(For the Scientific American.)

Static Pressure and the Ladies.

The remarks closing an article in the Scientific American of Feb. 14, under the heading "Gwynne's Pump," renewed a sense of mystification or confusion which has, for the last week or two, oppressed me whenever I hear "Centrifugal Force" mentioned. There seems to be a sort of rotary motion momentum in my brain, evolving "a power" of questions, for which I can find no answer but "vacuum." I was first sensible of this impression during a visit to the "Static Pressure Office," in your city; perhaps it originated there, if so, doubtless a remedy may be had from the same source or any other where some clearer head than mine would solve for me these puzzling doubts, which may, after all, be only misapprehension. Am I right in supposing that, in the "Static Pressure Engine," all the power to be used comes through the central shaft connected with the rotary disc? And, if so, is the material fluid within the disc expected to act as momentum through rotary motion, while it is passing off, producing centrifugal force? And if not, from what source is that available power to come? What is to be the capacity or diameter of the screw or propellar to transmit 40 horse-power (independent of that portion of power necessary to keep the machine in motion) according to known hydro-static laws? What material is to be used to confine 30 to 40 atmospheres of pressure on a disc sufficiently large to accommodate the actual necessity under those laws?

Did I rightly understand our "New Power" friends to advance the proposition that "centrifugal force is a power evolved from rotary motion, and, like gravity, costs nothing?"

Seriously, then, does gravity 'cost nothing?' I wish I had known that before, I would have informed my young brother of the fact whilst I assisted him, one sunny afternoon, years ago, in rolling a stone (almost too great for our united strength) up a high hill, just to make a grand exhibition of the power of gravity by tumbling it from the summit into the lake below. Probably the knowledge would not have added to our enjoyment of the anticipated leaping and crashing in its descent,—but when the final plunge was made, and the answering shout and echoes died on the ear,—when the foaming spray subsided, and the waters closed in widening ripples over our model Gravity Engine,—when we sat down on the verge of the bluff, first conscious of heat and fatigue, moralizing on the propriety of laboring hours for the excitement of moments, wishing our fingers had been bruised, and dresses soiled, in a better cause,—just then, I think, it would have been a consolation to know that "gravity costs nothing." Besides we should more readily have believed it—having then only begun to learn that in this remunerative world, we must pay, in some way, not only for corn and potatoes, but for all the enjoyment we receive, and all the power we are able to exert, moral or material:—"something for everything, nothing for nothing"—had not yet become an axiom with us.

As ladies seldom interest themselves in subjects of purely mechanical philosophy, I had not dared to ask a solution of my present doubts, but for a boast made by the gentlemen who claim to have discovered a new power through static pressure, that "women and children understand and appreciate the new principle more readily than experienced mechanics," "and are more willing to aid in its practical development." Born and matured in the western wild, where opportunities for investigating practical mechanism are comparatively rare, the gentlemen will, I know, pardon my dullness of comprehension in this matter—although it does so little credit to their compliment in awarding to me "the proper phrenological developments for thoroughly understanding the new principle" or theory.

I understand they propose to give a forty horse-power, for one hundred dollars, "to ladies only." Somehow I cannot help thinking I should rather invest that amount in one handsome saddle-horse of power, because, in that case, I should not only pay for the acquired power, but should actually acquire the power paid for. HAGAR.

Highlands, N. Y., Feb., 1852.

[For the Scientific American.]

American Rifle, and Bullets.

In your paper of the 14th Feb., you have favored your readers with drawings and descriptions of the bullets used by the French and Prussians, in their new army rifles, and also the American old and new picket bullets. In noticing the latter, you have referred to and recommended my work upon the "American Rifle," in a manner very kind and complimentary, for which I feel obliged and honored. In some particulars, however, you have made some slight mistakes, especially in describing the performance of the American Rifle, and in my recommending the telescopic sight for army use. You say, "In Mr. Chapman's work there are samples of American target-shooting at 220 yards, the target being 20 inches in diameter. In one sample 10 shots can be covered with a man's hat around the bull's eye." The 20 inches on the target is not intended to denote its diameter, but the length of the string of 10 shots; and those shots in the target which you say can be covered by a man's hat, are all actually contained in a circle 3 inches diameter. These sample targets in my work are on a scale of one-fourth the size of the originals. You also make me appear to recommend that, in the army, select men be furnished with the telescopic rifle. You are here under a mistake, I recommended the use of the flat-ended picket in the American army rifle, and this on the ground of its superior accuracy at long ranges.

