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Revolvers and Their Use

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Wednesday, July 14, 1886.

MAJOR-GENERAL SIR FREDERICK D. MIDDLETON, K.C.M.G.,
C.B., Commanding Militia of the Dominion of Canada, in the
Chair.

REVOLVERS AND THEIR USE.

By Major H. E. C. KITCHENER, Duke of Cornwall's Light Infantry.

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Preface.

BEFORE commencing this paper, I wish to express my acknowledgments to the many Officers and others who have so kindly assisted me with their experience and advice in compiling it.

I would also wish to point out that there is very little reliable printed matter to be found treating on the revolver, and therefore, no doubt, there will be many mistakes in this paper. I trust, however, that the discussion which I hope will follow will tend to remove them.

Introduction.

Most of us have a hobby of some sort, and for the last few years "Revolvers and their use" have been mine.

My hobby horse, like other horses of a like nature, has a trick of getting the bit between his teeth, and boring, if not his rider, at least his rider's friends.

I therefore venture, before I commence this lecture, to ask your indulgent consideration of the subject I have to lay before you; and I trust that, though much may prove to be chaff, some grain may be found.

I.—Importance of Revolver Training.

As honorary secretary of the R.M.C. Revolver Club, I have had opportunities of observing the difficulties which beginners find in the use of the revolver, and I have been astonished at the improvement after a few weeks' training.

The importance, too, of such training has been brought forcibly before me.

Surely coolness and presence of mind at critical moments are all-important in an Officer, and any means for fostering and engendering these qualities should be encouraged. Now it is obvious that a man who feels confident in being able to protect his own life would be cooler and more self-possessioned than one who has no confidence in his weapon or in his ability to use it.

An Officer's life is always valuable, especially so when conveying orders, or when reconnoitring to the front, and if he be a good revolver shot, he may pass with safety where otherwise he might fail.

For example, during the American war a Federal Lieutenant conveying orders, attended only by one orderly, was surprised by a party of the enemy's horsemen. He drew his revolver, and picking off

FIG. I.

TYPE OF SOLID FRAME. SINGLE ACTION REVOLVER.

FIG. III.

TYPE OF PISTOL.

FIG. VI. REVOLVER CARTRIDGES.

FIG. VII. EFFECT OF RECOIL.

FIG. II.
TYPE OF JOINTED
SELF-EXTRACTING REVOLVER.

FIG. IV.

TABLE FOR REVOLVERS (R.R.)

FIG. V. REVOLVER RANGE.

FIG. XIII.

FIG. IX.
REVOLVER RANGE.

FIG. XI.

RUNNING MAN BEFORE STARTING
AND AT END OF RUN.

FIG. X.

RUNNING MAN AS SEEN WHEN
COMING DOWN THE RANGE.

FIG. VIII.

FIG. XII.

SECTIONAL ELEVATION.

SECTIONAL ELEVATION.

four of his assailants so discouraged the remainder that they permitted him to proceed on his way unmolested.¹

Perhaps one of the noblest opportunities of displaying gallantry is in rescuing a comrade at the risk of one's life. A good revolver shot may often succeed in doing this, where a bad one would be not unlikely to add his own loss to that of his comrade.

Again, a revolver, from its shortness and single and double action, is a very dangerous weapon. In the Far West this is recognized to such an extent that it would be a breach of etiquette for a man to touch a friend's revolver, however close it may be to his grasp.

On the Congo, not long ago, a missionary severely wounded himself in the leg with his own revolver.

Many of us here this afternoon will remember how Colonel Gonne was accidentally wounded at Hounslow, just before the Zulu campaign.

If, then, accidents like these can and do happen where men are cool and collected, how much more likely are they to occur in the heat and excitement of action.

Should the Revolver be carried on Service?—It is urged sometimes that the revolver is too dangerous a weapon to be used in practice; but if so it should not be allowed in war.

Whether a revolver should be carried or not on service is still an open question. Some advocate its entire disuse, others that it should be confined to the Staff and cavalry.

No doubt to a mounted Officer the possession of a revolver and the ability to use it may often be of great value. There are times, too, such as at Abu Klea and Tammai, when the infantry Officer may turn the weapon to account. Colonel Byam, C.B., York and Lancaster Regiment, who has had considerable experience, writes on this point as follows:—"I think a revolver is better than a double-barrelled pistol, especially for an Officer who has to perform his duties on foot.

"My experience in the Soudan, 1884, goes to prove that an Officer may get into a scrimmage, and be surrounded by a number of the enemy, when he might require more than the two shots he would get with a double-barrelled pistol before he could free himself. I had a six-chambered Royal Navy revolver at Tammai when the Arabs rushed the 2nd Brigade square. I was at the corner of the square formed by my battalion when the rush came, and my men were forced back. I fired into the faces of two Arabs, and was then knocked over on my back. In this position I fired again; on regaining my feet, I was surrounded by Arabs, and fired my other three barrels into the faces of men close to me. Several men of the regiment came to my rescue, and I found an opportunity to reload, and was again in a position to fire, which luckily I had not to do. Loading did not take more than one minute. . . .

"I certainly think Officers should be trained to shoot with the right and left hand at distances less than 25 yards with a revolver cocked, and also half cocked, pulling the trigger from half cock and firing.

¹ Scott's "Partisan Warfare."

"A careless or excitable man *may* use his revolver at a wrong time, but anyone accustomed to handle one should not do so.

"I heard of no instance of the Royal Navy pattern of revolver getting out of order; there were, however, some intricate patterns that were reported to have jammed. I always looked to mine after a march, and again before settling for the night.

"I may remark that shooting at distances over 25 yards is a mistake. I recommend practice at 10 yards. On service it is better to reserve your fire till within 5 yards of your enemy. A mounted Officer might find a double-barrelled pistol very useful."

Again, Colonel Gilmore, in his "Four Years in the Saddle," says: "We had nearly all got through a fence when I saw Kemp engaged with a powerful fellow, who was closing in upon him with sword upraised. Kemp always carried two pistols; in one he had but one load; that he fired at his adversary, but missed, then threw the pistol at him and struck him in the breast. The trooper closed in upon him before he could draw his second pistol, and seizing him by the hair, tried to drag him off the horse, at the same time lashing him across the shoulder with his sabre. Kemp held down his head and took it, all the while trying to draw his pistol. I had cut my way to him, and had raised myself with uplifted sabre to cleave the fellow's skull, when Kemp discharged his pistol into his stomach, and he was free."

Those who advocate the entire disuse of the revolver admit freely that at times it is of value, but urge that this value is more than compensated by the mischief which, either through accident or ignorance, it may occasion. A General Officer commanding a brigade in Egypt told one of his regimental Officers who had a revolver in his hand to put it up and look after his men, not himself, and that his men would look after him.

Among the adherents of the revolver great differences of opinion are found as to which is the best weapon, some being in favour of one, some of another.

The double- or four-barrelled pistol also has many friends: they urge that they are simpler, that they possess more stopping power, and that, owing to the striker revolving and not the barrels, their mechanism is able to be better protected from the effects of the weather.

Sir Archibald Alison, writing on this subject, says: "Every Officer should carry a revolver on service, and as a matter of course be instructed in its use; when I say every Officer ought to have a revolver on service, I mean that he should have a weapon of that kind; but whether that should be a revolver proper or a double-barrelled pistol I am not prepared to say. On service myself I have always carried a revolver."

There is something to be said, too, in favour of smooth-bore barrels for weapons whose use is essentially at close quarters, and from which it is desired that a heavy shock to the object aimed at should be given.

Should Officers be armed with a Rifle?—In the Bechuana Expedition all Officers carried the carbine or rifle; and Colonel Leach, V.C.,

C.B., saved his life and that of his party by the use he made of the latter weapon in the Afghan Campaign.

Colonel Methuen, writing on this point, says: "My opinion is very divided. If an Officer is not armed with a carbine he loses a chance. If he has a carbine and makes use of it when not absolutely necessary, he may be neglecting his men.

"I do not consider it is an Officer's duty to kill; he has to superintend the action of his men.

"Fighting against the Boers as mounted infantry, I think an Officer *must* be armed. He may at any moment find to be so is an absolute necessity.

"Fighting against a European enemy, I believe he is never very likely to require a carbine, and if the worst came to the worst he could pick up a rifle *pro tem*.

"Sir Charles Warren lost two Officers in his previous expedition in Bechuanaland West from their not carrying carbines.

"If revolvers are used, by all means have an Army pattern, and have all Officers instructed in its use. I gave up the idea of any but a Martini-Henry rifle when going to the Cape, because it must be a *sine quâ non* that any arm taken on service should carry Government ammunition. But you will scarcely find one Officer who has had practical experience recommend a *revolver*; he will urge you to use a *double-barrel horse pistol*. I understand there are three objections to the revolver: it jams; the bullet is not sufficiently large to give the required shock; it delivers the fire too high. Personally I do not intend ever to use a revolver, as I mean to stick to my pair of Holland's horse pistols."

When considering the advisability of carrying the revolver or not, its moral effect should not be lost sight of. Perhaps there is no weapon which produces a greater effect in this way. A rifle when loaded may miss its aim, and when empty is useless. The revolver to an assailant is always a loaded weapon, and we require foes as brave as the Zulu or as reckless as the Soudanese to charge home when confronted by it. Again, a loaded revolver gives confidence to its possessor. If he has practised with the weapon he knows that, if held straight, six men must fall before he can be closed with; if he has had no practice with it he is equally confident, for few believe until they have tried how difficult it is to hit a man at even such short ranges as 10 or even 5 paces.

In practice the number of rounds fired is constantly forgotten, even by the marksman himself; how then can they be reckoned by an enemy in action? There are many cases of an empty revolver saving both life and property. A short time ago there was an account of a lady who, by presenting an empty revolver at a burglar, prevented his escape.

Lastly, it must be remembered that the question of revolvers *versus* pistols has been studied in other countries besides our own, and the result has been the universal adoption of the revolver.

II.—*Necessity for Training Officers in the use of the Revolver.*

No doubt many Officers in our Army are good revolver shots, the results of the annual inter-regimental revolver contests (established some time back by Major Salmond, Royal Scots Fusiliers) show this to be the case in peace: last year the winning Officer, Major Harley, the Buffs, scoring 57 out of 60 points. On service too there are numerous cases when Officers have shown their proficiency with a revolver. Captain Burn-Murdoch, of the Royals, who, with his legs jammed under a dead camel at Abu Klea, succeeded in killing four or five Arabs, who attacked him while in this critical position, is a case in point. But there are a great number of Officers who know little of the weapon, and some who know nothing at all.

Major King-Harman, B.S.C., lecturing at Simla last year on the subject, says: "It has always seemed to me a very strange thing that, although there is constantly continued and even increasing expenditure of time, trouble, and money on the instruction of the rank and file of the Army in the use of their weapons, yet no attention whatever is paid to the actual fighting capabilities of the commissioned Officers; and it seems to be taken for granted, either that they are quite perfect in the use of their weapons, or else that skill in the use of them is a matter of no importance."

Manner in which Revolvers are often purchased.—Of late years many Officers have been suddenly ordered on services of a nature when a knowledge of the revolver would have been of the utmost importance to them. On receiving their orders, those not in possession of revolvers hasten to town, and purchase a so-called "regulation revolver," good, bad, or indifferent, as fortune may decide.

Major McClintock, writing in the "Field," says: "Although the revolver has come into so general use, there is probably no weapon which is so little understood, and in the purchase of which the customer is so entirely at the mercy of the gunmaker from whom he buys it. Very few purchasers of revolvers understand the merits of the different types of these pistols which are offered for sale, and a still smaller number have the opportunity of testing the mechanism or the power of the weapons they buy. But there is no arm which should be selected with greater care, as when required for use the owner is generally in extreme peril and the failure of his arm may cost him his life."

On the Officer returning with his purchase, he may, if time permits, pay two or three visits to the nearest range, when a hasty practice is attempted (it was during a practice of this sort that Colonel Gonne was wounded), or, if time does not permit of this, he contents himself with what practice he can get in fine weather during his passage out. Now, in these days of progress, should such a state of things be possible?

Amount of Instruction our Officers receive in Self-defence.—Down at Sandhurst we teach the young Officer to command a brigade, to build a fort, to survey a country, to ride a war horse, and to climb a pole, but the only authorized course of personal defence or offence are ten

short lessons in sword exercise; that these lessons should teach anything more than a few parade cuts and guards is hardly to be expected.

After getting their commissions a three months' course of gymnastics is gone through: during which, if the classes are not too large, a few more lessons in sword drill are given.

The outcome of this and other training is that fine display known as "sword exercise" at General's Inspection, which, though imposing to the crowd, is well known to be more or less useless for all practical purposes.¹

Colonel Crookshank says on this point: "As for the sword exercise, in my own experience that has been an annual farce; I have commonly seen the Inspecting General turn his back on the performance, as being too painful to be witnessed."²

Colonel Onslow on Self-defence.—Colonel Onslow, Superintendent of Gymnasia, writing on this subject, says: "I think that all Officers should be instructed in the use of the revolver, and the cadets might be taught how to handle it at Sandhurst, and also upon first joining their regiments, as, if once properly taught how to use the weapon, they would require but little practice afterwards to enable them to defend themselves in a scrimmage. It is the infantry Officer's only weapon. I don't think he would care to depend on the regulation sword for his protection, and besides I do not believe that one infantry Officer in ten ever learns how to use a sword, and it is not, in fact, a weapon which can well be used on foot; at least such is my opinion. However, I may be wrong, but at any rate I have rarely met with men who have been at all handy with a sword, dismounted. A man may be very good with a single stick, but a duffer with a sword."

