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The Field.

Steam Cultivation.

THE ENGINE.

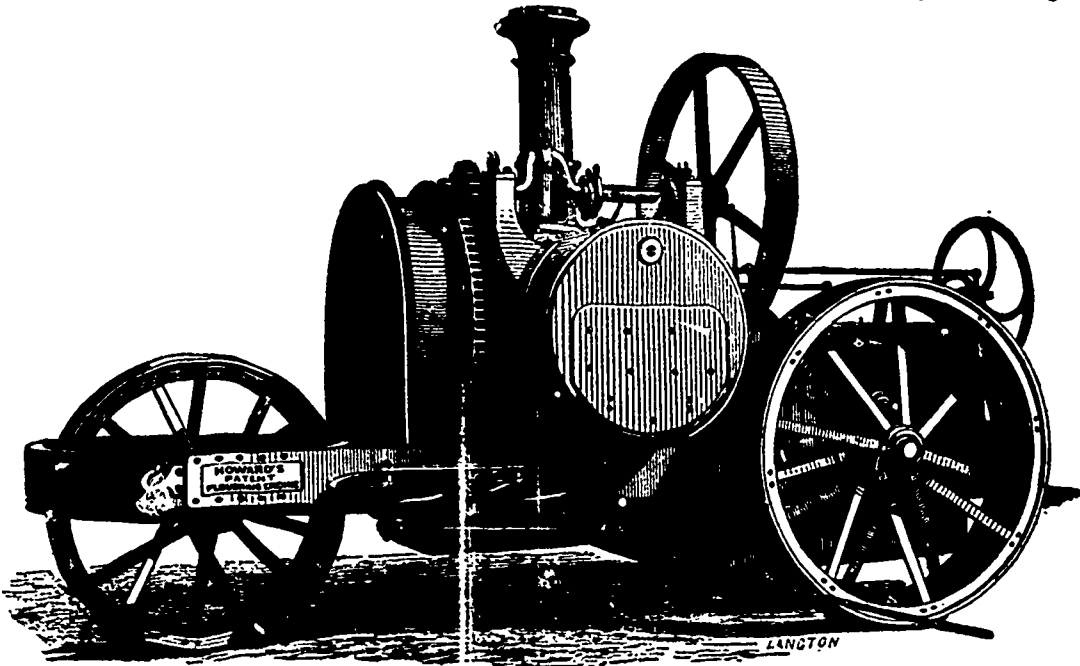
In order that our readers may understand the merits and advantages of the different systems of steam cultivation, it is necessary that we briefly point out some of the leading peculiarities of the various implements that compose what is known as a "set of apparatus." First and foremost the engine, as the source of the Titanic energies employed, claims our attention. Engines have been constructed on a variety of principles. Public opinion in Britain, at the present time, however, seems to be declared in favour of three kinds,—Smith's, Fowler's, and Howard's. That of the first named maker differs chiefly from those of Fowler and Howard, in not being constructed on the locomotive principle. In other words, it has to be dragged by horses to the field where its power is to be employed. It is, therefore, as might be expected, more simple in its construction, and much more moderate in its cost. The necessity of having a pretty large team of horses always at hand when it is to be removed from field to field, and from farm to farm, is somewhat of a disadvantage. Still, as the steam-engine does not entirely supersede the use of horses on a farm, but only necessitates the employment of a lesser number, this defect, in all probability is not so great as, at first sight, might appear. The employment of horses, even when it is found necessary to hire them, is nearly, if not quite as cheap as the expense incurred by the consumption of fuel in producing the ne-

cessary driving power to travel from place to place. When we come to treat of the comparative prime cost, and expense of working the various systems of steam tackle, we may have something further to say in reference to the claims of Smith's engine on the agricultural community.

Fowler's engine, as we have already intimated, is constructed on the locomotive principle, and moves along the headland as the land is ploughed or cultivated. The plough, as in all the systems, is double acting; or, in other words, works back and forward without being turned round at the end, by means of

reached, he takes the seat, and grasps the guiding handle at the other end of the implement, and so on. In Fowler's system, therefore, the engine is at one end of the furrow, and the "anchor" at the other. The latter is a simple, but ingenious, self-acting mechanical contrivance. It is constructed with a drum on which the rope is wound, while by means of large plate-like flanges on its travelling wheels, which penetrate some ten inches into the soil, it moves along the headland, opposite to the engine, and offers the requisite amount of resistance to the power exerted on the plough. Travelling back and forward, then,

between the engine and the anchor, the plough, or cultivator, may be said to be attached to an endless rope, which is wound off and on the two drums,—one at each end of the furrow. This steel wire rope is composed of several "lengths," and may be easily shortened or lengthened, to suit the dimensions of the field. Fowler's locomotive travels on four wheels, and the boiler, as in most agricultural engines, is placed transversely, or lengthwise, on the frame work. This arrangement, though



two sets of ploughs fixed on the same implement. Our second illustration, which represents Howard's plough, will render this explanation easily understood. The two sets of ploughs are constructed so as to balance on the wheels, and the weight of the ploughman, who steers the implement, is sufficient to introduce the plough-shares, and keep them in the soil at the required depth. When the headland is

certainly the natural one, has, as we shall presently see, some important drawbacks. In moving along headlands where, not unfrequently, steep inclines occur, a great variation of water level naturally takes place in the boiler. "In ascending an incline with the fire-box behind, we drown the steam space in its most productive position, and in descending, we expose the crown of the fire-box to be burned."

Every tyro in steam knows how important it is to secure a horizontal position for a tubular boiler. Consequently an engine-man, generally speaking, takes the precaution of "setting her looking a little up"—a phrase which simply signifies that he prefers the smoke box end to be just

