Feats of Fire-arms.

We have received a second interesting account of the results of other experiments with breech-loading fire-arms, recently made at West Point, N. Y. Our correspondent's *resume* runs thus:—

"Next came Mr. Soule's gun. It was either a chamber or a breech-loader. A section of the bore of this gun, slightly enlarged, slid vertically down, received its cartridge from behind and beneath, and then sliding up again to its place, cut off the rear of the cartridge. As might have been expected, it did not do good shooting, and *fouled* from escape of gas both before and behind the section.

The next competitor was Dr. Maynard, of Washington, the inventor of "Maynard's primer." His gun was a neat little piece of six pounds weight, but of under caliber. He tilted up the breech of the barrel, put in a metal cartridge, and lowered the breech to its place again. The shooting was only tolerable.

Lieut. Symmes' gun came next. It is a breech-loader. He drops a piece downward around a loose hinge under the breech of the barrel, puts the cartridge into the barrel, and forces it up to its place by again closing up the swinging piece. This swinging piece contains a plunger-hammer and a spiral wire spring and screw behind, to feed up as it wears. This plunger strikes the cap, and the fire passes through a straight canal to the charge; that canal closing against any escape of gas afterwards. The plunger is managed by a projection within the guard. Of course it has no lock. It was first fired on Thursday (3d), but owing to the failure of the clutch which holds up the breech, the firing was renewed after repair, next day. The firing was first-rate, being the best next to Colt.

Thus far, then, in the order of merit, the breech-loaders stand as follows: 1st, Symmes; 2d, Gibbs; 3d, Sharp's Co., &c. It is probable that one or two more guns may yet be tried before the Board, but they are inconsidcrable. The Board have authority to visit Springfield Armory, and other private armories, &c., and next week they will do so." †

In addition to the above we have also been furnished with the official list of names of competitors, written in the order in which their arms were to be submitted, as set down by the War Department.

1. John F. Sherman.
2. J. C. Symmes.
3. H. Gross.
4. George W. Morse.
5. Samuel Colt.
6. John P. Schenkl.
7. L. H. Gibbs.
8. George Patten.
9. R. V. Dewitt.
10. Hoe & Co. for G. Smith.
11. A. V. Hofer.
12. William C. Freeman.
13. Merrill, Lathrobe & Co.
14. C. Sharps & Co.
15. Jacob Stow.
16. A. E. Burnsides.
17. Lemuel Wells.
18. Sharpe's Rifle Co.

Several of the above inventions were patented in this country and in Europe through our Patent Agency, and have also been illustrated in the Scientific American.

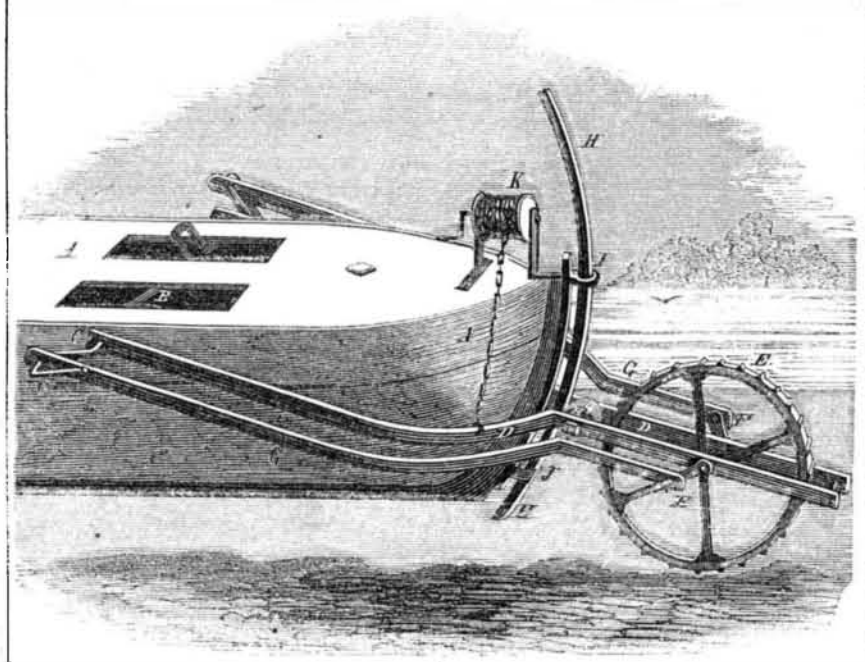
The number and celebrity of the competitors, the superior quality and great ingenuity of the guns, the acknowledged competency of the military judges, and the serious importance of their decision, make the result of the above trial of arms an event of the deepest interest, not only to the army but to the American public generally. The official report will be looked for with interest.