Sir Francis De Winton, also writing on this subject, says: "Except for parade purposes, or for cavalry, a sword is a useless and foolish weapon, and a revolver in the hands of a confident and practised man would be a far more efficient weapon for either offensive or defensive action. In fact, there cannot be any comparison between them.

"With reference to shooting, I have seen very fair practice made with a revolver in the hands of a man accustomed to use and handle them.

"I have known several instances where accidents have occurred from want of a proper knowledge, and I therefore consider the revolver is a dangerous weapon to every one when the owners do not know how to handle them.

"A course of practice or instruction in the use of revolvers could not fail to be useful, because it would give confidence and knowledge, and a certain amount of practice would naturally increase efficiency in shooting."

Unlike Continental armies, we have no course of revolver shooting for Officers, and therefore, officially, an infantry Officer can hardly be expected either to defend himself or assail a foe. Now how has this

¹ Since writing the above I have learned that General Roberts has substituted single stick and revolver practice in India; could we not follow in his wake?

² "Pioneer," 22nd July, 1885.

state of things arisen? Possibly this way: in the days of our fathers every Officer knew he was liable to be called out, and consequently that his life might depend upon the turn of his wrist or the steadiness of his eye, he therefore constantly practised both with sword and pistol, and the results arrived at with the pistol were little short of marvellous; cutting out the ace of diamonds at 12 paces, shooting a swallow on the wing, if not everyday occurrences, were at least not unusual. Shooting like this can never be expected with the revolver, but a fair shot ought to be able to place every bullet within a target 1 foot square at 30 yards distance. Duelling being still carried on in Continental armies, it no doubt serves to keep up the knowledge of self-defence. With us, however, the old custom of pistols for two and coffee for four has passed away, and with its departure comes the necessity for some course of training both with pistol and sword.

III.—*Scheme for Instruction of Officers.*

Proposed First Course of Instruction.—Out of the 300 gentlemen cadets now at Sandhurst, 246 pay 10s. per term for the privilege of practising in their own time with the revolver. Many of them become good shots, but others no doubt get tired of the walk to the range, and leave the College with as little skill in revolver shooting as when they entered it. The drier portions of the subject, such as taking to pieces, and cleaning the weapon, it would be quite useless under present arrangements to attempt to teach.

If, however, the authorities could see their way, while retaining the voluntary nature of the practice, to allot 200 marks (the same as is now given to riding and gymnastics) for proficiency in the use of the revolver, there would not be a cadet in the College who would not practise frequently.

In the event of marks being thus awarded, it would be necessary to open the subject to all cadets by making the charge compulsory. This charge, which would include examination, instruction, marking, and 100 rounds of ammunition to each cadet per term, would not exceed 10s. per head.

Major Savile, Professor of Tactics at the Royal Military College, writes on this subject as follows: "Concerning revolver shooting and instruction, it is my opinion that, if it is desirable that an Officer should know how to defend himself in action, it is obviously equally desirable that he should be taught the best means of so doing.

"If the matter is considered merely from a tactical point of view, it can hardly be denied that the preservation of the lives of our Officers during an action is of the highest importance, in order that the men may be properly led and directed, and that the plan conceived by superior authority may be correctly executed.

"Although actions in modern Continental warfare may be said to be mainly carried on at long range, and therefore during the greater part of a battle the sword and revolver carried by an Officer can hardly be looked upon as anything but encumbrances to his free action, still local fights in villages, woods, and enclosures almost invariably occur

in the course of a long action, and if an Officer so engaged leads his men properly, and sets a good example, it is certain that he will have to defend his life by the use of his sword and revolver; that the cases in which this will occur in savage warfare will be infinitely multiplied, is a fact patent to all.

"For these reasons, I strongly approve of any measures which will tend to promote good revolver shooting amongst our Officers.

"I fail to see any good cause why your scheme for introducing revolver shooting at the Royal Military College as a voluntary subject should not be carried out. I do not consider that the practice would in any way interfere with the instruction in other subjects, there is ample time available for it, and I am sure that regulations could easily be framed for conducting it in an efficient and practical manner."

Major Scott, Professor of Fortification at the Royal Military College, writes: "My idea is that a cadet should be instructed at a military school in those subjects which will make him ready to join his regiment as an efficient subaltern (not General) Officer.

"What subject can be more practical or useful than shooting? I agree in the main with your revolver practice scheme. Experience alone can test its practical working. I quite agree with you as regards the award of marks for practice. I personally should like to see this principle extended to rifle shooting as well.

"Shooting is a subject to which an award of marks is eminently suited, because their distribution must be fair, inasmuch as the amount allotted does not depend upon the fads and fancies of various individuals, but upon an actual score obtained at practice by individual exertion.

"Some years ago it was suggested that marks should be allotted to all athletic accomplishments, but a fair system of marking for proficiency in cricket, rackets, &c., presented an insurmountable obstacle.

"Such is quite the reverse with rifle shooting: points obtained count as marks 'et voilà tout.'"

Colonel Abbott Anderson, Professor of Surveying at R.M.C., writes: "I have perused your scheme for revolver instruction and for awarding marks for revolver shooting, and in the main I agree with your suggestions, and am decidedly of opinion that instruction in this most useful military accomplishment should no longer be neglected."

The old French proverb about omelettes and eggs must not be forgotten in considering whether cadets should be trained in the use of the revolver. The weapon is a dangerous one, and, though practice has been carried on for two years at the Royal Military College without accident, still it is not to be expected that one will never happen. Now, is the game worth the candle?

On the one hand we have our Officers trained to defend themselves when on service. On the other, the possibility of an accident at home. Surely the accidents which constantly occur from want of early training will more than compensate for the risk on a carefully superintended range.

Changes in Ammunition.—Of course this first training ought to be kept up. Here a difficulty arises; all Officers join with swords, some with revolvers as well. These latter find that not only *revolvers* change, which would be a small matter (because, though their revolver might not be the best obtainable, they would know its shooting powers and other capabilities, and be quite prepared, if need be, to trust their lives to its care), but that the Service ammunition changes even more frequently.

An Officer who took one of Webley's revolvers to the Soudan, chambered to fit No. I Mark Government ammunition, did not find out, until he was actually engaged with the enemy, that the new ammunition was Mark III, which could not be induced to enter his revolver. Finally, he threw his revolver at an Arab whom it hit in the face. It was picked up none the worse some three weeks later, and is now in England.

During the last few years we have had no less than three different sorts of Government ammunition, some of which fits one revolver, some another, and the owner of a revolver often finds to his dismay that his outlay has been wasted. This is discouraging to would-be purchasers, and some means should be devised for meeting the difficulty. Would it be possible for the Government to have in stock a sufficient number of proved revolvers, to supply not only the non-commissioned officers, but also all Officers ordered on active service? The advantages of this would be: 1st, That all Officers would be armed with the same class of weapon, as is the case in all Continental armies. 2nd, That Officers who like to be always ready for active service would be saved considerable expense. 3rd, That by issuing a few of these revolvers to each battalion there would be no obstacle to Officers going through an annual course of revolver shooting. 4th, As the Government ammunition is made for the Government pistol, there would be no danger of the one not fitting the other.

'Major King-Harman, in his lecture speaking of Officers' revolvers, says: "I am given to understand that orders will shortly be issued for all Officers to fire twenty-four rounds annually from revolvers at present in their possession, which will get them into the habit of firing off such weapons as they have got; but when the time comes, I strongly suspect that in too many cases the revolvers are very much like the swords, useless gimcrack things, that will not take Government ammunition, and that the private-made ammunition used with them is harmless rubbish that has been kept for years.

"Trained Officers don't grow like leaves on a tree, and in native regiments they are so few in number and so difficult to replace that everything should be done that is possible to preserve their lives."

Besides a short annual course, during which single and continuous right- and left-handed practice should be carried on, Officers might be encouraged to practise voluntarily by the construction of revolver ranges in or near the barracks. A space of 45 yards by 12 yards is sufficient for these ranges.

¹ "Pioneer," Simla.

In time, too, our present sword exercise at Generals' inspections might give place to more practical work, such as fencing, single-stick, or revolver shooting.

It would not appear necessary that an Officer should acquire all these exercises, but it is certainly to be wished that he should be fairly proficient in one or other of them.

Insufficiency of Annual Course.—With regard to non-commissioned officers, drivers of artillery, and others, who are armed with the revolver, some pains should be taken to teach them the construction and use of the weapon with which they are armed.

At present an annual course of twelve rounds is laid down for non-commissioned officers, but this is clearly inadequate to insure even fairly good shooting. At Abu Klea the sergeant-major of the Guards threw away his revolver and took to a rifle, perhaps the best thing he could have done under the circumstances.

IV.—*History of the Revolver.*

The first revolver dates back to about the 16th century; these first revolvers were of very primitive construction, and, following on the same lines as the revolving musket, which had been invented some time previously, were very clumsy weapons, taking more time to cock and revolve by hand for each discharge, than is now taken in loading and firing a breech-loader. I have here a curious relic of the past in the shape of an old revolving matchlock, kindly lent me with other revolvers by Mr. Wilkinson of Pall Mall. This weapon dates back to about the 16th century, the cylinder is revolved by hand, and the piece is discharged by means of a slowmatch; the stock passes under the arm in the same way as the matchlocks of the Sikhs and Afghans. It is probably of a weapon of this sort that Mr. Pepys writes in his diary, 4th March, 1664: "There are several people trying a new-fashioned gun, brought my Lord Peterborough this morning, to shoot often one after another without trouble or danger."¹

America may be said to be the birthplace of the modern revolver, and Colonel Colt its father; his weapon was for many years far ahead of English revolvers, and though Dean and Adams, and others in this country, expended much time and ingenuity on the subject, they at first made little way.

This was chiefly due to our English makers attempting the difficult task of combining the rotation of the cylinder with the action of pulling the trigger, and thus ensuring the greatest possible rapidity of fire.

Colonel Colt, on the other hand, very soon succeeded in causing the cylinder to rotate by the cocking of the hammer; he thus obtained a fair amount of rapidity with greater accuracy of fire than the English single-trigger action revolvers could hope to arrive at (Fig. 1, Plate XXVI).

Double-action Revolvers.—When, however, the idea of combining the American cocking action and the English trigger action in the

¹ United Service Journal.

same weapon, that is to say, in a double-action revolver, which might be cocked between each discharge, or discharged continuously at pleasure, was entertained, the English gun makers, who had already developed a smooth trigger action, advanced with a bound to the girths of our Yankee cousin, and a hammer and tongs race has ever since been run as to merit between American and English revolver makers.

The old pepper-box revolver, of which I have an example here, was one of these; its trigger action may be noticed, showing at what an early stage our English makers had arrived at a smooth pull-off. The old wheel pistol is another example of the early percussion type—it was a great novelty in 1839, and large numbers were made; the rebounding lock of this pistol is worthy of note.

Difficulties in manner of igniting the Charge.—Another difficulty which the earlier inventors had to struggle with was the manner of igniting the charge. In the Tower collection there is an example of a matchlock revolver; and many types of flintlock revolvers are still to be found. The percussion cap was of great assistance to the revolver makers, but the exploded cap often jammed the weapon, and it was not until the pin-fire cartridge was introduced that the revolver could be at all depended upon. After the pin-fire came the rim-fire cartridge, and this has now been superseded by the central fire.

In 1835 Colonel Colt patented his revolver, but it was not then the simple and useful weapon it has since become.

During the Crimean War and the Indian Mutiny the revolver, notwithstanding its imperfections, was frequently used with effect.¹ Major Lunley, V.C., on entering the Redan on September 8th, 1855, was immediately attacked by three gunners who were reloading a field piece. He drew his revolver and shot two of them, he was then knocked down by a stone. Again, in the Mutiny at Chota Behar, Colonel Daunt, V.C., rushed forward and, assisted by Sergeant Dymon, succeeded in capturing a gun by shooting the gunners at close quarters with his pistol.

Double-action Revolvers.—About 1855 Adams and Tranter brought out their double-action revolvers; they were at the time considered very superior to the single-action.

An Officer, writing in the "Field" of February 16th, 1884, says: "The revolver that I carried through the three campaigns of 1877, 1878, and 1879 in South Africa behaved as well as I could wish. This was a double-action revolver by Tranter, and although I carried it over some thousands of miles' rough travelling (in the saddle) I did not find it fail me once." But, notwithstanding this, a feeling appears to be growing that double-action revolvers, from their delicacy of construction, and liability to get out of order, are not suited for rough usage.

Colt's Single-action.—In Canada and the Rockies Colt's single-action frontier revolver is most generally met with. With this weapon the cow-boys are generally armed, and the practice they make is truly remarkable; they have also a curious knack, when rapid firing

¹ "V.C. Records."

is required, of supplying the double-action deficiency, they allow the pistol after each discharge to drop from their hand, retaining only hold of the trigger guard by the finger, the weight of the pistol and a slight jerk causes it to describe a circle, of which the finger in the trigger guard is the centre; as it comes back to its original position, the hammer is caught by the thumb, and the weapon cocked and again ready for use.

