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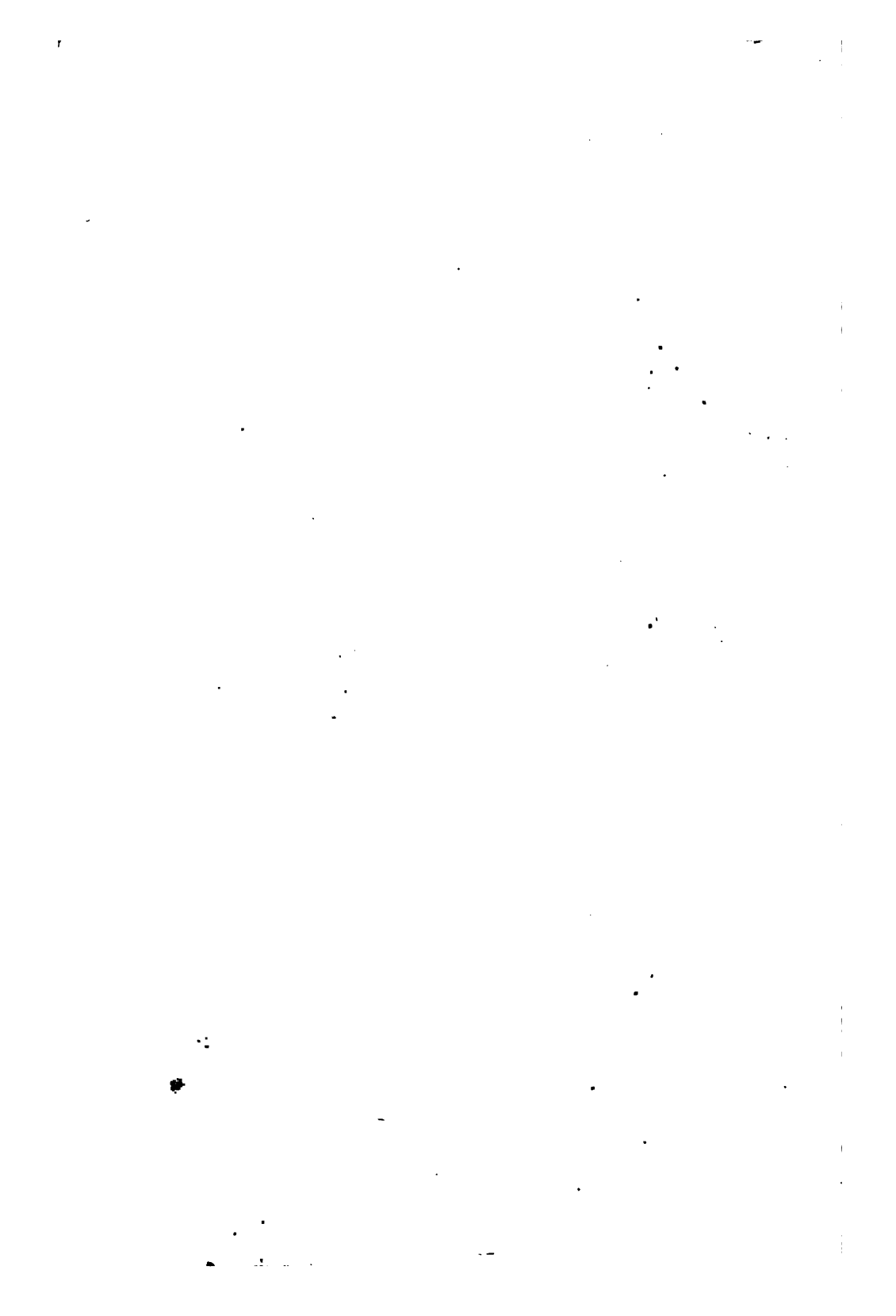




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RIFLES

AND

VOLUNTEER RIFLE CORPS.

AT a time when the formation of Volunteer Rifle Corps is progressing so rapidly and effectively throughout the kingdom,—when the cry, “To arms—to arms!” has resounded throughout the length and breadth of the land, and has been responded to by the girding up of the national loins, and the buckling on “of belt and badge and pointed steel,” it behoves every one not only to *gain* all the knowledge he possibly can on arms, and the mode of using them, but to *impart* it to others, and to endeavour to make each one as conversant with the subject as himself. The man who gains knowledge selfishly in order to gratify his pride, by making him think himself greater than his fellows, is no patriot. True patriotism, in a time like this, is to perfect others as you perfect yourself,—to gain knowledge only to increase the wisdom of others,—and to let the world profit by your experience. We have endeavoured, feeling this to be the true and proper course, to act, however humbly, up to this idea, and have thrown together in the following pages a description of such arms as we have actually examined and tried, and some observations which a long acquaintance with the subject has called forth.

It is a mistaken notion that because we are at peace we ought not to be making warlike preparations; for assuredly the only way to keep at peace is to be prepared for war; and we trust that the people of our beloved country will never cease preparing, until every man is fully proficient to do good service on the field whenever occasion may require him so to do—and until the necessary drill to enable the rising generation to act with military precision and in quick concert, and the practice and use of fire-arms, shall become an essential part of our every-day education.

In considering the subject of Rifles, we do not intend to encumber our pages with a history of the invention, or rather the gradual growth of the principle, of rifling fire-arms; for although a most interesting

series of papers might be prepared on the subject, our opinion is, that we shall be doing more real service, to the public, by confining our observations to the description of the different varieties of arms likely to be of service in the present movement, than by taking up valuable space, and more valuable time, in tracing out the origin of their invention, or in following the ramifications of their constructive theory. Rifles are not, we must, however, premise, a modern invention, having in some form or other been in use for a long period, though, until quite recently, the immense power and advantage of which they are capable have not been fully developed. There are now many varieties, all based on the same principle, but differing in details according to individual theory, and others, perhaps even more effective than any of them, are still in embryo, and are gradually receiving form from the day-by-day experience of their projectors.

The principle of Rifling fire-arms is this—to give rotation to the projectile round its axis of progression, and thus to ensure it a steady and regular flight. To this end, the projectiles have been tried in every conceivable manner; they have been made with vanes attached, with wings, with grooves, and numberless other contrivances, to give them rotation in their passage through the air after having left the barrel, but all these contrivances have signally failed, as indeed every thinking mind must at once suppose they must. The only practical method, so far discovered, is that of rifling the barrel of the fire-arm; that is to make its bore of such a shape that the projectile, while being propelled from the breech to the muzzle, may receive a rotary combined with a forward motion, and be so mechanically fitted to the barrel as to prevent the escape of the gas of the powder, and thus to receive the greatest possible impetus. The system of rifling by grooves has been very generally adopted, though not exclusively, and many interesting experiments with different numbers of grooves have been tried. Some of these have been made of varying depths, deep at the breech and gradually becoming shallower towards the muzzle; others of different turns so as to produce a quicker or slower rotary motion; and others, again, with the turn getting gradually quicker towards the muzzle. The turn in the Enfield is one in 6 feet 6 inches, while in General Jacob's splendid rifle it is one in 3 feet, whilst again Mr. Whitworth prefers one turn in 20 inches. This will serve as an example of the variety of opinions which have swayed the Rifle question, and which have each been thought the most

advantageous. One groove, two grooves, and three grooves have each been at one time or other considered good; but four, five, six, seven, and eight are each said to be most satisfactory, and each to possess advantages over the other.

"There can be little doubt," says Dean in his "History of Fire-Arms," "that a more regular-balanced action or equality of the rotary movement is imparted to the projectile by four grooves than by three; and in the friction arising from the movement imparted from the first, and continued throughout so equally, the impress of that equilibrium of the rotary movement must blend equally and favourably with the movement of translation; or, in other words, no oscillation can take place in the latter movement of the bullet up the barrel, nor on leaving the muzzle with the full impress of the initial velocity.

A reference to the action of *two* grooves in a rifle, especially where there exists no equality of groove and land, will illustrate how insufficient that number of grooves is to prevent the oscillations of the bullet on its passage up the barrel; an unsteadiness which remaining impressed upon it during its flight, becomes a potent accessory cause of deviation. In the case of *three* grooves, though they are better than two, yet they do not impart a perfect equilibrium of the rotary force to the projectile, even though an equal breadth of groove and land be established; and for the reason that a 3-square bite, in which the grooves are opposite to the lands, does not impress such an equilibrium, either of pressure, or of the rotary force, as a perfect square, where the bite of each groove is directly opposite a corresponding motive and directive agent. With three grooves there is, therefore, though in a less degree than with two, a less perfect equilibrium of the rotary forces than with four, and a certain degree of oscillation of the projectile in the barrel which influences prejudicially both the movement of translation and rotation. This effect of the three grooves is, moreover, more sensible in its influence on the deviation of a hollow projectile that has not a great cylindrical bearing in the barrel; and where this is in excess, the centre of gravity will no longer be where it should be in the elongated projectile, *i.e.*, as much forward as possible.

In a 3-groove rifle, with equal land and groove, there will be more land than in a 4-groove of equal bore, and in the necessarily greater breadth and flatness of groove in the former, there will be more liability of the projectile to oscillate, from the want of an opposite equilibrium of

the twisting forces. Oscillation entails friction of an irregular nature; hence the friction, and a prejudicial one, is greater in a 3-groove than a 4-groove rifle. Though this may appear militant to the notion entertained by many, of a greater friction in a 4-groove rifle than in one of 3, it will seem less so, when it is simply considered that, whether by an excess of powder-charge or other cause, the bullet is driven in its movement of translation over the grooves, without following the spiral in a regular manner, it experiences in some measure a wobbling movement, analogous to the beatings of the spherical ball in its passage up a smooth bore; and it is influenced in the same manner by the last impingement at the mouth of the barrel, which impresses upon it a movement of rotation either from beneath, upwards, or *vice versa*. If its last impingement be on the right side, the rotation will be from left to right, and if on the left side of the barrel, from right to left.

In a 4-groove rifle, whether the grooves and lands be equal in breadth or not, there is still an equilibrium of the movement of rotation and of the friction, for the projectile is equally, regularly, and solidly expanded into the four grooves; the hold of these upon the projectile is therefore more equal and efficient to impress the rotary movement; and it can experience oscillation from no agency whatever during its translation up the barrel, even though forced over the four grooves by an excessive charge. Hence the projectile is subjected to deviation by *one cause the less* in the 4-groove than in the 3-groove rifle.

Beyond the number 4, the additional disturbance given to the surface outline of the cylindrical part of the projectile by more grooves, though equal in number, is so much the more prejudicial to the form of the bullet, and therefore the more deteriorative to its precision of flight.

The Enfield authorities doubtless thought differently when, in adopting the same spiral as the French arm, they rejected the four grooves, and established their arm with three. The deviation in this respect evinced a difference of opinion; and that with some minds argues both independence and originality, even though not justified in the event."

Besides the ordinary grooved barrel, another, and most successful scheme has been propounded by Mr. Whitworth, who has made his bore of hexagonal form, of quick turn, and with the projectile fitting it to a mechanical nicety, and this has been followed by Mr. Westley Richards, and others. Of this and of the other forms we shall of course speak

more fully when describing the different makes of rifles in succeeding pages. We have perhaps said enough now to show the general principle of rifling, and in the papers which will follow we shall more particularly enter into details of construction and power.

The principal varieties of rifles now before the public are the following:—The Enfield, the Lancaster, the Colt, the Jacob, and the Whitworth, for muzzle-loaders; and Prince's, Terry's, Westley Richards', Reilly's, and Needham's, for breech-loaders. To these and others we shall now direct the attention of our readers; our purpose being to describe each variety in due course, to explain their peculiarities, and, when need be, to illustrate their construction. Before doing this, however, let us say a few words on the relative value and power of the rifle and the musket, just to show that a single man well skilled in the use of the former weapon, might do more effective service in a few minutes than a whole regiment armed with the latter. It has been said that by the ordinary mode of warfare, a man's own weight in lead, and more than ten times his weight in iron, is expended for every one of the enemy killed or wounded in an engagement, and this assertion is, unfortunately, borne out by facts. It is known that, in one engagement, 60,000 rounds of cartridge, at a cost for cartridges alone of above £300, were consumed, with the result only of about four men killed or disabled; thus each man was placed *hors de combat* at a cost of about £75 for powder and ball only!

In the Kaffir War, the expenditure of ammunition against the poor much-to-be-pitied natives was truly enormous, and cost us, for a long period, at the rate of nearly £4,000 per day. In this war, it is authentically stated that a reconnoitering party used up no less than 80,000 cartridges, and only killed or disabled twenty-five of the Kaffirs. Thus it took no less than 3,200 rounds of cartridges to disable *each* naked savage, at a cost, for ammunition alone, of about £17. On the morning of the battle of Vittoria, we are told that 3,000,000 rounds of cartridges were issued (sixty rounds to each man), and that 1,350,000 more were issued, besides six thousand five hundred and seventy rounds fired from sixty pieces of cannon. The enemy numbered 90,000 men, and out of these only 8,000 were killed or wounded, thus showing, in that engagement, not more than one shot in a thousand took effect on the enemy. Instances of this kind, proving the immense waste of ammunition under the old system might be produced *ad infinitum*, but perhaps these are

•

sufficient to show that for actual service the musket is not the most effective instrument.

It would be idle to suppose that to render our infantry effective they must all be supplied with long range rifles, as they would then be even less effective than they now are; for this simple reason, that they would not be able to take that deliberate aim, and to calculate distances to so great a nicety as is requisite. On this point Mr. Buak very sensibly says, "However desirable it may be to arm with the rifle all light troops, including the light companies of regiments, it cannot be admitted that any essential advantage would be gained by placing generally in the hands of soldiers of the line, a weapon, whose chief advantage consists in its length of range, unless it be, at the same time, as simple as possible in construction, little likely to get out of order, and be, moreover, divested of all complicated appliances. The short Enfield rifle is open to few objections in these respects; and, therefore, for the present at least, its introduction should be gladly hailed as a step in the right direction. Strength, moderate length, lightness, durability, are among the primary essentials of the infantry musket; precision and accuracy of fire are the next considerations. Troops on active service do not halt for the purpose of firing at each other at the greatest possible range. The tactics of war present a series of movements the object of which is to close in upon an adversary, or to out-flank him, and to deliver at a distance of from 200 to 250 yards an effective fire into his ranks. It is the province of artillery to pour destruction into the adverse host at greater ranges than this. At the same time, no one would deny that a firelock capable of delivering a ball with precision at 1,200 yards is a most valuable weapon—nor that in skilled hands it may, upon various emergencies render important service, even to the extent of silencing field artillery.

For infantry fire, unless from a body of picked and experienced men, to be delivered, under ordinary circumstances, at anything like the distance of six to eight hundred yards, would be mere waste, and would only tend to produce unsteadiness. People who write very authoritatively on these matters are too apt to forget that in action, after the first few rounds, the field speedily becomes obscured, and that it is scarcely possible for a marksman, however expert, whether stationed in line or square, to single out any object, even at 100 yards' distance. To the rifleman and the skirmisher this observation, of course, does not apply, as they can, in a great measure, select their own position; and for them, consequently, a

superior arm should be provided. As at present constructed, distant range is only attainable by a somewhat complex arrangement of sights, of such delicate workmanship, that, in the rough hands of recruits or even ordinary troops, they would speedily become useless; besides, they require careful and deliberate adjustment and considerable experience on the part of the soldier."

It is evident, from all that we have advanced, that two distinct classes of fire-arms are requisite—the one for the line simple and light, but effective at from six to seven hundred yards, and the other capable of carrying to eighteen hundred or two thousand yards, and sighted to, at all events, thirteen or fourteen hundred yards, for the use of rifle regiments and volunteer corps. It is these instruments to which we shall now, in succeeding papers, direct attention.

The formation of volunteer corps is no new feature in our kingdom, and the name of "British Volunteers" is associated with some of the brightest chapters of our national history. Perhaps a few words on the system may not here be uninteresting or unimportant. When, sixty years ago, the treaty of Campo Formio left England alone in a belligerent attitude towards France (the latter, having humiliated Austria, and extended her boundaries to the Alps, the Rhine, and the Pyrenees, and thus stood at the head of the Helvetian, Ligurian, Batavian, Roman, and Cisalpine Republics), an army of 270,000 men, under Bonaparte, Dessaix, Kleber, Kellermann, and Baraguay d'Hilliers, was disposed along the Channel coast, within a day's march of the several points of embarkation. Roused by these preparations, the British Government adopted extraordinary means of defence. Not only were the army, navy, and militia increased, but a bill was passed to provide for the raising of volunteer corps in every part of the kingdom. The enthusiasm was great among all classes; the desire to serve extended even to the clergy, until the Episcopal Bench decided that no clergyman should accept a commission, although, in case of invasion, it would then be his duty "to assist in any way the urgency of the case required." Known and respectable householders only were admitted into the force. Officers were required to be in receipt of an income of £50 per annum from landed property, and to reside in the county in which the corps was raised. In a few weeks 150,000 volunteers were enrolled and under arms. They were drilled for six hours once a week, and those who chose to claim it were allowed one shilling per week for the time so occupied. The cost of this new species

of armed force figures in the estimate for the year (1799) at £350,000. Seven months after the enrolment, the King announced in his speech to Parliament that "the demonstrations of zeal and spirit among all ranks had deterred the enemy from attempting to execute their vain threat of invading the coasts of the kingdom." In 1800 the volunteer corps cost £574,000; in 1801, £880,000; an expenditure reduced in the year following to £280,000, and falling in 1803 so low as £99,000, when, so far as the infantry was concerned, its existence was merely nominal.

Toward the end of 1803, the non-evacuation of Malta by the British led to that remarkable and sudden ebullition of temper on the part of Bonaparte, which was soon followed by a declaration of war between the two countries, and which precipitated Bonaparte's intended attack on England. He had intended to defer an invasion for four or five years; but, still believing a nation of seventeen millions must eventually succumb to one of forty millions, he prepared for his descent upon our coast by collecting an army of 150,000 men, with whom Massena pledged himself, if not to conquer England, at least to render it uninhabitable. The British army at this time amounted to 62,000 men (exclusive of those on colonial service), the militia 80,000. Parliament agreed to raise 50,000 men in addition by conscription. A levy *en masse* was also authorised, and all men between the ages of seventeen and fifty-five enrolled. Members of volunteer corps were to be exempt from the conscription; and the population volunteered in such numbers that the conscription was unnecessary. In October, when George III. reviewed the volunteers of London, Westminster, and the Tower Hamlets, in Hyde Park, they mustered 27,000 men. The returns for December showed a grand total of infantry, cavalry, and artillery, of 463,134, of which number 82,941 were raised in Ireland. The weakest corps was that of Bute, 90 rank and file; Devonshire contributed 15,212; Lancaster, 14,278; and the West Riding of Yorkshire, 14,006.

In 1806, the whole volunteer forces of the United Kingdom was as follows:—Cavalry, 31,771; Infantry, 328,956; Artillery, 10,133; making a total of 370,860. Of these the county of Selkirk furnished the smallest number, there being in two regiments only 160 men in all, while Yorkshire contributed 26,509 in seventy-two regiments. Of the way in which the call for volunteers was responded to, throughout the kingdom, we need only quote one county as an example, a table of which we have compiled at very considerable labour. The county we have

chosen is Derbyshire, which on *that* occasion stood out boldly with no less than thirty-three separate regiments composing 6,619 men. The following table which we have compiled, (and which has never before been printed,) shows the names of the regiments, the names of the commanders, the number of men, including officers, and the uniform of each.

Names of Corps and of Commander.	Number of men, including of ficers.	UNIFORM.
Ashbourne Infantry, Capt. Robt. Dale.	123	Coat, scarlet with yellow collar and cuffs; trousers, white; officers' lace, silver.
Ashover Infantry, Capt. Wm. Milnes.	63	Coat, scarlet with yellow collar and cuffs; trousers, dark blue; officers' lace, silver.
Barlborough Infantry, Capt. John Norborn.	78	Ditto.
Belper, Shottle, &c. Infantry, Lieut. Col. Joseph Strutt.	270	Coat, scarlet with yellow collar and cuffs; trousers, white; officers' lace, gold.
Bolsover, &c. Infantry, Capt. John Carter.	81	Same as Ashover.
Bradley, &c. Infantry, Capt. Chas. Meynell.	71	Same as Bradley.
Bradley United Infantry, Major Chas. Smelt.	252	Coat, scarlet with yellow collar and cuffs; trousers, dark blue; officers' lace, gold.
Chatsworth Infantry, Lieut. Col. H. B. Thornhill.	574	Ditto.
Derbyshire Cavalry, Lieut. Col. Sir H. Harpur, Bart.	316	Coat, dark blue with scarlet collar and cuffs; trousers, white; officers' lace, gold.
Derby Infantry, Col. Edwd. Pole.	692	Coat, scarlet with yellow collar and cuffs; trousers, white; no lace.
East Derbyshire Battalion, Lieut. Col. Robt. Wood.	350	Ditto.
Doveridge Infantry, Capt. Richd. Cavendish.	65	Not known.
Dronfield Infantry, Capt. Wm. Butterman.	120	Same as Ashover.
Glossop, &c. Infantry, Capt. George Hadfield.	167	Same as Belper.
Heanor Infantry, Capt. Alex. Radford.	124	Same as Derby.
North High Peak Infantry, Lieut. Col. Samuel Frith.	301	Coat, scarlet with blue collar and cuffs; trousers, white; officers' lace, gold.
South High Peak Infantry, Major Wm. Carleill.	253	Same as Derby.
Horsley Infantry, Capt. Wm. Sitwell.	66	Same as Bradley.
Ilkeston Infantry, Capt. Jas. Potter, jun.	76	Same as Ashbourne.
Measham Infantry, Capt. Thos. Jewsbury.	82	Coat, scarlet with yellow collar and cuffs; trousers, dark blue; no lace.
Norton Infantry, Capt. Samuel Shore.	83	Same as Derby.
North Wingfield, &c. Infantry, Capt. Wm. Webster.	68	Same as Ashover.
Pleasley and Heath Infantry, Capt. Richd. Snibson.	67	Ditto.
Shirland Infantry, Capt. John Pepper.	79	Ditto.
Staveley Infantry, Capt. Francis Foxlow.	124	Ditto.
Sudbury Infantry, Capt. Francis Calvert.	100	Same as Derby.

Names of Corps and of Commander.	Number of men, including officers.	Uniform.
Tickenhall, &c. Infantry, Capt. George Hutchinson.	71	Same as Derby.
Tibshelf and Morton Infantry, Capt. J. R. Sharp.	63	Not known.
Walton, &c. Infantry, Capt. E. M. Mundy, jun.	71	Same as Bradley.
Loyal Wirksworth Infantry, Lieut. Col. Chas. Hurt.	289	Same as Glossop.
Scarsdale Regiment of Infantry, Lieut. Col. Joshua Jebb.	1166	Same as Ashover.
Alvaston, &c. Infantry, Capt. Thos. Borrow.	62	Same as Bradley.
Loyal Trent and Derwent Infantry, Lieut. Col. Charles Holden.	252	Same as Measham.

From this one example, it will be seen how thoroughly the proverbially loyal and patriotic feeling of Englishmen was roused, and it will serve to show what may be expected in the present movement, the moment the people feel that the nation's rights are jeopardized, or their national liberties threatened.

At the period of which we write, the commencement of the present century, there were, however, other descriptions of volunteers besides those for military service. It was proclaimed that no indemnification for property destroyed to prevent it falling into the enemy's hands would be granted to any person, physically capable, who had not enrolled himself either to bear arms, serve as a pioneer or guide, or drive live stock into the interior, or undertake to furnish carts, waggons, horses, barges, or boats, as the needs of the army required. Such were the preparations then made to resist invasion, and we trust, even now, they may be greater and more effective. The gradual reduction of the volunteer force was as follows, as compiled from the annual war estimates:—1804, £2,020,567; 1805, 1,600,000; 1806, £1,738,806; 1807, £1,490,301; 1808, £1,263,437; 1809, £941,582; 1810, £737,862; 1811, £413,629 (this was in consequence of reducing the number of days' drill); 1812, £403,972; 1813, £405,907; 1814, £367,931; 1815, when the force was reduced, £164,692; after which we find no estimate for volunteer infantry in England.

The volunteer force now proposed is of a very different nature, in which uniform and drill are but secondary considerations, the paramount duty of its members being to "look well to their butts and take good aim," until a nation of sharpshooters has arisen that may laugh all threats

of invasion to scorn, and among whom will be found none like those-sea-coast cowards who, when the Spanish Armada threatened Protestant England, forsook their towns and fled into the interior; and regarding whom stout-hearted Queen Bess declared to her Parliament, "I swear unto you, by God, if I knew those persons, or may know of any that shall do so hereafter, I will make them feel what it is to be so fearful in so urgent a cause."

