

*Mr. Williams*—I am told that the rhubarb wine is much desired by our surgeons for the army. It contains a large proportion of acetic acid, and therefore I should suppose would not be suitable for diluting wines. But it is found to have a very powerful effect in destroying the taste for alcoholic drinks. I have long known that nothing else is so effective in destroying the taste for both spirits and tobacco as a strong acid.

*Mr. Robinson*—It has been stated here as the result of experiment that 2,500 gallons of rhubarb wine can be produced on an acre.

SENDING SCIONS.

Mr. Carpenter having offered for gratuitous distribution some scions of the American Golden Pippin, Dr. Parker, of Ithaca, remarked, that he had had a great deal of experience in sending scions, having received them from all parts of this country and Europe, packed in a great variety of ways, and that the only safe and proper way to send them, is to touch the ends with a thick solution of gum arabic and wrap them in dry paper. They should, when received, be packed in dry sand in a box, and buried about two feet deep on the north side of a building. The box should have an inclined top to shed the rain.

IMPREGNABLE ARMOR.

The following is an extract from a paper transmitted to the Secretary of the Navy, on January 18, 1863, by Mr. John Ericsson:—

"The English have failed in producing an armor capable of resisting projectiles of great speed and weight. Solid blocks of wrought-iron of the best quality, one foot in thickness, have been split under the impact of the projectile. The enormous dynamic force lodged in the shot, compared with the inadequate cohesive force of the metal at the place struck, together with the incompressible nature of the material, furnishes a ready explanation of the cause of the fractures which have resulted from heavy charges of powder at short ranges with the solid English targets.

"Having attentively studied the subject, and demonstrated satisfactorily the cause of the unexpected destruction of the enormous solid targets, the expedient at once suggested itself to the writer, of applying a laminated protection in order to exhaust the *vis viva* of the shot, by degrees, before reaching the solid blocks intended as the real armor. The peculiar feature of the laminated protection is evidently that each successive lamina, or plate, may be split without affecting the next; forming, as it does, a separate body placed at a measurable distance from the neighboring plate. Not so with a solid projectile; a split or crack of sufficient width must inevitably—owing to the incompressible nature of the material—run through the entire substance. Hence the destruction of the enormous blocks of wrought-iron tested in England.

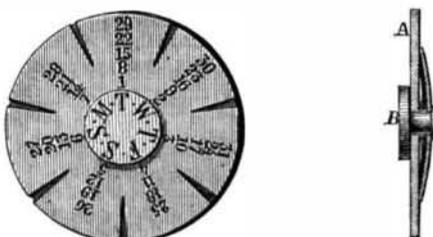
"The condition of my 15-inch target, recently tested by Captain Dahlgren, at the Washington Navy Yard, proves incontestably that, by interposing a laminated protection, armor may be made absolutely impregnable. Not only are the 5-inch wrought slab and the backing of 4-inch plating—together 9 inches—completely uninjured; but there remain also in the centre of the indentation made by the shot, more than 2 inches thickness of the outer plating. The absolute protection thus afforded by the 6-inch thick plate lining to the 5-inch wrought slabs of the 15-inch target, placed close to the muzzle (34 yards) of an XI-inch Dahlgren gun, fired with 30 pounds of powder, proves conclusively that the side armor of the *Puritan* and *Dictator* will be impregnable. This side armor, it will be remembered, is composed of 6-inch plating, under which is inserted the longitudinal wrought-iron slabs (stringers), backed by the 4-foot thickness of oak, firmly attached to the side of the ship without the employment of the objectionable through-bolts employed in the *Warrior* and other European iron-clads."

Two mines are now worked in Newfoundland—one of lead and one of copper—each employing over one hundred persons.

LARGE quantities of cotton are stored at Huntsville, Ala., now in possession of our forces. Every house or yard has one or more bales.

CROSBY'S POCKET CALENDAR.

This engraving represents a convenient little article for which every one has use at some time or other. The day of the month is always known by a person carrying one of these little calendars in his pocket. This is accomplished in the following manner:—The metallic disk, A, is fitted with a dial, B; the disk has seven rows of figures radiating from the center, corresponding with the seven days of the week, whose initials are marked on the central dial. It will be seen that by turning the central dial so that the first day of the week which commenced the month comes opposite the figure it began on, the reader can readily calculate any time after that from the other



figures. For instance, the present month, March, began on Monday, the figure 1 on the calendar should therefore be opposite the letter, M; each succeeding day or week is readily counted when the first one is known. To prevent the central dial from shifting it is held down by a spring shown in the section, this keeps it securely in position. This is a very convenient article, and is sold at the low price of 25 cents. Specimens will be sent to any address on receipt of price. The entire patent or rights for States for sale. Patented Feb. 18, 1864, through the Scientific American Patent Agency; for further information address the inventor, D. E. Crosby, 32 Fulton street, Brooklyn, N. Y.

Important Circular from the Navy Department.