The time taken in extracting the cartridges, and loading Colt's and other solid frame revolvers, has been attacked with more or less success by both English and American makers. Colonel Silver has produced a solid framed rapid extracting revolver of some merit, while Webley, Wilkinson, Kynock, and others in this country, Smith and Wesson in America, have devoted their attention to producing jointed framed self-extracting weapons. (Fig. 2.)

Heavy Charges.—There is no doubt an impression that a self-extracting revolver cannot safely fire such a heavy charge as a solid frame revolver of the same weight, but when we consider the heavy charges fired by jointed express rifles this seems to be straining at a gnat and swallowing a camel. Again, the Enfield and other self-extracting revolvers have about the same recoil with their 18 grains of powder and 265 grains of lead as the American cavalry revolver with 37.6 grains of powder and 250 grains of lead.¹ This goes to show that the strain on the two weapons is about the same, and when it is considered that the 18 grains of powder in the Enfield has to force a 0.476 bullet first through a 0.460 cylinder and then through a 0.450 barrel this is hardly to be wondered at. It must also be remembered that the revolver employed by the Russian cavalry is a self-extracting weapon, which safely carries a charge of 27 grains of powder.

Quite recently Mr. Webley has brought out a new self-extracting revolver, with the joint and top fastening of such solidity that over 100 rounds of the American cartridge, containing 37.6 grains of powder and 250 grains of lead, has been fired from it without inconvenience to the marksman or damage to the weapon.

Fouling.—Before breech-loaders were invented, fouling was a serious drawback to the efficiency of the revolver, and many systems of lubrication by Tranter and others were tried to surmount this difficulty.² It has now been altogether overcome by the employment of a lubricant contained in the cannellures of the bullet, which may consist of tallow or Japan wax.³ A Colt's revolver has fired 300 rounds with American Service ammunition, being allowed to cool after each 100; no difficulty was experienced in firing it. The revolver was then laid in the snow, water poured over it, and it was allowed to remain in the weather three days and nights. When taken up again it was rusted considerably, but worked perfectly.⁴

¹ Major McClintock's experiments.

² Greener, page 427.

³ United States, Springfield Report, 1882.

⁴ Extract from American Government Report on trials with breech-loading revolvers.

Fouling of the Pin of the Cylinder.—In the earlier types of self-extracting revolvers it was found that after firing a certain number of rounds, the gas escaping between the cylinder and the barrel fouled the pin of the cylinder to such an extent that the cylinder would not revolve. This difficulty has now been successfully overcome by Mr. Webley and others, and a self-extracting revolver has fired over 300 rounds without a sign of fouling.

V.—*Rapidity of Discharge.*

With regard to rapidity of fire, it must be remembered that a non-extracting double-action revolver can be fired as rapidly as a self-extracting revolver for the first six rounds; but when the reloading question comes in as part of the attainment of quick fire the latter weapon leaves the former hopelessly in the rear.

Whether the facility afforded for quick loading by the self-extracting revolver is of the value it appears to be at first sight seems to be doubtful. There are few cases, looking at it from a military point of view, when six shots would not be sufficient to settle the affair one way or another.

Again, though a self-extracting revolver takes very little time to reload, still it does take time, and it appears probable that that delay would in most cases be as fatal to its possessor as the rather longer period taken by the non-extracting weapon.

It has been stated that a self-extracting revolver can, by being placed in the holster, or stuck in the coat-front, be rapidly recharged with one hand while the marksman is proceeding at a gallop; of course, if this can be done, it is a point in favour of the self-extractor.¹

Colonel Maitland, R.A., writing from Turkish headquarters in 1878, says: "The revolver carried by the Circassian body-guard is a serviceable weapon. It opens at the breech on a hinge, and is so contrived that the action of opening throws out the empty cases; the barrel is then thrust, muzzle downwards, into the breast, the hinge remaining open; fresh cartridges are placed in the chamber. The breech is closed sharply by a snap. The pistol is then withdrawn ready for use. All this can be done at full gallop with one hand in a very short time."

The time taken by expert marksmen to fire and reload non-extracting revolvers is also short. Eighteen rounds have been fired, commencing and ending with chambers empty, in 1 minute 54 seconds, with a Colt revolver.²

It is not the extracting apparatus which oftenest renders a revolver unreliable, it is the failure of the cylinder to revolve properly. Many Officers on this account prefer the double-barrel pistol for active service. For the Afghan and Egyptian campaigns nearly all the Officers of the 10th Hussars armed themselves with these pistols instead of revolvers.

¹ "Encyclopædia Britannica."

² Springfield Report, 1882.

Reasons why the Cylinder sometimes fails to rotate.—The failure of the cylinder to rotate will generally be found to be due to one of two causes:—first, faulty construction in the revolver; second, faulty construction in the cartridge.

In the first case, when revolvers jam it is due to the ratchet not being properly hardened. This wearing of the ratchet is so well recognized that I find in Dean and Adams' description of their revolvers the following:—"The toothed ratchet is secured to the base of the chamber by two screws, so as to admit of its being renewed when it becomes abraded by use."¹

A good ratchet, however, will last a long time; over 5,000 rounds have been fired by a Wilkinson's extracting revolver before the ratchet showed any signs of wear.²

The ratchet in American revolvers appears to be flatter, stronger, and more deeply cut than those employed in England.

The hand or pawl has also two fingers in place of one, the second finger taking hold of a second tooth, and greatly assisting the revolution of the cylinder.

Another cause which sometimes accounts for the non-rotation of the cylinder is the wearing of the pawl or lifter, which shortens it and prevents it working properly.

A cause of miss-fire is the wearing of the striker, which of course shortens it, prevents its reaching and exploding the cartridge.

In the second case the butt end of the cartridge is sometimes accidentally elongated, and this catching in the breech piece prevents the cylinder revolving. Sometimes a paper coating is placed within the metal case of the cartridge, and this on discharge gets wedged between the cylinder and the barrel, causing them to jam. There were instances of this in Egypt.

Besides the complete jamming of the cylinder, miss-fires occur from the cylinder rotating either too far or not quite far enough, the hammer in these cases striking either behind or before the cap.

The weight of the loaded cartridges when two or more chambers have been discharged will sometimes thus drag the cylinder over.

Of course much greater rapidity can be obtained with a double-action revolver fired continuously, that is, without cocking, but by simply releasing the trigger after each discharge, than with the same weapon when fired at single practice, that is, when cocked by the thumb between each round. And there are times when this rapid firing may be of the utmost importance.

But care must be taken to guard against rapidity taking the place of accuracy; it is much easier than most people think to miss a man, even at 5 or 10 yards; the smoke alone after three or four rounds will often completely obscure the view.

Advantage of Continuous over Single Practice.—A great advantage which continuous practice has over single is that it enables the revolver to be discharged repeatedly with one hand with great ease. Thus an Officer may have his sword in his right hand, and yet fire

¹ Greener.

² R. M. C. Range.

his six barrels with his left; if mounted, he can hold his reins in his left hand and empty his revolver with his right. It is curious how little difference single or continuous practice makes in point of accuracy.

In the Musketry Regulations it is laid down that single practice should be the rule, continuous practice the exception, and this is now carried to such an extent that there is no continuous ball practice in the non-commissioned officers' course, although it was very strongly recommended that there should be.

My experience goes to show that continuous practice should be the rule, single practice the exception; when I say this, I do not mean that the revolver should necessarily be fired rapidly, indeed a steady aim should always be taken, but that continuous practice should be generally used even when time is no object.

My reasons for this are, first, that I consider continuous practice far more useful for an Officer than single practice; the latter would only be used for long shots, which would, in many cases, be better left unfired. Second, the most probable times when a revolver would be of use to an Officer would be at close quarters to repulse, or protect himself from, a sudden rush of the enemy. In this case continuous practice would be the order of the day. Third, continuous practice is more difficult to learn than single, and therefore should be more studied. Fourth,—after a short time, as good, or almost as good, shooting may be made with continuous as with single practice. In an account in "The Field," of some interesting revolver experiments made at Nunhead (on 28th March?) by Mr. Webley, his single practice at 12 yards was not so good as his continuous at the same distance.

Mr. Webley professes to be able to make as good shooting with continuous practice as at single; and I have come across many cadets who can do the same.

At these same trials Mr. Webley fired, continuous practice, forty-eight shots in 3 min. 5 sec. (with a self-extracting revolver), all but four shots striking within a square foot; range, 12 yards. Curiously enough, on the 9th April, Mr. Ira Paine, at the same place, under the same conditions, with a solid frame Colt, fired 48 shots in 2 min. 15 sec., but his diagram was not so good as Mr. Webley's.

When several shots have to be fired at an advancing target, I believe better shooting can be made continuously than when cocking after each shot, the disadvantage of the heavier pull in the former case being more than balanced by the advantage gained by keeping the eye constantly fixed on the target, and the revolver pointed more or less the whole time in the same direction.

Left-handed Shooting.—The importance of left-handed practice must be mentioned; to a beginner it will appear that shooting with the left hand is extremely difficult, but this is by no means the case; with a little practice, almost as good shooting can be made with the left as with the right hand, and the advantage of being able to do this must be apparent to all. It is urged that it may be very true with regard to the infantry Officer, who would

naturally, if a good shot with his left hand, carry his revolver in his left and his sword in his right, but that a mounted Officer would always have his reins in his left hand, and therefore only have his right available; but there are cases, a hard-pulling horse for instance, or an enemy close on the near side, when the power to shoot with the left hand would be of value. Sir Richard Taylor, K.C.B., writes: "The proposal that Officers should be instructed in the use of the revolver is one that in my opinion is well worthy of consideration, as there may occur many occasions on active service when proficiency in the use of that arm may be most useful. It is a mistake to suppose that a revolver can be used effectively without some amount of practice and tuition. I would also advocate that the use of the weapon should be taught with the left as well as the right hand."

A Staff Officer now serving in Egypt also writes: "I certainly think Officers should be instructed in revolver shooting as part of their training; they ought to be so, to enable them to defend themselves and also to accustom them to handle revolvers, and then we should not have so many accidents with them. I have been accustomed to shoot with revolvers and pistols ever since I have been in the Service, and made a point of making myself a fair shot. Every Officer should be able to shoot with his right or left hand as occasion requires."

The following incident is taken from Denison's "History of Cavalry":—

"In the battle of Saitshar, a Servian Officer, Captain Frassanovitch, distinguished himself greatly. He took his sabre in his teeth, and, revolver in hand, charged through a Turkish demi-battalion, captured the colours and carried them off, leaving a dead or wounded Turk behind him for every barrel of his weapon."

VI.—Accuracy.

It is difficult to lay down a cut-and-dry law with regard to the accuracy of the revolver, so much depending on the powers of the marksman. The Volunteers have lately seen the importance of accurate revolver shooting, and last year there was a revolver competition at Wimbledon for the first time. The attempt, notwithstanding some drawbacks, which will always attend a new venture, proved a great success, and is to be followed by a competition on a larger scale this year. The accuracy of the shooting, however, left much to be desired.

There is no doubt that the best revolver practice of the present time is far inferior in point of accuracy to the pistol-shooting of our fathers; partly this is no doubt due to the weapon; most revolvers are badly balanced, the better ones in this respect, such as Colt's Frontier, having too long a barrel for convenient portage.

Again, in the old duelling pistol, and in the modern rifle, the recoil acts more or less directly in a line with the hand or shoulder, whereas in the revolver it acts considerably above the hand, thus giving the

weapon an upward jerk, which, though perhaps not affecting the accuracy of the first shot, tends certainly, from the strain on the wrist, to impair the accuracy of those that follow.

Want of Interest in Revolver Shooting.—What perhaps is the chief cause of the poor, nay wretched, revolver shooting of the present day is the little interest taken in the subject. The old saying that "practice makes perfect" holds good in revolver shooting as well as in other matters, and, unless we can induce our Officers and others to exercise themselves in the use of the revolver, there will be little good in attempting to improve the defects of the weapon.

What may be done by a practised marksman, the following extract will show¹:—

"On Friday last we went by invitation to Nunhead to see Mr. Ira Paine demonstrate what a good shot can do with a revolver. The day was anything but favourable, the light being gleamy and dazzling, and a north-east wind blowing in powerful gusts from left to right across the range. Mr. Paine stood in a hut which offered some little protection from the wind, but the full flight of the bullet is across the open. The targets used were the ordinary cartons, with a bullseye $4\frac{1}{2}$ inches in diameter. The distances were measured by us. The first practice was at 12 yards, the weapon being a Colt's short army revolver with a barrel $5\frac{1}{2}$ inches long, taking Eley's 0.450 cartridge. The first shot struck the bullseye about half an inch low from the centre, the second was a dead centre, the third a quarter of an inch low, the fourth one-eighth inch low, the fifth three-eighths of an inch low, and the sixth one-third of an inch low on the right, all being bullseyes. In short, the number of shots fired was fifty, and resulted in forty-two bullseyes.

"The wind blew the target about so that, on our suggesting it should be fastened in some way, Mrs. Paine stepped forward, and, taking hold of one corner, held it steady. Under favourable circumstances, it is fair to suppose that every shot would have been a bull.

"The next arm used was the 'Frontier,' having a barrel $7\frac{1}{2}$ inches in length, and taking the 0.44 calibre Winchester Repeating Arms Company's cartridge.

"The first shot was a bull 1 inch low from centre, the second one-fourth inch right, the third one-eighth inch high, the fourth one-eighth inch left, high, the fifth an outer, the sixth (a careless shot) 2 inches high. All bulls but the fifth.

