

and perpetuated in Kennedy's fine Revolutionary novel, "Horseshoe Robinson."

The De Peyster relic is, as we have promised, not only in the best state of preservation, but altogether a good-looking piece even for the present day. An engraved trade mark proves it to have been made by Egg, we suppose the originator of the present well-known English gun-shop. Its calibre—as we write from cursory observation—is about .44, and its grooves which have the ordinary turn, are ten in number. The following comparative details we quote from General de Peyster's description :

"The length of the piece itself is 50 inches (of a U. S. rifle, 48½ inches); weight 7½ lbs. (of a U. S. rifle (1850) 9½ lbs.) The bayonet is 25 inches in length (a U. S. musket bayonet blade being 16 inches) and 1½ inches wide, and what is commonly called a sword blade bayonet; flat, lithic, yet strong—of fine temper, and capable of receiving a razor edge, and when unfixed, as serviceable as the best balanced cut and thrust sword. The sight at the breech is so arranged that by elevating it is equally adapted to ranges ranging from one hundred to five hundred yards."

The foregoing description of the Ferguson breech loader is valuable, not merely as a contribution to history. It is evidently that the inventor, or his attorney, whichever wrote that the "two great desiderata in gunnery" are expedition, safety and facility in loading, combined with the greatest certainty in execution, know something about guns. The feature of rifling, introduced in Germany about the middle of the 16th century, was not to be credited to Ferguson, but he may probably claim the merit of originating a breech system that was practicable. Crude and comparatively primitive as are its acting parts, it is obviously superior to any muzzle loader, and notably to a Brown Bess and her descendants.

The advance which has been made in America in the interval of nearly one hundred years since the South Carolina Loyalist were equipped with the first breech loader, is best illustrated by the success of the Remington system, not only in the country of its origin but all over the world. The accompanying cut, representing the Remington military rifle, is not inappropriate, though Major Ferguson's conception seems to have entertained an improvement available for hunting as well as for all military use.

The superiority in breech mechanism, as demonstrated in the present system over that of the last century, is especially evident in the scientific relation and composition of the parts therein, Ferguson, not contemplating the use of a metallic shell, gave no thought to the retention of gas, and simply concerned himself with such a construction as would do away with any recourse to the muzzle and a ram rod in loading. While in his piece even a larger gas escape is possible than in the contemporary flint lock muzzle-loader, in the Remington system not only is

so small an emission resultant from a defective cartridge as hardly to smother white paper exposed to it, but the ordinary, or extraordinary emission is entirely shut off from the interior action and working parts. This feature, it should be observed, is singular to the Remington, and on this account that system is especially cited as the culmination of arms construction after a century of improvement. In the Martini-Henri, the service arm adopted by England, the unavoidable admission of the fouling element to the interior of the system, has been the conspicuous defect of that gun, which indeed it possesses in common with all systems using the under lever action, as well as with every bolt gun yet produced—the needle gun and chassepot conspicuously. The reports of official trials and such *precis*, as are thus far attainable of the recent Franco-Prussian war, fully endorse this statement, and it is owing particularly to this essential fault that the principal European States are considering the adoption of new systems for their armies.

In the production of his breech loader, Ferguson was not obliged to study the effect of recoil upon his system, which as a second result of its free escape of the force of the discharge in the shape of gas, had hardly the "kicking" propensities of the contemporary muzzle loader. The metallic cartridge has, however effected what Ferguson's provision did not entertain—the almost total restriction of gas to the chamber of the piece but as a counter poise to this advantage, in the relative shooting powers of an arm, demands of the inventor something more than mechanical ability in construction—even such a scientific relation of parts as will absorb the shock of recoil in such a manner as to exempt the action from occasional or eventual disability. To illustrate: In the Remington system, cited as the present perfection of small arms construction, it has been found utterly impossible to explode in the gun, though filled from chamber to muzzle, a charge heavy enough to effect a recoil sufficient to disable the action. Not only do experiments at Liege and before official boards invariably sustain this claim, but the trial of over half a million arms in the hands of soldiers is a further and perhaps more substantial demonstration. Regarding other approved systems, the facts of experiment and active service are widely different. In the bolt system the necessity of a shoulder setting into a slot on one or the other side of the frame, to secure the bolt at the time of discharge, renders permanent disability by the consequent oblique action of the recoil shock, which bends the bolt and bursts the side of the frame, a dangerous incident at any time to be looked for. In the various systems having an under lever action, not only is clogging an eventual result of the escape of gas into the working parts, but the relation of the swinging breech block to the mouth of the chamber and its own pivot is such that the bolt is insecurely locked at the firing position, but the recoil shock, diverted from its proper plane, not unfrequently forces the block either upward or downward (generally the former) and by bending the lever or firing pin, renders the arm unserviceable. In the design of the Remington, the parts of the system are not only of extraordinary size and material strength, but so placed in relation to each other that any shock, however

severe, is taken up by the whole, and without damage to a single part. Experiment has shown that the solid frame itself would stretch before the action should suffer from the most violent possible recoil.

In our advertising columns to-day will be found the business card of Messrs CLARKE & CORNWALL, as general agents at St. John, New Brunswick. Mr. CORNWALL, on the first starting of the VOLUNTEER REVIEW, was its travelling agent and to his indefatigable labors it soon succeeded in getting a large and extended circulation in Ontario and Quebec, but more especially in the former province to which Mr. CORNWALL's labours were chiefly confined. After he gave up the agency of the REVIEW, he became travelling agent for the *Craftsman*, and latterly for the *Montreal Gazette*, the Publishers of both speaking in the highest terms of praise as to his faithfulness and regret at parting with him. And in the words of our Montreal contemporary, the *Gazette*,—"Few have achieved a more deserved business popularity throughout Canada than Mr. CORNWALL, and for ourselves we sever relations which have lasted for seven years, with the greatest regret. Scrupulously honest and exact in all his transactions, and associated now with a gentleman of well established business abilities, we are sure the new firm will certainly deserve a marked success."

## REVIEWS.

We have to acknowledge the receipt of the *Science of Health* for September, it is a number well worth perusal.

Also the *Phrenological Journal* for September, which contains a very interesting memoir of the late Dictator or President Tyrant or despot of Mexico Juarez, with a portrait.

Midsummer heats are often severe, even in the Northern cities of the United States. But let us not complain when we remember that in Thibet, in Central Asia, the intense heat often reached 150° in the daytime, while at night it is really cold. In Senegal, Africa, on the Island of Gaudaloupe, in the West Indies, and in the Great Desert of Sahara, the temperature often rises to 130°. The plagues and pestilences of Persia are engendered by an atmosphere heated to 125°, while in Calcutta and in Central America the mercury reaches 120°. Some of the interior valleys of California have a maximum temperature of 110°, and in some parts of Utah Territory 105° in the midsummer heat. The extreme summer heat in Montreal is often 103°—as high as that of the deserts of Arabia. The summer limit in New York State is 102°; the scale goes downward till we come to bleak Nova Zembla, where in those midsummer days, the mercury does not rise above 34°.