A code of regulations for the guidance of Lords Lieutenants in the formation of Rifle and Artillery Corps has just been issued by the War Office. The circular opens by saying, very properly, that—"Though engaged in important, and often, lucrative occupations, they have expressed their willingness, at their own cost, and at a considerable sacrifice of time, to instruct themselves in drill, and in the use of the arm, whether rifle or great gun, which they propose to adopt, with a view to fit themselves to act as auxiliaries to her Majesty's regular forces in case of public danger. But though the very essence of a volunteer force consists in their undertaking to bear, without any cost to the public, the whole charges of their training and practice previous to being called out for actual service, her Majesty's Government are of opinion, that it will be but fair to the volunteers, as a just acknowledgment of the spirit in which their services are tendered, to relieve them, in some degree, of the expense which their first outfit will entail upon them, and of which the purchase of arms is necessarily the heaviest item."

It then goes on to say that Her Majesty's Government have determined to issue to each corps, on proper regulations being complied with, Enfield Rifles at the rate of twenty-five per cent., *i. e.*, one Enfield for every four men enrolled.* This it considers to be amply sufficient for instruction, and it engages to arm the whole of the corps, whenever it may be called out for active service.

The circular then says—"Her Majesty's Government entertain no objection to the members of any volunteer rifle corps providing themselves with breech-loaders, or any other description of rifle, for purposes of ball practice, upon the understanding that, if not of the regulation gauge in barrel and nipple, no practice ammunition can be issued by the Government for such arms. Every rifle corps will, however, under all circumstances, be furnished with the long Enfield rifle and bayonet, with

* This percentage has now been increased, and Government will provide long Enfield rifles for the whole of corps, when required, very shortly; and expresses a hope to exchange them ultimately for short Enfields and sword-bayonets.

the use of which weapon the members are expected to acquaint themselves, as in case of the active services of the volunteer force being required, it must be exclusively armed with the rifle common to all the regular forces of Her Majesty."

The conditions contain thirty articles for the regulation of Rifle and Artillery Corps. The following are the regulations which relate to the former :—

CONDITIONS OF ACCEPTANCE OF OFFERS OF SERVICE.

1. In all cases of actual invasion, or appearance of any enemy in force on the coast of Great Britain, or of rebellion or insurrection arising or existing within the same, or the appearance of any enemy in force on the coast, or during any invasion, but not otherwise, the services of the volunteer force will extend to any part of Great Britain.

2. Before giving his sanction for the formation of any rifle corps, the Secretary of State will require that safe ranges for rifle practice be obtained, of not less than 200 yards, this being the minimum range of any practical utility. An officer will be sent upon the requisition of the lord lieutenant, to assist the volunteers in selecting a practice ground, and to report upon its sufficiency or otherwise. For this purpose it should be stated to whom the officer should address himself, and when it will be convenient to receive him for this duty.

3. That accommodation for the safe custody of the arms (at police stations, county militia stores, or elsewhere), and a competent person to keep them in good order be provided, at the cost of the corps; and that the expense of keeping the same in repair be borne by the funds of the corps.

4. Rules and regulations for the government of the force and for its discipline, when not subject to martial law, under the provisions of sections 22d and 23d of the Act 44 Geo. III., cap. 54, shall be submitted to and approved by the Secretary of State for War.

When so approved, these will, under section 56, be valid and binding upon the members of the force, and the penalties will be recoverable before a magistrate.

It is proposed to assemble a committee, composed of five members of the volunteer force, aided by one military officer, to be nominated by the Secretary of State, to compile a code of rules and regulations to serve as a model or guide, which will greatly assist the volunteer corps in drawing up their rules. (These rules will be found on a succeeding page.)

5. That the corps be subject to a periodical inspection by a military officer deputed for that purpose.

6. The uniform and equipments of all the corps must be approved by the lord lieutenant, and should be as far as possible similar for corps of artillery and rifles respectively within the same county, in order to enable the Government at any time to form the corps into battalions.

PRELIMINARY COURSE TO BE ADOPTED WITH A VIEW TO THE
SANCTION OF A VOLUNTEER CORPS.

7. In order to facilitate the formation of corps, the lord lieutenant, before transmitting any offer of service, should ascertain and report to the Secretary of State, that the members clearly understand, that if their offer be accepted, they thereby become amenable to the general provisions of the Act 44 Geo. III., cap. 54, as well as to the six foregoing conditions. It is necessary to observe that no proposals for the formation of corps, nor applications connected with the organisation, equipment, or government of the force, can be entertained by the Secretary of State for War, unless they be recommended by the lord lieutenant of the county, or in the Cinque Ports and Stannaries, by the lords warden, and in the Isle of Wight, by the governor.

ORGANISATION.

8. In order to render available the services of individuals residing in places not capable of raising so large a body as a company, and more especially with the view of encouraging, as largely as possible, the formation of small bodies of artillery at the smaller maritime places, Her Majesty's Government have determined, in such cases, to sanction the formation of sub-divisions and sections of artillery, and of sub-divisions of rifle companies, with a proportionate number of officers.

ESTABLISHMENT RIFLES.

10. A company will consist of not less than sixty nor more than 100 effectives, with one captain, one lieutenant, and one ensign; a sub-division of not less than thirty effectives, with one lieutenant, and one ensign.

11. It is to be understood that the formation of companies, sub-divisions, or sections, will not be sanctioned for a less number of effectives than the minimum herein assigned to these bodies respectively, but that they may enrol up to the maximum.

In places in which, from their large population, as well as patriotic

spirit, several companies, whether of artillery or rifles, are likely to be raised, the Secretary of State will be prepared, with a view as far as possible to reduce the expenses to the volunteers, by enabling them to accommodate their arms in a single storehouse, and to secure a practice range for the whole number of companies, instead of for each company separately, to accept their services as a battalion, on the recommendation of the lord lieutenant, provided that a sufficient number of companies and of men be raised to justify such an organisation. When, therefore, as many as eight companies, or a force not less than 500 strong, though with fewer companies, can be raised, the Government will sanction the appointment of a lieutenant-colonel, a major, and adjutant, to be paid by the corps.

For the rural districts of a county, in which, from the remoteness from each other of the several companies, it may be inconvenient to unite them in battalions, the Secretary of State will be prepared, on the application of the lord lieutenant, to recommend to Her Majesty the appointment of a field officer of the rank suited to the amount of the force in each district, to superintend the whole of the several companies and sub-divisions not forming a part of any battalion.

SUPERNUMERARIES.

12. The sanction of the Secretary of State for War must be obtained for the enrolment of any supernumeraries beyond the establishment, whether as effective members for general service, or of individuals who, desirous to contribute by their influence and means to the formation of volunteer corps, may be unequal to greater physical exertion than the mere attendance at the stipulated drills and the performance of local duties.

NON-EFFECTIVES.

13. The admission of honorary members or non-effectives, willing to contribute towards the expenses of the corps, will also be sanctioned by the Secretary of State. For these members a separate column is set apart in the Return, Schedule A in the Volunteer Act.

PRECEDENCE OF COMPANIES, &C., OF VOLUNTEERS, AND OF OFFICERS.

14. Artillery corps will, as in the regular service, rank before the rifle corps. The whole volunteer force of a county will take precedence throughout Great Britain, according to the date of the formation of the first company of their respective arms in a county. The several companies will rank, as artillery and rifles respectively, within their own

counties in the order of their formation. The whole county force and the several companies, sub-divisions, and sections, will be numbered and entered in the *Army List*.

In order to the assignment of precedence, the sub-divisions will rank after the companies, as artillery and rifles respectively, according to the dates of their formation, and the sections after the sub-divisions.

RANK OF OFFICERS.

16. Officers will, of course, take precedence according to the dates of their commissions.

Officers holding similar commissions, bearing the same date, will rank according to the precedence of the force of their respective counties; or, if belonging to separate companies in the same county, then according to the precedence of their respective companies, and if belonging to the same corps they will take precedence according to the order in which their names are inserted in the *Army List*.

EQUIPMENT OF RIFLES.—ARMS.

18. Upon the conditions stated in Article 4, rifles to the extent of twenty-five per cent. of the effectives will be supplied by the Government, for purposes of instruction, upon requisition according to a prescribed form, which will be furnished on application to the War Office. In case of being called out for active service in the field, the whole force will be armed by the Government.

Her Majesty's Government entertain no objection to the members of any volunteer rifle corps providing themselves with breech loaders, or any other description of rifle, for purposes of ball practice, upon the understanding that, if not of the regulation gauge in barrel and nipple, no practice ammunition can be issued by the Government for such arms.

Every rifle corps will, however, under all circumstances, be furnished with twenty-five per cent. of the Enfield rifle, with the use of which weapon the members are expected to acquaint themselves, as in case of the active services of the volunteer force being required, it must be exclusively armed with the rifle common to all the regular forces of Her Majesty.

ACCOUTREMENTS.

19. Accoutrements, to be provided at the expense of the members, will consist of waist-belt, of black or brown leather; sliding frog for bayonet; ball-bag, containing cap-pocket and 20-round pouch.

Patterns may be seen on application at the pattern-room, War Department, Pimlico.

AMMUNITION AND TARGETS.—RIFLES.

21. Article 8 of the Circular of 25th May last is revised as follows:—

There will be no special allowance of ammunition for training recruits, but the following uniform annual issues, at the cost price, will be sanctioned for the duly qualified effectives (see sections, 5 6, 7, 8, of the Volunteer Act)—viz., 100 rounds ball per man, 60 rounds blank per man, 176 percussion caps, 20 ditto for snapping practice.

The application for ammunition must be made by the officer commanding to the Secretary of State for War, according to forms which will be furnished by the War Office.

22. Targets will be issued at cost price, as stated in the Circular of 25th May, not exceeding five per company. Forms of requisition will be furnished by the War Office.

RETURNS TO BE RENDERED.

23. The attention of officers commanding is particularly called to the necessity of the utmost regularity in rendering the several returns, of which forms are annexed, specified in the Volunteer Act. These provide a check upon all the contemplated issues, and the necessary intimation for the regular inspection of the force.

ATTENDANCE AT DRILL.

24. It is to be understood, with reference to the 5, 6, 7 sections of the Volunteer Act, that the number of days' attendance at muster, stipulated by the Act, viz., eight days at the least in the course of four months, need not be continuous; but in order to entitle any volunteer to be returned as an effective, it is necessary that he should have attended on the prescribed number of days, the ordinary drills established by the officer commanding, whose duty it will be to consult the convenience of the members in so far as the efficiency of the force will permit.

VOLUNTEER ARTILLERY MANUAL.

27. It will materially facilitate the progress of this course of instruction if each volunteer will provide himself with, and carefully study, the small "Volunteer Artilleryman's Manual," now in course of preparation, and shortly to be published at a moderate price, by Boddy and Son, Wellington-street, Woolwich.

DRILL INSTRUCTIONS.—RIFLES.

28. A similar inexpensive manual, for the use of the volunteer rifles, is in course of publication by W. Clowes and Son, No. 14, Charing-Cross, and every volunteer rifleman should make himself master of its contents.

The aid of drill instructors from the disembodied militia will be afforded to the volunteer corps, to facilitate which the lords lieutenant have been requested to empower officers commanding regiments of disembodied militia to grant, without further reference to the War Office, the aid of two sergeants of the permanent staff, for a period not exceeding three months, to any volunteer company (or one sergeant for a subdivision) belonging to the county: or to any such company (or subdivision respectively) of an adjacent county, should the militia force of the county to which the corps belongs be embodied; provided the application be recommended by the lord lieutenant of such adjacent county.

Should there be no sergeants of disembodied militia available as drill instructors for a volunteer corps, within the limits of its own, or of an adjacent county, application must be made by the lord lieutenant to the Secretary of State for War.

It is most desirable that any irregularity of conduct on the part of any sergeants thus employed be immediately reported to the officer commanding.

The sergeants of the permanent staff cannot be employed upon this duty without their consent; and it is necessary that the volunteer corps afford them remuneration of 1s. a-day, and billet or lodging, or 4d. a-day in lieu thereof.

This ought not to be in any respect a permanent charge upon the members, since it may reasonably be expected, that intelligent and zealous individuals will be found in every corps, who will, in a comparatively short time, qualify themselves to act as non-commissioned officers and drill instructors.

MUSKETRY INSTRUCTORS.

29. It is of the greatest moment, that the musketry instruction of the volunteer force be carried out on the sound principles which are followed in the regular service. These are given in a condensed form in the before-mentioned manual.

When a corps shall have become well acquainted with the ordinary recruit drill, and sufficiently handy with their arms to undertake with

advantage the more advanced instructions of the musketry course, the aid of musketry instructors will be afforded, to as great an extent as possible, upon the same terms of remuneration as before stated for drill instructors.

INSTRUCTION OF VOLUNTEERS AT THE SCHOOL OF MUSKETRY.

His Royal Highness the General Commanding in Chief has been pleased to sanction the reception of a limited number of officers or members of rifle companies, at their own expense or that of the corps, at the School of Musketry, at Hythe, to undergo a modified course of instruction, which, with due attention on their part, will qualify them to act as the chief instructors of their companies.

The first class will assemble on Saturday, 23d July, and the course will last about 14 days.

Any members, in the proportion of two per company, desiring to avail themselves of these means of instruction, are requested to make immediate application to this effect, through their commanding officer, to the Secretary of State for War, in order that timely intimation may be made to the military authorities.

Clauses 2, 15, 17, 20, and 25 relate to the formation of volunteer artillery corps only, and, therefore, we have not thought it necessary to reprint them. The above regulations may be thus summed up :—

In all cases of actual invasion, or appearance of any enemy in force on the coast of Great Britain, or of rebellion, or insurrection arising or existing within the same, or the appearance of any enemy in force on the coast, or during any invasion, but not otherwise, the services of the volunteer force will extend to any part of Great Britain.

Safe practice ground of not less than 200-yard range must be provided and approved by an officer sent for that purpose. A place for the safe custody of arms (at militia stores, police stations, or elsewhere) to be provided. Rules to be subject to approval of War-office, and to be legally binding. Corps to be periodically inspected. Uniforms and equipments to be approved by Lord Lieutenant, and all in one county to be so near alike as to enable Government to form them into battalions. Companies to consist of not less than 60 nor more than 100 men, with 1 Captain, 1 Lieutenant, and 1 Ensign; and a sub-division to consist of not less than 30 men, with 1 Lieutenant and 1 Ensign. Officers to take precedence according to date of commissions. Accoutrements to consist

of a waist belt of black or brown leather, sliding frog for sword bayonet, and ball bag containing cap pocket and twenty round pouch. Ammunition and targets to be supplied by Government at cost price. The rest of the regulations consist of rules as to practice, and other matter of detail as to periodical returns, &c.

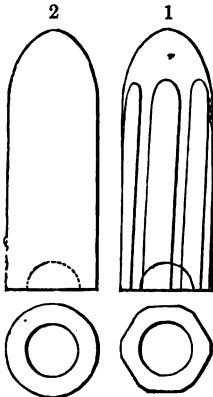
Thus the volunteer system is again fully recognised and promoted by Government, and it remains only to be seen how far the people will respond to the cry, "To arms! to arms!!" Most heartily do we trust that as we have now chronicled the fact that in 1806 there were no less than 370,860 enrolled volunteers in this kingdom, we *may* in 1860—simply reversing the last two figures—have to chronicle that roll multiplied an hundred-fold.

RIFLES.

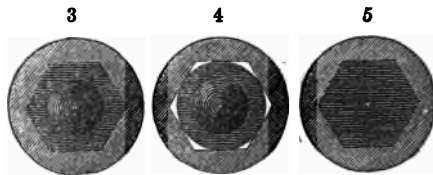
THE WHITWORTH RIFLE,

(*Made by the WHITWORTH RIFLE COMPANY, Manchester.*)

ONE of the most remarkable, or, as it is asserted, *the* most remarkable gun, for mechanical nicety and accuracy of bore, is the Whitworth Rifle, the invention of Mr. Whitworth, the eminent machinist and mechanician of Manchester. This splendid instrument is the result of many years of anxious thought, labour, and experiment, and of the expenditure of many thousands of pounds of money at the cost of Government. Its principle is that the bore, instead of



being circular, and grooved, is hexagonal, and the bullets are also of the same form, and made to fit, to a mechanical nicety, the interior of the barrel, both as to its hexagonal form and its turn. Mr. Whitworth says:—"In the system of rifling which I have adopted, the interior of the barrel is hex-



agonal, and, instead of consisting partly of non-effective lands and partly of grooves, consists of effective rifling surfaces. The angular corners [of

the hexagon are always rounded," and either cylindrical or hexagonal bullets may be used. If a bullet of cylindrical shape be fired it begins to expand, and is driven into the recesses of the hexagon, and thus becomes almost if not quite as effective as one fitted in the first instance to the bore. (See preceding pages for illustrations.) Fig. 1 shews the hexagonal projectile of its full size, and also its section, made to fit the bore of the barrel; Fig. 2 gives the cylindrical projectile. Fig. 3 shows the section of the barrel fitted with the hexagonal bullet; fig. 4 the section of the barrel with a cylindrical bullet before ignition; and fig. 5 the same when it leaves the barrel after expansion.

By this last diagram it will be seen that the force of explosion acting on the projectile easily effects its expansion, and adapts it to the curves of the spiral and the inclined sides of the hexagon.

Perhaps our readers may not all know the degree of force which is applied to a bullet at the instant of ignition of the powder. We therefore tell them that the estimated force of gunpowder at the moment of ignition is about 2,000 lbs. pressure on the square inch; or, in other words, one cubic inch of gunpowder is instantly converted into 2,000 inches of elastic fluid which strikes the bullet with a force of about 500 lbs. if the area of the base be half an inch; as four square half inches make one square inch. A force of this kind is more than enough to drive the cylindrical bullet into the angles of the barrel, and it thus becomes a mechanically fitting projectile. Of course, with this as with all other expanding bullets, it is essential that proper powder be employed, but of this we shall speak hereafter. If the projectile be originally of the same shape externally, as the bore of the barrel is internally, powder of the ordinary service strength is sufficient, and metals of all degrees of hardness, from lead to hardened steel may be used. With the hexagonal bore, and the projectile fitting mechanically to it, the rifle becomes a male and female screw, and thus secures a steady rotation.

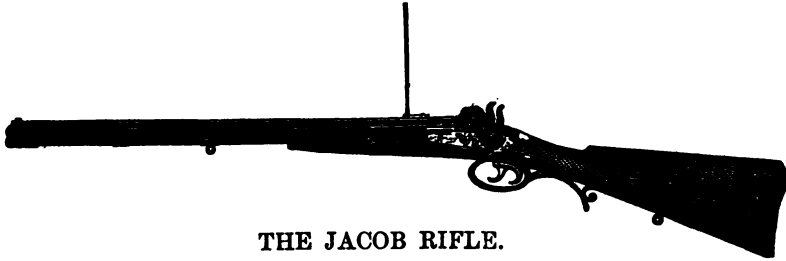
Of the curve, or spiral, of the barrel Mr. Whitworth says:—

"With the hexagonal barrel I use much quicker turns (than the Enfield), and can fire projectiles of any required length, as with the quickest that may be desirable they do not 'strip.' I made a short barrel with one turn in the inch (simply to try the effect of an extreme velocity of rotation) and found that I could fire from it mechanically-fitting projectiles made of an alloy of lead and tin, and with a charge of thirty-five grains of powder they penetrated through seven inches of

elm planks. At first I was desirous of using, if possible, the turn adopted for the Enfield Rifle, for firing long projectiles, and I tried various shapes and combinations of metal, so as to place the centre of gravity in different positions more or less forward; but when they were fired, the marks left by their passage through a paper screen, placed about six feet from the muzzle of the rifle, showed that they all turned over within that distance, because the rotation given by that comparatively slow turn invariably proved insufficient to keep them point foremost. For an ordinary military barrel, thirty-nine inches long, I propose a 45-inch bore, with one turn in twenty inches, which is, in my opinion, the best for this length. The rotation is sufficient, with a bullet of the requisite specific gravity, for a range of 2,000 yards. The gun responds to every increase of charge, by giving better elevation, from the service charge of seventy grains up to 120 grains; this latter charge is the largest that can be effectively consumed, and the recoil then becomes more than the shoulder can conveniently bear with the weight of the service musket. The advocates of the slow turn of one in six feet six inches consider that a quick turn causes so much friction as to impede the progress of the bullet to an injurious, and sometimes dangerous degree, and to produce loss of elevation and range; but my experiments show the contrary to be the case. The effect of too quick a turn, as to friction, is felt in the greatest degree when the projectile has attained its highest velocity in the barrel, that is at the muzzle, and is felt in its least degree when the projectile is beginning to move, at the breech. The great strain put upon a gun at the instant of explosion is due, not to the resistance of friction, but to the *vis inertiae* of the projectile which has to be overcome. In a long barrel, with an extremely quick turn, the resistance offered to the progress of the projectile as it is urged forward becomes very great at the muzzle, and although moderate charges give great results, the rifle will not respond to increased charges by giving better elevation. If the barrel be cut shorter an increase of charge then improves the elevation. Finding that all difficulty arising from length of projectiles is overcome by giving sufficient rotation, and that any weight that may be necessary can be obtained by adding to the length, I adopted for the service weight (530 grains) an increased length, and a reduced diameter, and obtained a comparatively low trajectory. This affords very great advantages; less elevation is required, and the path of the projectile lies more nearly in a straight line, making it more likely to hit any object of

moderate height within range, and rendering mistakes in judging distances of less moment."

It is very important to state that the trajectory of Mr. Whitworth's Rifle at 500 yards is 8 ft. 6 in., while that of the Enfield is 11 ft. 6 in.,—both having the same charge of powder and weight of projectile. With a barrel thirty-nine inches long, and of half inch bore, with one turn in twenty inches (or two turns in its entire length) the Whitworth Rifle projectile will pass through a wrought iron plate 6-10ths of an inch thick, or cut a clean core through solid timber six inches thick,—the projectile making at the rate of 15,000 revolutions per minute. At 1880 yards this rifle will, we are told, drive its bullets into the target, while the Enfield makes no hits whatever at 1440 yards.

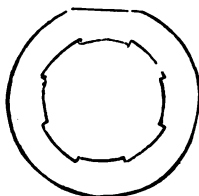


THE JACOB RIFLE.

(Made by G. H. DAW, 57, Threadneedle-street, London.)

Undoubtedly no one has ever done so much for perfecting the rifle, and for bringing its powers and capabilities into a practical system, as has the gallant and lamented General whose name this splendid arm bears, and who spent a long life and thousands of pounds of his own money in experiments upon its principles. The result of these experiments, and of his zealous, untiring labours, is the rifle under notice, which is decidedly the most compact, pleasant, effective, and useful muzzle-loading weapon for general purposes which we have tried. This gallant officer, at the city he founded, and which is named after himself, "Jacobabad," established practice grounds of the most complete and surprising character. His ground was a plain of great extent, on which were planted targets at all imaginable distances, and suitable for every variety of experiment. These targets were formed of solid brick, at a cost of thousands of pounds, and ranged at distances of from 100 to 2,000 yards from the shooting station,—the 2,000 yard wall being forty feet

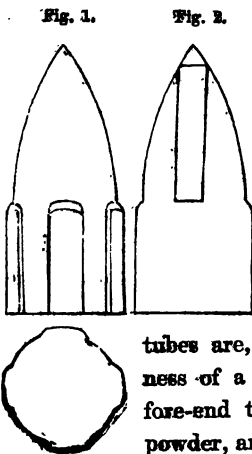
high, fifty feet long, and no less than three feet in thickness, and the others of proportionate dimensions. On this ground the great General, regardless of expense, of toil, of trouble, or of time, carried on his experiments, which have ended only in his death, and in the production of the rifle so appropriately named after him. Without encumbering our pages with details of these experiments—highly interesting and important though they are—we will at once proceed to a description of the arm itself, simply premising that it, and all the guns made for General Jacob himself for the prosecution of his experiments, were made by Mr. G. H. Daw, the eminent gun-maker of Threadneedle-street, London, than whom there is no better or more practised gun-maker in the kingdom. The rifle we shall describe is of the regulation (24) guage, and consequently the one best suited, under existing arrangements, to general use for rifle corps. The barrel is 24 inches long, with four deep grooves, of equal breadth with the lands,—that is, that the circumference of the bore is equally divided into eight parts, alternately raised



and sunk, as shown in this engraving; and the ends of the lands at the muzzle are gradually rounded off to a point for facility in loading. The turn is one in thirty inches; that is, the barrel takes four-fifths of a turn in its length, which, after all the General's experience, he found to be the best and most effective turn which could be adopted. The barrel weighs $4\frac{1}{2}$ lbs., and the whole arm 7 lbs. It has a patent breech, with no side vents; and the interior of the breech is so arranged as to tear open the skin of the cartridge in loading, and thus to render its rapidity of discharge almost equal to any breech-loader. The sights are of the most perfect and beautiful construction. The folding sight is attached to the barrel at the distance of twenty inches from the muzzle sight. For ordinary purposes it is scaled for adjustment up to 1,300 yards; but sights for longer ranges, up to 2,600 yards, can be kept and substituted by the shooter at any time. The sight lies flat upon the barrel for short distances (100 yards); and the fine gold line which runs along it is then, and indeed in all cases, of the utmost advantage in taking correct aim. When fixed for long ranges, the sight is elevated in about the following ratio: for 500 yards, three-quarters of an inch above the barrel; for 1,000 yards, one inch and five-eighths; for 1,300 yards, two inches and three-eighths, and so on in proportion. By this sight the most scrupu-

lously accurate aim can be taken, and with ordinary care in its use a man will soon become far above an average shot.