The occasion is opportune to give some opinions, unasked, but nevertheless not uncalled for, upon the proper system of arming, infantry. A select portion of each regiment ought to be armed with rifles using the flat-ended picket bullet, ranging accurately up to half a mile. The remainder of the regiment ought to be armed with breech-loading rifles, that is, if such breech-loading rifles can be made perfectly reliable for active service, and this fact can only be determined by experiment at home and service abroad. All rifles which *slug* their bullets, that is, all rifles in which the bullet is forced against the surface of the bore laterally, either by the over-size, or the spreading of the butt, or the upsetting of the bullet, are certain to perform irregularly; that is, more power will be applied to the bullet at one discharge than another, arising from the impossibility of forcing out or upsetting the bullets twice alike, and consequently their resistance to the powder will be inconstant. This is the reason why your recommendation of a small chamber in the butt of the flat-ended picket bullet would destroy its accuracy in fine shooting. I have no means of practically judging of the accuracy and efficiency of Sharpe's rifle, but if reports be true, it is much ahead of the ordinary breech-loading rifles. I am free to confess that I have not much faith in a breech-loading rifle, and if Mr. Sharpe has succeeded in making one that will stand rapid firing without breaking or sticking fast, he has achieved that for which he ought to receive a fortune.

It must be remembered, however, that these rifles must be so proportioned, that when the command, "fix bayonets," is given, the men shall stand, in a charge, equal to the musket-armed infantry of Europe. Clubbing rifles may do well, occasionally, against Mexicans, Greasers and Indians, but it would signally fail in a field fight against Russian or German infantry. The reason why the inaccurate musket has so long maintained its ground, as the principal arm of infantry, is no doubt attributable to the fact that it is better suited for bayonet practice than the rifle, and also exactly suitable to the blundering capacity of the common soldier. Musketry, at 200 yards, is like "playing at cards for nothing;" accurate rifles in the hands of Americans, at that distance, would swath men like grass before McCormick's Reaper. The weapons of war ought always to be made to conform to the intelligence and ability of the soldiers who are going to wield them, and the American people are eminently qualified to be armed in progressive advance of the nations of the earth. In arming infantry, it should be considered as a fixed fact, that great battles are never decided at long ranges, but that the close and murderous aim of the infantry, the rapid and overwhelming discharges of the horse-artillery, with the unflinching and appalling charge of the bayonet, decide the hopes of men, the fates of empires, and the fears of kings.

It is evidently the duty of our government to foster and encourage all good fire-arm inventions, from a colombiad down to a primer. Colt's revolvers, Sharpe's breech-loading rifles, picket bullets, and Maynard's primers, would be unintelligible to a people less capable than the "Universal Yankees."

JOHN R. CHAPMAN.

Oneida Lake, Madison Co., N. Y.

[The following are engravings of two strings of 10 shots each, made by John R. Chapman. Figure 1 is a string made by him on March 10th, 1848, with one of Edwin Wesson's rifles, with globe sights. The target was placed at a distance of 220 yards; the string is 15 1-8 inches; the shots were made at rest.

FIG. 1.

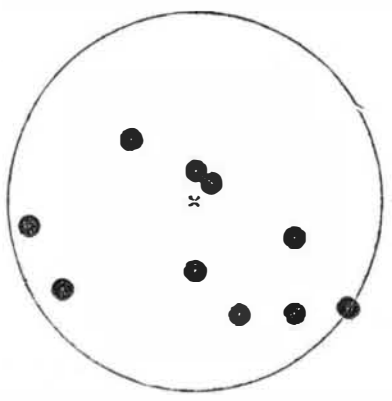
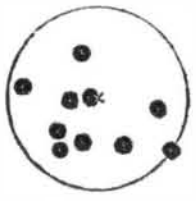


Fig. 2 is a string of 10 shots, at rest, the target placed at 110 yards' distance—the string is equal to 7 3-4 inches: they were made on the 2nd of November, 1847, with one of Edwin Wesson's rifles, with telescopic sights.

The engravings are on a reduced scale, but the original targets are in our possession, and we will give their true circumference. From the centre of the target, fig. 1, to the circumferential line—the centre of the extreme shot—the distance is 2 6-10 inches; the same distance, from centre to circumference—radial line of fig. 2—the length is 1 2-10 inches: in the latter case, 10 shots are placed within the radii of 1 2-10 inches. As the Scientific American has a considerable circulation in Europe, the above will show to the military gentlemen of England, France, &c., what we do here with American shooting-irons.

FIG. 2.