The Navy Department has issued the following circular to each of its inspectors of machinery:—

"SIR:—The great damage which has been sustained by the Navy Department from the poor materials and bad workmanship used by some contractors in the manufacture of its steam machinery, requires that every possible precaution and vigilance on the part of its inspectors should be exercised to prevent their occurrence in the future.

"The loss to the Government from badly-built machinery is not to be measured by the money cost thus saved to the contractor. It is immeasurably greater; the giving way of a part in which but a few dollars could be retrenched by the substitution of inferior materials, or the employment of unskillful labor, may involve the loss of the use of a steamer at a time when her services may be worth more than her whole commercial value; in fact, at a time when an event of national importance, not to be measured by money at all, may depend on her efficiency. Your patriotism, as well as your honor, honesty, and professional reputation, is involved in the performance of your duty with inflexible fidelity to the Government, and you are expected to give your whole time and your whole mind to the important work which the department has committed to your supervision. For any omission or defects arising from neglect of this you will be considered responsible; and any presents made by contractors to any person in the employment of the department will be viewed by it with strong disapprobation, and the reception of such present will be sufficient cause for removal.

"Your attention is particularly called to the following points:—

"1st. That the boiler plate is of the first quality, highly malleable, ductile and tough capable of being tightly compressed by the rivets, and of being calked in a durable manner. It is impossible to make a tight boiler of inferior iron. The rivets should be of the best quality of iron that it is possible to make, and thoroughly worked. The double-riveted seams are to be made true and fair, and calked on both sides. There are but few places where this cannot be done, whereas it is believed there are many cases where it is not done. The rivets are to be staggered, and not placed too far apart. It should be remembered that

the principal object of double-riveting in rectangular boilers is tightness, not strength. Neither acids nor 'quakers' to be allowed in making the seams.

"2d. The tube plates are to be drilled, not punched, and to the precise diameter of the tube, so that the latter fits the hole absolutely tight before being expanded. Immense loss has been inflicted on the department by some contractors making the tube holes from one thirty-second to two thirty-seconds of an inch too large in order to secure a cheap and easy fit of the tube; and the latter, being of too poor material to endure the expansion required to fill a hole so much too large, splits at the ends and leaks ever afterwards. This leakage, even at only a few joints, with iron vertical water tubes, soon destroys all the tubes in the box; the lye formed by the water with the coal ashes and soot on the lower tube plate spreading over the entire bottom of the box and rapidly corroding out the lower part of every tube in it. You will be vigilant to see that the diameters of the tube holes are accurate. Nothing is so destructive to a boiler as leaks, and no pains or cost should be spared to prevent them. The socket bolts of the water bottoms should all have heads on the inside, and on the outside large washers and nuts.

"3d. As the boilers are intended for carrying high steam, and are braced for the same, you will be particular to secure in the crow-feet, half-moons, joints, angle and T-iron, pins, &c., and in the riveting by which the braces are attached to the boiler shell, the same strength which the specifications require in the braces. It is obviously useless to make a boiler for high steam and attach its heavy bracing to the shell by a system of riveting with strength inferior to that of the braces.

"4th. The quality of the iron for the cylinder and its valve should receive your most anxious scrutiny. It should be of the best scrap, carefully selected, tough, with a fine compact grain, and so hard that the tool can barely work it. The cylinder and its valve must be cast at different times and of different metals. With steam of high pressure and superheated, the greatest care is required in securing the proper quality of metal and workmanship for horizontal cylinders with slide valves. The boring of the cylinder and the facing of the valve and its seat should be perfect.

"5th. The main and crank-pin journals must be turned perfectly true from end to end, and highly polished. They must also be mathematically in line and without a flaw.

"6th. The brasses for these journals must be of the composition required in the specifications, and you will personally be present and see the metals weighed out in the proper proportions, mixed and poured. They are to be first bored and channeled, and then scraped to their journals. They are to have sufficient end play to allow for expansion when heated. They are to be closely examined, and, if not of uniform texture, rejected. You will personally see to the securing of the thrust pillow-block, and to the quality and workmanship of its brasses. You will personally superintend the 'lining' of the engine. You will give particular attention to the tightness of the joints, especially of the vacuum joints, and to the packing of the engine. The lignum-vitæ in the pump packings and in the stern bushings is to be thoroughly soaked before being bored to the required diameter."

"GIDEON WELLES, Secretary of the Navy."

THE Michigan petroleum, lately discovered, has been analyzed, and found to be of a very superior quality. It has less odor than the crude Pennsylvania oils, and will yield 20 per cent more of the refined article than the former. Its specific gravity is 40°. That of the Pennsylvania oil ranges from 45° to 47°. Albion petroleum is easily deodorized, and, when refined makes a clear white oil that burns freely, and is entirely non-explosive. It yields but little naphtha, and stands a fire test of 140°.

TO MAKE LARD CANDLES.—To every eight pounds of lard add one ounce of nitric acid, and the manner of making it as follows:—Having carefully weighed your lard, place it over a slow fire, or at least merely melt it; then add the acid, and mold the same as tallow, and you have a clear beautiful candle. A small proportion of beeswax makes them harder.