The bullet as now formed for the Jacob rifle, is, in the opinion of many of the best authorities on the subject, the most perfect form hitherto tried for rifling purposes. It is more acutely pointed than any others, and this, in our opinion, gives it an immense superiority, and enables it to cleave through the air with the utmost rapidity which has yet been attained. From its peculiar form it meets with less resistance in the atmosphere, and attains greater distance as well as greater speed. The annexed diagram, fig. 1, shows



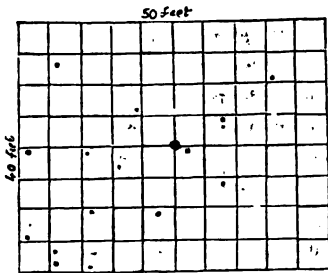
the form of this projectile, and fig. 2, the Jacob shell, of the same external form, but fitted with a copper tube filled with detonating powder and gunpowder, let into a deep hollow at the smaller end. These percussion shells, which General Jacob says are "the most formidable missiles ever invented by man," are undoubtedly the most effective of all the adaptations of percussion power to projectiles which have ever yet been tried. The tubes are, as we have said, of copper, of about the thickness of a quill, and three-quarters of an inch long. The fore-end terminates in a cone filled with the fulminating powder, and the remainder of the tube is filled with a fine quality of gunpowder, and stopped in with a varnished plug. Its position will be seen in the section, fig. 2. The effect of these shells when fired against artillery, or timber of any kind, is terrific in the extreme, and the General says, and we believe with perfect truth, that, armed with these missiles, two expert riflemen could annihilate in ten minutes the best field battery of artillery at present in existence. In course of some experiments at Kurrachee in India, 550 lbs of powder was exploded at 1800 yards distance with a 32 guage Jacob rifle and shell, and ammunition boxes were exploded with the same arm at 1200 yards, and these show most incontestibly its power and value as a military small arm. Of course, in the use of these shells great precaution is necessary, and the end of the ramrod is so contrived in hollowing, that it shall press on the lead *only*, in loading, and not on the apex containing the powder. Was this not the case, and a blow from the ramrod was given on the cone of the

tube, instant explosion would, of course, take place, which would be the death of the loader. We think it right to say this much as a caution to those who determine upon trying these deadly projectiles,—they are safe enough in ordinarily careful hands, but are highly dangerous in inexperienced ones. Those who wish to use them, may obtain them, or the tubes, the moulds, and every possible thing connected with them, which may be required, from Mr. Daw, the maker of the Jacob rifle, of 57, Threadneedle Street. By means of the shell fired out of a Jacob rifle such as we have been describing, a correct range of about 2,000 yards may be obtained with a charge of two drachms of powder only, and we apprehend beyond this nothing can well be required.

As a long-range military weapon, when fitted with the sword bayonet, we know of no arm which can be put into the hands of any body of men, which is so compact, so easy to carry and handle, and at the same time so effective and capable of doing execution in the ranks of an enemy, as is the Jacob rifle. It is one which, if adopted by volunteer rifle corps, will render them the most efficient body of men any country can produce. The only objection to its adoption by corps (and we confess it is a grave one) is that the Government ammunition cannot be used in it; and, therefore, in time of actual warfare, unless Government adopt it, the arm would have to be superseded by the Enfield. In trying this rifle, we have obtained the most satisfactory results. We commenced at two hundred yards, and the first shot we ever fired from it struck close by the bull's eye; and out of thirty rounds which followed, twenty-seven were within the circle of the target, of which four were in the bull's eye. Our after practice, both at this and at longer ranges, has been equally as satisfactory, and has proved to our minds, incontestibly, its advantage over others, not only for ball practice and for corps service, but for sporting purposes also.

We append a diagram of a target at 2,000 yards, shot at Jacobabad by the General himself not long before his death, viz. on the 13th of July, 1858. On this occasion fourteen shots were fired from a heavy double-barrelled rifle (8 lb. barrels) of 32 guage. Eley's cartridges, $2\frac{1}{2}$ drachms, were used, and the shells were $2\frac{1}{2}$ diameters long, and weighed 575 grains. Fourteen shots were fired, of which thirteen struck; the first having missed to the left. The wind was blowing strongly at the time, obliquely from the right and rear of the shooter. All the shells burst well. This diagram was communicated in a private

letter from General Jacob to F. J. Jessopp, Esq., of Derby, who has per-



mitted its use. It appears, from the correspondence which accompanies it, that Mr. Jessopp had submitted a plan to the General, by which he hoped to obviate the inconvenience of loading separately with patches. His plan was to have small tin tubes, trumpet-mouthed, to fit the bullet. In each of these he placed a cruciform patch, and pushed the bullet down nearly to the

the end. In loading, he placed the cylinder, or tube, on the muzzle, and pressed the bullet and patch home together, returning the cylinder to the pouch for after use. In reply, the General says he has no doubt the plan will answer admirably, but would not be adapted for general use in the ranks; and he considers the best plan to be, to stitch the patches on to the bullets and then dip them into melted tallow, and put them up into bags of 20 or 25 each. He then, in his characteristic way, goes on to say:—"If you once used the shells you would be disgusted with all other projectiles, which appear positively childish when compared to them. The Enfield rifle is like a pea-shooter when compared to a good shell rifle. With the latter, at 1200 or 1400 yards you could kill every man in an army without a chance of them injuring you in return." Of course, the General here forgot that the opposing army *may* be armed with a similar missile!

THE ENFIELD RIFLE.

Everybody has heard of the Enfield rifle, which is in course of adoption by the service, as fast as stores for that purpose can be made; and everybody has heard almost fabulous accounts of the immense cost at which the gigantic government establishment where they are made has been founded and is carried on. Did our limits allow us to do so, we should have wished to have fully gone into the matter, and the manufacture of the rifle throughout, and to have described the various processes which it undergoes, and the wonderful machinery by which it is accomplished. This, however, we have not space for, but will at once proceed to describe the rifle itself, by the aid of a very carefully executed engraving, showing its various parts. It will, however, be well to pre-

mise that the rifle, the stock, and every part, is made and finished by steam machinery, that there are 719 different processes in its manufacture, that the number of hands employed is 1,250, and that 1,200 rifles per week can be made with ease. Thus, at the rate of one rifle every three minutes, are our forces being supplied with these deadly arms. The cost at which the Enfield factory for the manufacture of small arms has been established is as follows. The buildings alone cost no less than £91,618, and the machinery and stores, £117,345, making, with later additions, and exclusive, of course, of salaries, wages, &c., about £250,000. This, it must be owned, is a great outlay; but it has been wisely made, and the rifles turned out are not to be equalled by those of any other country.

The barrel of the Enfield rifle is 3 feet 3 inches long, and the length of the complete arm, *without* bayonet, is 4 feet 7 inches, *with* bayonet, 6 feet 1 inch, its total weight being 9 lbs. 3 oz. The barrel is rifled in three grooves, shallower at the muzzle than at the breech, and the turn is one in seventy-eight inches, or exactly half a turn in the length of the barrel. The charge of powder (regulation) is $2\frac{1}{2}$ drachms, and the weight of bullet, 520 grains. The various parts will be seen and understood by the accompanying engraving.

Fig. 1 shows, in the first place, a side elevation of the rifle with a scale placed above it, to give a general idea of the proportions of the stock and such parts as are not shown more in detail. No. 2 gives two views of the bayonet. The manner in which this is affixed to the rifle is as follows:—The socket of the bayonet is in the first place slipped over the muzzle of the gun, the foremost sight passing up a groove prepared to receive it; after this it is turned to the right, the sight following the groove in that direction; it then slips still farther on, and is fixed by the band which is to be seen in the detail view (numbered 3 are two views of the butt plate of brass which is placed against the shoulder in firing). No. 4 shows the ramrod to the same scale as the elevation of the rifle; it has at its extremity a slotted hole for inserting the tow used in cleaning the barrel. No. 5 shows two views of the adjustable sight, with its moveable leaf graduated for different distances; in the front view of No. 5 is to be seen the slide, which is raised when required and gives the desired elevation. Nos. 6, 7, and 8 show side and front elevations of the bands for clipping the barrel to the long end of the stock; that at the top is fitted with a sling belt swivel for carrying the rifle strap, and the

whole are split at one side and fitted with adjusting screws. The details enumerated are shown to a scale double that of the elevation of the rifle and ramrod.

The Enfield rifle is composed of sixty-three different parts, including all the screws and other minute portions. As we have not before given this information, we append a list of them in their proper order. The number of pieces in other rifles is nearly the same, so that this will serve as a general guide :—

1 Stock	1 Sight leaf	3 Nuts for band screws
1 Barrel	1 Sight slide	1 Swivel for upper band
1 Breech screw	1 Sight leaf top	1 Swivel for guard
1 Front sight	1 Sight spring	1 Swivel screw for guard
1 Bayonet	1 Sight spring screw	1 Trigger guard
1 Locking ring	1 Sight leaf screw	1 Trigger guard pin
1 Locking ring screw	1 Sight axis pin	3 Trigger guard screws
1 Bayonet stop screw	1 Nose cap	1 Trigger plate
1 Lock plate	1 Nose cap screw	1 Trigger
1 Hammer	1 Ramrod	1 Trigger screw
1 Tumbler	1 Ramrod stop	2 Side cups
1 Sear	1 Ramrod spring	2 Side screws
1 Bridle	1 Ramrod spring pin	1 Tang screw
1 Swivel	1 Band upper	1 Butt plate
1 Main spring	1 Band screw upper	2 Butt plate screws, large
1 Sear spring	1 Band middle	2 Bridle and sear screws
1 Tumbler screw	1 Band lower	1 Cone
1 Sear spring screw	2 Band screws, middle and lower	Total, 63 pieces.
1 Sight bed		

The ordinary projectile is a modification of the Minie. It is cylindrical, obtusely pointed, hollow at the base, and fitted with an iron cup for expansion. This cup, which, of course, it will be understood is intended to produce expansion by being driven up into the bullet on explosion, is the most objectionable part of the thing. It is perfectly unnecessary, and even injurious, as it is sometimes driven *through* the bullet, and thus chokes up the barrel. The plain Pritchett bullet, an obtusely headed cylinder deeply hollowed at its base, is undoubtedly more effective, more simple, and takes the rifling from the grooves easier than any other form; and it is now being very generally adopted in place of the Minie cup.



For the purposes of the line no better arm is needed than the Enfield. With it good shooting may be made at 900 yards, and it is very effective at greater distances when used against troops or bodies

of infantry. For rifle corps it is certainly too heavy, too long, and too unwieldy, and is not up to the mark for the long-range target practice which most will endeavour to perfect themselves in. The short Enfield-Pritchett, with a barrel 2 feet 6 inches long, and a sword bayonet, is the only Enfield which ought to be placed in the hands of rifle corps. We have repeatedly tried the long Enfield, but have never found for target practice that it comes up at all towards an equality with other makes which we have shot with. We believe that the cost of each rifle to the country at the Enfield factory is £3 4s., but those made by contract are somewhat more costly.

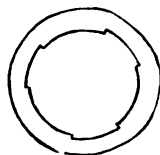
The SHORT ENFIELD is a particularly handy and convenient arm, and is highly effective for every purpose required by a corps. The bore, of course, is precisely the same as for the long Enfield; the same ammunition serving for each. The sword bayonet is precisely of the form we have engraved under the head of the Pritchett artillery carbine. The length of the barrel is 33 inches; of the entire gun $48\frac{3}{4}$ inches; and with sword bayonet, exactly the length of the long Enfield and bayonet, viz., 5 feet $11\frac{3}{4}$ inches. The weight of the barrel is 3 lbs. $12\frac{1}{2}$ oz., and of the entire arm with sword-bayonet 10 lbs. $3\frac{1}{4}$ oz.

The short Enfield, so called, is supplied by most gunmakers; but as so many of them thus supplied are not of regulation weight, calibre, and measure, it is of the utmost importance to use every care and precaution in selecting not only the gun, but the maker from whom it is had. By far the greater part of those supplied by ordinary gunmakers, or rather dealers, are what are technically termed. "Tower rejects," i. e., they have been rejected by the authorities from some cause or other and are then sold to the public as perfect guns. We have, of course, not tested every make of the Enfield, but we have no hesitation in saying that if a corps wishes to be really well supplied with an arm which shall be a credit to them, and one on which they may thoroughly depend for good workmanship, accuracy, and every essential for a first-rate arm, they cannot do better than place their orders in the hands of such men as Mr. R. T. Pritchett, of 86, St. James's Street, London, the inventor of the universally-approved Pritchett bullet; Mr. G. H. Daw, 9, Threadneedle-street, London, the maker of the Jacob rifle; Messrs. Hollis and Sheath, or some other respectable house. In such hands a corps will be perfectly safe, and may rely on being supplied with good regulation arms.

THE PRITCHETT RIFLE.

(Made by MR. R. T. PRITCHETT, 86, *St. James's-street*, and 59, *Chamber-street*, *Goodman's-fields*, *London*.)

THE name of "Pritchett" is so identified with fire-arms, that we presume there are but few, if any, of our readers who are not familiar with it, though, perhaps, not with the many admirable inventions with which it is connected. In the course of our work we shall probably have occasion more than once to allude to the successful labours of this gentleman, at present our purpose is to describe the rifle which, *per se*, bears his name. We have by us a Pritchett Artillery Carbine of this construction, which is one of the most compact, easy, and useful arms we have ever tried. This we will now describe. The barrel is 24 inches long, and the bore .577, the regulation diameter; and the whole length of the arm, exclusive of sword bayonet, is 3 feet 4 inches; with sword bayonet, 5 feet 3 inches. It is stocked to within 5 inches of the muzzle, brass mounted, and finished in a most excellent and business-like manner. The stock is attached by bands, which for all military purposes, and for the purposes of volunteer corps, is the most useful and advantageous,—the bands serving as a guide for the placing of the hands in going through the different exercises and drill movements. The barrel is rifled in three grooves, slightly deeper at the breech than at the muzzle, a system first introduced by the manufacturer, with a turn of one in 6 feet 6 inches, or about a third of a turn in the length of the barrel. The back sight is fixed 19 inches from the muzzle sight. It has a double action folding sight, with slide, and is graduated up to 1,100 yards. The sword bayonet is 2 feet 3½ inches long, the blade being 22½ inches long, and the hilt 5 inches. Thus the sword bayonet is 10 inches longer than the ordinary bayonet, and so compensates for the shortness of the barrel, in all cases where fixed swords



can be of service in repelling attacks of cavalry. Its form will be seen in the accompanying engraving. The guard B is of steel, the hilt C of

brass or fish-skin, and it is attached to the rifle by a ring at the back of the guard at D, which slipping over the muzzle, affords much protection, and is locked to the side of the barrel by the spring E. A, of course, is the blade, which is of fine steel, and curved. F is the scabbard, of thick leather mounted with polished steel.

We have described the sword-bayonet in this part of our work rather than any other, because we believe it owes its introduction into the British service to Mr. Pritchett. In 1851, that gentleman's attention was attracted, whilst studying in the "Ecoles de Tir" in Paris, to the sword-bayonet of the celebrated Chasseurs de Vincennes, and in 1852 he made a new pattern rifle with this sword attached, which he showed at Woolwich on the 15th of May in that year with eminent success, as will be seen from the following extract from the *Times* of that date :—

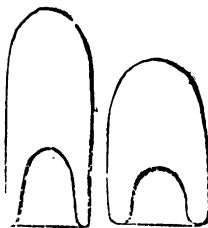
CHASSEUR RIFLE AND SWORD.—WOOLWICH, MAY 15.—Messrs. Pritchett and Son, who have for many years supplied the Board of Ordnance and the Hon. East India Company with small arms, attended in the Marshes here in the early part of the week with a new rifle, similar in principle to the celebrated rifle of the Chasseurs de Vincennes. The practice was remarkably good, the following being the result of the firing :—The target fired at was 18 feet high, by 12 feet broad; and of the first 16 rounds fired, 14 hit the target at 700 yards' range, and two only did not hit. The range was next extended to 800 yards; and of 17 rounds fired at that distance, 14 hit the target, and 3 did not hit. Fifteen rounds were fired at 900 yards' range, and out of that number 12 hit the target—one entering the bull's eye—and the other 3 did not hit. The trial was completed by firing the last 15 rounds at 1,000 yards' range, and at that distance 13 of the balls entered the target, and only 2 did not hit. The experiments may be considered a very fair test of the Chasseur rifle, as the weather was bad, with occasionally a Scotch mist or drizzling rain. The Chasseur rifle is 2 feet 10 inches long in the barrel, or 5 inches shorter than the barrel of the Minié rifle, the latter being 3 feet 3 inches in length. To place the Chasseur rifle in an equally advantageous position for close quarter defence, a sword, of the same description as those used by the French Chasseurs and Artillery, is fitted in the muzzle in the strong but similar manner as the bayonet; and the sword being 1 foot 11 inches in length, the Chasseur rifle and sword is exactly equal in length to the Minié rifle, or common musket and bayonet. The weight of the Chasseur rifle is 8 lb. 7 oz., and the mode of taking the sight when firing exactly on the same plan as has been adopted in the Minié rifle. The Chasseur sword is a most powerful weapon when fixed on the end of the rifle; and being sharp on one side, with a slight curve near the point, the wounds inflicted by it would be of a most destructive nature; and it may be used with the hand with great effect, the blade being 1 foot 10½ inches in length, exclusive of the handle, &c.

In 1853 the sword-bayonet was first adopted for the Artillery, and subsequently for the Rifle Brigade, and now, finally, for the naval service for the marines, for which services Mr. Pritchett is manufacturing them for the War Department. This arm, the "Pritchett Artillery Carbine," is the one we have just described.

For rifle corps the barrel is of the length of the short Enfield; and then, with the sword-bayonet, it is impossible, in our opinion, to place a

more useful, and for ordinary purposes more effective, instrument in the hands of any body of men. If great length of range is a desideratum, of course this arm is not intended or wished to compete with the small bore, or perhaps others ; but for actual use on the field, its range (fifteen or sixteen hundred yards) is all that can be required.

The projectile is the simple Pritchett bullet, as described under the head of the Enfield rifle, and this is undoubtedly the best to be used for this arm. We may probably speak again of this bullet before we close our series of papers ; but it will be well here, perhaps, to state that it is cylindro-conoidal (that is, the lower end is cylindrical, and the upper has a conical head), obtusely pointed and hollowed



at its base. The expansion which drives it into the grooves is obtained by its being made of such a length in proportion to its diameter, that the force of the powder when ignited, acting suddenly against the base, drives it up slightly before the inertia of the point is overcome, thus causing it to expand throughout its cylindrical part, and more especially at the shoulder, which is the most important part, being directly over the centre of gravity. The hollow both lightens the bullet, causes it to expand more rapidly, and throws the centre of gravity forward. It has been used in from .70 bore, up to projectile three-quarters of a pound.

The guns we have described, as is also the Enfield, are made by Mr. R. T. Pritchett, of 86, St. James's-street, London, who is prepared to supply volunteer corps, with rifle, sword-bayonet and sling complete, of first-rate workmanship, at £4 10s. 6d. Mr. Pritchett makes arms for the Victoria Rifles, and this alone is a guarantee of the excellence of the arms supplied by him.

TERRY'S BREECH-LOADER.

(Made by CALISHER and TERRY, *Whittall-street, Birmingham.*)

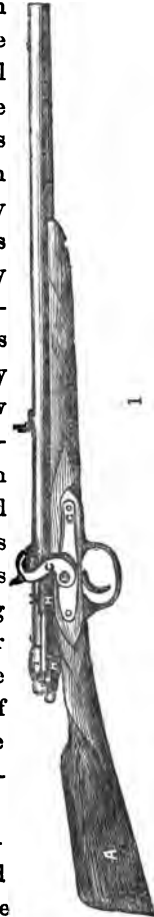
This powerful and well-constructed breech-loader is one of the most simple in construction, and yet most highly effective as a rifle arm, especially for cavalry purposes, of all the varieties now in use. The gun was patented in 1856, but since then, although the principle is the same, so many little fresh arrangements and adjustments have been made, that the present arm is almost as great an improvement upon itself, as it then was upon what preceded it. We were glad to learn a few months ago that

RIFLES AND VOLUNTEER RIFLE CORPS.

the War Office authorities were so strongly impressed with its importance as to order its immediate supply to several cavalry regiments, and we have no doubt that it will before long become, as it deserves to be, generally adopted, although the two most recent writers on rifles (Russell and Busk) pass it over in so off-hand a manner,—the former simply remarking, “Of Terry’s I have seen nothing, but have heard much from admirable judges;” and the latter speaking in anything but a flattering manner of its merits.

The barrel is rifled in five grooves, with one turn in thirty-six inches, that is, more than half a turn in the length of the barrel of the carbine. The lands are equal to the grooves, and come up flush to the muzzle. The principle of the invention is that the barrel opens at its side for the insertion of the charge, and this is done in such a simple manner that the greatest possible rapidity in loading is attained. One great advantage which Terry’s arm has over other makes is, that the barrel is firmly fixed, instead of moving forward, and the charge effectually bolted in and secured. We have a carbine of this construction of 30 gauge, with which we have done very satisfactory firing, and this arm we will therefore now describe. The barrel is twenty-five inches long, including the breech-loading apparatus; or twenty inches from nipple to muzzle. It is stocked its full length, and secured by a band. It has a folding sight, the axis of which is sixteen and a-half inches from the muzzle sight, and is graduated from 100 to 1000 yards. It has a steel cleaning rod, one half of which is beneath the barrel and the other end in the butt end of the stock. The cartridges are inserted, as we have said, in an opening at the side of the barrel immediately behind the lock. The admirable construction of this part of the arm will be best understood by reference to the accompanying engravings.

Fig. 1 is the rifle itself, which is of the same construction as the carbine. Fig. 2 is a section of the breech end of the barrel, showing its mechanism when open, and the way in which the cartridge is inserted and securely held during discharge. Fig. 3 is a similar section showing the mechanism when closed

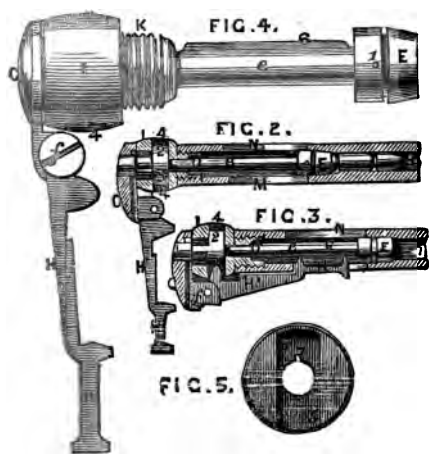


down. Fig. 4 is the piston by which the charge is driven in, and held during discharge. And fig. 5 is the opening at the end of the breech. In these figures, A is the stock, B the barrel, C an ordinary percussion lock, and D the breech, the construction of which, and the mechanism connected with it, forms the principal feature of Mr. Terry's invention.

E is a sliding piston, whose rod, *e*, is securely fixed into a piece of metal, G, to which is also hinged, at *f*, a lever, H, H, employed for locking the opening. I is a piece of metal passing over to the piston rod, *e*, and connected to the breech-end of the barrel by a screw, K, formed in the end of the barrel and around the piece I. The piston E, fig. 4, is formed slightly taper and solid, and is securely connected to the piston rod *e* by a pin at I; and the diameter, or calibre, of the bore of the barrel, at the breech-end thereof, is somewhat larger than the other part of the barrel, and is made conical, to receive the taper part of the piston, which should fit, as far as practicable, air-tight therein. The piston rod, *e*, has two lugs or projections, 2, 3, formed upon it, which fall into slots or openings, 4, 4, formed opposite to each other in I, as at fig. 2; an opening, 5, is formed in the piece I, as at fig. 5, to enable the parts 2, 3, to be inserted into that piece. One side of each of the slots, 4, 4, and lugs, 2, 3, inclines in opposite directions, so that when

2, 3, are moved, the piston E is forcibly pressed into its seat and held there. In order to effect the partial turning round of the lugs, 2, 3, the feather, 6, in the rod, *e*, is free of the groove in which it slides for drawing back the piston, to allow the cartridge to be introduced at M; the opening being nearly closed by the outer end of the lever, H, which fits as at figs. 1 and 3. There is a tempered steel spring attached to the G, for keeping

the lever, H, H, in the opening, M, during the discharge of the cartridge. The upper and under sides of the part, H, of the lever, H, are bevelled inwards to enable them to be readily gripped by the finger and thumb or withdrawing: the lever and pulling back: the piston: or charging. N



a slot or opening, formed in the breech for the escape of dirt, &c.; and O is a recess containing grease, which at every discharge lubricates the piston. The simplicity of the construction of this arm is a great advantage, as in case of accident it can easily be repaired by a common smith.