"Twenty-five shots were altogether fired, of which twenty-three were bulls. At 25 yards with the short Colt Mr. Paine made eight splendid bulls and seven outers, four of which were within half an inch of the bull.

"The exhibition closed with the 'Frontier,' at a third-class firing target, with a bullseye 2 feet by 9 inches.

"Distance 100 yards. Six shots were fired. The first was a bull 2 inches low, right; the third 4 inches low, left; the fourth, outer, left, 3 inches from bull; the fifth an outer, left, half an inch from bull; and the sixth a bull, 2 inches low, left. This is splendid

¹ "Shooting Times," April 25th, 1894.

shooting, and we regret exceedingly that the adverse conditions of the weather should have so interfered with this wonderful record."

At the last Wimbledon competition the best shooting record was made with an Enfield revolver, thirty-four points having been made out of a possible thirty-six.

But, notwithstanding the drawbacks in construction, it may be safely stated that in the hands of an ordinary practised marksman a revolver will put every bullet within a target 1 foot square at ranges varying from 10 to 30 yards according to proficiency, and this for all military purposes would appear to be sufficiently accurate.

Drift.—The twist of the rifling being to the left, the drift is in the same direction; it amounts to about 30 inches at a range of 300 yards. For distances under 150 yards, however, the pull on the trigger, acting in the opposite direction when shooting with the right hand, serves to neutralize the drift; when shooting with the left hand allowance must be made for their combined effect.

Construction of Butt.—It is curious to notice the different shape of handle adopted in most English revolvers as compared with that in general use in the United States. The handles of the former are of almost uniform thickness throughout, while those of the latter increase considerably in circumference towards the butt. Opinions and tastes vary considerably with regard to the best form of butt. In considering the subject, the two most important points to be remembered are—1st, Which butt affords the best grip? 2nd, Which sort of butt conduces most to lessen the effect of the recoil? An English saw-handled butt no doubt gives the firmer grip, while the American, on the other hand, reduces the shock of the recoil by allowing the pistol more play.

Simplicity of Construction.—Simplicity of construction is of greater or less importance in a military revolver in proportion with the intelligence and attention of the possessor. To be of any value, nay, not to be rather a danger, a revolver of any description must be thoroughly understood.

Knowledge of the Mechanism of Revolvers necessary.—A friend of mine was ordered in 1879 suddenly on transport service from Lucknow to Kabul. He had no revolver, but, thinking one necessary, he borrowed his Adjutant's. Some time elapsed before he had either time or occasion to try it. Fortunately for him, an opportunity of a peaceful nature came in his way. Passing along the Kurrum Valley with his train, he one day observed a fox, which, with sad sportsman-like instincts, he proceeded to stalk, and, on arriving within 20 yards of the intended victim, he began to open fire with his revolver, but, as perhaps was not unnatural, he could not succeed in getting off a round. A second attempt in camp not proving more successful, he returned the weapon to its owner, who, we will hope, if he takes it with him on service, will have better fortune. My friend then purchased a revolver, supposed to carry Government ammunition, and, being warned by experience, practised with it in camp. After the relief of Sherpore he took it with him when he went to assist in clearing the surrounding villages. In one of these he found some

Afghans, on whom, at about 20 yards, he fired six rounds, without, as far as I could gather, much result. He then proceeded to reload, and found to his dismay the ammunition he had purchased with the revolver had been expended, and the Government ammunition would not fit his new purchase. Fortunately the Afghans retired in one direction, and allowed him to perform a like movement in the other.

So much for an Officer not knowing the construction of, and failing to test the service ammunition with, his revolver.

It may appear to some that my friend's conduct showed negligence. In as far as not being in possession of a revolver and knowing how to use it directly he entered the Service, I think it does; but then my friend is not an isolated instance of this; indeed, the chief aim of this lecture is to point out how necessary it is for all Officers to possess and to know how to use a revolver.

After my friend got his orders he had neither time (getting his orders one evening and starting the next morning) nor facility to purchase a good revolver nor to study its construction.

Double-barrel Pistols.—The simplest form of weapon is the double-barrel pistol, and should be purchased in preference to the revolver by those who have not time or opportunity to study the construction of the latter.

Lieut.-Colonel Brabazon, 10th Royal Hussars, writing on double-barrel pistols, says:—

"I can only say that I infinitely prefer a double-barrel and breech-loading pistol carrying a heavy bullet and with a simple loading action to a revolver, I have seen so many lives jeopardized through reliance being placed in revolvers stopping a man. This a revolver seldom does. I could enumerate many cases, some of which have come under my own personal observation, and in one case where I myself was nearly being the victim of confidence placed in a revolver, when the revolver, though hitting the man aimed at, failed to stop him.

"The action of most revolvers is complicated, easily getting out of order and very difficult to keep in order. Once empty, you have not time to load them in action.

"At El Teb I nearly lost my life through my revolver jamming. I rode at a man, and my revolver (one served out to us from H.M.S. 'Jumna'—a navy revolver) would not go off.

"This is not the first time I have seen this happen to others, and once before, in Afghanistan, it happened to myself. These are my objections to a revolver and my reasons for preferring a pistol.

"1st. The revolver bullet is too light and the charge too small to stop a strong man unless you happen to hit him in a vital part.

"2nd. They easily get out of order.

"3rd. They frequently jam.

"4th. They take a long time to load.

"5th. You have to take them to pieces to clean them.

"6th. They are very difficult to make good practice with as they throw very high.

"7th. One must be in a very bad way if you want to fire more than one or two shots.

"8th. As a rule one does not reload until all the chambers are empty, and then you may not have time to do so. You are also very liable to be left under the circumstances in a position when you want at least a couple of shots while you have only one barrel loaded.

"A pistol carries a heavier bullet and efficaciously stops your man. Lieutenant Lord Airlie told me he owed his life at Abu Klea to my having given him one of my pistols with which he shot the man who wounded him; he dropped him dead.

"It is handier and comes up better than a revolver and makes much better practice. With simple breech-loading one can easily pop in a cartridge; it does not take a second. In fact, pistols are much easier cleaned and kept in order, carry a heavier bullet, really stop a man, handier to carry and to use, make better practice, and are in my opinion in every way preferable to a revolver."

Next in order of simplicity comes, I think, revolvers of the type of Colonel Colt's cavalry pistol. I purpose to describe this weapon in detail later on. It has a solid frame, and its mechanism is very simple, but, being only single-action, it has not the advantages of such weapons as our English double-action self-extracting revolvers. Weapons of this latter class are more complicated, and require more time to understand and more care to keep in working order.

Penetration and Stopping Power and Calibre.—Penetration and stopping power must not be confused with each other; the former depends principally on the striking velocity of the bullet (the striking velocity depends on the range and the quantity of powder used). Stopping power probably increases or decreases in proportion to the calibre of the bullet. It must be remembered that a bullet of small calibre travelling with great velocity is likely, not only to penetrate, but also to pass through an antagonist at short ranges, and as soon as this happens the energy yet remaining in the bullet is wasted. When the Henry-Martini is fired at 500 yards range, its effect in knocking over a weight is about the same as when fired at 20 yards range, showing the stopping power at both ranges to be about equal. Of course an express bullet has great velocity and also great stopping power; but this is due, not to the velocity in itself, but to the shape which the velocity causes the bullet to assume on striking. It is difficult to determine how the weight of the bullet, irrespective of its shape, affects its stopping power. It may be assumed that the greatest possible amount of stopping power can be attained from a revolver which has the largest calibre compatible with sufficient velocity to penetrate without passing through an antagonist.

Colonel Barrow's Opinion of the Government Revolver.—An Officer of the 19th Hussars writing from Egypt says: "As to the efficacy of the revolver, opinions are divided, but in the main strongly against it. Barrow used to get very warm on the subject, and thought the present weapon perfectly useless against Arabs, as the shock is not sufficient to stop them in their charge unless you are lucky enough to hit them in a vital spot. I remember he used to say that he would

as soon go into action with a pop-gun; and he carried (as do many others) one of those four-barrelled pistols of Wilkinson's, a much heavier weapon, the shock of which would bring down a bullock."

On the other hand, "At El Teb an Arab was cutting down one of our fellows, when a farrier shot him dead so clean that the sword just cut through the man's scalp, and that was all. It would seem from this that, if a fellow takes the trouble to practise, he can make a very useful and reliable friend of his revolver: but at the same time there is no doubt that it is susceptible of several important improvements, especially in the way of carrying a heavier bullet. I saw Besant, of the Egyptian Army, attacked by a dervish, who fired at him, grazing his arm; Besant emptied two chambers of his revolver at him, missing him, but shot him through the head with the third, killing him on the spot."

After Ulundi a Zulu showed Major Windham two wounds in his neck and shoulder that were made by an Officer's revolver at Isandlana; he said that two of his comrades had fallen dead, but, notwithstanding his wounds, he succeeded in assegaiing the Officer.

A gentleman writing from America says: "I knew many cases during my sojourn amongst the wild mining population of California where the man first shot was quite able to inflict a mortal wound on his assailant, although he subsequently died from the effects of the shot, and one case where the man so wounded killed his three opponents before he died from their bullets. These and other examples of a like nature show what an important qualification stopping power really is in a revolver. When a man is struck by the rifle bullet he has in most cases many yards to travel before he can reach the marksman; with the revolver he is close at hand."

Necessity for Accurate Aim.—Perhaps the best method of supplying this want of stopping power is to instruct the marksman so that when he fires, his shot may prove fatal. Practice makes perfect, and with a little trouble any man with ordinary eyesight can succeed in achieving this at 15 yards, a good shot at 20 or 30 yards, or even greater distances.

The stopping power depends, therefore, more on the proficiency of the marksman than on the bore of his revolver, and every one should determine for himself his stopping power range, and reserve his fire until certain of striking home. Of course the stopping power of a revolver could be increased by adding to the weight of powder and ball and increasing the calibre of the cartridge.

Relative Charges of Powder in England and America.—On this point there seems to be a difference of opinion between our own and the American authorities. With us 18 grains of powder and 265 grains of lead are considered the maximum charge admissible for the Service revolver. In America, on the other hand, they are of opinion that no inconvenience whatever attends the use of cartridges containing 37·6 grains of powder and 250 grains of lead.¹ It is possible that our authorities have been led to adopt the lighter charge more with regard to the strength of the Service pistol than on account of

¹ American Ordnance Notes, June 30th, 1876.

the recoil, the solid frame of the American pistol being more adapted to resist the shock of the exploding charge than the jointed frame used in our Service.

F. R. M., writing in the "Field," February 2nd, 1884, says: "Colt's Frontier revolver, weight 2 lbs. 8 ozs., takes 200 grains of lead propelled by 40 grains of powder. The Enfield, like most military revolvers, is 2½ lbs. in weight. Now, if an 18-grain charge is thought sufficient, it does not require a very profound reflection to arrive at the conclusion that a pistol of less than half that weight would do the work. If, on the other hand, we are to have a pistol weighing 2 lbs. 8½ ozs., let us have a 250-grain bullet and 40 grains of powder, and we shall have a weapon shooting with such force and precision that a moderately good shot, resting the barrel, never need miss a man at 200 yards. This is the style of tool with which you hear of Western frontier men killing deer at 150 yards, and it is so good that we might give it to artillerymen and take away the carbines, which would be pretty sure to be strapped up out of reach in case of sudden surprise by hostile cavalry. Of course civilians buy what pleases them, and must take the consequences if they do not make a judicious choice; but it is much more serious when those who are responsible for the national armament fall into such error, as I believe they have done in the matter of the Enfield revolver."

Recoil.—The recoil of most military revolvers is about a quarter that of the Henry-Martini, and when it is remembered what a severe kick a Henry-Martini will give if not held close, it will be seen that a considerable strain is brought on the hand and wrist by rapid revolver shooting.

VII.—Range.

Little need be said of the range of the revolver—perhaps the less said the better, for as far as military purposes are concerned it should rarely be employed beyond close quarters. There are cases, however, when long range shooting may prove advantageous even to an Officer, for instance, in endeavouring to capture despatches, or to disable pursuers.

It is well, therefore, that we should know what can be done in this way at a pinch. In experiments made on the Royal Military College range, it has been found that a fair pistol shot can, as a rule, with a Wilkinson revolver, place every bullet within a 6-foot square target at ranges up to 150 yards, and this target may be taken to represent a horseman. Mr. Ira Paive,¹ said to be the best revolver shot in the United States, has repeatedly put six shots running into the target of a man at 100 yards' range, and I have seen cadets make almost as good practice at a like distance.

The range of the revolver depends principally on its muzzle velocity, though the form and weight of the bullet affect it in a minor degree.

Sighting.—*Flight of Bullet affected by Recoil.*—With the rifle, the axis of the barrel at the time of firing and at the instant when the

¹ Walsh on "Revolvers."

bullet quits the muzzle are nearly coincident, but with the revolver this is not the case, owing to the recoil, acting along a line *above* the point of resistance, throwing the muzzle up. The direction of the bullet being determined by the position of the axis of the barrel at the instant it quits the muzzle, it is necessary to so arrange the sight that the proper elevation is given to the axis of the barrel, not at the moment of pulling the trigger, but at the instant when the bullet leaves the muzzle. A revolver correctly sighted to fire from a fixed rest will, when fired offhand, throw high.

