The Effect of Shot on the "New Ironsides."

Through the attention of an officer on board the *New Ironsides* we are enabled to present our readers with a diagram of the effects of the rebel shots which were fired at that vessel during the recent attack on Fort Sumter. The injuries were very slight; the vessel was struck in all about ninety times, we are told, but the most serious damage she received is here depicted. Previous to describing the diagram we will let our correspondent tell his story in his own way:—

MESSRS. EDITORS:—We have had a fight with Forts Sumter and Moultrie, but as there was a reporter for one of the New York papers on board, I will not go into a description of it, except to speak of the effect of the shot on our plating. In reference to the *Keokuk* I will state, primarily, that I was informed by one of her crew that she received eighty-nine shots through her plating, fifteen of which were below the water line, also that a 32-pounder pierced her bow. The *New Ironsides* received very little injury; the worst being the loss of one of the iron port-lids; it was knocked off by a rifle shot supposed to have been fired from Fort Moultrie. I examined the iron, and it appears to be crystallized, as the break was short off, although it was in the weakest part. Our plating stood the test very well, as the shot that struck seem to have broken into pieces. There was a rifle shot taken out of our stem, where it had buried itself in the wood. Enclosed please find a rough sketch of some of the marks which the *New Ironsides* received.

Fig. 1 is a representation of a spent rifle shot found in the wooden stem of the ship after the engagement. The body of the shot is 6 inches in diameter and 10 inches in length, and is, as the reader will discover, a most formidable instrument for offense. The bands at the base and the forward end produce—the one—the necessary rotation to the missiles by expanding into the grooves, the other centers the shot in the bore of the gun so that its flight will be true after leaving it. The piercing end of the missile is rounded, and it is in all respects the very counterpart of those projectiles which inventors at the North have experimented with and proved to be the most effectual against armor; thus showing conclusively that the rebels have full and early intelligence of every mechanical novelty of merit. Fig. 2 is a section of the inclined armor of the *New Ironsides*, showing the indentation of the shot at A, and also the wooden backing of the plates at C and D. The shot broke in pieces and flew off without penetrating or disturbing the backing, although it came very near it. Fig. 3 is a view of the broadside of the ship, and shows several scars. The port-lid, A, was broken off and lost overboard, by being struck at B, near the point of support, by a rifle shot. The plate, E, was struck by a round shot at D, which cracked the armor in the line, C; the shot made an indentation one inch deep by actual measurement. The fractured port-lid was also struck, before it was finally detached, by a round shot at F. The shot carried away the edge of the lid, and, striking the main armor, glanced off and made the long "blaze" at G. The plate, H, was struck at J by a rifled shot, which glanced off after breaking the plate on the line, K, also scarring the timber backing; the armor ends at that point. One rifle shot also struck on one of the bolts that hold the plating to the ship, and made an impression two and a half inches in depth. Some of the rifled shell of the enemy entered the *New Ironsides'* bow, but were prevented from doing any damage by the precaution of the commander in placing sand bags at that point. Without this protection the shells would undoubtedly have done considerable damage. The ship ought to be as completely iron-clad as the *Roanoke* is. She would then be more effective against an enemy than in her present condition.

The *New Ironsides* is not completely iron-clad, but only on those points covering her broadsides; the bow and stern are left undefended, as in some of the English vessels. She took an active part in the fight at first, but afterward fell back out of range, being unmanageable. The channel is tortuous at that point, we are given to understand, and the ship could not obtain sufficient momentum to get steerage way on her. We are unable to say at what range the rebel shot took effect on the *New Ironsides*, nor do we know what charges of powder propelled them. That they struck at a low velocity, however, must be inferred from the fact of the rifle shot sticking in the wood work. The ship was also unable to deliver her broadsides with good effect, and fell back as before stated. When all things are more propitious than on the last occasion, we do not doubt that the ship and the brave fellows who command and man her will give a good account of themselves.

Fig. 1.

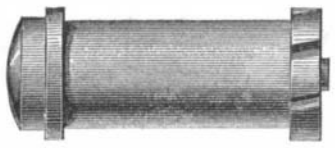


Fig. 2.

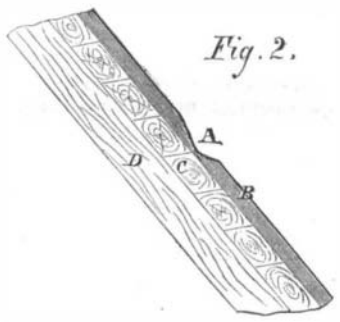
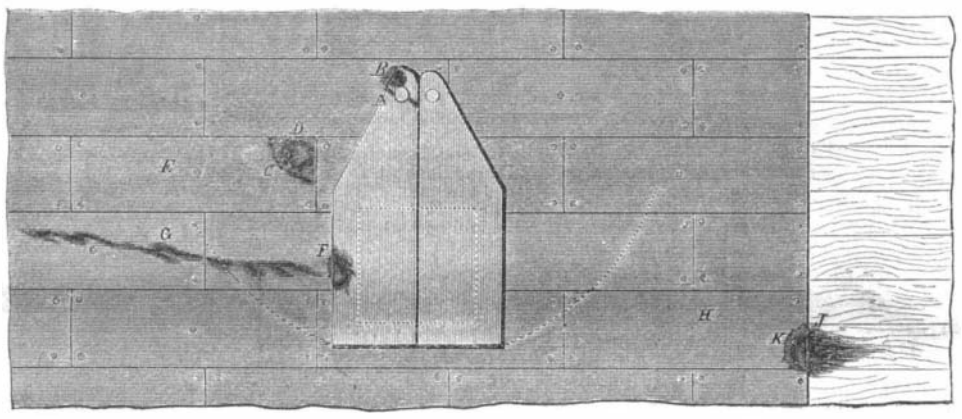