With this carbine at 200 yards distance we have put, out of twenty-five successive shots, twenty-three in the target, and in the whole course of our shooting have never known it, at present, miss fire. It is very easily handled, loads rapidly and pleasantly, and is no more subject to be dirty about the nipple than other breech loaders are. The projectile is the Pritchett bullet, as will be hereafter described. It is deeply hollowed at base so as to produce expansion, and drive it into the grooves of the barrel. The cartridge is formed of strong paper, and to its base is attached a thick greased wad, which on discharge remains in the barrel and is driven out in front of the bullet at the next discharge, and thus cleans out and lubricates the barrel at every shot.

The following testimony to the advantages possessed by this arm will be interesting to our readers. We copy it from the *Times* of July 22, 1858.

“A Breech-loading Rifle Carbine, the invention of Mr. Terry, of Birmingham, has been under test on board Her Majesty’s ship *Excellent*, under the superintendence of Captain Hewlett, C.B., from May 10th until the present time, during which time 1,800 rounds have been fired from it with unprecedented accuracy at various ranges, *without cleaning the weapon*, which, notwithstanding, gives no recoil; in proof of which Captain Hewlett gave the inventor the following certificate, which is fixed on the stock of the gun:—

“This is to certify that I have seen 1,800 rounds fired from this rifle without cleaning.

“R. H. HEWLETT.

“July 20th, 1858.”

The rifle missed fire but twice in the 1,800 rounds, and whether discharged by officer or man, 86 per cent. were “hits.” Yesterday the rifle was taken to the camp at Browndown, and its capabilities exhibited before the troops and Instructors in Musketry of the 15th Foot (Lieutenant Cuthbert) and Royal Marine Light Infantry (Major Lowder). The practice at 700 and 800 yards was marvellous, notwithstanding a very powerful wind, and will be continued to-day. Its advantages over the old pieces are, 3 lbs. less in weight, and five shots to one in time of

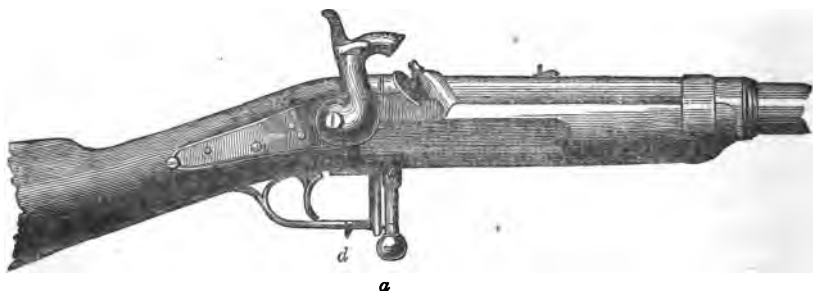
firing, giving it the advantages of a revolver with a tremendous range, and no necessity for cleaning out under about a couple of thousand rounds."

The same number of shots were fired from one at Liverpool in July, 1859, without cleaning, and it was loaded and fired at the rate of nine shots a minute.

This rifle, as in the case of other breech-loaders, can be loaded with facility by a person on horseback, his horse being at the time at full gallop. All danger of the hand being blown off while loading is entirely removed. A person loading them does not use, or require any ramrod, and the necessity of biting the cartridge, which has been the cause of so much complaint and suffering, is entirely dispensed with. Terry's rifle possesses an advantage which is of the utmost importance, namely, that almost any number of shots may be discharged from the piece without fouling. It is made by Messrs. Calisher and Terry, of Whittall Street, Birmingham, of whom the cartridges and all necessary things pertaining to the gun can be had.

PRINCE'S BREECH-LOADER.

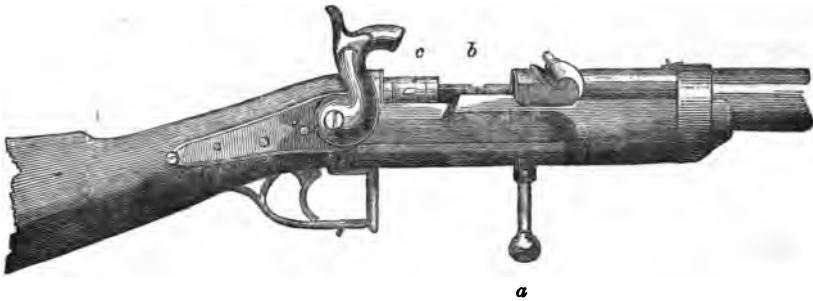
This invention, patented by William Frederick Prince, late of New Bond Street, London, which from the reports which have been circulated of its shooting, has attracted a great deal of attention latterly, is totally different in principle from any of those we have been describing, for while they open at the breech by bolt, or flap, or other contrivance, in this one the whole barrel detaches itself from the breech, and is driven forward until loading has been effected, when it is drawn back and



effectually bolted into its former position. The accompanying illustrations show the construction of this arm.

Fig. 1 shows the rifle with the breech closed, ready for firing; and fig. 2 shows it with chamber open, ready to receive the cartridge: (a) is

a lever terminating in a knob. This lever, when the gun is loaded, is close up to the front of the trigger guard, which is made square for that purpose; to this guard it is bolted (*d*), so as to keep it in its place. The other end of the lever is firmly attached to the breech end of the barrel,



and moves in a groove cut in the stock for that purpose. When it is desired to load, the stock is firmly grasped under the right arm, in same manner as for Terry's and other breech-loaders, the bolt (*d*) is loosened, the knob (*a*) attached to the lever is drawn to the right, and with the same movement of the hand driven forward. By this movement the barrel is released from the breech (*c*) and slipped forward on the stock to a distance of about three inches. The chamber (*b*) is thus opened ready for the insertion of the cartridge, which is dropped into the opening, the knob and lever pulled back into its place, and locked in by a sharp tap with the hand. The arrangement of the breech is admirable; it is formed like a segment of a screw, which works with the movement of the lever, and locks tightly in; and until this is accomplished the gun cannot possibly be fired.

The barrel is rifled in five grooves, with a turn of one in four feet, or three quarters of a turn in the entire barrel.

With regard to rapidity of firing, we are assured that Prince's rifle may be loaded and fired at the rate of nine rounds in sixty-three seconds, say nine rounds a minute. Of course this is *firing*, but cannot possibly be *aiming*. Nevertheless, it shows what may be done in case of emergency. Mr. Prince assures us that at a trial at Hythe, at target practice, he fired 120 rounds in less than eighteen minutes, and this, we apprehend, is much quicker than can ever possibly be required in actual warfare; and he also tells us that with a rifle of small bore he put six-

teen successive shots into a sheet of note paper at 100 yards, and twelve successive shots into a sheet of foolscap at 200 yards distance.

The projectile is the ordinary Pritchett bullet, and the cartridge is formed of a strong tough paper which ignites with the flash of the cap, and is entirely consumed in the explosion. It is, however, so constructed as to be available either for breech or muzzle loading, and we are glad to see that Mr. Prince, is now so improving his rifle, as to make it so that it can be loaded either way, and will take the Government ammunition when requisite.

THE WESTLEY RICHARDS' BREECH-LOADER.

This is one of the latest, or rather *the* latest, breech-loading rifle which has been invented, and is at the same time said to be one of the most effective. Unlike other makes, the breech action opens by a lid, or flap, which throws back on to the top of the barrel, and contains upon itself the whole of the mechanism by which the breech is plugged. The rifle was patented in March, 1858, and is more of an adaptation of parts of several other inventions, than an invention itself—its merit consisting in the putting together of the best features of other makes, so as to produce an arm capable of rapid firing and precision of aim. We have a carbine of .450 bore, of this construction, from which we have made very good shooting; and we have also shot from a rifle of larger calibre with almost as good effect. The carbine we will now describe.

The barrel and breech is $22\frac{1}{2}$ inches in length—the barrel itself being 20 inches, and the breech construction $2\frac{1}{2}$ inches. It is rifled on the same principle as the Whitworth, the only difference being that it is of an octagonal bore, while the Whitworth is hexagonal. The turn, too, is similar to the Whitworth, being one turn in twenty inches. The carbine is stocked up to the muzzle, and attached by a muzzle-band. It has a folding sight, the axis of which is placed $13\frac{1}{2}$ inches from the muzzle sight. It has a steel cleaning-rod under the barrel, the end, as well as a breech-cleaner, being enclosed in the butt end of the stock. The arrangement of the breech will be best understood on reference to the accompanying engravings. Fig. 1 shows the breech attachment thrown open ready to receive the cartridge. Fig. 2 a section of the same when closed into the barrel. In Fig. 1, A is the lid or flap thrown back so as to open the breech B for the insertion of the cartridge. C is the sliding block, which is loosely attached to the flap by a pin-screw at D, and

which, falling in against the breech, slides forward and locks the brass plug E into the barrel. F is a bolt, which, on closing the breech attachment, presses into and expands the wad at the end of the cartridge. In

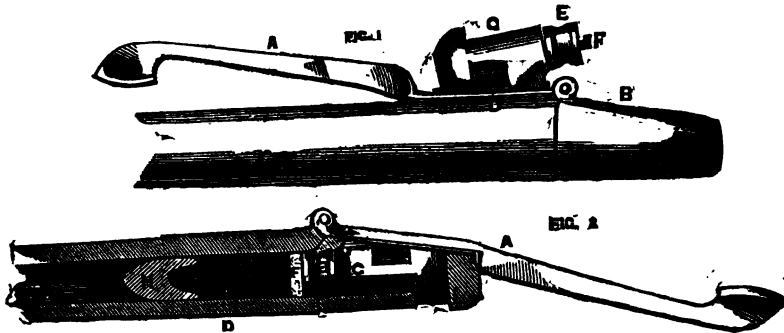


Fig. 2 (which shows a section of the gun charged, closed, and ready for firing), A is the lid, or flap, closed down, C the sliding block, E the brass plug, and F the wad at the base of the cartridge; G the gunpowder, and H the bullet.

For rapidity of action in opening and closing the breech, the Westley Richards undoubtedly stands first; but it is, nevertheless, we think, capable of further improvement. The flap, or lid, ought, in our opinion, to bolt or fall into a catch on the stock, so as to prevent all possibility of its flying up in course of firing.

We have made excellent shooting with this carbine, and have found it particularly easy and pleasant to handle, and very accurate in delivery.

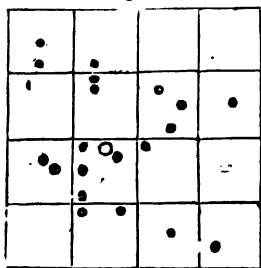
The projectile used is the ordinary conical bullet. The cartridge is formed of strong tough Bank's paper, tied tightly round and deeply drawn in at base of the bullet, so as to allow it to bend into the breech. To the end is attached a greased felt cloth wad, which expands on closing down the flap and felt, and thus prevents the escape of gas. The bullet is of $\cdot 457$ diameter (the chamber bore being $\cdot 475$) and its weight 430 grains. The charge of powder for this projectile, is two drachms; and the peculiar form of the interior of the barrel, and its quick turn, give it a tolerably low trajectory.

For corps purposes the rifle is, of course, made of the regulation length of barrel, and properly fitted with sword-bayonet. The carbine we have been describing is, for cavalry, as handy and convenient an arm

as can well be put into their hands. It does not foul at the nipple more than other breech-loaders do, is quick at loading, and easy at discharge; and if the works will stand the wear and tear of regular action, it will be a remarkably effective and valuable weapon to our troops.

The carbines and rifles are the same bore, viz.; $\cdot 450$ of an inch. The average shooting of the carbines at 400 yards gives a radius of 6

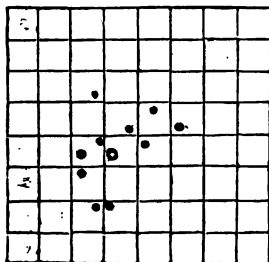
Fig. 1.



inches, and good shooting is from 4.50 to 5 inches. The angle of elevation at that distance is $1^{\circ} 10''$. The average shooting of the rifles at 600 yards is from 10 to 11 inches; good shooting from 7 to 8 inches, but at this distance as low a figure as $6^{\circ} 12''$ has been attained. The angle of elevation at 600 yards is $1^{\circ} 55''$. We append two diagrams of targets recently shot. The first

is a group from a target, showing shooting with a carbine twenty inches long, on the 22nd of September, 1859, at 400 yards. Twenty shots were fired, and all struck within a radius of 5.7 inches—the angle elevation being $1^{\circ} 16''$. The charge used was F.G. powder 2 drs., and ball 400 grains. The next shows a target of

Fig. 2.



3 feet 4 inches square. Shooting with a Rifle three feet long, on the 16th of September, 1859. On this occasion ten shots were fired at 600 yards, and all struck within a radius of 7.5 inches; the angle of elevation being $1^{\circ} 40''$. The charge was $2\frac{3}{4}$ drs. F.G. powder, and ball of 530 grains. In addition to these, the following highly satisfactory report of some shooting made with Westley Richards' breech-loader at Aldershot, which has been

furnished expressly to ourselves.

“Memorandum showing the merit of the shooting of four men of the Grenadier Guards with Westley Richards' Rifles, as compared with the best shooting of any company of their battalion armed with the Enfield.

Westley Richards' Breech-loader.				Enfield Rifle			
1st point,	}	150 to 300	}	1st point,	}		}
20 rounds.		yards ...		20 rounds.			
			27.10			18.34	

Westley Richards' Breech-loader— <i>contd.</i>				Enfield Rifle— <i>contd.</i>			
File firing, }	400 yards, }	12·75	}	File firing, }	300 yards, }	12·77	}
10 rounds.	standing .			10 rounds.	standing .		
Volley firing, }	500 yards, }	11·16	}	Volley firing, }	400 yards, }	10·96	}
4 rounds.	kneeling .			10 rounds.	kneeling .		
Skirmishing, }	From 400 to }	11·35	}	Skirmishing, }	From 400 to }	5·78	}
10 rounds.	200 yards .			10 rounds.	200 yards .		
50 rounds.	Total average	62·36	}	50 rounds.	Total average	47·85	}

Four men of the Grenadier Guards, from 100 to 300 yards standing; target 6 feet by 4 feet. Recapitulation first period, 27·10; bulls-eyes value 3; centres 2; outers 1. Averages found by total number of points divided by total number of men. The same firing from 300 to 600 yards, kneeling; target 6 feet by 8 feet; centres 2; outers 1; second period 20·75. The same firing from 600 to 900 yards, kneeling; target 6 feet by 12 feet; centres 2, outers 1; third period 12·50. Total average made with the 60 rounds, 20 being fired in each period, 60·35." At the same time a private firing against time without any previous drill, fired 40 rounds in 6 minutes.

The above report is highly satisfactory, and shows the capabilities of Westley Richards' gun in a remarkable manner. We believe that a carbine of his make was fired occasionally over a period of eight months, on board the "Excellent," at Portsmouth, in which time upwards of 600 rounds were fired; and although during the entire time the inside of the barrel and the breech-works were never cleaned, it was in as good condition at the end of that time as when the first shot was fired.

This arm, which has been approved by the Small Arms Committee is made by the inventor, Mr. Westley Richards, of Birmingham, from whom it, and the ammunition proper for it, may be obtained.

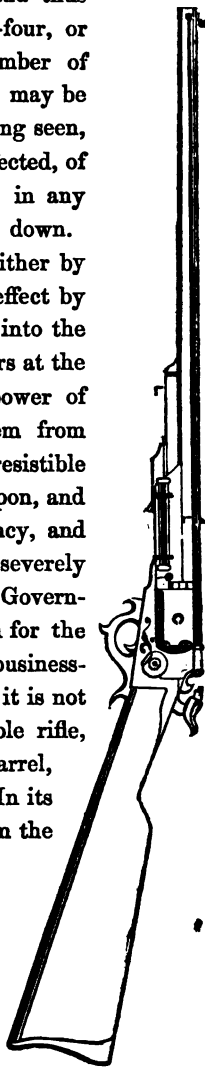
COLT'S REVOLVING RIFLE.

(Colt's Rifle and Pistol Depôt, Pall Mall, London.)

Of course, for actual service, one of the great desiderata of a rifle is rapidity of action; and this is attained to a marvellous degree by the Revolving rifle invented by Colonel Colt, and now greatly in use in the U. S., India, and the Colonies. The arm is, in general principle, the same as the gallant Colonel's pistols, which we shall hereafter describe; but its adaptation to the rifle, so as to be used in the ranks, is a most important matter, and one likely to be extremely valuable in time of actual warfare, as by it the rifle-man is enabled to fire six successive

shots, with deadly aim and unerring precision, without lowering the piece from his shoulder; and he may be provided with another, and another, ready loaded cylinder in his pouch, which he can, in as little time as, in ordinary cases, it takes to load even one of the best constructed breech-loaders, put in place of the exploded one, and thus keep up a running fire of twelve, eighteen, twenty-four, or any other number of shots, according to the number of cylinders with which he is furnished. And all this may be done by the skirmisher without the possibility of being seen, as the loading, or replacing of the cylinder, is effected, of course, at the breech, and can be done with ease in any position, either kneeling, sitting, crouching, or lying down.

Colt's revolving rifle—which can be loaded either by flask or cartridge—has been used with astonishing effect by celebrated American hunters, in their expeditions into the vast forests of the interior, and by many of our officers at the Cape and in India; and on many occasions the power of firing six shots before reloading has rescued them from situations of great danger. They pronounce it an irresistible and efficient weapon, which may be always relied upon, and affords an unfailing resource. The power, efficiency, and applicability to military uses of these rifles has been severely tested and satisfactorily proved by the American Government, who have ordered several thousands of them for the equipment of a body of picked men. It has a neat, business-like, serviceable appearance; and as regards weight, it is not more heavy or cumbersome than the ordinary double rifle, its weight varying, according to the length of barrel, from 7 lbs. to 12 lbs. each, with five and six shots. In its internal construction it differs, in some respects, from the pistols and early revolving rifles; for the catch which causes the breech cylinder to revolve, instead of acting against ratchet teeth, cut on the cylinder itself, works in teeth cut on the circumference of the cylinder end of the base pin, in such a manner that the base pin rotates with the cylinder itself, being locked by a small mortice in the cylinder, and the stop-bolt gears into corresponding notches, also cut in the end of the base



pin, and thus locks it when required. This is an improvement; and, by a simple arrangement, the small spring catch—which, by means of a circular groove on the front end of the base pin, keeps it in place—is immediately released, by pressing on a small stud, and the cylinder can be instantaneously removed or replaced. Instead of the pin—which in the pistol is used to let the hammer down or when carrying it—a small recess is cut between each nipple, in the cylinder itself, into which the hammer fits when let down, and makes security doubly secure. In the engraving, S is the sight, C the cylinder, arranged for six shots, L below the figure the lever, L on the barrel the lubricator for greasing the barrel on each discharge, and • the spring for firing the base pin.

At a trial of Colt's rifled carbines, ordered by the United States War Department, satisfactory results were arrived at at one, three, and five hundred yards. To test the penetration of the arms, a target of white pine boards, seasoned, one inch thick, with an interval of one inch and a quarter between the boards, and two feet by two in size, was used. The shots were fired at thirty yards from the target, when the carbine with 12-inch barrel penetrated 9 boards; the carbine with 15-inch barrel penetrated $8\frac{1}{2}$ boards; the carbine with 18-inch barrel penetrated 9 boards. These results induced the board to report on Colonel Colt's arms as superior to any other for cavalry service.

In connection with Colt's revolving rifle we call attention to an important improvement in bayonets made by Mr. Dennet, the energetic London representative of Colonel Colt, and which, besides being adapted to this special rifle are equally well calculated for the ordinary service of the army. The regulation bayonet is, as everybody is aware, triangular in form, with slightly hollowed sides, while those proposed and made by Mr. Dennet, are of a lozenge, rhomboidal, or elliptic section, the sides of which are grooved out; and the bayonets so formed, instead of being fixed upon the musket, carbine, or rifle, as heretofore, are so fixed, that the sharp edge is coincident with the longitudinal axis of the arm. The practice has heretofore been to expose one of the flat or grooved faces of the bayonet to the line of discharge, or flight, of the bullet, but this has been found extremely prejudicial to correct firing when the bayonet is fixed; as, from the re-action of the explosive force of the powder between the concave, or flat surface of the bayonet and the ball, the latter is caused to diverge from the correct line of flight. Of course it takes a long time to remove prejudices in favour of anything which the authori-

ties are accustomed to, and, therefore, the bayonet, as at present in use, will probably be allowed to remain in use for a long time to come. Ultimately, we feel persuaded, it will be superseded by these excellent improvements of Mr. Dennet, who has done good service by directing his attention to this important detail of small arms.

Of Colt's revolving pistols we shall speak hereafter, but while on the subject of his rifles we now call attention to a very important arrangement of his arm for cavalry purposes—the

PISTOL CARBINE WITH BREECH
ATTACHMENT.

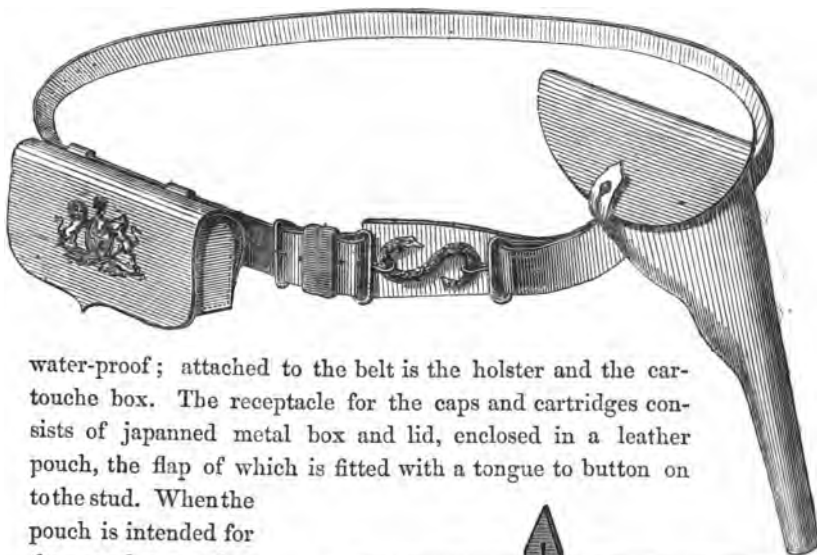
In this arm the Carbine breech or stock is attached to the $7\frac{1}{2}$ -inch barrel army and navy revolver, and thus the pistol is made an efficient substitute for the carbines now in general use, without detracting from the special and peculiar qualities of the revolver. The weapon may be used with great facility, and convenience as a carbine; and when not required for such use, the pistol may be removed and placed in the holster on the body, the butt or stock being allowed to swing from a strap or sling over the back, or at the side. An obvious advantage of this fitting is, that when in action, if all the charges of a repeating arm have been fired, the discharged pistol may be instantly exchanged for the other of the pair in the holster. Practical experience has proved that the revolver, as a substitute for the carbine, is a great boon to the soldier, as it is more rapidly loaded, more readily discharged, and, at ordinary distances, equally as effective as any other arm. With the pistol carbine really good shooting is easily effected at a range of three hundred yards.



Of the Colt rifle there are fifteen varieties, viz., three different calibre or bore, and five different sizes of each. These varieties, and every possible requisite, can be had at the Colt Depot, 14, Pall Mall, London.

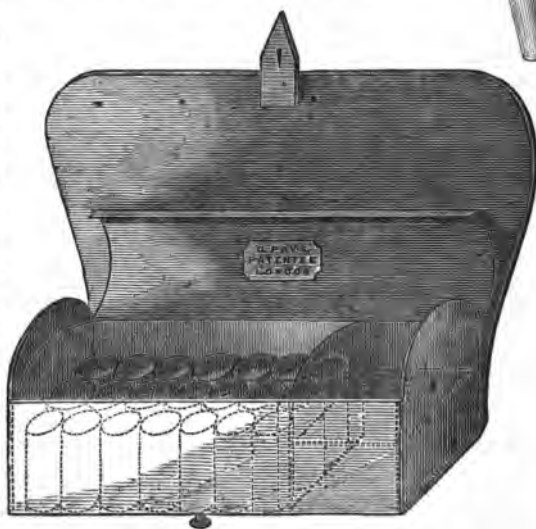
NEW HOLSTER, BELT, AND CARTOUCHE BOX.