New Method of Propulsion.

To propel a vessel, it is necessary that the propelling apparatus should grasp either the water, the earth or the air. Oars, paddles, paddle-wheels, screws, and all the multitudinous forms of ordinary and extraordinary propellers which act on the water, are similar in one respect—they urge the water backwards, and by the re-action or resistance thereof urge the vessel forward. The primitive method of moving boats by poles, one extremity of which are planted on the bottom, is still employed with great effect in moving rafts, scows, canal boats, and the like heavy masses, and this is almost the only example in common use of the second class of propellers. Propulsion by acting on the air is still more rare, and although, by a stretch both of language and logic, the immense number of sailing vessels may possibly be supposed, in some sense, to be moved by such propulsion, it is evident that the action of sails is very different from that of propellers proper. The sails simply receive the impulse of air in motion, while a propeller proper is active, or produces a dynamic effect on the medium in which it is placed. Thomas Silver, of Philadelphia, proposed, a few years ago, to move boats in shallow water by causing a steam engine to revolve a windmill, or huge screw, of light materials, mounted above the deck, and which should urge the vessel forward by its action on the air alone. This is the only example of this kind of propulsion within our recollection at this moment.

Although we have referred to poling as the only example of the second class of propellers *in common use*, there have been employed, to a limited extent, forms of propellers which, acting on the bottom, have urged vessels forward by the aid of machinery in the boat. The device under consideration is one of that class, and is the invention of J. W. Wetmore, of Erie, Pa. It is secured by patent dated June 16, 1857. The machinery within the boat may be a steam engine of any ordinary character. The power is employed in giving a rotary motion to a shaft resembling the shaft of paddle-wheels, but the ends, instead of wheels, carry simply cranks, from the pins of which the power is carried by connecting rods to corresponding cranks, on the shaft of a wheel below. This latter wheel is mounted in a frame, and allowed to rest on the bottom of the river, and to take hold of the same by teeth, so that as it revolves it drags the vessel

WETMORE'S METHOD OF PROPULSION.



onward, somewhat in a manner analogous to the motion of a locomotive. The frame allows the wheel to rise and fall to accommodate itself to the inequalities of the bottom.

A is the boat, and B the first motion shaft. C represents a crank on the extremity. D D represent radius rods, which extend from the shaft B to the shaft of a heavy wheel, E, at the bottom of the stream, forming a frame for the support of the same; allowing it to rise and sink at pleasure, but compelling it always to maintain a uniform distance from the shaft B. F F represent cranks on the shaft of E, and G G are connecting rods, which extend from the pins of the cranks C C to the pins of the corresponding cranks F F. The two cranks C C, being set at right angles to each other, enables one to work with full effect, while the other is at its dead point, so that the power is conveyed quite uniformly—the two cranks F F being of course necessarily set in the same manner. H is a curved rod, which is mounted between the radius rods D D, and connects to them by a stout fastening, H′. It travels up and down through the guides I and J, which guides are fixed on the bow of the vessel. This device supports the frame latterally, and ensures that the machinery be kept perfectly in line, while it allows the frame to work freely up and down. K is a windlass mounted on the deck, by which the whole may be elevated when not wanted for use. It also serves to prevent the frame and wheel from dropping into a vertical position when the boat chances to move into very deep water.

All propellers which act on a yielding medium, as air or water, lose a portion of their effect by the "slip," as it is termed, or backward motion of the fluid. But propellers of the class to which this belongs, where the wheel has a firm hold of the bottom, lose no power from such cause, and the whole power of the engine, minus that absorbed in friction, is expended in moving the vessel forward. It is most valuable in rapid streams, where by this means a slow motion of the engine ensures a moderate motion of the boat against the current, an effect which could not be produced by paddles working in the current itself, except by giving a very high velocity thereto. A slow motion of such paddles would not be sufficient to overcome the current, and the boat, although moving moderately though the water, would be actually moving backward down the stream.

