	Head of Chamber,	Mouth of Chamber.
Remington, 43 cal.	.525	.463
Peabody... 43 cal.	.536	.464
Whitney... 43 cal.	.531	.465

It will be seen that the original weapon, the Spanish Remington, exceeds the limit of safety least of any, while the Peabody passes it by .016, the Whitney by, 010. The variation in cartridges by different makers is by no means so great. That made by the Remingtons for their Spanish model measures .519 at the head to .459 at the mouth. A second, made in Cuba for the same gun by Spanish workmen, measures .520 head and .457 mouth. The Winchester cartridge of the same calibre measured .520 head, .458 mouth. The Spanish government, anxious to have a gun that would take any variety of cartridge, and a cartridge fit to go into any gun fixed the official limits of variation as follows: Gun chamber—head .5295 to .5370, month .4685 to 4760; cartridge limits, head .517 to .526, mouth .456 to .466. Within these limsts there is of course much room for uncertainty, and that uncertainty it was that first produced the large chambers of modern military guns, made to take a variety of cartridges. The trouble with all this is that they are too large, for while the cartridge keeps uniform the gun chamber varies. A cartridge may go in very nicely, and yet stick in coming out. In nine cases out of ten the trouble is caused by a large chamber that did not support the walls of the cartridge. In consequence, the latter, either swelled or burst. The remedy far this state of things is very simple. It is for the members of the gun trade to secure some sort of uniformity in sizes of chambers by mutual agreement, and especially of conformity to the size of the cartridge. The latest experiments show that for fine target rifles carefully kept, the difference between chamber and cartridge can be reduced to .001 of an inch without danger of sticking, while for military rifles .003 is a safe allowance not to be exceeded.

In order to bring American breechloaders to their full perfection, all that they need is a common standand of calible and chamber, no matter what that may be. It is the business of the cartridge factories to conform to that, and make their cartridge fit the guns; but at present, so great is the variety of chamber and bore in guns of avowdly the same calibre, that the very best results cannot be obtained. For instance, a measurement of several barrels of the very highest grade of target rifle, the Sharpes and Remington Creedmoor, the other day gave the following differences: Remington Creedmoor, 44 cal., five barrels measured .447, .449, .448, .447, .447. respectively; Sharpes Creedmmoor, 44 cal., measured .442. The latter gun varies the least, and the manufacturers have lately come to an understanding that their sporting rifles of 44 cal. shall in future measure exactly .440 and their Creedmoors .441

We understsnd that in future the Sharps, Remington and Peabody 44 cal. rifles will be provided with chambers of uniform size by mutual agreement, and the agreement bids fair to improve future shooting in a great degree. It will certainly secure one thing—greater uniformity of result, as it stands to reason that a perfecly fitting cartridge will centre its bullet truly, when one several sizes too small will engage its missile in the rifling at an angle which, however small in the bore of the gun, may make all the difference between a bull-eye's and an outer or miss at 1000 yards.

THE following interesting paragraphs on *Torpedo* experiments are from *Broad Arrow* and the United States *Army and Navy Journal*:

"The Torpedo Committee at Portsmouth have been prosecuting two distinct series of experiments since the night attack was made upon the *Monarch* at Spithead; the object being to ascertain the best means of detecting the approach of boats in the dark, either for the purpose of exploding torpedoes against a ship at another or of detaching sunken mines from their connections with the shore, as well as to discover the colour which is less likely to be detected in the night. The thing is to adopt means for discovering the enemy at a distance from the ship or the mines. Parachutes and rockets have been tried with considerable success, and the lime light has been tested; but the greatest success has attended the use of the electric light as a torpedo dectector Several interesting experiments have been made with Wilde's electro magnetic induction machines, fitted with an apparatus for projecting the beam of intense light produced upon a distant object, or for searching the sea in any direction on the look out for enemies. On Wednesday, the 2nd ult., a trial was made of Messrs. Siemen's electric light by the Torpedo Committee at Fort Monckton, near Gosport. A boat belonging to the *Excellent* gunnery-ship, attempted to approach the line of torpedoes in Stokes Bay for the purpose of cutting the cables connecting them with the batteries on shore, but was discovered on every occasion long before it could reach the mines, and the illumination produced was of so brilliant a character that a person could read by it more than a couple of miles distant. The experiments are said to have been very successful. In the meantime it has been found colours which are the most difficult to discern during the day are readily discerned under the electric light. The French grey of the *Glatton* can easily be seen, and white is only a little more difficult to discover. The best colour for concealment is black, and yet the smoke of the steam launches when illuminated by the beam seems solid and to stand out boldly When boats can thus readily be picked out, nothing could protect them from the guns of a ship or battery, But the whole question of colour is a highly interesting one, and can here only be incidentally alluded to.