We see it stated in the Hartford (Conn.) Times that Mr. C. Sharpe is manufacturing his breech-loading rifle in that place, and that it is very effective at 2,000 yards. Like Mr. Chapman, we do not see how it is more correct or can carry further than any other,—it is a good breech-loading rifle. We have one of Nippes' make, but unless Mr. Sharpe shall throw some more light on the subject, we must look upon the statements made about it with caution. We have seen a statement in a Philadelphia paper, that Mr. Lewis Michael, of Hanover, Pa., in seven consecutive shots, at 100 yards, put 5 shots in the centre of the target, and the other two were only 5-8ths of an inch from it.

The Flax Movement in Ireland.

The Belfast papers of a late date report, at great length, the proceedings at the annual meeting of the Royal Society for the promotion and improvement of the growth of flax in Ireland. The present demand for flax in Ireland is about double what it was when the Society was established. In 1841, the Irish spinning trade numbered 250,000 spindles. Now it is close upon 500,000. In place of 16,000 tons of flax, which was the extent of consumption in 1841, 32,000 tons are now required by the Irish trade. The entire consumption of the United Kingdom would, at present, require 500,000 acres of flax annually, and it is progressively increasing at a pretty rapid rate.

For the Scientific American.

Steam Navies.

Your notice in No. 24, Scientific American, recalls to my remembrance, that somebody has made a most important error in comparing the tonnage of the British and United States Mercantile Steam Marine: in the United States the tonnage is still calculated on the actual length, breadth, and depth of the vessel, without regard to form or to the room occupied by the boilers, engines and fuel. On the contrary, the length occupied by these is deducted in the English length for tonnage; all the rest of the vessel is measured on the principle of conic sections, so that a *full* built vessel, of a given length, breadth, and depth, will measure much more than a *sharp* vessel, whose initial dimensions are the same; and these calculations, in their results, will not vary three per cent. from the true available tonnage, in either a sailing ship or steamer.

The American rule is,—multiply the length by the breadth, and this product by the depth, then divide this last product by 95—the quotient is deemed the true tonnage. By this arbitrary and Procrustean rule, a sharp clipper ship will have to pay dues on many more tons than she can carry; while the full built *crawler* will pay dues on many *less* tons than she can carry. By the operation of the English mode, in measuring steamships, at least one-third of the capacity is deducted, as being appropriated to the engines, boilers, and fuel. No such deduction is made in the American measure, consequently, in an equal number of vessels of each country, and all of the same linear dimensions, the American vessels would appear to have fifty per cent. more tonnage, when the fact is not so. If this one-half is added to the English actual tonnage, or the one-third deducted from the American arbitrary tonnage, the balance will be less imposing, but more true, by showing the two countries nearly on a par, as to the tonnage of the mercantile steam marine.

But there is the important difference that England has at least ten ocean steamers to every two river steamers; while the United States appear to have about ten river steamers, to every three ocean steamers. And, as you say, England can blockade all the ports of Europe, and still have enough to defend her own coast: including her military marine, of both classes, and the available mercantile steam marine, she can, in three months, gird the coasts of Europe with 600 sail of vessels, and yet have from 250 to 300 at home; and, taught by past experience, the *defensive* warfare of Britain will, in future, be *aggressive*. *Nous verrons.* W. S.

Steam Yacht for the Pacha of Egypt.

One of the most gorgeous and splendid specimens of naval architecture which has ever been produced—is now being constructed for the use of the Pacha of Egypt by Messrs. Tod & M'Gregor, of Glasgow, Scotland. Her engines, of the most beautiful make and finish are of 300 horse-power, the frame work is of iron, and being intended only for pleasure trips on the Nile, she will not draw more than 4 feet 2 inches of water; she is to be called "The Light of Heaven." The fittings of the interior are of the most gorgeous character, consisting of papier-mache ornaments and rich brocaded silks, which will alone cost $125,000. The ceiling of the saloon will be divided into a number of panels of rich white silk, having upon the centre the device of the crescent and the star, encircled with most elaborate and richly colored wreaths of eastern flowers of silk. The borders of the panels are to be richly ornamented with Raffaelesque decorations. Other portions of the ceiling, between the beams, are to be covered with silk of a white ground, and groups of flowers formed with gold thread. The panels on the side are formed of papier-mache. The ottomans in the saloon are covered with cloth of gold, formed with a warp of gold and weft of glass thread. The awning of the deck is to be formed of richly brocaded silk, the fringe being of gold and costing $100 per yard. The cost of the silk for the awning will not be less than $10,000. The officers' rooms are also fitted up with brocades of the richest character and color, differing only from the other portions of the vessel in not having gold embroidery.