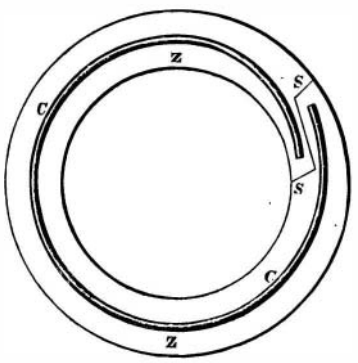
Fig. 3.



THE SHOT-MARKS ON THE "NEW IRONSIDES."

GALVANIC SLUG AND SNAIL SHOCKER.

"Having a few pet plants which slugs and snails are particularly fond of as food, I have devised the following simple and efficacious mode of protecting them against their and my enemies; and as this plan may be useful to some of your readers, I herewith send you a description of my galvanic circle. Procure a



flat ring of zinc, large enough to encircle the plant; make a slit in the ring after the manner of a key-ring, so that it can be put round the stem of the plant and then rest upon the ground. Now twist a copper wire into a ring very nearly of the same circumference as the flat zinc ring, and putting it round the plant, let it rest upon the zinc, as in the illustration. No slug or snail will cross that magic circle; they can drag their slimy way upon the zinc well enough, but let them but touch the copper at the same time and they will receive a galvanic shock sufficient to induce them at once to recoil from the barrier. It will, of course, become evident that mural fruit can in a similar way be protected by fastening along the wall two narrow ribbons of the metals mentioned. Other applications of this principle will doubtless be made in many gardens as the occasion arises. In the illustration Z Z is the zinc, S the slit in it, and C C the copper wire."—*Septimus Piesse, Chiswick, London.*

Science of Smelling.

It is evident to thinking persons that the influence of odors upon the olfactory nerve are not of chance or accident—in truth, all the physical faculties of man are alike governed by immutable laws in harmony and in analogy with each other. Experiments are being prosecuted with earnestness, and gratifying results are obtained, establishing the fact of the perfect analogy between the laws of vision, smelling and hearing.

As there are primitive sounds and primitive colors so there are primitive odors. The primitive colors are now well known to be violet, indigo, blue, green, yellow, orange and red—seven in number, as established by Newton. The primitive sounds are indicated in music by the signs E, G, B, D, F, A, C—also seven in number. The primitive odors, as evolved from plants, appear also to be seven; these are camphor, lemon, jessamine, rose, almond, clove and santal. All perfumes from flowers are either analogies of these primitive odors or are harmonious combinations. As there are various shades of one color and various pitches of one note, so there are definite octaves of the primitive odors. Actual experiment establishes that there are several octaves of lemon, also of the almond and camphor. To the present I have discovered but two octaves of the rose and one only of the jessamine. Experiments are in actual course with clove and with santal, of which there does exist known analogies, or octaves, or shades, but their number is not yet defined, but certainly exceeds six.

The relative volatility of odors has an important bearing as to their influence upon the olfactory nerve, as also does the action of oxygen upon them. Rapid volatility may be likened to the high vibrations of a string. The action of the atmosphere destroys all color-producing colorless compounds; so with the strongest odors, they eventually succumb and become inert.

Though a great deal has been done to the several parts wherewith eventually I hope to construct a true theory of odor, yet there is much more to do. Light, heat, electricity—immaterial agents—are best explained by assuming their materiality; sound can only exist in connection with a material body. Assuming odor to be an immaterial agent, then we can explain many of its phenomena without difficulty.

A correspondent of the SCIENTIFIC AMERICAN, in a letter published on page 166, current volume of that journal, speaks of me as "*M.* Piesse." I claim my birthright; I am an Englishman, and have nothing in common with Frenchmen, but that my ancestors came to this true land of liberty at the revocation of the edict of Nantes.—*Septimus Piesse.*

MR. FAIRBAIRN states that of two tubes of the same diameter and quality of metal, but one twice the length of the other, the shortest will resist double the pressure of the other. The collapsing pressure, other things being the same, varies inversely as their lengths, and inversely as their diameters. Experiments made with elliptical tubes showed that in every construction where tubes have to sustain a uniform external pressure, the cylindrical is the only form to be relied upon, and that any departure from the true circle is attended with danger.