

first prize for foreign machines—consisting of a medal of gold and 1,000 francs—to the machine of the American system of Wood, exhibited and brought to perfection for transportation on roads by Mr. Peltier, Jr., living at Paris, No. 45 Rue Marais-Saint-Martin. The prize of honor—consisting of a large medal of gold—has been also awarded to the same machine, the best of the international meeting. A medal of gold has been demanded of the Minister of Agriculture for Messrs. Claudon & Co., of Clermont (Oise), second importers of the Wood machine.

"The jury also believe it a duty to make known that the machine of Wood has not been patented in France; that the construction of this machine belongs to the public domain, and that our constructors will be able to imitate and perfect it."

REAPING MACHINE TRIAL.

Foreign Machines.—"In the first line is placed the machine of Burgess & Key; the jury have decreed to it the first prize and the prize of honor. It is known that this machine is none other than the American machine invented by McCormick. It has been improved by Messrs. Burgess & Key, who have added to it three helices, ingeniously disposed to gather the cut grain and throw it on the soil in parallel swathes in the track passed over by the horses. This operation is effected perfectly when the machine cuts barley properly ripe and dry. Only a small number of these machines have come into France; but Mr. Laurent, of Paris, who has bought of Messrs. Burgess & Key the right of manufacturing them, has delivered 150 to our agriculturists, of which three were for Algeria.

"The machine exhibited by Mr. Cuthbert is a happy improvement on the American system of Hussey, and although of a moderate price, is one of the best constructed reapers which have appeared at the concourse of Fougilleuse. It has merited to this exhibitor the second prize for foreign machines.

"The machine invented and constructed by Mr. Wood, of the United States, has been imported into Europe by Mr. Cranston, who charged himself with operating it before the jury. It has experienced some modifications since the exhibition of last year. The jury have decreed to Mr. Cranston the third prize for foreign machines."

The jury also make honorable mention of the Manny reaper, imported by Roberts, and of the celebrated Bell machine, which, they say, was the first mechanical reaper that ever actually operated; having been in use in Scotland since 1828. It is pushed before the horses.

French Machines.—"Dr. Mazier remains at the head of French inventors. He does not cease to make improvements in his machines, which are more simple and less cumbersome than the foreign reapers, and are, therefore, better adapted to the general conditions of French agriculture. He has lowered the price of his machines from 1,050 to 800 francs, and has delivered 90 to French agriculturists. Mr. Mazier declared to the jury, with great loyalty, that he owed part of his success to the persevering aid which he has received from his foreman, Mr. Emile Ruffrey. The agriculturists are happy to find occasions to encourage the workman employed in developing their industry. They know well the master is obliged to count on the laborer. It is by benefits on the part of the chief that are maintained those long attachments so frequent now between the masters and the rural agents. The jury have sympathized with the sentiment which actuated Mr. Mazier in his declaration, and have demanded of the minister a bronze medal and 200 francs for Mr. Emile Ruffrey. They are happy to recompense a worthy co-operator in the invention of French mowing machines."

THE STEAM PLOW—FAWKES' AND OTHERS.

We find the following reflections on the steam plow in the *New York World*. We see that this important matter continues to attract a great deal of attention in England:—

A year ago, at some of the large agricultural exhibitions, particularly at the National, held in Chicago, a demonstration was had on this new invention, to test its applicability, as an actual plow, in superseding, by the use of steam and machinery, the ordinary plow now used in cultivation. The trial was not conclusive—not satisfactory even to the committees appointed to try the

machine, although the large premium offered for a successful one of the kind was claimed by the inventor. There were defects in its principle, and still greater defects in its mechanism. These were all to be remedied and overcome. So said the inventor. It has been again tried this Fall at the late Illinois State Fair, at Jacksonville; but with no better success, as we learn, than before. What the alleged impediments to success may be, we do not know; we do not much care, even; for a steam plow, or a machine to drag behind, or drive before it a gang, be it three, five, or ten veritable plows, of the shape and kind now used on our farms, we believe will prove no achievement, either in economy or expense, or excellence of work, over that which it is intended to supersede.

The expression of such opinion may be thought the very essence of "fogyism" in this day of invention and improvement. Yet, we so believe. It will take too many words to give all the reasons for our belief, but a few we will name, even admitting the thing to finally prove successful:—

1. The expense of the machine will exclude it from all small farms, and gardener's uses, in the contracted area of their premises.

2. Its size and cumbersome working will require fields of great size, and a long stretch of "lands" to range upon, without frequent turnings. The soil, too must be of a level surface, or, if undulating at all, in such regular undulations that the "dip" and positions of the several plows composing the "gang" can be uniform.

3. Leaving out several other objections, the fatal one exists, that the plow itself, as now constructed—no matter how good it be—is an imperfect implement, founded on a false principle for the perfect breaking up and movement of the soil, and fitting it to receive the seed for a crop. Such being the fact, as we assume it, the "plow" is not worth the pains of applying it to steam use, and the same skill and invention had better be applied to some other kind of machine.

