are not included, but have on this showing  $4\frac{1}{2}$  acres ploughed per day of 10 hours at a cost of something like 7s. 6d. per acre, while horse labour upon the same would have cost fully 10s. per acre at the same depth.

On Saturday Fowler was moved to another piece on the same clover ley. The contest was  $6\frac{1}{2}$  acres. He took his small tackle to work with 8-horse single cylinder engine, and performed the greatest achievement yet recounted in the annals of steam culture. Carrying four furrows 7 inches deep, with 50 lbs. of steam, the whole was completed in 7 hours 38 minutes, which equal to 4-5ths of an acre per hour, or about 4-5ths in 10 hours. The expenses calculated the usual way, amount to 4s. per acre, so that this case there seems more disparity between two competitors than in any former instances. These figures are of course only approximate, but still we believe in the main they will be confirmed by the report to be issued by the Judges on Monday with the awards.

A great deal of conversation has occurred upon the field respecting the cause of the difference between the two systems, and there seems no other way to account for it than by suppo-