Mr. C. F. Dennet has also lately introduced one of the most useful, as well as ornamental pistol holsters, cartouche pouches, and belts we have seen. The belt is made of black patent leather, and the fixture is



water-proof; attached to the belt is the holster and the cartouche box. The receptacle for the caps and cartridges consists of japanned metal box and lid, enclosed in a leather pouch, the flap of which is fitted with a tongue to button on to the stud. When the pouch is intended for the cavalry service, the suspending straps are passed through loops on the ends of the pouch, and are secured to the underside of the same by buckles.

When worn by the infantry, artillery, &c., it is run on the body-belt. One principle attained is the reduction in the weight of the present system, and Mr. Dennet's belt



saves man and horse no less than eight pounds.

The pistol to be used is a Colt's revolver only, in lieu of the heavy

cavalry pistol and cumbersome carbine and cross-belt. The deadly effect of a six-shot revolver must be obvious, in the right hand only of a dragoon, when he is now obliged to use his two hands to a carbine. Again, with the old belts, the obnoxious pipe-clay is an eternal source of annoyance; whereas the black patent leather has only to be rubbed over with a moist rag, and it appears again quite new. This belt and holster, of which we give engravings, is, without exception, the most convenient and handy thing of the kind we have ever seen. It is made of sizes to suit both cavalry and infantry, and our impression is that no man is properly or efficiently armed unless he have about him the best constructed revolver he can get, and so placed in a holster as to be drawn out and fired on the instant. No rifleman certainly ought to consider himself fully equipped without one.

NEEDHAM'S BREECH-LOADING NEEDLE GUN.

(Made by J. NEEDHAM, 26, Piccadilly, London).

In construction, this gun is different from any other which has come under our notice, except the Prussian needle gun, which, however, is far inferior to it. Of course, it has no lock, and requires no cap; it is extremely easy in handling, loads and discharges with the utmost rapidity, and shoots with great accuracy and precision. It is beautifully made, and is an extremely effective weapon both for military and sporting purposes. This gun was patented by Mr. Needham in 1852, but has since then been considerably improved; and it is now one of the most complete and satisfactory firearms which can be placed in the hands of a sportsman. It is made both single as a rifle, for military purposes, and double for sporting. We have a rifle of this make with which we have made excellent shooting at various distances. This we will now describe, merely premising that for a military weapon for such rifle corps as may adopt it, it is fitted with sword-bayonet according to regulation bore.

The barrel is fifty-four inches long, of which four and a-half inches is taken up with the breech-loading apparatus. The stock is twenty-five inches long, and the whole weight of the gun is $7\frac{1}{2}$ lbs., without sword. The barrel is octagonal exteriorly, and grooved in its interior in five diagonal grooves. The turn is one in forty-five, or three-quarters of a turn in the length of the barrel. The muzzle sight is beaded; the back sight is a folding one scaled to 400 yards, and placed twenty-five

inches from the fore one. As far as cartridges are concerned, Needham's gun is far a-head of the French system, in which the cartridges are expensive, and must each time be drawn out before re-loading. In Needham's the cost is much less; the discharged cartridge is pushed forward each time of loading, into the chamber, and is discharged on each explosion. The construction of the gun will be best understood on



Fig. 1.

reference to the accompanying engravings. Fig. 1 is the rifle with the breech closed ready for firing. Fig. 2 is a view of a double barrel, separated from the stock for the purpose of showing one barrel with the breech closed, and the other open ready to receive the charge; and it may be worthy of remark, that this mode of opening the breech has been in some measure adopted in Armstrong's great gun, and in other recent constructions of fire-arms.

Fig. 3 shows one of the actions detached from the barrels, which is easily effected by withdrawing the pin on which it turns. The needle is here seen in the position it has after the gun has been discharged.

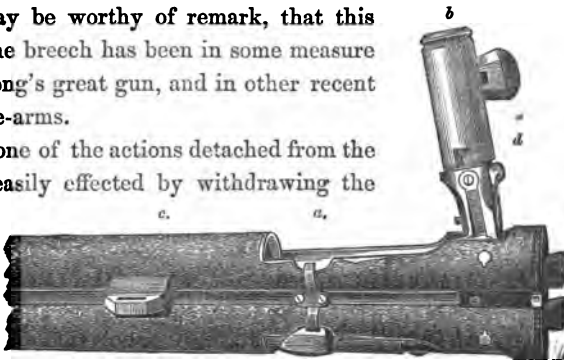


Fig. 2.

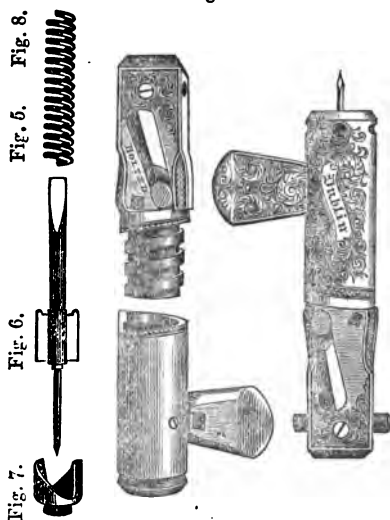
Fig. 4, the action with cap screwed off, and work of lock removed. Fig. 5, the mainspring. Fig. 6, the striker, which carries the needle and passes through the mainspring. Fig. 7, the screw cam, which is fixed in the bottom of the cavity in the cap, and, by its action on the shoulder of the striker, cocks the lock. Fig. 8 is a section of the cartridge and shot. At the base, it will be seen, is a cavity tantamount to

a cap, containing percussion powder and surrounded by gunpowder, and this the needle strikes on being propelled from the action.

The cartridge is inserted in the opening, *a*, in fig. 2, and pushed forward into the chamber, *c*. The action, *b*, is then closed down, the finger piece, *d*, closed over the catch, and the rifle is ready for the discharge. For this purpose the trigger is pulled, the needle is driven forward and enters the cartridge, with sufficient power to fire the detonating powder and discharge the rifle.

To open the breech, the forefinger is applied to the wing, or finger-piece, *d*, on the cap of the action, and the cap is turned round until the finger-piece reaches the upper edge of the opening in the barrels. This movement causes the needle to recede (*i.e.* cocks the lock), and simultaneously

Fig. 4.



disengages the end of the cap from the chamber into which it fits when closed. The whole action is then turned out into the position seen in fig. 2, and a loaded cartridge dropped into the opening in the barrel and pushed forward into the chamber; the action is then closed down and the fingerpiece brought round to the original position, and nothing remains but to pull the trigger. If not intended to be immediately discharged, the small bolt on the side of the action is thrown up by the finger into the position represented in fig. 1, when the gun reads "bolted," and the action is locked. A touch of the thumb suffices to throw down the bolt into the position shown in fig. 3, which leaves the gun again at full cock. Thus, whenever the word "Bolted" is seen, the gun is safe and incapable of discharge.

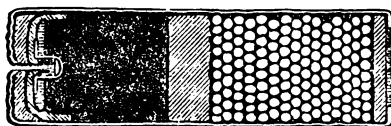


Fig. 8.

other end resting on the face of the breech, and no force short of what

It will be seen by these engravings that the action (fig. 3) which bears on its foremost extremity the whole force of the recoil, has its

would burst the barrels could possibly open the joint. Thus all strain from the pin on which the action turns is removed.

When one shot has been fired, another cartridge is placed in the opening and pushed into the chamber, carrying before it the remains of the exploded one, and the hinder or thick portion of the old cartridge thus acts as an additional wad in front of the bullet.

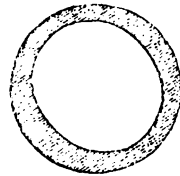
The needle gun is an excellent invention, and admirably adapted to the requirements of the sportsman, and for the use of volunteer rifle Corps. It is light, simple, and easy of use, and soon becomes a favourite with all who use it.

It is made by the Patentee, Mr. Joseph Needham, 26, Piccadilly, London, and by Messrs. W. and J. Rigby, 24, Suffolk-street, Dublin, and at either of these establishments cartridges (both shot and bullet), and every requisite can be obtained.

THE LANCASTER RIFLE.

(Made by C. LANCASTER, New Bond Street, London.)

This gun is one of the most successful of modern makes, and is at least equal to most others in accuracy of delivery, and in ease of firing. The system of rifling adopted by Mr. Lancaster is simplicity itself, but by it he reduces the windage to an almost homœopathic extreme, without perceptibly increasing the friction. The bore is slightly elliptical, as seen in the section, and thus the system approaches pretty closely to a two-grooved one; but as there are really *no* grooves, the projectile passes up the barrel with the utmost ease, and receives its rotary motion without its speed being diminished by friction against the angles. The bore which Mr. Lancaster recommends is .498, and the length of barrel 32 inches, the turn being 1 in 32 inches, or exactly one turn in the length of the barrel. The projectile used is the conical bullet, either hollowed at base, or flat; it is cast of the softest lead, so as to cause easy expansion, and its length should be $2\frac{1}{4}$ diameters. At the moment of firing the expansion upon this principle is so great that the bullet hermetically seals the barrel, and therefore serves to ensure the most extreme accuracy of flight. The bullets are all swaged, and in their flight are of equal precision and range with Jacob's balls.



The superiority of Lancaster's gun over many others has been re-

peatedly and most clearly demonstrated, both at Hythe and other places, and in private trials we have found it to be all that can well be desired for target practice. When it fails, the fault lies with the ammunition, not with the rifle. With the ammunition, as at present supplied by Government, a failure never takes place. We do not like usually to copy the opinions of others on any rifles we are describing, but we cannot resist giving the following quotation from the *Times* on the comparative merits of the Lancaster and Enfield rifles:—

¶“The important disclosures which have recently been made public relative to the alleged defects in the Enfield rifle used by the British troops in India have been the means of directing the attention of the authorities to the vast superiority, as a weapon in the hands of troops, of the Lancaster rifled carbines, with which the corps of Royal Engineers is now armed. From the reports which have recently been received, by the authorities at the Horse Guards, from the officers now serving with the Royal Engineers in India, there can be no doubt that the Lancaster rifle is in every respect superior to any small arm in the service, repeated proofs of which were given during the conflicts with the mutineers in India. Four companies of the Royal Engineers have been employed in India during the rebellion, all armed with the Lancaster carbine, and the same tests, which applied to the Enfield rifle proved it to be defective, have resulted in the Lancaster rifle maintaining its efficiency. The officers report that there has not been a single complaint of fouling, difficulty of loading, or want of accuracy and power, brought against it; but, on the contrary, it has proved, in every respect, superior to the Enfield rifle. During the frequent conflicts with the mutineers in which the men of the Royal Engineers and the troops of the line have been engaged together, with the same amount of ammunition issued to all the troops engaged, the men of the line regiments have been compelled to cease firing for the purpose of wiping out the barrels of their Enfield rifles after firing from ten to twenty rounds, whereas the Royal Engineers, with the Lancaster rifle, have continued their fire, loading their carbines with perfect ease. On the 21st of February, in last year, the fourth company of Royal Engineers, consisting of about 100 non-commissioned officers and men, was stationed at Fort Jellalabad, before Lucknow. The enemy attacked the fort in great numbers, and went close to the walls. They were, however, repulsed by the Royal Engineers with great loss, no less than ninety men being

left dead on the ground, the whole being killed by the Lancaster rifles. No idea could be formed of the number of killed and wounded carried off, but no doubt it was considerable. The Royal Engineers sustained no loss; not a man was even wounded. This fact is most important, not so much as showing the accuracy of the arm, but from the circumstance that during the six hours the Royal Engineers were engaged with the rebels, until relieved by Sir J. Outram's force, each man fired on an average at least sixty rounds, and yet not the least difficulty was experienced during the whole of that time in loading the carbines. The only thing observable was that with some the bullet became a little tighter than usual as it approached the breech when rammed down the barrel, and with others that there was an increased recoil. If the defects pointed out in the Enfield rifle, and the difficulty with which it is loaded after several rounds have been fired from it, resulted from the expansive action of the barrel against the bands, or against the bayonet-socket and its ring, causing an indentation of its outer surface, and consequent contraction of the bore at those places, the defect would be permanent, and nothing but a mandril or cutting tool forced into the barrel could remove it. It is, however, well known that after an Enfield rifle has been wiped out with a wet or greasy rag, it loads as easily and fires as well as when first used, thus proving that the defect alluded to is not a permanent one produced in the metal of the barrel by expansion, but a temporary one resulting from the peculiarity of bore retaining the maximum amount of deposit from the powder charge. On the other hand, the peculiarity of the Lancaster bore, judging from its performance under the same circumstances, and with the same ammunition, appears to be such that it retains only the minimum amount of deposit, while at the same time its range and accuracy are greater. In the last-mentioned qualities it has been frequently proved to excel the Enfield rifle in England as well as in India. Both rifles may now be considered to have had a very fair trial in the very best school for testing their respective merits—namely, actual warfare; and from the unanimous testimony of officers and men, both in India and elsewhere, there can be no doubt that as a weapon in the hands of troops engaged in war the Lancaster is in every respect superior to the Enfield rifle."

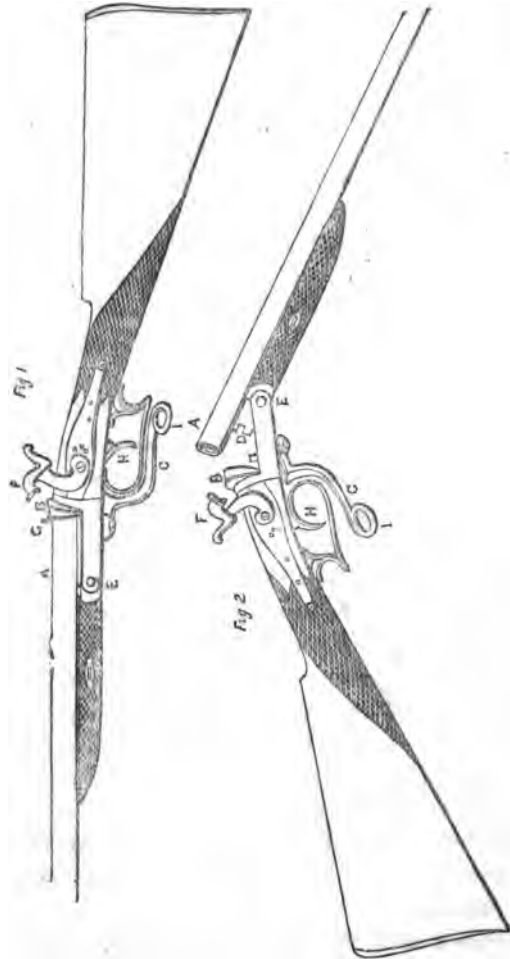
For the purposes of warfare, the Lancaster rifle is fitted, like the others, with a sword-bayonet, and to the ordinary observer is nothing more nor less than a short Enfield. In *use*, however, the difference is

soon felt, and we have made most excellent shooting with it at various distances. It is remarkably handy, easy of use, cleanly in the extreme, and is altogether a most valuable and effective weapon.

REILLY'S BREECH-LOADER.

(Made by REILLY and Co., New Oxford-street, London.)

This gun, on the Lefauchaux principle, but improved upon and per-

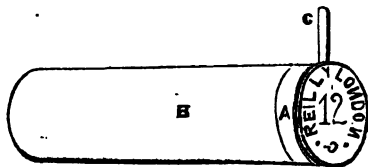


fectured in many particulars, is one of the most satisfactory guns which can be put into the hands of a sportsman. The principle, we are per-

suaed, might be applied to breech-loaders for the service, and that with very little trouble or alteration ; and we have no doubt the makers will be enabled soon to accomplish so desirable an end. We have a double-barrelled gun of this construction, with which we have made most excellent shooting, and we have no hesitation in saying, that in the hands of a sportsman it is one of the most effective, easy, and pleasant guns which can be had. Its construction is simple, its manipulation easy, and its mechanism so well arranged and powerful, as to render it perfectly safe. It is loaded with the greatest possible ease, discharged with the utmost rapidity, and cleaned without the slightest trouble. The construction will be best understood by the following illustrations :—

Fig. 1 shows the gun at full cock, loaded and ready for firing. A is the barrel, B the breech, C the lever, E the hinge, on which the barrel turns, or “tips,” F the hammer, G the point acting on the percussion contained in the cartridge, and H the trigger. Fig. 2 shows the gun open ready to receive the cartridge. A is the barrel, which, when closed, fits tightly against the breech B, and is held firmly in its place by a rotating bolt worked by the lever C into the slot D, on the under side of the barrel.

To open the gun, the butt is to be grasped between the right elbow and side, in the ordinary capping position. The lever C is then turned round to the right by taking hold of the end I with the finger and thumb of the right hand. The barrel is thus disengaged, and “tips,” as shown in Fig. 2. At the end of the barrel is a small notch, which fits to a similar one in the breech, and forms a perforation. The cartridge is simply placed in the barrel, pushed close up by the thumb, with the percussion pin in the notch, the barrel is brought down to the bed, the lever turned back under the trigger guard, the hammer set at full cock, and the gun is ready for discharge. It requires no capping or adjustment of any kind, is extremely quick and ready in loading, and fires with the greatest accuracy and precision. The cartridge is of the form shown in the accompanying engraving. It consists of a firm and smoothly made case of paper, B, with a base of brass, A. On this base, in the inside, a percussion capsule is placed, and on it the charge of powder is poured in ; a felt wad is then pressed down on the charge, and the proper quantity of shot inserted ; another

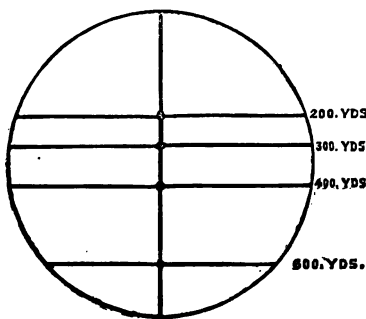


wad is then tightly pressed in, and the mouth of the cartridge turned over to secure it. At the base is a pin (C), which acts upon the capsule when the hammer falls, and causes ignition. After discharge, the cartridge case is simply drawn out by the pin, and replaced, and the same cases can be reloaded and used over and over again. We repeat, that for a sporting gun, we know of none better than this one, the make of Messrs. Reilly and Co.

DICKSON'S TELESCOPE SIGHTS.

One of the most remarkable inventions of late years is the TELESCOPE SIGHT, by which the most scrupulous accuracy in aiming is attained. Of this species of sight the splendid instruments made by Messrs. Richard Dickson and Son, of Edinburgh, are, in our opinion, the most perfect. They are manufactured principally for India, but are also of the highest use in deer stalking in the Highlands. We do not suppose that they can be of general service for the ranks in actual warfare, but for target practice at great distances they may be made of infinite value.

The telescope made by Dickson and Son is 17 inches in length; the eye-lens being three-eighths of an inch in diameter, and the fore-lens seven-eighths. The sight is fixed at a distance of $7\frac{1}{2}$ inches from the



eye-lens. The telescope slides on to the barrel, to which it is affixed by a bolt, and can instantly be attached or removed. The line next the eye is terminated by an india rubber ring and leather capping, to prevent any recoil which there may be from affecting the eye. The sight is obtained by cross wires, as in the diagram. The wires are of the finest platina, or fine spider thread, and thus the

the greatest possible nicety is obtained. By the use of this sighting, aim may be taken with the most microscopic nicety, the power of the lenses enabling the shooter to scour the range of country for miles around him, and to see every figure and every deer or bird as distinctly as if within a few hundred feet of his station. The telescope sight can be attached to rifles of various constructions, and adjusted accordingly.

REVOLVERS.

In our opinion, no rifleman, and indeed no other man, is properly

armed unless he have with him a revolver, and has well practised its use. No matter whether a man be an officer or a private in either infantry, cavalry, or marines, he ought to be trained to the use of the revolver, and to carry it in case of need, as an adjunct to his ordinary arms. In close quarters, when the rifle would become useless, the sword bayonet and the revolver would reign supreme over every opposing foe. We strongly urge volunteers to practice the revolver with as much assiduity and attention as they will the rifle, for we are fully impressed, from actual knowledge and experience, with the value which attaches to them.

To enable volunteers and regulars, as well as private individuals, to judge as to the best makes of these powerful and splendid weapons of defence, we describe some of the principal varieties which we have ourselves tried and proved to be effective. There are other makes, and these we shall from time to time describe, in addition to the following; but we have no hesitation in saying that, whatever make a man may fix upon, he will do well to practise with it until he becomes its complete master; and we would recommend all corps to add a small holster to the waist belt, which can be easily constructed so as to hold the revolver, the ammunition, and the caps, and even an extra chamber if requisite, without at all interfering with the sword or pouches necessary for rifle practice.

COLT'S REVOLVERS.

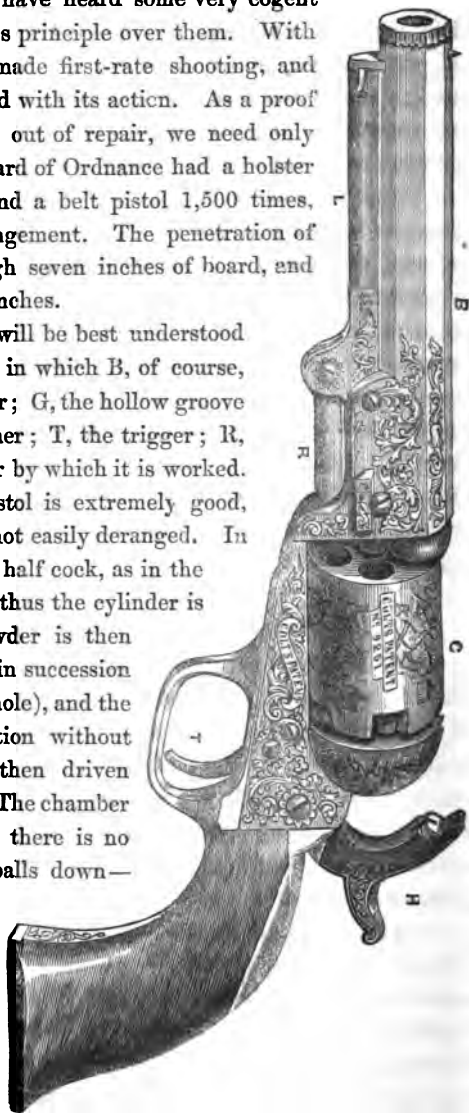
(Made by COLONEL COLT, Pall Mall, London.)

The fame which has so long attached to Colt's revolvers renders them so well known as to require but little introduction to a description of the arm necessary. Although the *invention* of revolvers, of course, cannot be ascribed to the gallant Colonel, their adaptation to modern requirements, and their general use, is undoubtedly due to his extreme energy, perseverance and skill; and to him, therefore, every possible credit ought to be given. We have no hesitation in saying that, but for him, we should have been far less advanced in revolving firearms at the present moment than we are. This make is now extensively used in the United States, and, indeed, in almost every corner of the world, and seems not to lose favour anywhere. In Turkey, Egypt, Brazil, Peru, Spain, Holland, Prussia, Russia, Italy, and Chili, as well as the United States, and our own country, they have been, and are extensively used and approved; and we are given to understand that 40,000 of them have been supplied to our authorities, and have been served out and used in

the Baltic, in the Crimea, in China, and in India, with the utmost effect.

The shooting with Colt's arms is highly satisfactory; and although we have a decided predilection for an arm which revolves with the trigger, we cannot but say that we have heard some very cogent arguments in favour of Colt's principle over them. With Colt's Revolver we have made first-rate shooting, and have been perfectly satisfied with its action. As a proof that it is not liable to get out of repair, we need only state that the American Board of Ordnance had a holster pistol fired 1,200 times, and a belt pistol 1,500 times, without the slightest derangement. The penetration of the first named was through seven inches of board, and of the second, through six inches.