In the case of a rifle the axis of the barrel produced passes above the line of sight, but in the case of a revolver, up to a range of about 270 yards, the axis of the barrel at the moment of pulling the trigger is below the line of sight, and this is because before the bullet leaves the muzzle the barrel is rotated upwards, until the axis of the barrel is sufficiently far above the line sighted for the object to be struck (Fig. 7). Of course the amount of depression to be given to the axis of the barrel depends on the length of the barrel, the charge of powder, the weight of bullet, &c., and can only be found by experiment. The angle of depression for 50 yards' range for the American cavalry revolver¹ has been carefully worked out, and is found to be $1^{\circ} 14' 24''$. This is found sufficient with the fall of the trajectory to cause the bullet to strike the object aimed at. At 150 yards, however, it will be necessary to aim about 4 feet, and at 200 yards 8 feet, above the object to be struck.

In many revolvers the *v* of the back sight, though good for fine shooting, is cut too deep for quick aiming; the rounded fore sight of most revolvers is often difficult to distinguish; many good shots therefore prefer a flat fore sight.

A very good system of sighting is to have a bright triangular piece of metal let into the pistol just below the back sight, the sharp angle of which at once catches the eye and fixes the centre of the notch.

Bright Fore Sights.—Bright fore sights on revolvers, in contradistinction to the dark ones used on rifles, are perhaps to be preferred, as they are more readily seen, and enable a more rapid sight to be taken. Colonel Silver's ivory fore sight appears to be the best.

Military Revolver sighted for 50 Yards.—In the *Musketry Regulations* it states that military revolvers are sighted to shoot accurately at 50 yards. The advantage of this seems to be very questionable; putting aside the fact that the revolver is used nine times out of ten at close quarters, the tendency of all marksmen, especially when hurried, is to take rather a fuller than a fine sight. It is probably on account of this 50 yards sighting that marksmen find that their bullets generally strike high.

A good revolver shot will often discover, on purchasing a new revolver, that his shots go high or low, to the right or to the left; this is owing to the position of the fore sight, and can be easily remedied by having the fore sight raised, lowered, or inclined to the right or left.²

¹ "United States War Office Report on Revolvers," 1894.

² Major McClintock on revolvers, "Royal Artillery Journal."

Revolvers are not fitted with movable back sights; therefore, in long-range shooting, allowance must be made for the fall of the bullet by aiming well over the object to be hit.

Some revolvers are made with the fore sight attached by means of a screw, and by removing this screw and substituting a different fore sight a point-blank aim may be taken, but this expedient does not recommend itself as practical from a military point of view.

Cleaning.—It may almost be said that to be able to clean a revolver is as important as to be able to load it, for certain it is that unless properly cleaned it will sooner or later either jam or get out of order in some other way.

The arrangements in all first-class revolvers for cleaning are by no means complicated; they, however, require some study, but with a few lessons and some practice they may be easily mastered. The chief point to be learnt is to take the weapon to pieces and put it together again.

In the Musketry Regulations of most Continental armies, more particularly the French, very complete instructions are given for taking the revolver to pieces, cleaning it, and putting it together again. These necessary instructions appear to be wholly omitted from our Musketry Regulations.

Loading.—Loading occurs in the barrels of revolvers from the manner in which they are rifled. Deep sharp grooves are likely to lead. A loaded barrel may be cleaned with mercury.

Facilities for cleaning English Revolvers.—Before quitting the subject of cleaning, attention must be drawn to the advantages possessed by most of our English revolvers over many of American make. In the former no screws or separate fastening pins are employed; to remove the cylinder for cleaning, all that has to be done is to open the revolver and press a thumb-piece. In many of the latter a small screw has to be taken out, which is very liable to be lost, and to remove which a turn-screw or knife is required.

VIII.—*Safety to the Firer and his Friends.*

First, with regard to safety to the firer, a fertile source of danger is the liability that self-extracting revolvers have of going off without being properly closed.

Captain Burn-Murdock's revolver went off in this manner during the Nile Campaign, wounding him slightly in the face, and rendering the weapon unserviceable. He was fortunately able to borrow a second revolver, which served him in good stead at Abu Klea.

Reliable Quality of Materials important to Safety.—Again, the liability to accident will depend greatly on the quality of the materials of which the revolver is constructed, and the care with which they have been put together.

A revolver should not be offered for sale by a first-rate gun-maker until it has been thoroughly tested as to material and workmanship.

Some marksmen, to steady the weapon, raise the left arm and rest

the barrel of the revolver upon it. This plan cannot be adopted without risk, owing to the escape of gas between the cylinder and the barrel, which will sometimes burn the coat and arm.

A marksman must be careful with a strange revolver to see that it does not go off when at full cock before he pulls the trigger; a day or two ago there was a case of a revolver which could be discharged from full cock by a slight shake of the wrist.

Manner of carrying the Revolver.—Secondly, with regard to the safety of comrades. Their safety depends not so much on the revolver, as the manner in which it is carried and held. The safest way to carry a revolver, as far as the bearer is concerned, is in a belt at the back; it is more quickly drawn when thus carried, and this is the plan generally adopted in the United States. The revolver may also be carried on the hip. The belt which holds the revolver case should be fitted with leather cartridge carriers. A small purse on the inside is also convenient for money or other valuables. On service a lanyard should be attached to the handle of the revolver and then passed round the neck, so that if the revolver be dropped it can be easily recovered; this is very important in the case of mounted men. On horseback the safest and most convenient manner of carrying the revolver is no doubt the holster pipe; still this is not to be recommended. The chances of a rider and his horse parting company, either by accident or design, have to be taken into account, and, as the separation might take place at a critical moment, the balance of opinion is in favour of the revolver being part of the man's equipment rather than that of his horse.

Mr. Stanley in his African wanderings fitted a rough stock to his revolver, and carried it suspended from his shoulder between his arm and his side. He found this method very convenient for rapid use, the fact of the stock being pressed to the shoulder when firing considerably assisting the aim. General the Hon. W. Feilding has also borne testimony to the advantage of this plan.¹

Chief Causes of Accidents.—Revolver accidents chiefly happen when the weapon is held in the hand preparatory to use. It was thus that Colonel Gonne, 17th Lancers, and Colonel the Hon. C. H. Lindsay, St. George's Rifle Volunteers, were both accidentally wounded, curiously enough, both in the same place, the thigh, while superintending the practice of their corps. In nine cases out of ten these accidents are due to want of knowledge of the mechanism of the weapon, and therefore a hard and fast rule should be laid down that no loaded revolver should be handled until its construction and action are thoroughly understood.

Writing on this subject from Egypt, Colonel Murray says: "If the man is not accustomed to handling a revolver it is a most dangerous weapon, and in a *mêlée*, if a man gets excited, he may just as easily shoot a friend as an enemy."

Again, Colonel the Hon. P. Methuen writes: "I consider the revolver most dangerous for anyone but the enemy. In my short Cape experience one bullet went through an Officer's tent, over the

¹ Feilding on "The best Outfit for Exploration," 1895.

Quartermaster's head, and eventually attracted attention in an adjoining camp. This was from indifferent handling during cleaning. A man had a bullet lodged in his leg at the range of one yard; this was from a man showing off the admirable mechanism of his revolver, not knowing it was loaded. A similar accident happened on board ship going out to the Cape.

"Another time Colonel Cotton told me of an Officer who went through the pistol practice necessary for shooting your opponent through the head in a duel. I suppose the pistol went off rather after its time, for the bullet went through the deck, and nearly did for the First Lieutenant in his cabin.

"These are all instances of accidents occurring from gross ignorance, and I for one feel uncomfortable when my friends for the first time on board ship ask for target practice with their new revolvers, 'just to see what they are like.'"

The Colonel of a Highland regiment on passage out to Egypt in 1882 was heard to remark: "What I funk is not the Egyptians, but the subalterns' pistols."

The only means of getting a man to be steady in using his revolver is to make him a thoroughly good shot with it up to at least 30 yards, and then, when he has confidence in his weapon, he will not fire at random, but will take care he shoots the man he intends to, and no one else. With a man not accustomed to a revolver, the very knowledge that he has six barrels; or rather shots, to fire off tends to make him unsteady, as he thinks, if he misses with the first, he is sure to hit with one of the others, so that it does not much matter about aim. A steady pistol shot, on the contrary, makes sure of each shot, perhaps from mere habit.

A great source of danger, both to the firer and bystanders, is the difference in pull-off in the same revolver when fired continuously or in single practice. I have myself on two or three occasions seen a revolver go off accidentally from this reason. The most careful shot is liable at times to forget the difference between the pull-off of the continuous and that of the single shot. The only way to guard against accidents of this sort is to insist on the revolver being always held (except while taking aim) with the muzzle pointing downwards. On some ranges a mechanical contrivance, Fig. 4, is employed, which ensures the revolver being kept in this position.

Safety Stops.—There is a simple arrangement to be found in the revolvers of the Royal Irish Constabulary and others, which enables the weapon to be rendered perfectly safe for portage. It is a small thumb piece attached to the base of the hammer, which, on being turned, locks its action. The objection to this catch or stop appears to be that the marksman is liable to forget that it has been applied, and on attempting to fire without releasing it finds to his surprise, and may be horror, that his revolver will not go off.

Colt's revolvers have a safety notch, on which the hammer rests before it comes to the half cock, and the pistol should always be carried with the hammer resting on this notch.

Rebounding Lock.—English revolvers are now generally made with

a rebounding lock. This is a great improvement, as it renders the revolver far safer for portage. Lieutenant Clementson, 19th Hussars, writing last month from the Soudan, says: "Revolvers have an uncomfortable knack of going off at the wrong time and in the wrong direction. Last week, when out with a patrol, my interpreter's revolver, which he was carrying strapped to his saddle, suddenly went off, and killed the camel he was riding, the bullet passing through its spine. This was unaccountable enough, as it was certainly not cocked, and was so placed that he could not have touched it with his foot or anything of that sort."

IX.—*Danger Precautions.*

Danger precautions may be considered under two heads: 1st, the precautions to be taken to guard against accidents in instruction drill and practice; 2nd, those precautions it will be necessary to take when the weapon is being used on active service.

The only way to guard against accidents of the 1st class is to insist upon the strict observance of carefully drawn-up rules.

With beginners it is well that the revolver should be loaded for them by the instructor, who places it in a stand ready for use.

Revolver Stand.—No revolver range should be without this stand; it is made by driving a post firmly into the ground, and then nailing upon it a board, about one foot square, previously prepared with one or more holes to fit the barrels of the revolvers. Its object is to insure the revolver being always pointed towards the ground when not aimed at the target (Fig. 4). The firer, on his name being called, should advance from the barrier and place his hand on the revolver, previously loaded and placed in the stand by the instructor; he should then, at single practice, cock the revolver, while still in the stand, before raising it; if at continuous practice, he should raise it at once and carry the muzzle direct from the stand to the target. As soon as he has pressed the trigger, at either practice, he should lower his hand until the muzzle of the revolver drops into its place in the stand, he should then, without necessarily relinquishing his hold of the weapon, watch his shot being signalled.

Shooting at the running man, the same course should be adopted, with the exception that the muzzle of the revolver need not be placed in the stand after each discharge, but be held pointing at the target until the six shots are fired or the running man disappears.

Barrier necessary on Range.—Across the end of the range, about five yards in rear of the firing-point, there should be a barrier beyond which no one should be allowed to pass except the firer, the instructor, and the superintending Officer.

Safety to the Public.—The safety of a range will depend very much on where it is situated. In most cases the ordinary precautions adopted on a rifle range are sufficient. Where space is an object, as in a town or close to barracks, safety to the public can be secured by the following system (Fig. 5).

The firing-point being fixed as the centre of a circle, the back

screen or butt and the intercepting screens are all described as arcs of circles struck from the common centre, the object of this being that all bullets aimed from that common centre and impinging on any part of the surfaces of either of those screens must necessarily strike at right angles, so preventing the possibility of the bullet glancing away from the spot struck; and, as the screens would be made of iron plates faced with wood there could not be any back splash. Again, presuming that it be desirable to have an 18 feet opening clear from the firing-point to the target, the screens A, A, each having a surface of 10 feet, are so placed as to intercept the flight of a bullet aimed at a point immediately beyond the limit of protection afforded by the butts.

In like manner the screens B, B intercept the bullet as soon as its line of flight passes outside the limit of protection afforded by A, A, and in the same manner with C, C, so that the fixing of three screens on either side gives absolute protection for an entire half-circle described from the common centre or firing-point.¹

X.—*Precautions against Accidents in the Field.*

With regard to precautions which should be taken to guard against accidents in the field, they would appear to be as follows:—

1st. No one should carry a revolver until he is thoroughly acquainted with the method of taking it to pieces, loading and firing it. This ought to apply even more strongly to men than to Officers. But what is our present practice? Drivers of artillery and commissariat are supplied with revolvers on proceeding on active service, no time is then available for training them in its use, and they proceed on service with weapons more dangerous to themselves, their comrades, and their cattle than to their enemies. If fortunate enough to return to England, instead of being allowed time and opportunity to learn the construction and use of their arms, their revolvers are at once given into store. Imagine, gentlemen, a cavalry regiment on home service without sabres, an infantry regiment without rifles, and you will have the position of our drivers of to-day.

Lastly, it should be impressed in the strongest possible way upon all Officers employed directly with troops that the revolver is not intended for *offence*, but only for *defence*, and that of the most pressing nature, and that therefore the revolver should remain in its case except at moments of passing emergency.

