

Breech-loaders versus Muzzle-loaders.

It has always been claimed that breech-loading cannon were the most effective pieces for service, in that they were more accurate and could be fired much faster than the muzzle-loading gun. The following, from the London *News* of Nov. 1st. would seem to contradict this impression:—

Some very interesting trials of 12-pounder field guns, rifled according to the different systems of Sir Wm. Armstrong and Mr. Whitworth, were made at Fort Twist, near Shorncliffe, last week, before Gen. Bloomfield, Inspector General of Artillery, and a large staff of officers. The Whitworth guns were four in number, and formed part of a battery of 12-pounder brass muzzle-loading guns, being the first guns rifled on this system which have been furnished for the service. The Armstrong guns were two of the ordinary 12-pounder field guns, such as were used in China, with certain improvements since adopted, and of course breech-loaders, made of iron on the plan employed in the construction of all the Armstrong guns.

This was the first occasion on which so direct a comparison has been made between these rival systems in regard to field guns, and the result was regarded as one of considerable importance by the officers of artillery and other scientific artillerists present at the experiment. The trials began by firing at a floating target distant 500 yards. As the shot fell in the sea, no very close comparison could be made as to the accuracy of the respective hits, but both at the 500 yards range, and afterward at the 1,200 yards, the shot from the Whitworth was the first to carry away the flag aimed at, and it was generally conceded that at both ranges this gun fired closer to the mark than the Armstrong. Both guns were then tried with shell, the Armstrong firing the compound percussion shells, and the Whitworth firing the new kind of shrapnel perfected under the superintendence of Colonel Boxer, which is now promising, so far, to surpass all shells hitherto invented, whether for the field or for piercing the sides of armor plated ships. It was observed that a considerable number of the Armstrong shells burst in the air before reaching the mark, and, of course, without effect; but the Whitworth shell, being used with a time-fuse, which is ignited in front like the old shell by means of the ordinary Boxer time-fuse, was found to be more regular and effective in its action.

But perhaps the most interesting part of the experiments was a comparison made between the two different kinds of ordnance as to rapidity of fire. It has always been held that the one great advantage of the breech-loader was its superiority in handiness and quick firing. The result of this trial does not, however, confirm this opinion. The artillery-men were ordered to fire twenty rounds from each gun as rapidly as they could be served. The Whitworth gun finished the twenty rounds first, completing the task in thirteen minutes; the Armstrong followed two and a half minutes later. This superiority was attributed to the simplicity of the loading and serving the Whitworth gun; the drill being, in fact, precisely the same as in working one of the old smooth-bore guns, whereas the Armstrong drill requires three or four extra movements. All the guns were further tried by firing from each one hundred consecutive rounds. The Armstrongs were fired with lubricating wads, and were also washed out and had their breech pieces changed as often as they became heated so as to be unsafe; the Whitworths all completed their 100 rounds without being washed out at all, and without using any lubricating wads. It was remarked, too, that the loading was as easy at the last round as at the first.

The trial exhibited a practical proof of the value of brass muzzle-loading guns. The French artillery, it will be remembered, have always preferred these guns, as they are found very rarely to get out of order, either by injury in service or by the action of the weather. When rifled, as these guns were, upon the Whitworth system, and made without the complicated arrangement for loading at the breech, it is evident that they are capable of the most efficient service of any field-gun yet employed.

A large cupola war steamer is to be built at the Millwall Iron Works, London, for the Italian Government.

What is in the Bedroom?

The importance of ventilating bedrooms is a fact which every body is vitally interested in and which few properly appreciate. We copy the following from an exchange, which shows the injurious effects which must arise from ill-ventilated sleeping apartments:—If two persons are to occupy a bedroom during a night, let them step upon weighing scales as they retire, and then again in the morning, and they will find their actual weight is at least a pound less in the morning. Frequently there will be a loss of two or more pounds, and the average loss throughout the year will be more than one pound. That is, during the night there is a loss of a pound of matter which has gone off from their bodies, partly from the lungs, and partly through the pores of the skin. The escaped material is carbonic acid, and decayed animal matter, or poisonous exhalations. This is diffused through the air in part, and in part absorbed by the bedclothes. If a single ounce of wood or cotton be burned in a room, it will so completely saturate the air with smoke that one can hardly breathe, though there can only be one ounce of foreign matter in the air. If an ounce of cotton be burned every half hour during the night, the air will be kept continually saturated with smoke, unless there be an open door or window for it to escape. Now, the sixteen ounces of smoke thus formed is far less poisonous than the sixteen ounces of exhalations from the lungs and bodies of the two persons who have lost a pound in weight during the eight hours of sleeping; for, while the dry smoke is mainly taken into the lungs, the damp odors from the body are absorbed both into the lungs and into the pores of the whole body. Need more be said to show the importance of having bedrooms well ventilated, and of thoroughly airing the sheets, coverlids and mattresses in the morning, before packing them up in the form of a neatly-made bed?

Engineers, Attention!