The form of the pistol will be best understood by the following engraving, in which B, of course, is the barrel; C, the cylinder; G, the hollow groove for capping; H, the hammer; T, the trigger; R, the ramrod, and L, the lever by which it is worked. The mechanism of the pistol is extremely good, strong, and simple, and is not easily deranged. In actual use the arm is set at half cock, as in the case of other revolvers, and thus the cylinder is set at liberty. The powder is then poured into each chamber in succession (or the cartridge inserted whole), and the balls placed in their position without patch or wad; they are then driven home by the lever ramrod. The chamber not being rifled, of course there is no difficulty in ramming the balls down—the only care requisite being that the bullet is fairly down on the powder, and its point beneath the end of the cylinder. In capping, the caps are placed on the nipple in succession, as they pass under the hollowed side of the boss; the hammer is let down gently, and



the pistol is ready for use. If intended to be carried in the holster, the hammer, for safety, lets down on to a small pin which stands out from between the nipples, and the utmost security is thus attained. The breech sight is formed by the hammer when at full cock covering the sight on the end of the barrel. To us this appears an inconvenient arrangement, but it is by others said to give the eye a perfect rest and aim, and to cause the arm to be fired with precision. In cocking, the hammer is easily pulled back by the thumb, without using both hands. We have heard it objected to Colt's system, that the exploded caps are likely to clog the cylinder, and prevent its rotating; indeed Russell, in his recent work, states this to be the case. This must, however, have arisen from ignorance of the proper manner of holding the pistol while cocking. The proper position is to raise the arm perpendicularly; by this means the exploded cap is instantly disengaged and falls off.



We append some diagrams of target practice, which will show, better than any description, the deadly effect with which Colt's revolvers may be used.

Diagram of 10 rounds, fired with the large revolver, at 200 yards distance, July 21, 1858. Target, 6 ft. by 2 ft. Centre, 6 inches. Space here shown, 12 inches square; no allowance for wind or defective sighting. Thus, out of 10 shots, 8 are within a radius of 6 inches, at 200 yards distance.

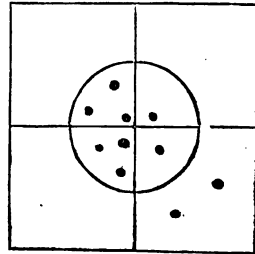
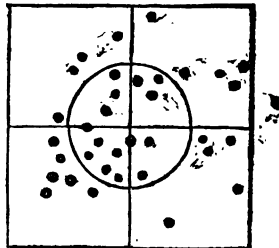


Diagram of 36 shots, fired from small revolver pistol No. 9,066, at 50 yards distance. Space here shown, 12 inches square. Centre, 6 inches.



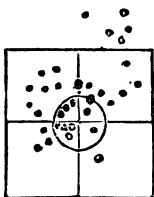


Diagram of 36 shots fired from same pistol at 50 yards, on a windy day, May 28, 1858. Space here shown, 12 inches. Centre, 6 inches.

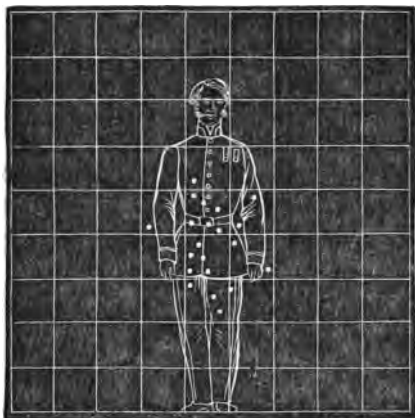


Diagram of a 6-feet target, showing 21 shots fired from a revolver at 180 yards distance; 19 shots on the body, and the remaining two close by it.

The revolver is to be had at Colonel Colt's Dépôt, Pall Mall, London, where every requisite can be obtained of Mr. Dennet, the gallant Colonel's able representative.

DAW'S REVOLVER.

(Made by G. H. DAW, 57, Threadneedle-Street, London.)

Mr. Daw, the eminent gunmaker, whose name is well known in connection with General Jacob's rifles, and with many other excellent inventions, has succeeded in effecting some important improvements in the construction of revolvers, and has brought out one which is in every way worthy of his name. We have one of these revolvers now by us, and we are greatly pleased with its construction, its make and finish, its extreme accuracy in delivery, and its pleasantness in use. It is undoubtedly the most artistic in general form, and the easiest to grasp and handle of any we have tried. Mr. Daw's improvement consists in the position and arrangement of the sights, which are both on the barrel, and so arranged that the raising of the hammer by the trigger does not obscure them, and in the hammer itself forming a part of the shield for

the preservation of the caps. The form of this elegant pistol will be seen by reference to the following engraving. These are some of the principal points of superiority to which Mr. Daw lays claim. The action is simple in the extreme, the parts are few in number, strongly made, and not likely to get out of order. It can be cocked either



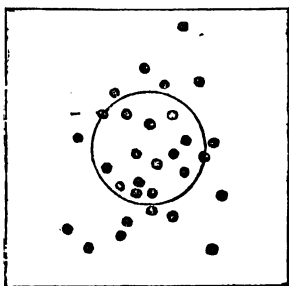
by the trigger, or with the thumb, and has safety pins between the nipples, which fit into a notch on the face of the hammer. The form of the grip is, as we have said, different to others; the object of the inventor has been to get such a shape as would serve as a conductor for the hand in quick firing, so as to ensure the ball being carried in a direct line with the object. The shield is somewhat similar to Colt's, with this important difference, that the opening at the side for putting on the caps is done away with, and the capping is done at the top, when the hammer is at half-cock. This is a very convenient and safe arrangement. The nipples are in definite compartments, and thus protected each from the other's flame.

We have heard several officers who have used this revolver speak of it in the highest terms of commendation, and we have ourselves proved its excellence in some hundreds of trials which we have given it, and in loading we have found the new arrangement of the ramrod to be the most effective. General Jacob, who was the greatest connoisseur in fire arms of the present day, says this weapon is "the best and most convenient revolver to which his attention has been directed."

Of course, in cases of close combat, or under thousands of circumstances which may arise, it is not always possible to raise the arm perpendicularly while cocking; indeed, except at target practice, it is scarcely to be expected that the operator can do this. If a man must rely on a revolver for his life under any circumstances in which he may be placed, he must have one which he can cock in any position, quickly, and without fear of clogging with exploded caps; and one, also, which will cock with the trigger alone. These are more important desiderata for actual use than the question of sighting; for a revolver, necessarily,

is more often required where *deliberate* aiming cannot be taken than where it can. For target practice, or duelling—which God forbid any revolver we are describing may ever be used for—careful and deliberate **aim by fine sighting may be taken**; but for close combat on the battlefield, for **security of life on the highway**, for defence of person, home, family, and goods from attacks of robbers, sighting is of third-rate importance to ease of handling, quickness of cocking, rapidity of discharge, and freedom from all chance of clogging. We have tried Daw's under a great variety of circumstances (as we have others), and we have found it to possess those advantages to a satisfactory degree. Of course each individual has his own opinion of the merits of such pistols as he may have used; and, unquestionably, every make has *some* advantage over others. Thus, one may have better sighting, while another has more ease of handling; one may have rapidity of action, while another has greater freedom from clogging; and one may deliver its fire with the most deadly certainty, while another may possess greater advantages in cocking.

We append a diagram, to show the effect of thirty shots fired by



ourselves from a Daw's revolver, at a sheet of foolscap paper, with a six-inch centre, without any allowance for windage, although there was a breeze from right to left blowing at the time. We do not give this as a specimen of extraordinary shooting, but as one for which we can vouch, and by which it will be seen that the whole thirty shots were delivered with

deadly precision within the distance of the breast of a man.

THE ADAMS' REVOLVER.

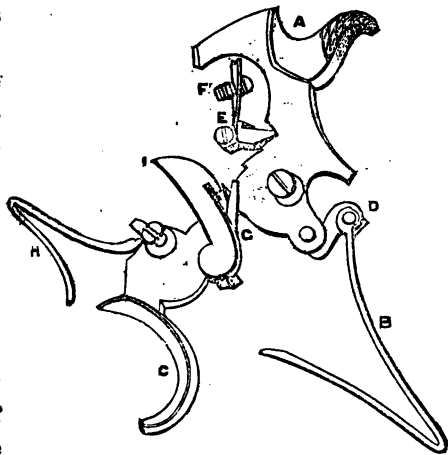
(Made by MR. ROBERT ADAMS, 76, King William-street, London-bridge.)

The revolver patented by Mr. Adams is one of great beauty and immense power, and, for all purposes where a revolver can be of service, is as effective as any arm well can be. The whole frame, which includes the barrel of the pistol, is made of *one* single piece of iron of the best quality which can be procured. When we say of one piece of iron, we mean it literally; it is neither welded or jointed in any way, but cut out of one solid mass of metal; it is, therefore, as firm at the angles as in any

other part, and as strong as metal can make it. Having been cut to the required form, and worked up and rifled, it thus becomes more safe and more firm than if made in several pieces, and held together only with bolts. The cylinder is also, of course, of one piece of steel, or of case-hardened iron, and bored with five chambers, the usual number in revolvers, and one especially adapted to Adams's invention, which requires, from the peculiarity of its construction, that the number of chambers should be odd. This is rendered necessary on account of the spur of the trigger, which, coming forward when the trigger is drawn back, fixes the cylinder at the instant of discharge. By looking carefully at the mechanism while the trigger is being pulled, it will be seen that when the cylinder comes to its proper place, it is held firm by a projection, and thus prevented from revolving further. With an even number of chambers, this projection must necessarily face the open space where the cones are placed.

The action is very simple, and will be best understood from the accompanying diagram.

A is the hammer, B the main-spring, C the trigger, D the swivel, E the short scear, F the short scear spring, G the long scear, H the trigger spring, and I the lifter. Thus, when the trigger C is pulled, the long scear G pushes up the hammer, while the lifter I at the same time works the ratchet of the cylinder. As the hammer rises, the belly, of course, forces the long scear out of the



notch, and thus enables the hammer to fall on the nipple. In cocking the revolver, by drawing back the hammer with the thumb, the movement is somewhat different: the short scear E falls into the notch, the long scear is pulled up close to the short scear by the hook on the hammer, and thus the trigger is drawn back at the same instant. When the trigger is now pulled, the long scear pushes the short one out of the notch, and the hammer falls on the nipple; and the trigger, on the pressure of the finger being removed, springs back into its original place.

The barrel has three grooves, the grooves being of double the width of the lands ; and the frame being perfectly level throughout the entire length, from the muzzle to the hammer, enables the sight to be adjusted with more ease and nicety than by any other arrangement. This is, of course, far preferable to the plan of having the breech-sight formed by a notch in the hammer when at full cock, because at the moment when the trigger is pulled—at which instant the eye ought to be intently fixed on the sights—the sight is removed from it, and, of course, the line of vision is broken. The ramrod is attached to the side of the barrel, and works as a lever. It is loaded and capped with the utmost ease, and is perfectly safe and free from all chance of clogging with the discharged caps, even in the most rapid firing. There is also an impossibility of the cylinder moving by the springing back of the hammer at the moment of discharge through the force of escape from the nipple. To prove this, it is only necessary to pull the trigger back, as if just discharged, and then cock the hammer. By doing this, it will be seen that the cylinder is not moved in the slightest degree, and thus all chance of accident is prevented.



There can be no doubt that for a revolver to be really valuable in case of emergency, it ought not to require separate cocking for each discharge ; for, although this can be done with great rapidity and ease with the thumb, it is a loss of time which in many instances might be fatal. This is clearly shown in the following letter which we have had shown to us :—

“SIR,—In these days of warfare, any invention of improvements in fire-arms should be patronised and assisted, and with that view I write you this letter. I had one of your largest-sized Revolver Pistols at the bloody battle of Inkermann, and by some chance got

surrounded by Russians. I then found the advantages of your pistol over that of Colonel Colt's, for had I to cock before each shot I should have lost my life; but with yours, having only to pull the trigger, I was able to shoot four Russians, and thereby save my life. I should not have had time to cock, as they were too close to me, being only a few yards from me; so close that I was bayoneted through the thigh immediately after shooting the fourth man. I hope this may be of service to you, as I certainly owe my life to your invention of the Revolver Pistol.—I have the honour to be your obedient servant,

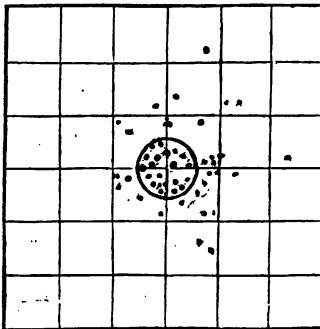
"Mr. R. Adams."

"J. G. CROSS, 88th Regt.

The Adams' revolver has been thoroughly tested on various occasions by the Small Arms Committee, and, in consequence of its apparent superiority, has been exclusively adopted by the Government, as it was also by the late East India Company. Most of our readers will remember reading, during the late Indian rebellion, a description in the leading journals of the fearful havoc made amongst the rebels by one hundred of our cavalry, who, armed with these revolvers, charged the enemy, and in a few minutes left four hundred of them dead on the field.

It is in warfare such as this that the long pull with the trigger is invaluable, and its superiority over cocking with the thumb shown. The United States, and various European Governments, have been supplied with considerable quantities of them; and it is no small recommendation in this age of invention to find, in the latest Report of the Small Arms Committee, that this revolver maintains its old position.

The following diagram of target-practice (centre of a 6-feet target) at Woolwich will show its accuracy:—



Fac-Simile of a Target—copied from an official return from the Royal Arsenal at Woolwich, showing the last 50 out of 1,000 successive shots, *fired off-hand*, from one of Adams's revolving pistols, on the 5th of September, 1854, by the Foreman of the Gun Factory. The firing took place in the presence of Colonel Chalmers, R.A., and other scientific officers; the distance being 30 yards, and time of firing four hours. The same

pistol was used throughout, nor was there a single miss-fire: it was never cleaned nor oiled, nor suffered the slightest derangement; and the target was struck 1,000 times in succession, to the great admiration of the authorities present. The shots fired were—50 shots at 30 yards—950

rounds fired previously to the presence of Colonel Chalmers and other officers, making 1,000 successive shots in 4 hours with the *same Pistol*, *without cleaning, or a miss-fire, or derangement.*

(THE DEANE-HARDING REVOLVER.)

This is one of the improvements in revolvers, and, as is the case of many improvements, its mechanism is so simplified as to place it in some respects no little in advance of some other makes. We will not here go into a minute particularising of the alterations and improvements which have been made in its various parts, but content ourselves by describing the complete instrument by aid of the accompanying engravings. The Deane-Harding revolver is, as we have said, extremely simple in construction: indeed it is so much so that it would be almost impossible for anyone, however inexperienced, to fail in taking it to pieces and putting it accurately together.

In the engravings, fig. 1 is a general side view, and fig. 2 a section



of the revolver. The frame is made in two separate parts; the first, consisting of the under-side and back of the frame, is fixed to the stock, and is suitably formed to receive the lock; the second part forms part with the barrel, and consists of the top and fore part of the frame. In order to secure the two parts of the frame firmly together, this second portion of the frame is furnished with a hook *a*, which enters a recess formed for

it at a^1 in the other portion, and the extremity of the upper portion of the frame may be notched on either side to enter between projections on the other part of the frame, but, by preference, a hole is formed to receive a projection on the top of the back part of the frame, and a pin passing through the two parts secures the whole. The pin is kept in its place by a small screw, the end of which enters a groove cut in it; the pin is, however, capable of turning within its hole to allow of the end of the bolt entering the holes formed for it in the back of the revolving chambers. The revolving chambers are seen at e , fig. 1; they are arranged to turn on a pin f , fixed on the back part of the frame; or in place of this construction, centres or points may be formed on the chambers, and suitable recesses are in this case formed in the fore and back parts of the frame to receive the centres or points; or the centres or points may be formed on the fore and back parts of the frame, and the recesses in the two ends of the revolving chambers; by either of these latter arrangements the use of a pin f is avoided. The method in which the part of the frame which is fixed to the stock is cut away to receive the lock is clearly shown by the longitudinal section, fig. 2. This figure also exhibits the construction of the lock: g is the trigger, turning on the centre g^1 , and having a projecting portion g^2 formed on it; this, when the trigger is drawn back by acting on the incline at the end of the piece h^1 carried by the hammer h , raises it (the piece h^1 not being able to move further out from the hammer than the position in which it is shown), and the hammer continues to rise until the end of the projection g^2 passes the end of the piece h^1 , and the hammer then descends by the action of its spring i ; h^2 is the centre on which the hammer turns. After the hammer has descended, the trigger is brought back by the action of its spring j , the piece h^1 receding by the yielding of its spring to allow it to pass. The spring has fixed at its end a piece which, when the trigger is drawn back, is projected up through a hole in the frame, and enters indentations formed for it, so as to lock it for firing; this piece, in place of being fixed to the trigger spring, as heretofore, forms part of the trigger. The driver is pin-jointed, and works to rotate the revolving chambers through the slot in the frame. When the hammer is drawn up by hand, a projection on it comes in contact with the under surface of the projection on the trigger, which is thus brought back as the hammer rises. On the end of the projection is the notch, and on the under side of the projection are two other notches. When the

hammer has been raised a short distance, the notch on the hammer falls into the first notch on the trigger, and the hammer is then held at half-cock. If, when the lock is in this position, the trigger be drawn back, the projection comes in contact with the piece, before the half-cock notch of the trigger becomes clear of the hammer, and, consequently, the piece can only be discharged by drawing the trigger sufficiently far back to allow the end of the projection to clear the end, as before described. If the hammer be drawn back by hand beyond the half-cock notch of the trigger, the notch on the projection falls into the second or full-cock notch of the trigger. When the piece is at full-cock, the notches are at once cleared on pulling the trigger, and the hammer descends.

REEVES' DOUBLE ACTION REVOLVER.

This revolver, made by Reeves, of the Toledo Works, Birmingham, varies but little from the Adams or the Deane-Harding in general appearance, but some little alteration in detail has been effected with advantage. Mr. Reeves claims for himself superiority of construction in many points, greater safety in loading and handling, and increased strength.

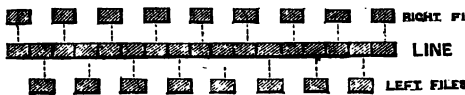
There are, of course, many other varieties, both of rifles and of revolvers, besides those we have described. Our object has not been to describe every known variety, but only such as we have full knowledge of from actual experience. There are, doubtless, other makes equally deserving of notice, and of high commendation; and these, probably, we may add to future editions of our work. We shall be glad if gunmakers, sword and accoutrement makers, and all who are interested in the volunteer movement, will put themselves into communication with us, and report such inventions or improvements as they may from time to time effect.

DRILL.

THE drill of the volunteer is a matter of the utmost importance, as upon it the soldier-like appearance, the martial bearing, and the general efficiency of the corps depend. A man may be a good shot at a target, but unless he can deport himself properly, and can thoroughly master the movements of a number marshalled together, he will be but a poor soldier, and find himself more in the way than of assistance in time of need

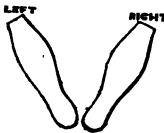
The drill just drawn up by the War Department for the training of volunteer corps is extremely simple, and is modified to a considerable extent from any other code in existence. Having received this system of drill, and carefully tried it in a most efficient corps, we will describe the first principles of it, in a popular manner, but, at the same time, in a way which will render the "raw recruit" able to go through the movements in a few lessons.

The men (called "a squad") having "fallen in" in line, that is to say, side by side, will stand firm, their arms slightly touching, just below the elbow, so as to preserve uniformity, and to keep even line in marching. They will then "Tell off," i. e. the right-hand man will be number 1, the next man 2, and so on from right to left. Each man is called a "file," and it is essential to remember that odd numbers (1, 3, 5, 7, 9, and so on) are "right files," while even numbers



(2, 4, 6, 8, 10, &c.) are "left files." The first word of command will be, "Right files, one pace

forward; Left files, one pace step back—March." On this the numbers 1, 3, &c. will take one pace directly in front, and the remainder, 2, 4, &c. one pace to the rear, and stand perfectly still. The position of the

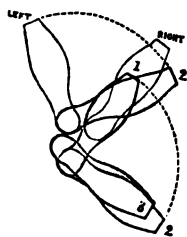


feet should be in all cases, when standing at attention, thus, the toes turned out at an angle of 60 degrees, the heels close together. At the same time the shoulders must be held well up and square to the front, the arms hanging straight down from the shoulders, with the palms of the hands close to the thighs, the head well up but not thrown back, and the eyes directed straight in front.

At the words, "*Stand at Ease*," the left foot must be quickly advanced about six inches to the front, the left knee a little bent, and at the same moment strike the palms of the hands together, with a "clap," and pass the right hand over the back of the left, letting them down in front of the body. At the word "*Attention*," the hands must be smartly drawn to the sides, and the left foot drawn back to original position.

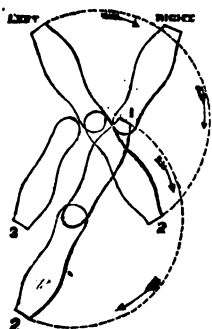
The next is what are called the "facings," as follows, the volunteer always waiting without the slightest movement until the last word of the

order has been uttered, and then performing the movement smartly.



"To the Right—Face." This is performed in two motions. At the conclusion of the word *"face,"* the right foot must be drawn back, and its hollow placed smartly against the left heel, as shown at 1, and stand steady. At the word *"Two"* raise the toes and turn round on the heel, a quarter of a circle, as at 2. *"To the Left—Face."* First place the right heel in the hollow of the left foot, then raise the

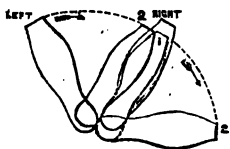
toes, and come round to the front into the original position.



"Right about—Face." First, at the word *"face"* the right foot must be drawn back, and the ball of the great toe placed against the left heel (1). At the word *"Two,"* raise the toes and turn round smartly on the heels, half a circle (until facing the opposite way), and remain steady, as at 2. At the word *"Three"* bring the right foot to its original position, and close the heels (3).

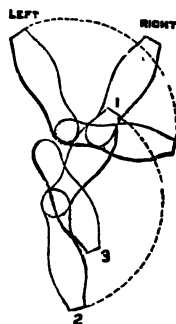
"To the right about three quarters—Face."

First, at the word *"face,"* draw the right foot back, and place the ball of it against the heel of the left foot; and stand firm, as at 1. At the word *"two"* raise the toes and turn round on the heels, as before, for three-eighths of a circle as at 2. At the word *"three,"* close the heels as before.



"To the right—half face."

Draw the right foot back one inch and stand firm (1). At the word *"two"* raise the toes and turn round on the heel



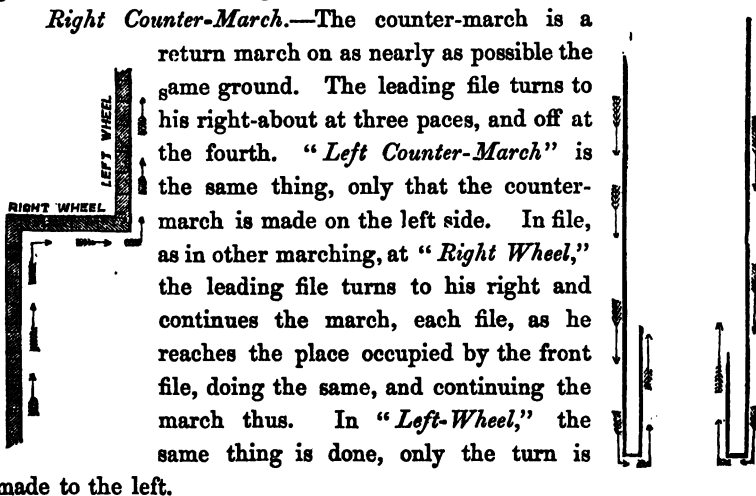
an eighth of a circle (2). *"To the left—half face."* Advance the right foot one inch, and so round on the heels as before, to the front. These movements having been gone through in the manner stated, and in quick time, the squad must be closed, when at the words, *"Right files one pace step back, left files one pace forward—March,"* the paces must be taken, and the squad resume its original position in line. At the words, *"Eyes right, dress."* Each man will look to his right, and see that he is in perfect line with the rest.

In marching, the length of the pace in quick marching is thirty inches (two feet and a-half), in double quick thirty-six (one yard)—the time in quick marching being 108 steps in a minute, and in double quick 150 steps to the minute.

At the words, "*By your right,*" or "*By your left,*" the squad will remain steady. It is simply a caution to tell by which end of the line or flank files are to be guided in the march. When the words "*Quick-march*" are given, the whole squad step off together with the left foot, the right or left-hand man, as the case may be, marching straight to the front in a perfect line, and the others keeping time and pace with him by touch as before described. On the word "*Halt,*" the pace in the act of being made must be completed, the heels brought together, and an instant stoppage made.

At the words, "*Right-about face—quick march,*" each man will turn round by his right, as already described, and the squad will again march off simultaneously with the left foot. If the order is given on the march, "*To the right-about—turn,*" each man will turn to the right-about in three paces and off, simultaneously, at the fourth. If the order given be "*To the right—turn,*" each man will face to his right (or left) and march forward in single or double file, as the case may be. In file marching, at the word "*Halt—front,*" each man turns to the original front, and thus re-forms line.