Targets.—There are several sorts of targets used for revolver shooting. In Belgium, where they practise constantly, they use lead targets, which travel backwards and forwards on a pair of rails between the butt and the firing-point, thus obviating the necessity for a marker. Paper and cardboard targets are often used. Iron figure targets are, perhaps, the best; they may be painted similar to a third-class Wimbledon target. This arrangement makes the head count only two, which, compared with the five awarded to the bull's-eye, is con-

¹ "Naval and Military Magazine," Oct., 1885.

sidered hard by some, but is not so in point of fact, as the head is as far from the centre aimed at as the knees. Without altering the scoring rings, the target may be painted some natural colour, to represent a man, and this plan is much to be recommended.

The Marker's Butt.—The marker's butt should be about 2 feet from the target, with a stout palisading and plate-glass window, to protect the marker from the splash of the bullet. Holes should be cut in this palisading below the plate-glass window, through which the handles of the discs pass. The discs themselves rest in a hollow in front of the target; the parts of the handles outside the palisading should be hidden from view by a small ramp. Brushes are attached to the reverse sides of the discs to enable the marker to re-colour the target while showing the position of the shots. The advantages of this system are rapidity, as the discs have only a very short distance to travel, and safety to the marker from splash; this latter point is of importance, as many markers have been injured by the splash of the bullet passing through the usual marking slit, on rifle as well as on revolver ranges (Figs. 8, 9).

Running Man.—Besides the ordinary practice at a stationary target, when plenty of time for aiming is taken, it is important that Officers should practise rapidity of fire, and this can be best done by firing at a moving target.

Most moving targets run from right to left, and *vice versa*. This sort of target does not appear to be at all suitable for revolver practice. An Officer should never employ his revolver on an enemy passing across his front, but on an enemy advancing towards him.

The following is a description of the target used on the R.M.C. range (Fig. 9). By means of a rope, three pulleys, a wheel, and a trolley an iron figure target is made to travel up and down the range. To obviate the possibility of the firer taking a pot shot, either before the target begins to move or after it has stopped, the figure is not fixed rigidly to the trolley, but is swung on its centre with the weight so adjusted that, while its normal position is vertical, a slight blow will turn it over. About two yards from the pulleys, nearest the marker's butt, two posts are driven firmly in the ground; on either side of the tramway these posts are connected by an iron bar, sufficiently raised from the ground to allow the fulcrum on which the target swings to pass beneath (Fig. 11). Another post is fixed one yard from the ends of the tramway, nearest the firing-point, with an arm sufficiently long to reach the upper portion of the target.

The manner of working this "running man" target is as follows: It is first run under the bar, which, by forcing the figure into a horizontal position, prevents its being seen from the firing-point. On the word being given to "run up," the marker turns the handle, and as soon as the head of the figure clears the bar it assumes a vertical position. The figure remains vertical until it comes in contact with the fixed arm at the end of the run (A, Fig. 9), when it again swings over into the horizontal position. The reasons for the target starting two yards in front of the pulley is, in the first place, to protect the

marker from splash; in the second, to allow the figure on being drawn up to the pulley to again become upright, so that the shots can be signalled by the marker.

Ammunition.—There are three descriptions of Government ammunition:—

Mark I.—Calibre 0·450; it contains 13 grs. of powder and 225 grs. of lead: it is now used principally in the Navy and on foreign stations.

Mark II.—Calibre 0·455; contains 18 grs. of powder and 265 grs. of lead: this seems to have been an intermediate experimental cartridge.

Mark III.—Calibre 0·476; contains 18 grs. of powder and 265 grs. of lead, and is the present Service cartridge (Fig. 6).

It is difficult to understand why the calibre of the bullet should have been altered from 0·455 to 0·476, the bore of the barrel remaining the same, the striking calibre of the bullet is as before, but a far greater strain is brought on the revolver, as the bullet, before it can pass through the barrel, has to lose 0·026 of its calibre.

Revolvers chambered to take Mark I are useless for Marks II, and III, those chambered to take Mark II will take Mark I, but not Mark III. Revolvers chambered to take Mark III will take all three cartridges, but if opened to extract will throw out the live as well as empty cartridges of Marks I and II.

Cartridges should not be allowed to get too old; it is also very important that the exact number of grains of powder for which the pistol is sighted be employed; a few grains more or less making the bullet strike considerably higher or lower than the point aimed at.

An Officer writes from the Soudan: "I don't think the Service charge sufficient or the bullet heavy enough. The Government ammunition is not made carefully, and I have found some of their cartridges difficult to load, although I have the proper-sized revolvers to take them."

The ammunition supplied with the Colt revolver contains 40 grs. of powder and 250 grs. of lead, the recoil not being much in excess of that of the Enfield; the Enfield being the heavier weapon.

In the "Field" of October 18th, 1884, Major McClintock, R.A., Assistant-Superintendent, Royal Small Arms Factory, Enfield, says:—

"It may be supposed that, owing to its large charge, the recoil of the Colt's Frontier revolver is excessive, but this is not so. As a matter of fact, and as shown in the recoil column in the table, the recoil of this pistol is little more than that of revolvers firing the Government 0·455 cartridge: and on account of the balance of the Frontier pistol even this slight excess of recoil is not felt."

Buckshot cartridges have been recommended; no doubt at a distance they would wound many, and at close quarters prove a terrible shock. At night they would be invaluable. Express bullets have also been suggested for use with revolvers. If the powder charge were sufficient to cause them to spread, they no doubt would have great stopping power.

Increased stopping power may be given to a revolver bullet by cutting off the pointed end with a penknife. A bullet treated in this way will penetrate an iron plate on which a conical pointed bullet would flatten.

Experiments have been made which tend to prove that greater accuracy, velocity, penetration, and less recoil, can be obtained with the Service ammunition by using a larger calibre for the barrel than the 0.450 of the Service weapon. Fig. 13 is an exaggerated section of the chamber cylinder and barrel of an Enfield.

The bullet is made in the form of a hollow cylinder, this hollow being partially filled with a clay plug A (Fig. 6); a hollow B is left between this plug and the nose of the bullet.

The cannellures at C, D, E, weaken the bullet considerably.

During some recent experiments with Mr. Wilkinson's ammunition, which is supposed to be the same as the Government, it was found that the bullet on quitting the muzzle of the revolver frequently broke into two fragments at one or other of the cannellures.

This breaking up of the bullet was only discovered towards the conclusion of some long trials of several revolvers and pistols, and, of course, when found out, completely invalidated the trials.

A few rounds of Government ammunition have been obtained and fired without any sign of breaking up, but time has not allowed of an exhaustive test.

XI.—*The Enfield or Government Revolver.*

This revolver weighs 2 lbs. 8 ozs., has a barrel 6 inches long, and carries the Government cartridge, 0.476.

It possesses the following advantages:—

- 1st. It shoots with great accuracy, owing to its careful manufacture.
- 2nd. The cylinder axis, being rigid, serves to strengthen the pistol and prevent the possibility of the cylinder blowing upwards.
- 3rd. The extractor requires no spring.

The defects of the pistol appear to be:—

- 1st. A difficulty of extracting the cartridges; owing to the rigid cylinder axis, they frequently jam at the base of the pistol.
- 2nd. The time taken to load. This is quite as long as that taken with the solid frame Colt or Silver.

3rd. The weak joint action. This is to be strengthened in future pistols of the same make.

It has been said that this pistol combines most of the disadvantages of the jointed frame without the advantages of the solid frame system.

Thomas's Patent.—This is a very strong form of self-extracting revolver; the manner in which the cartridges are extracted is very similar to that employed in the Enfield. This revolver has a solid frame; it is tedious to load.

Cogswell and Harrison's Colonial Revolver.—This is a solid frame strong revolver, very like a double-action Colt; it has, however, a smoother pull-off, and a very good arrangement for removing the cylinder.

Mr. Harris, writing to the "Field" upon Messrs. Cogswell and Harrison's Colonial pistol, says:—

"I beg to submit the following particulars of its performance when I was shooting with it this day:—

"Six shots at a card target 12 inches by 10 inches, at fifty paces. Colt's long 0.45 cartridges used. Every shot well within target; greatest distance from centre of card, $3\frac{1}{4}$ inches.

"Six shots at card 10 inches square, 2-inch bull at thirty paces, 0.455 cartridges, one shot in bull, two within $\frac{1}{2}$ -inch of same, rest at $1\frac{1}{2}$ inches, 3 inches, and 4 inches respectively from bull.

"Six shots at card 6 inches square, at twenty paces, Winchester, 0.44 cartridges used. One shot missed target, all others well within square.

"This Winchester ammunition can be used in this pistol in case of emergency, as, although the bullet is a little smaller than the barrel, still it shoots very hard and tolerably straight, as this result shows. With an all-round pistol like this, ammunition can be got for it in any part of the globe. Sixty additional shots were fired, the last being as accurate as the first, and no trace of leading in the barrel. The recoil from the long 0.45 Colt cartridges was by no means too heavy; using both hands to hold the stock insures a steady aim and splendid shooting with this ammunition."

Webley's W.G. Revolver, 1886.—This revolver has a barrel 6 inches, weighs 2 lbs. 8 ozs., and carries the Government ammunition as well as the 0.450. The chief advantages claimed for this pistol are—

1st. That, owing to its large circular hinge and massive breech-fastening, it is practically as strong as a solid framed revolver, and will stand as heavy a charge.

2nd. That by a simple arrangement of two collars fitting into each other, it is impossible for any fouling to reach the spindle on which the cylinder rotates.

3rd. That rapid sighting is obtained by the wide shaped V of the back sight.

4th. That by an ingenious contrivance of the lock the hammer is raised for continuous practice by about half the pull, the other half being thus rendered so light that as good shooting can be made at continuous as at single practice.

5th. That it is impossible to discharge the weapon until properly closed.

The objections to the weapon appear to be—

1st. That it is more complicated than a single-action non-extracting revolver.

2nd. That, with the view of enabling the revolver to fire both the 0.450 and the 0.476 cartridge, the barrel has been bored too small to obtain the best results from the larger cartridge. Of course a purchaser could always have the barrel of his revolver bored to suit the larger-sized ammunition.

3rd. The arrangement for locking the cylinder does not appear to be quite as substantial as might be wished.

*Kynock's Revolver.*¹—The chief peculiarity in this revolver is the manner in which the hammer is raised. This is accomplished by the second finger acting on a second trigger. The advantages of the pistol are—

1st. Its combination of single and double action, which insures great accuracy with rapid firing.

2nd. That the hammer is covered in.

3rd. Its cheapness.

The disadvantages appear to be—

1st. As the weapon can only be kept cocked by a continuous pressure of the second finger, it will not admit of very accurate practice being made with it when time is no object.

2nd. The top-fastening does not appear to be quite solid enough.

Silver.—The "Expert."—This clever invention has been designed with the view of combining the advantages of solid frame revolvers with those of quick extraction; it weighs 2 lbs. 8 ozs., has a length of barrel 6 inches. The advantages claimed for the pistol are:—1st. Its rapid extraction. 2nd. Its solid frame. 3rd. Its light weight. 4th. Its ivory fore sight.

The objections to it appear to be—

1st. That, though it extracts rapidly, it takes longer to load than a jointed framed revolver.

2nd. That the extracting apparatus is more exposed to injury than is the case with the self-extracting revolver.

Wilkinson's Revolver.—This revolver weighs 2 lbs. 8 ozs., has a length of barrel 6 inches, and it is a jointed self-extracting revolver of considerable merit. The advantages claimed for it are:

1st. Its accurate shooting with Government ammunition; this is attained by having the calibres of the chamber, the cylinder, and the barrel suited to 0·476 ammunition, which is not the case with many revolvers.

2nd. It has a very secure form of fastening with a patent safety arrangement, which prevents the possibility of the revolver being fired until firmly closed.

Its disadvantages appear to be:—1st. That, though fully able to withstand the shock of the present Government charge, it is doubtful whether either the top fastening or lower joint would stand the 40-gr. powder charge carried safely by the Webley W.G. 2nd. The ratchet has a tendency to wear.

Wilkinson's revolvers have been subjected to a two years' trial at the Royal Military College, during which time over 30,000 rounds have been fired, and with the exception of an occasional accident to the ratchet they have stood the severe tests put upon them perfectly. The results of this long trial conclusively prove that, provided due precautions are taken, 1st in purchasing, 2nd in keeping in order and

¹ Since this lecture was written, Mr. Kynock has further greatly improved his revolver. This improvement consists in a simple arrangement at the back of the trigger guard which catches the cocking trigger and holds the hammer at full cock until the firing trigger is pressed, thus enabling the pistol to be used at single and continuous practice.

cleaning, self-extracting revolvers may be as thoroughly depended upon as solid frame revolvers.

To show what may be done with this revolver when fired rapidly with trigger action by a good shot, I have here a target 1 foot square on which are forty-eight hits, only ten of which are outside a 6-inch centre. The range fired at was 20 yards, the time taken 4 minutes 52 seconds, number of rounds fired forty-eight.

Colt's Revolver.—Colt's United States Cavalry Revolver. This revolver weighs 2 lbs. 5½ ozs., it has a barrel 7½ inches long, it is single-action, calibre 0.45 inch.

