

For the Scientific American.

**The American Rifle.**

The great advantages possessed by American riflemen over those of other countries, consists in the use of the elongated ball, or slug, (termed by Chapman "the picket bullet,") over the round ball, and in adopting our rifles in every particular to this form of lead. The slug has been used, more or less, for many years, but with very little success previous to the invention of Clark's Loading Muzzle in 1840. The form of slugs used previous to this time were, however, faulty in a very important particular. They were of an egg or acorn shape. This form with the necessary amount of reaming at the muzzle of the rifle, to insure a safe and convenient entrance of the bullet in loading, resulted in destroying the perfection of delivery when the rifle was discharged, by liberating the bullet before it was entirely out of the barrel and while it was exposed to the blast from the charge of exploded powder, in which case the least imperfection in the muzzle, slug or patch would cause the slug to be turned from a direct line upon its own axis. Therefore the slug was generally condemned as being inferior to the ball for accuracy. With the invention of Clark's loading muzzle the form of slug was changed, making it more pointed, much increasing its proportionate length and making it nearly square behind. The advantages of this form of lead over the ball, will be readily appreciated by any one at all conversant in rifle projectiles. It possesses a form suitably adapted to pass through the air, or any material substance with the greatest possible ease. It removes no more air than the round ball which fits the same calibre, and its weight is four times greater. With this form of lead a perfect muzzle for loading and a perfect muzzle to fire from, cannot be possessed by one and the same thing. Hence the advantages of Clark's muzzle, which consists of a piece one inch in length of the original barrel being cut off and fitted with steady pins or any other arrangement which will insure a good fit and at the same time secure the coincidence between the line of calibre of the loading muzzle and the barrel. The muzzle piece being reamed at the top, or made tunnel shaped, with a proper starting tool, secures a perfect entrance of the slug without a liability of cutting or straining the patch, as the lead is gradually compressed to the form of calibre and at the same time sufficiently so as to fill deep rifling which secures its hold at the discharge. By taking the loading muzzle off, the barrel muzzle is left perfectly square, which on delivery of the slug holds it firmly in its position until it is entirely out of the barrel, when the explosive gas has free scope to liberate itself without exerting much influence on the slug. To insure steadiness to the rifle at the moment of discharge and under the action of a strong charge of powder, the American rifles are made much heavier in proportion to size of calibre than those of any other country. We use a large charge of mild powder and calculate on its burning the whole length of the barrel, for the greatest force of a charge of powder is exerted at the moment when the last kernel explodes, and by this arrangement we secure a moderate start of the slug at the breech and an increase in velocity up to the muzzle.—Another advantage consists in the increase twist of the rifles, by which we bring the slug to whatever motion is requisite on its own axis by a gradual increase from the breech to the muzzle. The advantages of substituting steel for iron in the construction of rifles must be too obvious to any one acquainted with the nature and qualities of the two metals to require an argument on that point.

The most famous manufacturer of rifles in the world is Mr. Edwin Wesson, now of Hartford, Conn, to which place he has lately removed his factory from Northboro, Mass. He was the first rifle maker who brought into successful practice Clark's patent loading muzzle. He enjoyed the exclusive right to this patent, but unlike many other owners of patents who are exclusives, he has generously allowed all rifle makers the use of it upon the payment of a very moderate compensation. Mr. Wesson was granted a patent last June for an improved rifle to do a great

amount of work in a short space of time, a description of which we may give at some future period.