The other movements will be best understood by the following diagrams, the arrow showing the direction in which the marching is made:



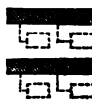
The *Diagonal March* is effected by the men facing to the right or left half-face, and then marching each man direct to his front, halting and fronting. The position of the line will thus have been altered to the side as well as advanced in front, thus—



Wheeling, when in line, or in companies, is when the whole line wheels round to a different face. On the order "*Right (or left) Wheel,*" the right-hand man (or left) forms a pivot and marks time, remaining on the same spot of ground, while the left flank steps out a full pace, and the intermediate men step gradually shorter from him to the pivot man. By this means the squad is gradually brought round to the required position, when the word "*Forward*" is given, and the whole march off with the left foot. When the company is divided into sub-divisions or sections, and the order, "*Leading sub-division (or section), right (or left) wheel—forward,*" is given, the leading section wheels in like manner, and the succeeding ones continue the march until they reach the spot, where the leading section wheeled, and then wheel in like manner in succession. If the order is, "*Sections (or subdivisions), right (or left) wheel,*" the right (or left) hand man of each section marks time while all wheel at the same moment, and are thus brought into line. It is accomplished in the same manner as the forming into sub-divisions or sections is done from line, called "*forming close columns of sections.*"

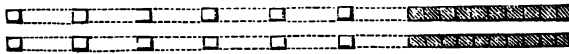
Forming in two ranks (front and rear) is either effected by squads being marched up to form, or from line. If from line the men are told off into sub-divisions, the left sub-division steps back, faces to the right, marches on and fronts in rear of the front rank, or the line is told off into sections, the second and third step back, the first and fourth face inwards, march to the centre, close, and front. When in front and rear rank the same evolutions and movements are gone through as in single file, and several movements are added.

Forming into fours is thus effected:—At the word "*Fours deep,*" right files (1, 3, &c.) stand fast; left files (2, 4, &c.) take one pace to the rear with the left foot, and one to the right with the right foot. Thus, instead of being four to the front and two deep, they will now be as two to the front and four deep. At



the word "*front*," the left files come to their original position, by taking a side pace to the left with the left foot, and one to the front with the right foot. At the order "*Fours—right*," the whole squad must turn to the right, and the left files will then take a pace to the right with the right foot, and one to their front with the left foot. At the word "*Front*," the whole will face to the front, and the left files come to their original position by taking a side pace to the left with the left foot, and one to the front with the right foot. "*Fours—left*" is the same movement, only a left turn, and, of course, the side step with the left foot, and one to the rear with the right. "*Fours—about*," the whole squad turns to the right-about, and the left files then take a pace to the front with the right foot, and one to the left with the left foot. On the word "*Front*," in all cases the squad will come round in same manner, only altering the facing as before described, and form two deep.

Extending is spreading out in line, to cover a larger space of ground,



and is of course done only in double rank. When the company is in line, at the words, "*To the right* (or left) *extend*," the right (or left) file will instantly kneel down and bring his rifle to the capping position; the remainder will shoulder arms, face outwards, and march off in quick time. When the man nearest to the kneeling file shall have stepped six paces from him, he will also front and kneel, and so on throughout the company, until all are kneeling in line at six paces distance from each other. In extending, as a general rule, it is the business of the rear rank man of each file to regulate the distance, and of the front-rank man to look to the direction. The front-rank men will move direct to the flank, covering correctly on the march; the rear-rank men will cast their eyes over the inward shoulder, and tap their respective front-rank men, as a signal to halt, front, and kneel, when they have gained their proper distances. The number of paces to extend depends on the commander; thus: "*Three* (two, four, &c.) *paces from the right—extend*." When no number is specified, six paces will be the regulated distance between files. The company may be extended from the right, left, or centre, or from any other named file.

On the word "*Close to right*," left, centre, or any other file, the file

named will rise, order arms, and stand at ease; the remainder will rise, face towards him, and close at trailed arms at quick time, halting, fronting, ordering arms, and standing at ease, in succession, as they arrive at their places. The file on which the skirmishers close may be faced in any direction; the remainder will form upon it, facing in the same direction, and thus change front. The front may also be changed on any file while extended. On the order, "*Change front to right on the two right* (left or centre, or other) *files*," the named files will instantly change front in the required direction, and the company will then form upon them, the files still keeping the specified distance from each other, and kneeling down as they come into line. In extending on the march, the named file marches steadily on; the remainder make a half face and march diagonally until they have taken their distances and come up in extended line. On the words, "*Company or Line—Advance*," the men will rise, trail arms, and march off direct to the front; on the words, "*Company or Line—Retire*," they will turn to the right-about and march off, rear rank in front, at quick time, keeping their distances and dressing by the centre.

On the order "*Right* (or left) *Incline*," the skirmishers will make a half face in the required direction, and continue their march, gaining ground on the ordered flank, until the word "*Advance*," or "*Retire*," be given. On the word "*Halt*," the men instantly halt, front, and kneel.

When firing in skirmishing order, the front and rear rank men work together; both must never be unloaded at the same time, but fire alternately, beginning with the front rank. When moving, the loaded man must always be nearest the enemy.

Forming "*Rallying Square*" is when the men are ordered to rally round the commanding officer, so as to form a solid square to resist cavalry. On the order being given the men will run in, the first two who arrive placing themselves right and left by the officer, facing outwards; the next three in front of these facing to the front: the next three covering them in rear, and facing to the rear; the next four at the angles, and so on till all are placed. Each man, as he arrives,



fixes his sword, and when the order "*Prepare to resist Cavalry—Ready*" is given, the first and second rank will sink down at once upon the right knee, as a front and rear rank kneeling, and, at the same time, will place the butts of their rifles

on the ground against the inside of their right knees, locks turned uppermost, the muzzle slanting upwards, so that the point of the sword will be about the height of a horse's nose; the left hand to have a firm grasp of the rifle immediately above the lower band, the right hand holding the small of the butt, the left arm to rest upon the thigh about six inches in rear of the left knee. The third and fourth ranks will come to the capping position as a front and rear rank standing. The standing ranks will fire by files, and the kneeling ranks in volleys, by word of command.

In "*Re-forming Company*," the right or left-hand file will take his place, and the remainder will form upon him in their original order.

Of course there are many other movements which have to be made, but those we have given are the principal ones, and, once mastered, the volunteer will soon learn the rest. These and the Platoon movements we do not propose giving—they are the movements of an advanced corps, and are better learned on the drill ground, and by reading and studying the instructions issued by the War Office. The movements on the field are made by sound of Bugle, the following being the calls as laid down by the War Department in the manual to which we have referred.

One G sounded on the bugle denotes the right of the line; two G's the centre; three G's the left. The G's, preceding any sound, denote the part of the line to which it applies; for instance, two G's before the extend signify to extend from the centre; one G followed by the close, to close to the right; one G followed by the incline, to incline to the right; three G's followed by the wheel, to wheel to the left.

EXTEND.



RIFLES AND VOLUNTEER RIFLE CORPS

CLOSE.



ADVANCE.



HALT.

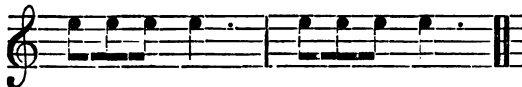


The Halt annuls all previous Sounds except the Fire.

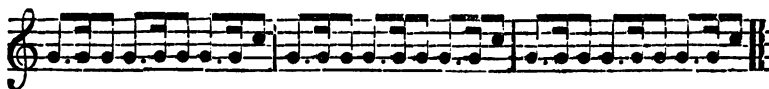
COMMENCE FIRING.



CEASE FIRING.



RETIRE.



ASSEMBLY.



This sound is to be used to turn out troops in cases of alarm by day or night, but must not be used at light infantry drill.

INCLINE,
With the distinguishing G's.



WHEEL,
With the distinguishing G's.



THE ALARM, OR LOOK OUT FOR CAVALRY.



RIFLE EXERCISE.

The manual exercise is all we shall here give, as the ball practice and snapping practice require to be taught ocularly and orally:—

"SHOULDER ARMS."—Raise the rifle with a smart cant of the right arm, and seize it, to steady it, with the left hand. It must be carried at the full extent of the arm, close to the side; the guard to the front, with the fore-finger and thumb round it, the other fingers under the cock, the upper part of the barrel close into the shoulder.



Shoulder Arms.

"ORDER ARMS."—1. Seize the rifle with the left hand. 2. Slip the rifle down as low as the left arm will allow, keeping it close to the body; then seize it between the bands with the right hand, place the butt quietly on the ground, even with the great toe of the right foot; at the same time bring the left hand quietly to the left side; the right arm to be slightly bent, the thumb round the barrel, and the fingers slanting to the ground.



Order Arms.

"FIX SWORDS."—Place the rifle between the knees with the right hand, and hold it with the knees, guard to the front, then draw the sword with the right hand, holding the scabbard with the left; turn the point upwards, seize the "nose-cap" of the rifle with the left hand, slip on the ring of the sword and spring on to the catch; then seize the rifle with the right hand, and come to the position of "Order Arms."

"PRESENT ARMS."—1. Bring the rifle to "Shoulder Arms;" then seize it at the lower band, still close in to the side; raise it a few inches, and slip the thumb of the right hand under the cock, with the fingers below the guard. 2. Raise the rifle perpendicularly with the right hand to the poise, bringing it in front of the centre of the body, with the lock to the front; place the left open on the stock, fingers pointing upwards, and wrist resting on the guard. 3. Bring the rifle down quickly as far as the right hand will allow, and grasp it with the left hand, at same time draw back the right foot a few inches; hold the rifle clear of, and in front of, the body. 4. Bring the rifle to "Shoulder Arms," by carrying it smartly to the right side, and bringing the left arm to position, as we have here already described



Present Arms.

"SLOPE ARMS."—1. Same as first motion of **"Present Arms."** 2. Carry the rifle on to the left shoulder, where let it rest; muzzle sloping up to the rear, left hand grasping the butt, the guard pressed gently against front of the shoulder; left elbow close to the side, and right arm down by right side.

"CARRY ARMS."—Take the rifle across the body to position of **"Shoulder Arms."**

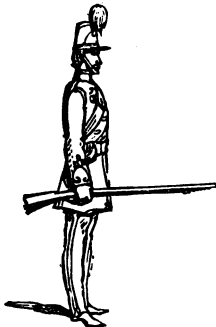
"PORT ARMS."—1. Same as first position of **"Present Arms."** 2. Bring the rifle diagonally across the body, lock to the front, right hand grasping the small of the butt, barrel resting in the left hand.



Port Arms.

"CHARGE SWORDS."—Make a right-half-face, and bring down the rifle to nearly a horizontal position at the right side, with the muzzle inclining a little upwards.

"TRAIL ARMS."—Bring the rifle to a horizontal position, easily, in the right hand, grasping it behind the lower band, at the full extent of the arm.



Trail Arms.

"SECURE ARMS."—

First motion the same as first position of **"Present Arms."** 2. Throw the rifle smartly under the left arm, the hammer close up into the arm-pit, left hand grasping the small of the butt. Take away the right hand smartly, and drop it to the side.



Charge Swords.



Slope Arms.



Secure Arms.

The positions for loading, capping, charging, firing, as a front, or as a rear rank, and the other positions in firing, we shall omit for the reason stated, that after having mastered the positions we have given, the volunteer

will be in a sufficiently advanced condition to learn them on the ground in less time than by reading about them.

In "aiming" and "judging distances," the following extracts from the War Office Instructions* will be useful.

AIMING.—The sights must be carefully adjusted for the distance which is required, and this can only be done by experience and careful tutelage. The sights must not be allowed, in holding the rifle, to incline either to the right or left. The line of sight should be taken along the centre of the notch of the back-sight and the top of the foresight, which should cover the middle of the mark aimed at. The eye should be fixed steadfastly on the mark aimed at, and not on the barrel or foresight; the sights will then be brought up to the line of sight. In aiming, the left eye should be closed. If a man is not able to do this at the outset, he will soon succeed by tying a handkerchief over the left eye.

The difference between fine, full, and half sight in aiming, is as follows, viz :—

1st. Fine-sight is when the line of sight is taken along the bottom of the notch of the back-sight, the fine point of the fore-sight being only seen in the alignment; as A, fig. 1.



2nd. Full-sight is when the point of the fore-sight is taken in alignment with the shoulder of the notch of the back-sight; as B, fig. 2.



3rd. Half-sight is when the point of the fore-sight is aligned midway between the shoulder and bottom of back-sight; as C, fig. 3.



Aiming with the half-sight is the usual method; aiming with a fine-sight will give a little less elevation; and aiming with a full-sight a little more.

The instructor is recommended next to cause each man to place his rifle in the rest and align it with the sight for 100 yards on a mark that distance from him; having done so, he will leave his rifle on the rest and step aside. He will then see if the aim is correct, and should he discover

* An excellent and essential book for volunteers, published by authority by Clowes & Son to which we have before referred and made extracts from.

any error, he will point it out and cause it to be corrected, or call upon another volunteer to correct it. This proceeding is to be carried out at every distance of fifty yards, from 100 to 900 yards, at "bull's eyes" of the following dimensions, viz. :—

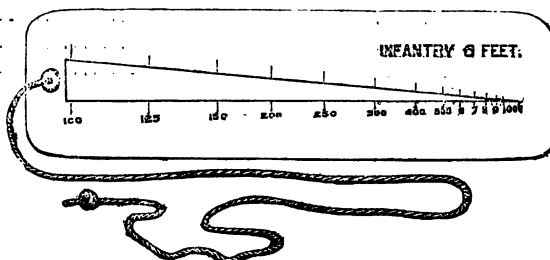
From 100 to 300 yards, eight inches in diameter.

From 350 to 900 yards, two feet.

JUDGING DISTANCE DRILL.—As proper elevation is of such great importance in firing, the volunteer should be well practised in judging distances; for this purpose men should be placed in front of the squad, at measured distances of fifty yards apart, from 50 to 300 yards for the first practice, and afterwards from 300 to 900 yards. The attention of each volunteer should be directed to the appearance of these men, and of their features, accoutrements, &c., at the different distances; they must remember the distances at which the smaller objects become indistinct or invisible. Each volunteer should be called upon to explain to the instructor what he sees; the explanation should be in a low tone of voice, in order that the rest of the squad may not hear.

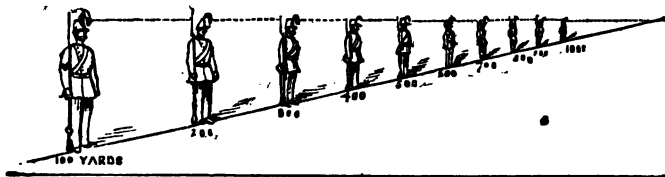
It must be remembered that the sun, the state of the atmosphere, and the background will make a difference in the appearance of the same objects at different times. After the above exercises, volunteers should be practised in judging unknown distances; the accuracy of their judgment will have to be tested by measuring the distances with a chain or cord.

As an adjunct to rifle practice, a most admirable little instrument has been invented and made by Mr. Wilkinson of Pall Mall. This little



instrument, which we have used and proved, is called the *Stadia*, and is a most admirable and valuable help to the rifleman. It is of this form—and is mathematically correct when properly and carefully used. Its

principle will be easily understood by the following diagram. An infantry soldier, cap and all, is calculated at six feet in height, a cavalry soldier and horse at eight feet. Of course, the farther a man is off, the less he appears; thus, as seen in perspective—



The instrument is calculated at twenty-five inches, and its mode of use is this—The small stud at the end of the string is grasped between the teeth, and the stadia held at full length with the left hand. It is then noticed what part of the scale the figure of a man fills, and his distance from the observer is at once accurately obtained. The principle is so extremely simple, that a common carpenter's rule, partly opened, will answer every purpose when its scale is once properly understood; thus, if the partly opened scale be held at twenty-five inches from the eye, a man (assumed to be six feet in height from ground to crown of hat) will, when fifty yards off, occupy exactly one inch, and so on, as follows:—

At fifty yards, one inch in height.

100 yards	$\frac{1}{2}$	550	„	$\frac{11}{16}$
150 „	$\frac{3}{8}$	600	„	$\frac{12}{16}$
200 „	$\frac{1}{4}$	650	„	$\frac{13}{16}$
250 „	$\frac{5}{16}$	700	„	$\frac{14}{16}$
300 „	$\frac{3}{8}$	750	„	$\frac{15}{16}$
350 „	$\frac{7}{16}$	800	„	$\frac{16}{16}$
400 „	$\frac{1}{2}$	900	„	$\frac{17}{16}$
450 „	$\frac{11}{16}$	1000	„	$\frac{18}{16}$
500 „	$\frac{12}{16}$			

and so on continually. For cavalry, at eight feet, the scale has to be increased, of course, one-third for every distance.

As, however, the student in drawing ought never to use compasses or rules until he has learned to do without them, so the rifleman ought never to use the stadia until he has practised independent judging of distances.

DRESS.

The question of Dress is one which is naturally of great interest to volunteers and to the public; and, next to the obtaining a good rifle, a good dress is, undoubtedly, important. We much fear, however, that there will be found in every corps men who consider dress as of *primary*, and the rifle of but *secondary*, importance, and who join a corps more from the love of finery than of country—more from a wish to be “men of mark” amongst their female acquaintances than marksmen at the rifle-target; and more from a desire to shine along the busy streets than on the field of action. Such men are, however, happily but rare exceptions; the great bulk of those who join the movement being actuated by the purest, noblest, and most patriotic motives, and ready to sacrifice their time, their money, their comfort, and even their lives, for the good of their Queen and country. If people *are* to be soldiers, and *are* to band themselves together for patriotic motives, for the defence of their country, we say, undoubtedly, let them present a soldierly and respectable appearance. If they *are* to be soldiers, in the name of all that is good and noble, let them be so, not in name only, but in every essential. If they have abundant funds, we would say to them: “Equip yourselves well in every particular, procure arms that shall defy competition, and a uniform that shall be a credit to you, and that shall give you a soldierly and commanding bearing.” If the funds are not abundant, however, we would say: “First of all, purchase a thoroughly good rifle, and then, with the remainder of the sum at your disposal, equip yourselves as you best can. Make sure of a good rifle first, and then, for uniform, why, “cut your coat according to your cloth.” Remember, above all, that having joined a *rifle* corps, your great aim must be to become a good and expert shot, a “crack marksman,” a good and efficient soldier. Having joined a rifle regiment, let it be your study to become master of your gun, whether you are in plain clothes or not. It is not uniform that makes the marksman—it is not silver lace round the cap that marks an efficient soldier—it is not stripes on the arm or a slung sword that shows a brave man, and it is not silken lining to a tunic that will make a man a skilful and experienced warrior. The emulation in a rifle corps should be, not who shall, by wearing the most stripes, be entitled to discard the rifle and

wear a paltry dress-sword, but who shall carry the rifle most efficiently at target-practice, and who shall earn glory in carrying an arm over which he has the most complete mastery.

A good rifle is the first thing to be obtained—the effective use of the rifle the first thing to be aimed at. A good uniform is the second thing in importance to procure, and a soldierly bearing and attention to drill the next to accomplish.

There seems to be no question that the best colour for the uniform of a rifle corps is grey, and that the best colour for facings and braids is green. The old-world notion of dark “rifle green” is completely exploded, and it is found that it is just the worst colour which could be adopted. The uniform of a rifle corps should be the one which will be most indistinct in the distance; and it is an undoubted fact that nothing is so much so as grey. It assimilates with the scenery, whether it be moorland, rock, wood, or plain, better than any other can do; and this is easily proved by any one: notice two people walking together—the one in a suit of grey clothes, the other in any dark colour, black, brown, or green—and you will find that the one in dark is distinctly visible, at least a mile beyond the spot at which the one in grey is entirely lost to sight. When the uniform is grey, it is only with the utmost care that a correct estimate of distance is gained, and thus the result has two decided advantages—first, that the rifleman in grey is scarcely visible to the enemy; and second, that when he is seen—so deceptive is the effect of the colour—it is next to impossible for the enemy to judge what distance he may be from him.

At Hythe, recently, when the volunteers mustered from all parts of the kingdom, with every variety of uniform, it was undeniably proved that grey was by far the most fitting colour to adopt, and Lord Elcho, Her Majesty's Under Secretary of State for War, appeared in a suit which gave high satisfaction, as did also the captain of the first company of the Derbyshire Volunteer Rifle Corps. At Hythe, Major-General Hay, in order to test the question of colour, requested Lord Elcho, and Lord Radstock, who wore grey uniforms, and three or four other volunteers who wore dark green, to form in line and march four hundred yards in a westerly direction on the shingle. The superiority of the grey uniform was immediately visible, for while the green stood out as a sharply defined black object against the horizon, the grey seemed to fade and melt away into space and to become gradually invisible. Grey, then,

being the best colour for the cloth, it behoves corps to adopt it, and we recommend them certainly to break it up with a cheerful green, which harmonizes well with it, and adds immeasurably to its invisibility,

Having alluded to the dress of the Derbyshire Rifle Corps, we will proceed to describe it in detail, believing that by so doing we are placing a most excellent model before our readers; and to illustrate our description, we have had the engraving executed which forms the frontispiece to this volume. The uniform consists of tunic and trousers of grey cloth of fine quality, braided with green mohair braid; forage-cap of the same colours; full dress chako with plume of green cock's feathers; grey cloth gloves; black silk stock; black enamelled-leather waist belt with pouch and frog; and shoulder belt of the same material with badge and cartouche box.

The TUNIC, it will be seen, by the engraving, is not inconveniently short, as in some corps, but of most excellent proportion. It is single-breasted, the collar rounded in front. On each side of the breast are five loops of massive, flat, green mohair braid, with caps, and drops of the same material, and it fastens with bronze buttons—the flat braid being adopted in place of the square, so as to preclude all possibility of the rifle catching upon it during drill or in active service. For the same reason the drops are lightly stitched down to the breast. The loops and drops on either side, decrease from the shoulder downwards. On each shoulder is a double green cord, fastening with a bronze button. The collar is edged with braid in same manner as the loops. The cuffs are worked in green braid, with the Austrian knot in front, and finished at back with an inward scroll. On the back seams is a single green braid which, finishing at the top in a “crow's-foot” (three eyes) and passing under bronze buttons, terminates in an Austrian knot on the skirt. The buttons are of bronze, and bear a bugle and crown, with the numerals VI for rank, surrounded by the words “Derbyshire Volunteers.”

The TROUSERS are of the same cloth as the Tunic, with a green braid, one inch wide, down the outward seams.

The FORAGE-CAP is of the same cloth (grey) as the rest of the uniform, with a broad oak-leaf band of green silk, or a band of green cloth, an inch and a-half wide, with a piping of green cloth round the top. In front is a bronze bugle with the figure 6 for rank, and the peak is of black patent-leather lined with green leather, and bound with black. Chin strap of black patent-leather. To this is added a black oil-silk cover.

The CHAKO is of the same colour (grey) as the rest of the uniform, bound with black patent-leather at top and bottom, with a sunk top of black patent-leather, and peak and chin-strap of the same. In front is a bronze bugle with the figure 6 for rank, surmounted by a green leather rosette in the centre of which is a bronze crown. At the back is a gorgon's head for a ventilator. The chako is finished by a plume of green cock's feathers, with bronze socket.

The GLOVES are of grey cloth, same shade as the uniform; and the STOCK of black silk or leather,

The WAIST-BELT, SHOULDER-BELT, POUCH, FROG, (for sword) and CARTOUCHE-BOX, are of double enamelled black leather, highly finished, and stitched all round. The waist-belt fastens with a bronze clasp bearing the bugle; and the shoulder-belt bears in front a bronze badge with the Derbyshire Arms, a rose surmounted by a crown, enclosed in a wreath of laurel. The pouch is calculated to hold twelve rounds of ammunition and a supply of caps, and the cartouche-box is made to hold thirty rounds of cartridges.

Whilst speaking of the cartouche-box and belts, it may not be out of place here to mention an improvement which has recently been effected, and patented, in this necessary part of equipment by Mr. Barrow, of Birmingham. The improvement consists in the upper plate



of the pouch being pierced for the required number of cartridges, and these holes being each again filled with a pierced elastic, so as to hold each cartridge tightly in its place, and thus prevent all risk of the powder (as is too often the case with the ordinary regulation pouch) being shaken out in running, and the cartridge thereby spoiled. By Mr. Barrow's patent

the cartridges are perfectly secured from accidental displacement, and are yet so easily removed that, on taking them from the pouch, the hand is scarcely sensible of any resistance. Cartridges of different sizes may be placed in the same pouch, and will be held with equal security. They have simply to be inserted in the holes in the pouch, when they

are instantly held secure, and when about to be used are lifted from the holes, which give them up with a resistance so slight as to be almost imperceptible. The circular belt is attached to each end of the box, which can be brought round the waist belt, and naturally equalizes the weight between the shoulders and the waist; when in actual use the box can be placed more on the hip, and it will then be more convenient to the right hand; it is so arranged that the cartridges can be brought out of the pouch in rotation, which will prevent confusion in quick firing. The principle of this box can be fitted to any of the belts or pouches now in use.