Why is the plow imperfect? Simply, for the reason that soil, to be perfectly prepared to receive the seed and produce a crop, should be thoroughly pulverized, deeply dug, and rest on a soft bottom underneath, which last, though not penetrated by the instrument which has worked above it, shall still admit the roots of whatever grows above to enter and run down, if they choose to do so, and draw whatever nutriment they can from below. In short, if land is plowed six, eight or ten inches deep, and its upper strata be lifted and turned over to either of those depths, the lever power which raised it is exerted to the same extent to press down still more compactly than before the soil beneath it. That is, the plow, in its work, presses both ways—down as well as up; whereas, the work, for the benefit of cultivation, should be lifting only. The pressure down is all wrong, and, so far, does a positive injury to the sub-soil, let the comminution of that above be ever so perfect. In light soils, we admit that the downward pressure is not always prejudicial to the future crop. But in clay, or heavy soils, it must be so. The sub-soil surface of the furrow below is as polished, from the pressure of the bottom of the plow upon it, as the top of the inverted earth which is lifted from it, and turned over into the adjoining furrow; so, unless the roots of the growing crop be very strong, they must seek their food only near the surface, or within such depths as the plow may have penetrated, and thus be liable to be cut short by drought. For perfect cultivation, these difficulties must be obviated.

Well; and how? By the invention of a rotary digger. That is to say, a cylinder revolving a shaft supported at each end on a frame, on the principle of a common form or garden roller; that cylinder to be filled with spiked or claw-formed teeth; and, by its rapid revolutions, these teeth must dig up the ground, six to twenty inches deep, as may be desirable, leaving the ground light, free, and thoroughly pulverized, to receive the seed of whatever kind. A drill may be attached behind it, for the purpose of sowing or planting the seeds, if necessary. This, in short, is the grand desideratum which we look for in the perfect cultivation of the soil. The earth, by this operation, will be loosened as far down as the machine goes, and the sub-soil, beneath what is loosened, will not be packed still harder than it laid before, as with the plow. It will be

readily seen that, in this proposition, the plow is superseded entirely, as it should be in all free soils, and an instrument of altogether another kind has to take its place.

Now, can this implement be invented and perfected for practical and easy operation? We think so. It need be no more complicated than a reaper or a mowing machine. It may be made to work by either horse or steam power; and, without divulging a secret, we are of opinion that there is now in progress, in western New York, a machine possessing the right principle of a rotary digger, and that it will soon be in operation. That it will be perfect in its first movements we do not say, but we believe that a practical machine of the kind will, in due time, be accomplished.

Can the small farmer use such a machine economically, even if it be invented and perfected? We believe so, if his land be free from stones and roots. Its portability and compactness will render it easy to manage, and the celerity with which he can get in his crops by its aid will enable him to clear his land from impediments to its working, which the dilatory and only partial labor performed by the plow would not. The great advantage of such a machine, however, would be in the vast prairie cultivation of the western States, on broad river bottoms, and in large fields, where the surface lies smooth, free from stones or other impediments and where a timely cultivation and deposit of the seed is indispensable to successful cropping. Sugar and cotton lands, as well as those for corn, wheat and other grains, will be immensely benefitted by this rapid cultivation. The present season, by its continuous Spring weather, so timely for plowing, seed-sowing and germination, as well as for the after-growth of the plants for several weeks in succession, in several of our States, most fortunately rendered a service not often witnessed. The same genial action of the element, in a much briefer time, by the aid of a rotary digger, would enable the cultivator to get his seeds well into the ground, and secure a favorable crop during ordinary seasons, unlike the present through which we have passed.

We could discourse further on this subject—hardly, perhaps, to the edification of our readers; and this must suffice for the present. We trust that, before the autumn agricultural and mechanical exhibitions are ended, we shall learn that something better than a steam plow has been attempted, if not effected; and that an implement, on the principal of the rotary digger, may be placed before our farmer friends, to give them a more thorough cultivation of their soils than ever before.

FACING FORTS WITH IRON PLATES.

The numerous experiments in England and France having proved that a solid wrought-iron plate, $\frac{1}{2}$ inches thick, is absolutely cannon proof, resisting even the elongated bolts of the Armstrong gun, the suggestion naturally occurs that these plates would be the proper facing for the walls of fortifications. As the battering down of the walls of a fort with siege guns, once placed in range, is a mere question of time, which may be counted on with almost as much certainty as the time required to dig a cellar, the question has been seriously propounded by the *London Times*, and other journals of character, whether walled fortifications should not be abandoned altogether, and resort be had to earth-works alone for defense. But if forts can be made impregnable, the question of their utility will be settled. There would seem to be, at least, no doubt about the propriety of facing the embrasures with iron.

NEW BOOKS AND PERIODICALS RECEIVED.

CAMILLE, OR THE CAMELIA LADY. From the French of Alexandre Dumas, the younger.

This work we have not read, and therefore cannot speak of its merits or demerits. We have generally thought our time could be more profitably employed than in the reading of fictitious works. They are ordinarily of but little account, and do more harm than good. If any one wishes to procure the work, he can obtain it from these well-known publishers, Messrs. T. B. Peterson & Bros., Philadelphia, Pa.

We have received from Messrs. Crosby, Nichols, Lee & Co., publishers, Boston, Mass., the following new publications:—

THE KANGAROO HUNTERS, OR ADVENTURES IN THE BUSH. By ANN HOWARD. **JACK IN THE FORECASTLE, OR INCIDENTS IN THE EARLY LIFE OF HAWKEY MARTINEAU.** Author of "Tales of the Ocean," "Salt Water Bubbles," &c. **THE ADVENTURES OF JAMES CAPEN ADAMS, MOUNTAINEER AND GRIZZLY BEAR HUNTER, OF CALIFORNIA.** By Theodore & Hittell. These works are all profusely illustrated and will supply instruction and amusement for many happy fire-side circles. They may be obtained of R. Lockwood & Son, New York.

THE TINMAN'S MANUAL AND BUILDER'S AND MECHANIC'S HANDBOOK. By I. R. Butts; published by I. R. Butts & Co., Boston, Mass. 304 pages. A very useful little book.