For further information, the inventor may be addressed at the above place.

American Farmers should be Intelligent.

It is pretty generally understood that the mass of American farmers are "penny wise and pound foolish" in many things, and instead of working their farms on approved principles, they choose to plod along as their fathers did, and are consequently not up to the modern agricultural standard. The *Southern Farmer*, an excellent journal, published at Petersburg, Va., very justly remarks that one of the many means of improvement within the reach of our farmers is a journal that will keep them posted in regard to the "progress of mechanical inventions, particularly as relates to the application of these inventions to agriculture. The number of new implements brought out every year by the mechanical genius of our countrymen will appear almost marvelous to those who are not at the pains to obtain correct information on the subject. And for the farmer to pursue his calling intelligently, so as to grow his crops at the least possible expenditure of money, he should be willing to encourage and accept every improvement calculated to diminish the amount of manual labor. In the course of time, and that not very distant, judging from the past, we have no doubt that our fields will be plowed by the agency of steam. Every year it requires an increased amount of the productions of the earth to supply the necessities and luxuries of man, and these wants must be met by the introduction of new appliances. To every farmer, then, we would recommend the Scientific American as a paper from which he may derive the most valuable information. It is a journal of high character, reliable in its statements, familiar with the progress of the times in all the practical departments of science, and enjoying a wide circulation."

Important Inquiry about Iron.

The Secretary of the Treasury has issued to the iron manufacturers of this country the following important circular, from which a body of information is likely to be derived of incalculable value to the country. It is believed that the United States produce iron in some localities which oxydizes less rapidly than the iron of any other country:—

Treasury Department,
August 31, 1857.

Sir—This department has been furnished with undoubted evidence that there is a great difference between irons from different mines in the United States, in the degree and rapidity with which they become oxydized. Congress, during the last session, appropriated the sum of $2,500 to test the different irons in this country in that particular. If these experiments shall establish the important fact that we have irons entirely or nearly proof against the corrosion of oxygen, it will multiply the uses of such iron to a very considerable extent for purposes to which it is now applied, and give it the preference over other irons for many purposes for which iron is now used.

The very large extent to which this material is superseding the use of wood and stone in public buildings, erecting at a cost of many millions of dollars annually, under this department, renders it of the greatest importance to know what irons resist for the longest period the action of oxygen.

I have, therefore, to request that you will forward to this department, by mail or express, two or three small samples of iron and a sample of ore from each of the mines worked by you; the samples of iron not to exceed a quarter of a pound each, and the ore not to exceed a half pound in weight. I would also request information on the following points, viz.: The extent of the ore deposit, facilities of mining ore, its distance from furnace, and distance of furnace from market, and mode of transportation thence; the fuel used; relative cost of charcoal, coke, bituminous and anthracite iron; kind of flux and its cost, etc.; the capacity of the establishment, and the amount of iron produced during the last year, and what it would be capable of producing under a ready sale and remunerating prices; any peculiarity in the iron produced; whether there are rolling-mills in the vicinity, and what descriptions of iron they roll; to what purposes most of the products of your furnaces are applied, and what description of iron the establishment mostly produces; when did your works first go into operation; what has been the annual production, and what the ruling prices each year since your works were started. You will please give the State and county in which your iron mine is situated, and the distance your fuel is transported. As it is the intention of the department to furnish you with the result of the experiments, you will please name the post-office through which to address you. If you know of any one in the iron business who does not receive a copy of this letter, and forward his address, one will be sent to him. You will realize the value of the information when you reflect upon the growing importance of the iron interest of the country—a fact attributable, in no small degree, to the introduction of iron as a substitute for other materials in our public buildings.

The policy of affording encouragement to this great interest, by promoting its production and increasing its consumption, has been commenced by the government, and I am desirous of obtaining all the information which can be had on the subject, with a view to its further development.

It is believed that there will be not only a willingness, but an anxiety, on the part of every one to advance the object which the department has in view.

I am desirous of obtaining the information asked for at the earliest practical moment.

Very respectfully,
Your obedient servant,
Howell Cobb,
Secretary of the Treasury.