"SIR: Some of your readers may be interested in a brief account of the torpedo experiments at this station to day and yesterday many of which were of an interesting character, The experiments were conducted before Secretary Robeson and a large party of distinguished persons, among whom were Senators Cragin, Anthony, and Burnside; Representatives Frost, Eames, and Banks; Admiral Porter; Rear-Admirals Case and Rogers; Commodore Jeffers, Chief of the Bureau of Ordnance, etc, etc.

The first day (September 2). was devoted to the station proper, and the experiments performed served to show the capabilities of the station and the kind of work and instruction carried on there. The chemical and electrical laboratories, fuse room and work shops were open to the inspection of the visitors. For the convenience both of the operators and the spectators, a stand had been erected on the grass plot adjoining Captain Breese's quarters, to which were led the necessary electric wires, and from this point, all the experiments in the inner harbour were directed. From the elevated position of the stand, the spectators had a good view of the explosions, with an opportunity to see the methods of conducting the operations.

The experiments began with a subaqueous salute (if this expression may be used), in honor of the Secretary, under the direction of Commander Manly. This consisted of nineteen small ground torpedoes, fired automatically at six seconds intervals, by means of an ingenious electric appartus, contrived by Prof. Farmer.

Next, the method of using the two sizes of dynamo-electric machines issued to the Service, was shown by lieutenant Merrell. With the Clor boat machine, a 25 pound ground torpedo was fired, and with the A or ship machine, a 100 pounder.

After this, the Lay torpedo at the station was operated by Lieutenant Bradford, who directed its movements from the stand. The torpedo was started from the wharf in front of the office building, and manœuvred in various directions for a short time. It was then sent against a target about 600 yards distant. On striking the target, a small charge carried upon a rod attached to the bow of the torpedo, was exploded. After the explosion, the torpedo made a complete circle, returning again to its starting point having accomplished all that could be desired.

Immediately after, the Ericsson torpedo was exhibited by Mr. Lasso, Mr. Ericsson's agent. It was operated from the steamer *Nina* on which was placed the necessary apparatus for working it. On starting, it took at once the depth for which it wat set (10 feet), which it preserved during its run. The Torpedo worked well, being under the control of the operator, who changed its course at pleasure.

Next came the firing of six ground torpedoes by Lieutenant Maynard. These torpedoes were planted in a group in front of the stand and connected, in independent circuits, to a key board arranged to show the method of testing and firing any number of torpedoes, in line or grouped. By this arrangement, the torpedoes could be fired singly or in such numbers or groups as desired.

Some interesting electrical experiments were next brought forward. The first was simultaneous firing of 918 fuzes by a powerful current generated by a large Farmer dynamo-electric machine, driven by the engine in the machine shop. At the same time was shown in action, an ingenious electric engine designed by Lieutenant Moore, for driving a moveable torpedo. This engine promises to be of much use. A chronagraph designed by Prof. Farmer was exhibited. This instrument is new, and has not been sufficiently tested, but is believed to possess many advantages over any now in use. A Siemen's Position Indicator had been placed upon the parapet above the stand, with its base line along the east shore of the island, so that the working of this ingenious instrument could be readily seen.

Meantime, the U. S. steamer *Nina* had left her wharf and steamed down the harbor with a 100 pounder spar torpedo on her starboard quarter. This was exploded in front of the stand, when the vessel was at full speed. Following her came the steam launch which fired a 75 pound torpedo from a spar rigged out from her bow. The *Nina* having turned, came back by the stand, towing a Harvey torpedo on her port side, exploding it in contact with a floating target.