Its chief advantages appear to be its solid frame, its simplicity of construction, and its accuracy of fire at long ranges. It not only takes its own ammunition of 40 grs. of powder and 250 grs. of lead, but it will also take the three Marks of our Government cartridge.

When its own ammunition is used with it, its penetration is double that of the Service revolver. The defects of the weapon are, first, its length, 12½ inches, which renders it unsuitable for close fighting; second, it is single-action; third, it is non-extracting.

It compares favourably with the Government and other revolvers in point of weight, being 2½ ozs. lighter than the Enfield.

Lancaster's.—Lancaster's pistols are made with either two or four barrels; they possess the following advantages over the revolver:—

Having no projecting parts, they are easier carried; having no hammer, they are safer; they ought to shoot truer than the revolver, owing to there being no escape of gas between the cylinder and the barrel; for the same reason they may be supported on the left arm when firing, which cannot be done with safety with a revolver; they cannot jam; and, lastly, the mechanism, being well protected, is little, if at all, affected by sand, wet, or dirt. These pistols were carried in the Soudan by Officers of the Royal Irish and others who speak very highly of them. The following letter from Lieutenant Whitla, Queen's Bays, is interesting:—

"On reaching my station in India (Umballa), a Gladstone bag belonging to me, containing amongst other things a Lancaster pistol, was stolen from my baggage, and I could not find any trace of the things stolen until *three weeks* afterwards, when a heavy shower of rain washed away part of a mud wall forming the boundary of the riding-school, and the men who were told off to replace it found my pistol buried there. The barrels were, of course, rather rusted, but the lock revolved as freely as ever, and the rust had not penetrated to it at all; in fact, I fired several rounds from it after the barrels had been cleared from the rust. I should add that the pistol was found buried without any sort of covering on it. The stock was also slightly eaten by white ants."

These pistols are rather expensive, costing about 8l. They are made to carry the Government ammunition, 0.476.

With a view of comparing some of the different types of pistols, Captain B. Barter, the Lincolnshire Regiment, one of the best revolver shots in the Army, and Mr. Kelly, R E., have kindly carried out a series of independent experiments.

Cogswell and Harrison, 0.476 bore, Colt Action.—Very full sight required, which for rapid firing is an advantage, as most revolvers throw high; when in a hurry the firer is apt to take a full sight, in such cases this revolver would therefore carry point blank. Too full a sight, however, is required for very accurate shooting.

Enfield Service Revolver.—The pull-off is good, the weapon appears to me inaccurate and clumsy.

Wilkinson.—A splendid weapon, with very good sighting and pull-off action, rapid and very easy to load.

Sighting, point blank with fine sight. On the whole the most accurate and satisfactory revolver I have tried.

Colt's Frontier.—Too long in the barrel. Trigger too narrow, and stock short and uncomfortable; only one action, and that clumsy.

Kynock's.—I do not like the action of this revolver. There might be a chance of a piece of the flesh between thumb and forefinger being caught and nipped. I found this revolver apt to miss fire.

Lancaster's 4-barrel Pistol.—Has only one action—continuous, very hard pull-off. The sighting of this pistol is very serviceable.

Lancaster's 2-barrel Pistol, Bore 0.577.—Continuous action, only very hard pull-off, and a very heavy weapon. The kick is very great.

Webley.—Very good action, pull-off too light (when cocked) for service. In continuous practice the pull-off is just right. The revolver I fired with carried slightly to the left.

Silver, 0.450 Bore.—The safety action is useful (unless it be liable to get out of order). The sight has a white bead which removes the liability of losing the sight altogether by mistaking the metal of the breech for the fore sight, as sometimes happens when both are shiny. Very handy to unload, and action appears simple and not liable to get out of order.

Colt's Double Action.—Good pull-off. Carries very high.

Of all the revolvers I tried, I liked Wilkinson's much the best, combining a good serviceable pull-off both when cocked and in continuous practice. With great accuracy and good balance, it is also the easiest to load.

Next to it I like Webley's and Silver's best, the former on account of the good pull-off in the continuous practice, and Silver's on account of the (white bead) sighting, and of the simple way it ejects the empty cartridges.

Experiments in Rapid Firing by Lieut. Kelly, R.E.—Twelve shots fired with each revolver, time taken over the following operations:—Firing six shots, unloading, reloading, firing another six shots and unloading.

Target was circular, 2 feet diameter. Range, 30 yards; firing as quickly as possible consistent with any aim, almost snap shooting.

Pattern of revolver.	Time.		Hits. Max. 12.	Remarks.
	m.	s.		
No. 1. Wilkinson ..	0	40	10	Fairly easy pull; a severe recoil, apt to hurt the hand by striking between thumb and forefinger; appears to throw about 5 inches left and 15 inches high, with full sight.
No. 2. Kynock.....	1	3	11	Sight of this is too thin and hard to see; the 0-476 ammunition fits very tight, and makes it apt to jam; it spurts back behind; throws 10 inches high; correct direction. I consider the double trigger arrangement the best of all; it is not liable to unsteady the hand, because the stiff pull is constant and steady, and when the aim is taken a light pullfires. I found this the pleasantest weapon of all for quick-firing.
No. 3. Enfield	1	25	6	The loading arrangement is very slow; the unloading is clumsy; cartridges not completely ejected; the trigger is a long way from the hand, so that only the end of the finger can reach it; it jammed slightly once; throws 12 inches left and 24 inches high.
No. 4. Webley.....	1	30	8	4 missfires in 12 shots; throws 7 inches high; correct line.
No. 5. Colt, single action.	2	5	9	Appears to throw excessively high—3 feet at least; rather violent recoil. A single-action revolver is not up to modern requirements.
No. 6. Colt, continuous action.	1	40	7	Very stiff pull; violent recoil; throws 12 inches left, 20 inches high about; the butt is too small for the hand.
No. 7. Cogswell and Harrison.	1	45	11	Easy pull of trigger; clumsy unloading arrangement; throws in correct line of elevation.
No. 8. Silver	1	25	9	Hes a very good fore sight, an ivory circle; an easy pull; but requires special ammunition.
No. 9. Lancaster 2-barrelled pistol.	1	30	3	Very stiff pull; most violent recoil, which hurts and unsteadies the hand.
No. 10. Lancaster 4-barrelled pistol.	1	10	7	Same as No. 9.

The above does not represent good shooting, as no doubt every shot should hit the target, but I consider that it shows the comparative

values of the revolvers for rapid firing, such as most likely to be required in the field. It is conclusively in favour of those with a light pull, or as in the case of Kynock's, of a stiff pull constant and steady, and a light pull when required to fire. Kynock's trigger and Silver's sight appears a good combination.

America.

The Americans depend very much on the revolver in war. They maintain that it is *the* cavalry weapon *par excellence*. General Lee, writing on this subject, says: "The sword has lost much of its effectiveness by the improved revolver, with which the cavalry man will make the dashing charge with more confidence. My experience was that the cavalry man was timid with his sabre in fighting against the revolver, and for the least excuse will drop the sabre for the revolver. . . . In every instance under my observation the moral effect of the revolver was greater than that of the sabre, the momentum with good cavalry is as readily obtained with the revolver as with the sabre. The revolver is the all-important weapon with the cavalry man in motion, and is indispensable in his equipment."

The revolvers used are Colt's and Smith and Wesson's; the former are, however, superseding the latter. The United States War Office purchase about 1,500 revolvers annually, and since 1879 these have all been of the Colt type.

The Americans do not appear to attach very great importance to the employment of heavy powder charges.

Notwithstanding the fact that the Colt will carry with ease 37·6 grains of powder and 250 grains of lead, the War Office cartridge contains only 28 grains of powder and 230 grains of lead. This is probably due to the Smith and Wesson (a jointed revolver) not being able to stand a heavier charge without injury, and the War Office very naturally are loth to introduce two descriptions of Service ammunition. Still it is six years since the War Office purchased any jointed framed revolvers, and if our go-ahead cousins had considered a heavy charge of much importance they would before this have cast their Smith and Wesson's and adopted the heavy Colt cartridge.

As many Officers and others are at present armed with Colt's revolver, it has been thought advisable to give the following quotations with reference to their mechanical features and manipulation taken from the American Arms Regulations, 1882:—

"Mechanical Features of the Colt.—The frame is made of wrought iron and case-hardened. It encloses the cylinder and is made in one piece, into which the barrel is screwed. The centre-pin bushing affords a third surface of revolution for the cylinder, and diminishes the chances of sticking from dirt or rust. The cylinder and bushing may both revolve on the centre-pin, which in turn may revolve in its own bearings. The double feed-finger on the hand gives two points of contact with the ratchet instead of only one. The finger of the hand moves in the direction of the tangent to the circle upon which the ratchet is cut, and, after rotating the cylinder to a certain position, it passes from the notch of the ratchet, and can no longer act upon it. But, before the first or upper finger leaves its notch in the ratchet, the lower finger begins to act upon the next notch, and thus insures the certainty of the revolution of the cylinder. This form and action of the hand

allows the space between the chambers to be utilized for cutting the ratchet-teeth upon a larger circle, thereby increasing the leverage, and consequently the rotatory effect of the hand upon the cylinder. It also produces less wear upon the ratchet. The hammer has three notches, the safety notch, the half and full-cock notches. The former is the first one felt in cocking the revolver.

"Manipulation.—To load the Revolver.—Hold the revolver in the left hand, muzzle downward. Half-cock it with the right hand, and open the gate. Insert the cartridges with the right hand, close the gate, and bring the hammer to the safety notch. Keep it there until the revolver is to be fired.

"To eject the Cartridge-shells.—Hold the revolver in the left hand. Bring the hammer to half-cock, and open the gate. Push out the shells with the ejector-rod, using the right hand, turning the cylinder with the thumb and forefinger of the left hand.

"To dismount the Revolver.—Half-cock the revolver; loosen the centre-pin catch-screw; draw out the centre pin; open the gate, and then take out the cylinder. To remove the ejector, turn out the ejector-tube screw, then push the front end away from the barrel and pull it toward the muzzle.

The stock can be removed by turning out the two back-strap screws just behind the hammer, and that at the bottom of the strap. Remove the mainspring and guard. The parts of the cock can then be readily separated. The centre-pin bushing should be pushed out for cleaning. To remove the gate, turn out the gate-screw in the lower side of the frame, hidden by the guard. Withdraw the gate-spring and catch, then push out the gate.

"To assemble the Revolver.—Follow the directions for dismounting the revolver in inverse order. The mainspring is most conveniently mounted by turning in the screw part way, and then swinging the front end of the mainspring around it until it bears against the under side of the hammer-roll. The centre-pin bushing should be frequently removed for cleaning."

Russia.

The Russians have adopted an American revolver, Smith and Wesson's, 6 chambers and double action. Cal., 0.42 inch; length of barrel, 6.6 inches; weight, 2 lbs. 7 ozs. It carries a cartridge containing 23 grains of powder, 233.7 grains of lead. In the cavalry, all ranks except privates of transport are armed with it, and, like the American, but contrary to our own and other Continental armies, they are trained to depend to a considerable extent upon it. In the artillery all ranks except privates of transport are also armed with the revolver.

In the infantry, all Officers, sergeant-majors, drummers, buglers, non-commissioned officers of transport, and clerks are armed with it. Regular annual practice is carried out by both Officers and men at a target representing a man standing at 25 paces.

All senior classes at military educational establishments pass through an annual course.

To give some idea of the number of revolvers carried by Russian troops, it may be mentioned that 100,000 Smith and Wesson's have recently been supplied on a single contract, and this is not more than half the number that they possess.

Perhaps, in considering the introduction of the revolver into the Russian Army, more especially into the cavalry arm, it would be as well to mention two examples, taken from Colonel Dennison's book, showing the results of two engagements, in one of which the revolver was used, in the other the sword, as it is chiefly on this book that

the Russians have introduced revolvers, and from these examples we may gather the use they expect to make of them in the future.

"A fight took place in Virginia in November, 1864, between a squadron of Mosby's Confederate partisan cavalry, under Major Richards, and a squadron of Federal cavalry, under Captain Blazer. After a sharp hand-to-hand fight, in which the Confederates used the revolver solely, the Federal squadron was completely defeated; the casualties were, on the Southern side, only one man killed and several wounded, but so deadly was the effect of the revolver that Blazer's loss was 24 men killed, 12 wounded, and 62 prisoners. This was in killed and wounded 36 out of 100—more than one-third, while killed, wounded, and prisoners comprised virtually the whole force. The proportion of the killed to the wounded is an extraordinary proof of the deadly effect of the revolver.

"Compare this with the fight at Egmont-op-Zee, on the 2nd October, 1799, between the English dragoons and some French cavalry, where two troops dashed into 500 victorious French horse, and after a *mêlée* drove them off.

"Then the 500 French returned, and met at the charge the English, reinforced by one troop; a second fight then ensued, and yet in both conflicts, the sword being used on both sides, only three English troopers were killed, and nine wounded. In a fight of the same kind with revolvers, how different would have been the losses!"

Again, a troop sergeant-major of the 10th Hussars says:—

"On charging the Soudanese at El Teb, I first attempted to cut them down with my sword, but found I could do little execution with it; the enemy for the most part eluding my blows, and even, when struck, appearing to suffer little from them; I then drew my revolver, and soon knocked over three or four."

It has often been said that that Army which first learns how to take the best advantage of the most recent development in the improvement of modern man-killing weapons, possesses a marked advantage over a more old-fashioned adversary. In military matters changes of all sorts are constantly necessary for those who would keep pace with the rapid march of modern ideas and educated intelligence. Our progress may be said to depend on change.