The ARM is the SHORT ENFIELD RIFLE, steel-mounted, with sword-bayonet, with black leather scabbard and sling. The rifle is of strictly regulation weight, length and bore, in every respect, and, for the guidance of corps in examining arms submitted to them, we append the Government regulations. The short Enfield should be as follows:—

Weight, with sword bayonet	10lbs. 3½ oz.
———without	8lbs. 7½ oz.
———of barrel	3lbs. 12½ oz.
Length, with sword-bayonet.....	5ft. 11¼ in.
———without	4ft. 0¼ in.
———of barrel.....	2ft. 9 in.
Diameter of bore.....	·577
Windage	·027
Width of grooves	·262
Depth	·014

The following letter from Her Majesty's Secretary of State for War shows that the *whole* of the Rifles required by volunteer corps will be supplied free of cost by Government, and that, in due course, the long Enfields with bayonet will be replaced by short Enfields with sword-bayonet, probably in the course of the ensuing season:—

MY LORD,—I have the honour to inform you that Her Majesty's Government have determined to issue to Volunteer Rifle Corps, after the 1st of January next, an additional supply of long Enfield Rifles (pattern 1853), to the extent of 50 per cent. on the effective strength of the corps. This supply will raise the aggregate issue to 100 per cent. on the effective strength of the force; and I have to request that you will be good enough to communicate this decision of the Government to the commanding officers of the various corps in your county, who should at once forward the prescribed requisitions to this office for such portion of the supply as they may be entitled to under regulation.

I hope to be in a position in the course of next year to exchange these Rifles gradually for short Enfield, in the case of any corps which may desire it, on the understanding that the long Rifles must be returned in good condition, fair wear and tear excepted; or that the corps must pay for any damage they may have received.

Cost.—For the guidance of towns where volunteer corps are being, or may hereafter, be formed, we append an estimate of the cost of outfit :

Tunic and Trousers	£3 0 0
Forage Cap, with badge and cover complete	0 6 0
Chako and plume	1 1 0
Waist-belt, with pouch and frog complete, and Shoulder-belt with Cartouche-box, Badge, &c., complete	1 3 0
Stock	1s. 6d. to 3s.
Gloves	0 1 6½
	<hr/>
	5 8 6½
Short Enfield Rifle, of superior make, with Sword-bayonet, scabbard, sling, snap-cap, plug, &c., complete	4 10 6
	<hr/>
Total cost of outfit	£9 19 0½

Thus it will be seen that a complete outfit, of first-rate quality in material and design, and with every possible care and attention to fit, can be procured for less than ten pounds ; or, as Her Majesty's Government is now supplying the whole number of rifles, the outfit will only cost about five guineas. The above estimate is the one at which the Master Tailor to the corps, Mr. J. Smith, of Derby, is supplying the members, and the uniform is said to be, by competent judges, one of the most elegant, effective, and well-made of any in the kingdom. Of course, the question of undress, and of military overcoats, is one which must occupy the attention of committees. With regard to the overcoat, it may be well to say that the same firm is supplying the corps with a coat of excellent shape, with cape of good proportion, of the very best quality, dark grey Melton cloth, at about £2 15s., including bronze clasp and chain, and that the undress is of but little cost.

The uniform of the officers is of precisely the same pattern as that of the privates, the cloth being of a finer quality, and of a shade darker in colour. The braid is square, and of silk in place of mohair, and the fastenings are worked olivets, of same colour as the braid, instead of bronze buttons. The seam on the trousers is of green cloth in place of braid, and the rank is indicated by the regulation distinctions worked on the collar in silver thread, and embroidery, viz., the Captain a crown and star ; the Lieutenant a crown ; and the Ensign a star. The chako and plume is of the same form as that of the privates ; the bugle, crown, and number, being of silver instead of bronze. In same manner the forage-cap is distinguished from that of the privates by a silver bugle in

place of bronze. The shoulder and sword-belt are of black morocco, with silver clasps, and badge, and the whistle and chain are also of silver. The swords have steel scabbards. The undress is of the same cloth as the full-dress, but without braid; the undress belts having bronze instead of silver ornaments.

The distinctions of the non-commissioned officers are as follows:—

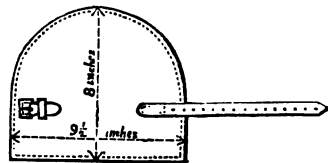
Captain's Sergeant, who ranks as Sergeant-major, four stripes on each arm, surmounted by an embroidered crown. He also carries a sword with black leather scabbard, in place of a rifle, bronze whistle and chain.

Sergeants—Three stripes on each arm.

Corporals—Two stripes on each arm. The stripes in every case are of silver lace on green cloth. The non-commissioned officers also wear a bronze whistle and chain.

If waterproof overcoats, &c., are required, and we are of opinion that they might most advantageously be adopted by the service, Messrs. Spill and Co., of Stepney, make an excellent article, which has been tried and found to be all that can be desired, and at a price which is quite within reason. It may also be well to hint to corps, that waterproof sword-cases and forage bags, as well as camp-sheets, &c., are also supplied by them, and are of a kind which will answer every requirement. We have put a waterproof wrapper of this make to a test of thirteen hours' incessant rain, and can answer for its complete imperviousness to wet. Its form, too, is well adapted to the purposes of a corps, being not so wide as to interfere with the proper handling of the rifle, and yet wide enough to protect the uniform and pouches.

So many movements of the rifleman are accompanied by kneeling, that knee-caps are an essential part of his equipment. These may be made of double leather, thus, and strapped round the leg close beneath the right knee. We have given the dimensions, and they can easily be made by any saddler at a cost of eighteenpence each. A most excellent



scheme, combining waterproof leggings with knee-cap, has been hit upon by Messrs. Spill and Co., which they are now making for corps. The leggings fit close round the foot, being well hollowed to receive the boot, and are so shaped at top that the front rises over the knee, while the back is well fitted into the joint. In the front of the right legging

a circular pad for kneeling is inserted between the outer and inner surfaces, and thus a most complete article is at once obtained, and at a price, we believe, to a corps of not exceeding seven and sixpence each. With a pair of these; with a strong clump-soled pair of boots; with a waterproof wrapper of the make we have just mentioned as having tested; and with an oil-silk cover to his cap (or a waterproof fishing-hat), the rifleman need fear no amount of wet, and may go through his duties with comfort. We know it may be urged against waterproof coats that the heat and perspiration may be tiring; but, on the other hand, it must be recollected that the ordinary military over-coat—even of the very best Melton cloth—absorbs the wet, and becomes every minute heavier to the wearer, and thus tires him far more than the waterproof possibly can do.



Of course it need scarcely be stated that commissioned officers wear slung swords with steel scabbards, and such non-commissioned officers as may carry them wear swords with black leather scabbards. The full-dress regulation rifle officers' sword is a beautiful weapon, and one we have now by us, made by Reeves of the famed Toledo Works at Birmingham, we will now describe:—It is, without the scabbard, thirty-eight inches in length; the blade being thirty-two and a-half inches, and the hilt five and a-half inches. The blade is one inch wide at the hilt, and is very slightly curved. The hilt is of fish-skin with silver bands, and the guard, which, like the rest, is made of polished steel, bears a bugle and crown, within an oval, beautifully chased. The blade is elegantly engraved with foliage, palm and laurel branches, &c., and has, on one side, the royal initials, V.R., and the crown, with the bugle beneath, and on the other the crowned shield, with the name of the company, and the bugle below. The scabbard is of polished steel, with two bands and rings for slinging. As a sword-maker, Reeves stands deservedly high, and therefore we have preferred giving a description of his weapon in this place. The non-commissioned officer's swords are, of course, of a somewhat inferior quality, are shorter, and have leather scabbards.

Regulation bugles for the service and for volunteer corps are made by most military musical instrument makers, and may be had at a cost of about two guineas each.

The uniform of the Band is of the same cloth as the rest of the corps, viz., grey, but, in place of green braid, scarlet is substituted, and the trousers have a scarlet band down the seams. The forage cap is of grey cloth, with a stripe of scarlet cloth. The members of the band wear brass-mounted swords with black leather scabbards. The band, it may be well to state, consists of nineteen members, as follows:—1 Piccolo; 1 E flat Clarionet; 5 other Clarionets; 1 Bassoon; 1 E flat Saxe Tuba Horn; 1 B flat Saxe Tuba Horn; 2 Cornets; 2 Horns; 1 Tenor Trombone; 1 Bass Trombone; 1 Ophicleide; 1 Bombardon; 1 Side Drum; 1 great Drum and Cymbals; and 1 Euphonium; and this is found to be an arrangement of instruments which produces a very effective band.

Her Majesty's War Office having from time to time received many applications for advice as to the best uniform to be adopted, has given the matter due consideration; and the deliberations of a committee specially appointed for the purpose have resulted in the preparation of a pattern suit recommended to be adopted for colour and shape; the quality of the material being determined by the circumstances of each particular corps. The pattern suits are respectively faced with red and black, and with green; but the committee do not recommend that these colours should be universally adopted for facings, many counties having colours of their own. The pattern suits as recommended by the committee are now deposited at the War Office, where they can be seen, and coloured plates may be had at Ackerman's of Regent Street, who has published them for the War Office.

Although this dress is recommended by the committee to be generally adopted, it must be borne in mind that it is not intended to be compulsory; the selection of the uniform being left to the members of each corps, subject to the approval of the Lord-Lieutenant of the county, as in the first circular.

The sealed pattern consists of tunic, trowsers, gaiters, cap, and great-coat, together with waist-belt, sling, and pouches. The colour is, *wisely*, a light brownish grey; the material, *unwisely*, serge or tweed. Of course tweed may have been determined upon on the ground of cost, as it is undoubtedly cheaper than broadcloth, but we strongly recommend corps not to adopt it, but to go to a little more expense, and have a really good serviceable, respectable cloth at first. The tunic is of the regulation cut and form, as shown in our engraving.

It is, of course, grey, and trimmed with green braid, which is edged

with a red piping, and the cuffs are finished with an Austrian knot. The trowsers are exaggerated peg-tops, of the same colour as the tunic, and with a narrow red cord down the sides. This form of trowsers has been adopted, so that by drawing them up and tucking them into the leggings or gaiters, which are of russet coloured leather, they form that



UNIFORM AS RECOMMENDED BY THE WAR OFFICE.

peculiar—and peculiarly un-English—garment known as knickerbockers. The CAP is of grey cloth with green braid, and is of the most useless form that can well be devised. It is no protection to the head, and the peak is, especially, ridiculously small, and out of all proportion to be of the slightest service. The belts, pouch, &c., are of brown leather, and are plain and ugly. The whole dress in our opinion has a poor,

almost poverty-stricken, appearance about it, and is not one we could conscientiously recommend. It has not a sufficiently military appearance to give its wearers that soldierly look which is in our opinion so essential. We give an engraving showing the dress in its three varieties; first, the ordinary dress with the trousers in their legitimate form; second, with the trousers converted into knickerbockers; and, third, the great coat, which would be infinitely better with the hood thrown over the head.

R U L E S

FOR THE

GOVERNMENT OF VOLUNTEER RIFLE CORPS.

WITH a view to the proper regulation and government of Rifle Volunteer Corps in this kingdom, Her Majesty's Secretary at War ordered a committee to be formed for the purpose of drawing up a code of laws as the foundation for those governing the various companies already, or to be hereafter formed. The committee consisted of experienced military men and the following officers of Volunteer Corps.

PRESIDENT.

VISCOUNT RANELAGH, South Middlesex Rifles.

EARL SPENCER, Althorp Rifles.

MAJOR CLIFFORD, Victoria Rifles.

MR. J. H. ORDE, Yarmouth Rifles.

MR. WILBRAHAM TAYLOR, North Middlesex & Barnet Rifles,

CAPTAIN DENIS MOORE, Exeter and South Devon Rifles.

MR. R. BLACKBURNE, Edinburgh Rifles.

MR. A. GLADSTONE, 5th Lancashire Rifles.

MR. W. H. HYETT, Gloucestershire and Stroud Rifles.

CAPTAIN HICKS, London Rifle Brigade.

MR. TEMPLER, Bridport Rifles.

MR. WILLIAM LAIRD, Birkenhead Rifles.

The code drawn up by this committee has been approved by the War Office, and a copy forwarded to each corps. As there are, of course, various matters of detail which have to be filled up

and amended by individual companies, we give the laws as revised and passed by the First Derbyshire Rifle Volunteer Corps, and approved by the Secretary at War.

1. The Corps having been raised under the Act 44 Geo. III., cap. 54, the members are consequently subject to the provisions of that Act, and to all regulations which have been or shall be issued, under the authority of the Secretary of State for War.

2. The Corps shall consist of two classes—(1.) ENROLLED members, consisting of EFFECTIVES, NON-EFFECTIVES, and SUPERNUMARIES, and of (2.) HONORARY members, the latter contributing to the funds of the Corps, but not being enrolled for service.

3. All subscriptions shall fall due on the 1st of the month succeeding that in which the Queen signified her acceptance of the services of the Corps, viz., on the 1st of July.

4. The annual subscription of members of the Corps shall be ten shillings and sixpence, with an entrance of ten shillings and sixpence.

5. The Corps, through the Officer in Command, will propose gentlemen to the Lord-Lieutenant for Commissions as Officers; but the appointment of all Officers is vested by Act of Parliament in the Lord-Lieutenant, subject to the Queen's approval.

6. The Non-commissioned Officers shall be appointed by the Officer in command.

7. Future candidates for admission shall be proposed by three gentlemen, two at least of whom shall be members of the Corps, and be admitted on the approval of the Commanding Officer.

8. Each member must be provided with uniform and accoutrements of the pattern approved by the Lord-Lieutenant of the county.

9. Each member shall be responsible for the due preservation of all articles issued to him which are the property of Her Majesty's Government or of the Corps, fair wear and tear only excepted.

10. The expression "Property of the Corps" shall include all articles which have been purchased out of the general funds of the Corps.

11. When the Corps is not assembled for actual service, the Commanding Officer is, by the general provisions of the Act 44 Geo. III., cap. 54, solely responsible for the discipline of the Corps; but it shall be lawful for him at any time to assemble a Court of Enquiry, consisting of two Officers and two enrolled members of the Corps, to be appointed by rolster, for the purpose of investigating any irregularity, and assisting

him in coming to a conclusion upon it. And any enquiry in reference to a Commissioned Officer shall be made by a Court composed of Officers of the Volunteer Establishment within the county, convened under the authority of the Lord-Lieutenant.

12. The Commanding Officer shall fix the time and place for parades, drills, and rifle practice.

13. The Senior Officer in Command shall have power, subject to the approval of the Commanding Officer, to inflict fines for minor offences, to be fixed by the Committee named in Rule 17.

14. The following fines shall also be imposed, [the amounts to be settled as above, provided that they shall not be less than the following sums respectively, viz.,

	<i>s.</i>	<i>d.</i>
For loading contrary to orders, or shooting out of turn...	2	6
For discharging the rifle accidentally.....	5	0
For pointing the same, loaded, or unloaded, at any person without orders	5	0
For firing during practice from a point not a practising station	2	6
For standing during practice in advance of the line marked as the practising station	2	6]

Also such other fines as the Commanding Officer, with the advice of the Committee named in Rule 17, shall think proper to fix.

15. All fines imposed on members of the corps shall be entered in a book kept by the Commanding Officer for that purpose.

16. All fines shall become due on the first day of every month succeeding that in which they have been incurred, and shall be collected by one of the Company's Sergeants, and paid by him to the Captain.

17. The property of the Corps is, by 50th section of the Act 44 Geo. III, cap 54, legally vested in the Commanding Officer; but a Committee, to aid him in the management of its finances, shall be appointed yearly. This Committee shall consist of the Officers and five members of the Corps, the five members of the Corps to retire annually on the 1st of July in each year, and to be re-eligible.

18. The Commanding Officer shall cause an abstract of the accounts to be annually prepared, for the information of every member of the Corps.

19. The expense of the ammunition furnished by Her Majesty's Government, as specified in paragraph twenty-one of the War Office

Memorandum of July, 1859, shall be defrayed out of the funds of the Corps; but the cost of any further ammunition used for purposes of practice shall be defrayed by the member or members expending it.

20. Honorary members shall not interfere in any way with the military duties of the Corps, neither shall it be obligatory on them to provide themselves with uniform.

21. Honorary members will be permitted to use the practice ground when it is not required by the enrolled members, under such restrictions and regulations as the above mentioned committee may think necessary.

22. Honorary members shall severally pay a donation of ten guineas, or an annual subscription of two guineas.

23. The system of musketry instruction, as recommended for Volunteers by the Commandant of the School of Musketry at Hythe, must be adhered to.

24. Every member is expected to provide himself with the Volunteer Rifle Manual. The Rules of the Corps will be furnished to him.

Additional regulations for NON-ATTENDANCE at drill, in full uniform, on Saturday afternoons, have since been added. These are as follows :—

					<i>s.</i>	<i>d.</i>
For Privates, a fine of	..	..	..	..	0	6
For Sergeants, „	..	..	..	..	1	0
For Officers, „	..	..	..	..	2	6

and these are quite essential to the well-being of any company.

In addition to these rules we give those of the South Lancashire Rifles, because they contain some excellent regulations not embraced in the others. They are as follows :—

1. During the parades and rifle practice of the company the ground to be used only by military members.

2. Any member absenting himself from drill, parade, or rifle practice, without having applied for and obtained leave of absence, through the paymaster, or otherwise the senior officer present, and who shall not be able to assign good and sufficient cause for such absence to be fined one shilling.

3. Any member arriving on the ground late, and after his name has been called, to be fined sixpence.

4. Any member wishing to practice with the rifle on the ground appointed for the use of the company, to apply in the first instance to the

paymaster, or in his absence to the senior officer present, who will, subject to the approval of the commanding officer, determine, according to circumstances, whether permission to practice can be accorded or not. Any gentleman practising without such permission, to be fined half-a-crown.

5. No member to be allowed to use the ground for any purpose, if his subscription for the present year and fines be unpaid.

6. Any member firing from the rear of the line, discharging his rifle accidentally, carelessly, or otherwise, or pointing the barrel, whether loaded or unloaded, at any person under any pretence whatever, to be fined ten shillings.

7. Every member who shall not be ready to take his turn when firing, must be passed, and no one can be allowed to fire out of his turn on account of any shot that he may have lost.

8. Strict silence to be observed whilst on duty.

9. Small disputes, the decision of the senior officer present to be final.

10. Any fines that may be incurred under the above rules, together with any subscriptions forwarded for the purpose, to be devoted to a fund for the service of the company.

11. Saturday afternoons to be the formal day of drill, parade, and practice. The other days and hours of duty to be determined from time to time, according to season, due notice of the same to be given by advertisement.

12. Honorary members to be admitted by ballot.

13. All members to appear in uniform on Saturdays.

OATH

TO BE TAKEN BY EACH VOLUNTEER ON JOINING A CORPS.

I, A. B., do make oath that I will be faithful and bear true allegiance to Her Majesty, her heirs and successors; that I will, as in duty bound, honestly and faithfully defend Her Majesty, her heirs and successors, in person, crown, and dignity, against all enemies, and will observe and obey all orders of Her Majesty, her heirs and successors, and of the generals and officers set over me. So help me God.

This oath may be taken before a magistrate, or a commanding officer.

ETIQUETTE, &c.,

OF VOLUNTEER RIFLE CORPS.

When volunteer corps do duty in brigade, the commanding officer with the oldest commission takes the right and command of the whole brigade, unless a line officer of equal military rank be appointed. When volunteers and militia are brigaded with troops of the line, the commanding officer of the line of course takes the command, and without reference to the date of his commission. If volunteers and militia are brigaded together, the commanding officer of the militia takes command without reference to the date of his commission; but should either the line or militia officer be of an inferior grade, the volunteer officer is then entitled to the command.

No commissioned officer of volunteer corps has the power of resigning his commission without Her Majesty's permission. He is entitled to all the privileges and exemptions of a military officer, during Her Majesty's pleasure; is entitled to appear at Court and at State ceremonies in uniform; and in order of precedence he comes immediately after militia officers of the same grade, and before line and militia officers of a grade under.

Volunteer officers, while on duty or in uniform, are entitled to the military salute from volunteers, and from non-commissioned officers and privates of the line.

Non-commissioned officers and privates of volunteer corps cannot absent themselves from duty without leave or reasonable excuse. They are bound, while on duty or in uniform, to pay the officers the customary military salutes, and to deport themselves with military form and etiquette.

Officers, non-commissioned officers, and privates are bound to conform in every respect to the uniform and outward arrangements of their corps, and to observe the strictest care as regards their dress, arms and accoutrements.

One word in conclusion : There never was a time when it was so incumbent on the people of this glorious country of ours to arm themselves—there never was a time when the people were in such need of united efforts to become prepared for any emergency, and there never was a time when those efforts were so nobly made as now. In the beginning of the present century the people rushed into the volunteer force to save themselves from their otherwise inevitable fate of being “drawn” for the militia, or worse, of being “pressed” for other branches of the service. They joined the volunteers, were exempt from the militia, were equipped by Government, and cared nothing for the movement. Now they have no pressure from without ; but their beloved Queen appeals to their patriotism and their loyalty, their love of country and their home affections, and the respond is one which does honour to them and to her. The volunteers *now are* volunteers in every sense of the word. They devote their time to the cause ; they purchase with their own money their own arms, uniforms, and equipments, and they impose upon themselves restrictions and fines to keep strict discipline and order among themselves, and all this for love of country and for the sake of upholding national greatness and liberty. Those whose means enable them to equip themselves, do so—those whose means enable them to give large sums of money instead, also do so ; and those who have patriotism in their hearts, but whose means do not allow of them doing as others, are equipped free of all cost out of the general funds ; but all do it with the same patriotic feelings, the same love of their fatherland, the same warm-hearted loyalty to their Sovereign.

This is as it should be, and we appeal to every man throughout the length and breadth of the land to support by every means in his power this holy and hallowed movement. All who can ought to enrol themselves as active members of the corps, and all who cannot do so ought to aid the movement by subscriptions and by example. It is a duty each man owes his Queen, his country, and his family, and it is a duty which each one ought to feel it to be a high privilege to owe, and a source of sincere pleasure to discharge. The movement ought to progress until there is not a man who is not perfect in the use of the rifle, and who is not thus prepared to defend our fatherland, our national rights, our Queen, and our homes.

REGISTER

OF

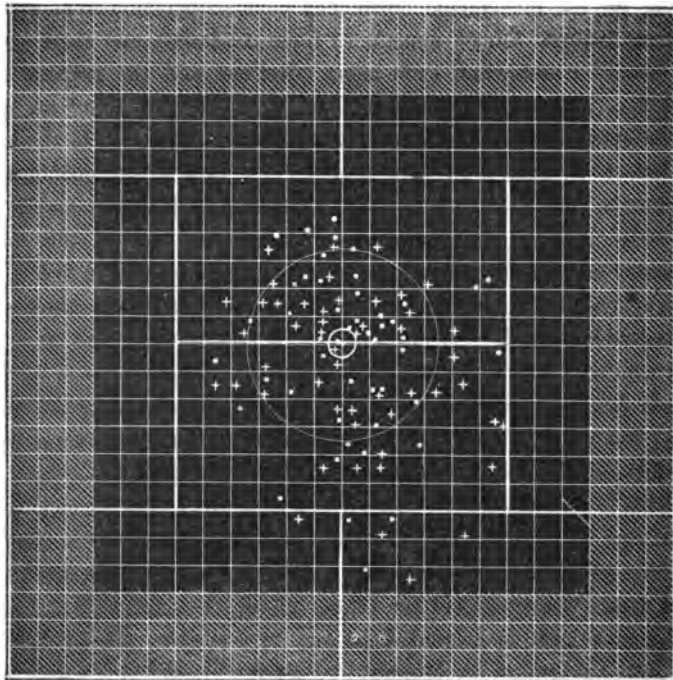
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June 15th, 1855, from a Rifle brought by himself,

At a Distance of 600 Yards, at a 12-foot Target.

Wind—S.W. Strong, and Raining.

Hits	98.
Misses	2 in the first 50.
Strips	None.



First 50 Rounds were fired with the Service Ammunition Pritchett Ball—Fouled a little 36th Round, and continued to Clear and Foul to the 50th, but not to hurt the Shooting—2 Misses. Last 50 Rounds from same Rifle, not Cleaned, marked + with a Ball brought by R. T. Pritchett, without Fouling from first to last Round.

J. FRAZER, CAPTN. R.A.

Woolwich, June 15th, 1855.

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