In confirming the finding and sentence of a court martial called to try the first-assistant engineer of the screw steamer, *Huron*, off Charleston, S. C., on a charge of disobedience of orders, the Secretary of the Navy remarks as follows:

The court acquit the accused of any intention to treat his superior officer with contempt, by expostulating with him upon an order, the execution of which he believed would be attended by disastrous consequences. The extenuating circumstances which the court refer to, in explanation of their mild sentence, for the serious offence of disobeying an order, are not specified. Such an offence can be palliated only by the strongest and clearest reasons for failing or hesitating to obey. It will, therefore, be a sufficient reprimand for the first-assistant engineer to admonish him, as the Department now does, that whenever an order is practicable, and not manifestly and palpably unlawful, it is the duty of the subordinate, who receives it, to show the utmost willingness and readiness to obey; and even in a case where his own professional skill and experience might entitle his objections to weight, to state them, when necessity calls for them, in such a manner as to leave no possible room for supposing that they originate in any feeling of disrespect or insubordination.

Supposing a series of personal annoyances to be practiced by the chief engineer toward his coadjutor, such as treating him slightly, pooh-poohing at his views after they are especially called for, in a word, committing numberless offences upon good feeling and good breeding, should the subordinate be obliged to resign his position or must he incur the odium of bringing a court martial against his senior in rank? Or, failing in these, if he vindicate his personal dignity by protesting against such treatment, is he liable to be publicly rebuked?

The Wakulla Fountain.

Mr. John P. Nesle, of Albany, N. Y., having seen a letter in a former number of this journal describing the clearness of the water in Lake Superior, sends us an account of a visit which he made in 1843 to the Wakulla Fountain, so called, in Florida. Of his experiments he says briefly:—"I armed myself with some twine and a piece of lead, weighing about a quarter of a pound, tied in a white cotton cloth just large enough to cover it. Arriving there I found the fountain the only source of supply to quite a rivulet—the basin or head of which is some two acres or more in extent, the stream running slowly toward the Gulf of Mexico. Taking a skiff I rowed gently toward the deepest part, and on looking down it seemed as though I was floating in the air; fish innumerable, from a foot to two feet in length being plainly visible at the bottom, which was fifty feet or more from

the surface. But the great feature of the Wakulla is the sunken spring, so to speak, which appeared to be some five or six feet in diameter, descending at a slant of about 45° in what resembled limestone rock. Here I carefully let down the lead until it rested on the bottom, where it was plainly seen; the depth was 90 feet. Many of the sinks in that part of Florida are full of water but have no visible outlet, while others are quite dry."

All in Silver Bricks.

It is proposed in Virginia City, Nevada, to ship immediately to the East, for the benefit of the Sanitary Fund, the sum of \$20,000, and in the novel currency of silver bricks. The *Territorial Enterprise* says:—

This shipment will be made in solid silver bricks, stamped with an appropriate inscription, and will prove the biggest advertisement for Nevada Territory that ingenious brains have yet conceived. These silver bricks will be curiously examined and commented on by many a man in New York who would forget in fifteen minutes after he heard it, the fact that \$20,000 in gold coin or Treasury notes had been sent from the unknown land of Nevada.

MISCELLANEOUS SUMMARY.

NEBRASKA SALT BASINS.—In the Nebraska Territory, about 60 miles west of the Missouri river, there is a remarkable salt region covering about 1,600 acres. It consists of four basins, depressed several feet below the common level. The bottoms of the basin are composed of black mud covered over in warm dry weather with a thin stratum of salt, causing them to look like magnificent fields of snow. The salt is collected by scrapers; occasionally a man will scrape up a wagon-load in a day. In and about those basins are numerous springs of strong brine boiling up. The farmers, from a hundred miles around go there and boil and scrape off enough salt for their own use. The salt is of excellent quality; the crystals are large and clear like those of the solar salt of Syracuse, N. Y.

SAVE THE RAGS.—When peddlers paid a cent and a half a pound, and that too in tin ware, for paper rags, there was little inducement for the housekeeper to save her scraps of cloth. But the times have changed, and rags are now worth at least five times as much in cash. Every prudent housekeeper should now save her rags, and even old newspapers, which have heretofore been used for kindling. The latter will readily sell for four cents and a half a pound. It may be added that now is the best time to dispose of any "hoards" of this marketable commodity which families may have. Bring them out, take them to the nearest rag merchant, and in this way you can soon make enough to take three newspapers into your family.

SINGULAR SHOT.—At the Navy Yard, on Friday last, we learn, an experiment was made with a 10 inch Dahlgren (smooth-bore) gun. A solid shot weighing 130 lbs. was thrown at an iron-clad target, at a distance of 500 yards, perforating the iron plating, four inches thick, as also ten-inch oak planking, passing out on the other side. The plating was torn into fragments, one piece flying backward into the joiners' shop, 200 yards in the rear of the gun, and 700 from the target.—*National Intelligencer.*

STAFFORD'S PROJECTILE.—There is a target on exhibition at the Merchants' Exchange, Wall street, composed of seven inches in thickness of iron and twenty-one inches in thickness of oak, which was completely riddled at West Point by Stafford's projectile, described on page 247, current volume, *SCIENTIFIC AMERICAN*. Very successful experiments were also made with this projectile at the Washington navy yard on the 24th ult.

CEMENT FOR MENDING CRACKS IN STEAM BOILERS.—Mix two parts of finely powdered litharge with one part of very fine sand, and one part of quicklime which has been allowed to slack spontaneously by exposure to the air. This mixture may be kept for any length of time without injury. In using it a portion is mixed into paste with linseed oil or, still better, boiled linseed oil. In this state it must be quickly applied as it soon becomes hard.

THE AMERICAN BANK NOTE COMPANY, in this city, are issuing \$100,000 in stamp currency per day. This is at the rate of nearly one-half cent each daily for the whole loyal population.