To my mind it is a question for serious consideration whether our cavalry, good as it is, but armed as it is, would in a cavalry action be any match for an enemy armed with revolvers, as the Russians now are. Too great attention can hardly be paid at the present time to this point. The question of the best method of arming cavalry has been constantly discussed. The pistol, the sword, the lance, the rifle, have all in their turn had their adherents.

I am not an advocate of converting the cavalry man and his horse into a travelling armoury, but I believe that a light, handy, quick-firing, hard-hitting revolver is essentially a cavalry weapon.

If by the use of a comparatively clumsy revolver the Confederate irregular cavalry was able almost to annihilate the Federal horse twenty-two years ago, what may be expected from cavalry armed with

revolvers of to-day? The edge of the sword is no sharper than it was. The efficiency of the revolver is vastly increased.

It is often lost sight of that during the Franco-Prussian war only six Germans were killed with the sabre, though 100,000 cavalry were engaged for over six months.

France.

The revolver in use in the French Army is a double-action, non-extracting, six-chambered weapon, dating back to 1873. It weighs 2 lbs. 10 ozs., and takes a charge of 10 grains powder, 180 grains lead. The only difference between the weapon supplied to Officers and men is that the former is rather lighter and better finished. I have here the French regulation revolver which belonged to the late Prince Imperial, and which was given by him to Mr. Wilkinson just before the Zulu campaign. Officers, sergeant-majors, drum-majors, drummers, troopers in Cuirassier regiments, and drivers of train are armed and trained with a revolver. Both regular and reserve Officers go through an annual course of revolver shooting. They fire 36 rounds, 24 of which are single practice, 12 continuous, ranges varying from 13 to 30 yards, in addition to 36 rounds of blank. Non-commissioned officers fire 10 rounds of blank. Strict regulations with regard to safety at revolver practice are laid down, only one marksman at a time being allowed to advance within ten paces of the firing-point, and no revolver being allowed to be loaded until the firing-point is reached.

Germany.

The pattern revolver used in the Prussian Service is that introduced in 1879. Officers are supplied with a rather better finished weapon, which costs 3s. more, but is otherwise the same as the men's. It weighs about 3 lbs., the cartridge contains 22·2 grains of powder and 262·4 of lead.

There is a regular annual course of instruction and practice for both Officers and men, the ammunition being supplied by Government; the range from 25 to 100 metres.

All Officers, and in the cavalry non-commissioned officers and trumpeters, also all the troopers in cuirassier regiments, are armed with the revolver.

Italy.

The Officers, non-commissioned officers, and some of the trooper in the cavalry are armed with a Liège revolver.

Spain.

All Officers in the Spanish Army have to be in possession of a revolver. The pattern generally in use is a modified Smith-Wesson double-action revolver taking a cartridge which contains 20 grains of powder.

In the last Carlist rising revolvers were freely used.

Austria.

In Austria all Officers on active service have to provide themselves with the Austrian regulation revolver, which costs about 2*l*. Non-commissioned officers of cavalry, of artillery, of train, of Jägers, and about 70 men per squadron of Lancer regiments, are supplied by Government with revolvers in peace time. They are badly finished weapons, and many serious accidents have occurred owing to the hammer flying off at practice. Both the Officers' and non-commissioned officers' pistols are furnished with a double action.

The Austrians employ iron targets painted white and blue. The bull's eye to be aimed at is circular, but ovals are drawn as shown in Fig. 12 for purposes of scoring. The object of this appears to be to make the man fire low. Figure targets painted natural colours are also laid down in the regulations as to be used.

At aiming drill, to see that a correct alignment is taken, the instructor holds a small target up and places his eye at a pinhole in the centre of the bull.

At drill dummy cartridges are used for instruction in loading, &c.

During the annual course twenty rounds are fired. Besides this the ammunition remaining over, owing to casualties and non-effectives, is used for the worst shots.

England.

In the cavalry, warrant officers, staff sergeants, troop sergeant-majors, farriers, and trumpeters are armed with the revolver; in the infantry, warrant officers and staff sergeants. They fire 12 rounds per annum, 6 right-handed and 6 left. Owing to the small number of rounds allowed, the musketry authorities have been reluctantly compelled to abandon continuous ball practice. When we consider the complications introduced into the new Enfield revolver to obtain rapidity, it is curious that the course of annual practice should be framed to suit the old simple single-action weapon.

Until lately, the Colt's and Adams' pistols have been in use in our Service. These are now being superseded by the self-extracting Enfield.

In Continental armies the Officers are either bound to supply themselves with Government revolvers or they are supplied with them by the State. With us, on the contrary, not only is an Officer not expected to provide himself with the Government revolver, but it is impossible for him to purchase one.

Further, whereas the tendency on the Continent, more especially in the case of Russia, is to develop the use of the revolver, with us a contrary course appears to be pursued. Until lately, all our Lancer regiments were armed with the revolver, but now a carbine has been substituted.

Now, gentlemen, my hobby horse has run his course; he has had his little day; and he has made his mistakes (how numerous they are, no one knows better than his rider), and it is left with you for consideration—

- 1st. Should Officers be armed with a revolver ?
- 2nd. Should they be instructed in its use ?

Mr. C. FREDERICK LOWE (South London Rifle Club): Mr. Chairman and gentlemen, there are one or two matters as regards revolvers to which I wish to draw your attention. The first is the remarkable difference between the shape of the butt of the Colt revolver, in universal use in America, and that of the butts of all English-made revolvers. The point for consideration is, which is the best form of butt for the purpose of giving to the muscles of the hand the most powerful grip of the weapon in order to withstand the upward tendency of the barrel. Now, all English revolvers have a lump on them which comes between the thumb and finger. I have seen two excellent shots with the revolver, Mr. Webley and Mr. Winans, each of whom has been wounded by the recoil of the lump in question, whereas, in the Colt, if the revolver comes back, there is no lump to wound the firer's hand, and the extended base enables him to get the greatest muscular power of the three fingers of his hand against the ball of the thumb, so as to resist the upward tendency of the revolver. I submit, therefore, that the grip of the Colt revolver is superior to the grip of an English revolver. There is also a remarkable difference between all English rifles and American rifles as regards the bend of the butt and angle at which the heel plate is set, and I beg to draw the attention of practical makers to that point. It is true that Messrs. Colt supply for the English market a revolver fashioned according to English ideas, and there is a revolver on that table with a saw-handled butt, and also with the lump. What the advantage of the lump on the English revolver may be I cannot make out, but it would appear to have had its origin in the saw-handled butt of the duelling pistol, and I have heard very strong expressions of opinion on the part of practical revolver-makers as to its entire inutility. I quite agree with what Major Kitchener has said as regards the ivory fore sight of Silver's revolver. It is a remarkable fact that the Boers in South Africa had ivory fore sights on the rifles that shot down our troops at Majuba Hill. The great point is that they can be used either in bright or dull light. Of course an ivory fore sight would hardly be strong enough to stand the rough usage of a campaign, but I think Messrs. Silver have solved that problem by sinking the little ivory disc in a metal collar. With reference to the back sight, the great point about a revolver is to get a form of back sight which will give a rapid and at the same time an accurate aim without blur, and Mr. Webley has been kind enough to make a few revolvers in which he has carried out the American pattern, called the buckhorn sight, that is the lower half a pinhole—a pinhole opened out at the top. I hold in my hand a revolver so fitted, which I specially borrowed from Wimbledon, in order to illustrate this. That of course is a moot question. All our English sights ever since the days of Queen Anne, for rifles and revolvers, have been an angular notch, while the Americans make use of the buckhorn sight, both for sporting and military purposes. I venture to think it is possible to improve the back sight of the revolver in that way. As regards the trigger, I find the finger is apt to slip on a smooth trigger, especially if there is any grease. I think, therefore, that the trigger should be slightly roughed, to give the finger a better grip. With reference to the accuracy of revolver shooting, I have heard of an incident that took place in America. There is a class of gentlemen there called cowboys, who are armed generally with Colt's Frontier pistol. One of these cowboys, mounted on a horse, galloped along by the side of a train going at slow speed. He took one shot, and hit the insulator on a telegraph pole in front of him, and then turning round he took a second shot, and knocked off a second insulator behind him. That shows the degree of accuracy which can be attained by a man who knows how to use his weapon. I was told by an Officer who was in the Crimea, that there was a very good revolver then in vogue, called "Tranter's revolver," which had two triggers, similar to the Kynock's, one for revolving the cylinder, and the other for firing it. But the main point to which I would allude is the extraordinary manner in which the Government have done their business with reference to the cartridge. I believe it was found with the Enfield revolver that when the Mark II ammunition was used, which has 18 grains of powder and 265 grains of lead, the bullet being of the diameter of 0.455, that is five-thousandths more than the bore

of the revolver. If you had exploded three cartridges and wanted to extract them to fill up the chamber, all the cartridges came out. To obviate that they raised the diameter of the bullet from 0.455 to 0.476, so that the nose of the bullet would stick in the chamber, and only the exploded cases come out. The result of a defective extracting principle in the Enfield revolver, and of jamming a 0.476 bullet through a 0.450 barrel, has been to destroy the accuracy of every revolver used in Her Majesty's Service, and, as Major Kitchener has shown us, the friction is so great that the 0.476 bullet, Mark III, sometimes breaks into two pieces, and I think it is a great pity indeed that the accuracy of the weapons placed in the hands of our Officers and soldiers for service should be sacrificed in order to hide, as it were, the deficiencies of the Enfield revolver. Mr. Webley has certainly made some very great improvements in the manufacture of revolvers. I am told that the American Government will not purchase any extracting revolvers, because they consider that the problem has not yet been solved, but a leading American manufacturer admitted to me that if a satisfactory self-extracting revolver could be made, the day of the non-extracting revolver was settled. It seems to me, from my limited knowledge, that the problem has been solved, and I venture to think that the last improvement in the Webley and Wilkinson revolver as regards the locking apparatus is satisfactory and efficient. I also think Mr. Webley's anti-fouling collar is most satisfactory. I know there are many gallant Officers in the room who have expressed a strong opinion as to the inefficiency of the Government weapon, and I think I have shown the real reason from which those deficiencies arise. I must apologize for intruding upon you, but I have ventured to do so at the invitation of the gallant lecturer.

Major KITCHENER: With reference to Mr. Lowe's remark, that I found the Government ammunition break up, I think I ought to mention that the ammunition I was using was not actual Government ammunition, but ammunition that I obtained from Mr. Wilkinson. I have not had an opportunity of sufficiently testing the Government ammunition to say that that breaks up; in fact, the few rounds that I had to test did not break. I had about 40 rounds.

Mr. FREDERICK LOWE: I found them break up at Wimbledon.

The CHAIRMAN (Sir F. Middleton): Gentlemen, after the very interesting paper which we have just heard read, I am sure our thanks are due to Major Kitchener. I am only sorry that more of you have not canvassed his remarks, or brought anything to bear upon them, as I hoped would have been the case. I am afraid, as the lecturer said, that there is a want of interest in the British Army about the use of the revolver. It is very evident that in future warfare the revolver will be used a great deal more than it ever has been, especially by cavalry, and it has so far been recognized by the English Government, that whenever we do go on active service, though it is not absolutely recognized as an arm, still every Officer now provides himself with a revolver. And it certainly is of importance that as the fact of the necessity of a revolver is recognized for our Officers, the same weapon should also be furnished to artillery drivers and the drivers of transport. I believe that they have been so furnished in Egypt. It is evident that it is very necessary that a man on horseback, either with artillery or wagons, should have some means of defending himself besides the whip, and therefore we should adopt the revolver, and the practice of training men to fire a revolver should be just as much carried out as training men to fire a rifle. The fact is it is an excessively difficult thing to fire a revolver so as to hit, if you are not accustomed to it. As the lecturer says, it gives confidence to a man to know that he has in his possession a loaded revolver, but in nine cases out of ten, if he came to use it, he would not have so much confidence afterwards, for I doubt very much whether he could hit a haystack. I have seen it tried very often, and I really do not think some men could hit a haystack with a revolver. It is a practice that requires a very great deal of attention, and I hope soon to see that it is recognized as a very important part of our training. They already, I believe, at Wimbledon, have prizes for revolver shooting, and in my humble way out in Canada, I had some revolver shooting introduced, but still it has not met with the support which it ought to have done. The cavalry of the future, I think, will have to depend very much upon the revolver in preference to the carbine. I think that will be recognized after some time. With regard to one of the remarks of

the lecturer as to whether an Officer should be armed with a rifle or revolver, I think there can be very little doubt about that. A revolver is a weapon which, as he said, is a defensive, not an offensive weapon. An Officer armed with a rifle would be apt to be taking pot shots sometimes; his attention, instead of being given to his men, would be probably drawn away in firing at the enemy, and this I have seen done with very bad effect. An Officer nowadays has quite enough to do to look after his men without using the rifle. But when it comes to the question of a revolver, it is quite a different thing; he has that merely as a defensive weapon, and the more he is able to use it the greater confidence it will give him. As regards the remarks of Mr. Lowe, I have no doubt when once it is recognized that the revolver is to be an arm of the Service, we shall get what is proved to be the best weapon. I think you will all agree with me that our thanks are due to Major Kitchener for having brought this subject before us.