**The Minuteness of Creation.**

It is utterly impossible for the mind to conceive of the almost infinite minuteness of an atom. A single grain of gold, for instance, might be beaten out so as to cover a square foot of space, and yet we have not approached its reduction to atoms. An admirable illustration by Delper, he would give, as he had never seen it quoted: it was this. Reduce a cubic inch of sulphur to fine powder, and you may cover with it an area of six square miles. Take one grain of this powder and triturate it thoroughly with ninety-nine grains of sugar of milk, and its presence would be detectible in every grain of the hundred. Take a grain of this, and treat it in the same way with other ninety-nine grains of sugar of milk, and so on. At the third dilution as we may call it, the powder thus resulting from a cubic inch of sulphur would cover two square miles of area; at the fifth, the empire of Austria; at the sixth, the whole of Asia and Africa; at the ninth, it would cover the entire surface of the sun, with all its planets, and all their satellites. And yet, although in every grain of this powder the sulphur was found to be present, we had not reduced it to atoms. Again, it is well known that every drop of putrid water, under certain circumstances, contains millions of animalcules, invisible except to high powers of the microscope. And every one of these animalcules is a highly organized being, having at least something analogous to a skeleton,—capable of action—of pursuing, of retreating, of attack and of defence. The globules of the blood of an elephant are perceivable only with a powerful microscope, and yet these animalcules must have blood, and that blood must consist of similar globules. Once more! The Bovista Gigantea, a species of mushroom, in the space of twelve hours shoots up from a scarcely perceptible germ to a plant a foot in diameter. Every square inch of its surface contains three hundred and thirty-six millions of cells, every cell, with their six sides is divided from these around it by filaments of far more complex structure than an atom of potash, and yet we have not got a glimpse even of the atoms of which they are composed. He would confess, inquiries such as these inspired him with but one feeling—fear. It was as if he were taken, by some profound astronomer, far amongst the worlds that people infinite space, and he was ready to cry out for some one to lead him back to solid ground once more. One thing only gave him comfort: he knew of something higher, deeper than those facts—it was their idea. These were, after all, only the letters in which the infinite idea is blazoned. He felt as did the deep-thoughted Pascal, when he exclaimed, that although the universe were to crush him, he would still feel himself greater than the universe, for he knew that and how it was crushing him.—Darwin's Lectures.

**Consumption and Ventilation.**

Sir Jacob Starks, physician to the Queen of England, enumerates as the exciting cause of consumption, "long confinement in close all-ventilated rooms, whether nurseries, or school-rooms, or manufactories;" he also says, "if an infant, born in perfect health, and of the healthiest parents, be kept in close rooms, in which free ventilation and cleanliness are neglected, a few months will often suffice to induce tuberculous chachexia"—the beginning of consumption.—Persons engaged in confined close rooms, or workshops are the chief sufferers from consumption; thus, of the 233 tailors who died in one district in London, in 1839, 123 died of diseases of the lungs, of whom ninety-two died of consumption. Of fifty-two milliners dying in the same year, thirty-three died of diseases of the lungs, of whom 28 died of consumption. Dr. Guy reports, that in a close printers' room, he found seventeen men at work, of whom three had spitting of blood, two had affections of the lungs, and five had constant and severe colds. After reading these sad facts, who can deny that the chief cause of consumption is the respiration of bad air?

**Foreign Correspondence.**

GLASGOW, March 13, 1848.

Dear Scientific:—It seems as if some great volcanic eruption had shook the powers of the European world, and from late accounts from the West and other quarters the preparations going on, seem to indicate coming anarchy and revolt. Revolution fell on the throne of France like a thunderbolt. Whatever may be the subsequent results, and future destiny of France, is only known to that Potentate "before whose eye a sparrows falls and worlds roll." Europe, Universal Europe has felt the shock, Spain, Portugal, Rome, Sicily, the Germanic confederacy, the dispersed and scattered sons of Poland, have felt impulsed. The cry of liberty, and equal rights has sounded from Calais to Dover, the remote mountains of Wales, in England, of the Hebrides in Scotland, and the famine-stricken soil of Erin, has echoed back "liberty and the rights of the people." Our government has declared France as a Republic, this is policy, what else could be done, England is placed in difficulties out of which it will require more sage and judicious men to steer her, than the present ministry. Our British possessions in North America have once attempted to become independant. Our country has internal evils which has long kept us poor and trodden under, the greatest of which is our national debt. The working classes, the toil-worn and oppressed masses have again and again plead for the rights of labor, they have been crushed, but now the storm which swept over the throne of France has begun to rustle over England, like the breeze which precedes the wind of the wilderness. There are voices coming from the mountain fastness, from the glens, and hill steepes of Scotland where beneath the green turf rest the ashes of the patriots of other days. The people of England have met in thousands and tens of thousands and demanded—what? Bread and their rights. What would have been recognised as treason and a penal crime under the Castlereagh Ministry, is now placarded on our streets and City buildings. We have already had some terrible riots in our city, attended with loss of life and property—a mob of some thousands passed through our city, breaking, demolishing and stealing. The mob was more a disgrace to liberty and Glasgow than an honor. I would expect more good from our tumults, were they not tumults, but they met on sabbath day and profaned it—hence no good can come out of their meetings. The most intelligent part of the people here are now condemning at least some of the conduct of the French populace. For example, the mob at Havre threatened to burn the flax mills unless the British workmen were dismissed. Many of the workmen were reduced to distress, not being able to draw their earnings.—600 or 700 persons discharged have been conveyed home at the expense of the English government. These were mostly Scotch, and their kinsmen the north of Irelanders. I have seen many of these operatives and knew them before they went to France. They are the very choicest of our linen dressers and were hired by French agents who came from France for that purpose. They were solicited to go there, and many of them have lost their all by doing so. As for the wealthy British who have been driven from France they deserve it. They are the people who drain England of money to spend abroad. Let them stay now at home.

The great evil with our Scotch people now is want of employment. The old parish employment system is abolished, much to the injury of our mechanics.

As it regards scientific information, it is almost drowned for a space amid popular commotion. Mr. Simpson, your acquaintance's fanning mill propellor is the only wonderment, and is a great walk-the-water novelty.

The first of the new line of steamers of the North America Royal Mail Packet Co. to sail between Liverpool and your city, has just left this port to sail for New York on the 15th of April. She is named the America, and is a splendid vessel. She was built at Greenock, where Henry Eckford of New York served his apprenticeship, and when she arrives at New York, the daughter will no doubt wel-

come and praise the handiwork of the same mother in naval architecture. Her keel and fore rake are 250 feet, her breadth of beam 38 feet, tonnage 1800, and engines 650 horse power, built by Robert Napier, and built as he can build them. The America is to be commanded by Captain Judkins, the senior Captain of the company. She is superior to any vessel in her Majesty's service and can be converted into a war vessel in 48 hours. She is splendidly fitted up, but I need say no more, you will see for yourself. The whole of this new line are Clyde built and finished from kelson to topgallant by Scottish mechanics.—The America, Niagara and Canada were built by Mr. Steel of Greenock, the Europa by John Wood of Port Glasgow. Napier is the Engineer for all. There are but few of the ship carpenters of Greenock who cannot build a ship throughout. There is a fine Athenaeum in that place, where they learn drawing and nautical architecture for a trifling outlay, and thither the young carpenters resort to converse, draw, and spend their evening hours.

Trade is reviving in our manufacturing districts and this is glad news to many poor people. 18,000 persons died in this place last winter from typhus fever and other causes.—No more outbreaks need be anticipated here. Ten thousand citizens have enrolled themselves to keep the peace. The Duke of Hamilton has raised his coal miner's wages from 2s. 6d per day to 4s., nearly one dollar. This is something to the credit of the noble Douglas. So our prospects are somewhat brighter, although there is much preparation for emigration. Few Scotch, however, now go to America. New Zealand is the principal outlet for our redundant population, and there they will carry into the wilderness the same Puritan faith and the same energies which from Plymouth Rock has made America "beloved at home and revered abroad."

Yours, &c.

GLENBURN.

**Winds of Ohio.**

The Cincinnati Gazette says, that Dr. Drake of that City, has for many years kept a register of winds in that State, and says the Southwest wind prevails on the Ohio three-fourths of the year. It exhibits in character, the humid and the arid; the former prevailing through the night, and generally continuing two or three days after its commencement and alternating with the Northeast wind; it sinks the barometer more than any other aërial current, causing clouds, and general rain, which is often profuse. The arid Southwest wind commences between sunrise and 10 A. M. It is at first very gentle, increasing in force with the progress of the day, until 4 or 5 o'clock P. M., when it begins to subside. It ceases at sunset, and the succeeding night is clear and serene. This is the predominant wind in the hottest and driest weather. Its prevalence in comparison with the humid is as eight to one. It is seldom attended with an atmosphere altogether cloudless, but never produces any other rain than a thunder shower. Dr. Drake seems to have noticed a remarkable peculiarity in this climate—the total absence of very high winds. We have no gales strictly speaking, nor storms accompanied with high wind; even the equinoctial storms frequently so terrible on the Atlantic coast, are seldom sufficiently severe to attract attention.

**The Women of Turkey.**

A writer in Blackwood says—"The lot of this portion of the Musselman population is much less than one would be led to expect. They certainly hold a secondary station in society; but brought up as they are in the most complete ignorance, they are unconscious of their degraded position, and know not that there is a better. They are, in general treated very kindly by their husbands and masters, and do not undergo, as it is supposed either capricious or brutal treatment. Although in Europe, they still believe a Turk to be constantly surrounded by a multitude of obelisks; at Constantinople there are very few Osmanlees who have three or even two wives; and even these lodge in separate mansions, in general far distant from each other. Almost all the Turks, with the exception of the above mentioned individuals, possess, in general, but one wife, they are the most faithful."