

Having been honoured with an invitation to deliver a lecture on Rifle Shooting, [1] & on the advantages which are likely to be derived from the present volunteer movement, I will endeavour to do so to the best of my ability, altho' fully sensible how little I shall be able to do justice to the subject of such importance at the present moment.

Having however been engaged for some years in duties connected with training as chief Instructor of Musketry at Hythe & Malta during the organization of the System of Instruction which is now so universally approved of, I may perhaps hope to be able to give you some little information on the subject.

It will be unnecessary for me to lay much stress on the importance of increasing the home force of the Country or to recapitulate the now uncontested maxims respecting the inefficiency of the wooden walls of England or the bridging [insert] of [end insert] the Channel by steam.

The present movement is a proof that these principles are now acknowledged & acted upon. I will therefore say only a few words on the peculiar nature of the steps we are taking to insure ourselves from foreign aggression.

In no other country in the world [insert] would [end insert] such means as we are now adopting be resorted to for the defence of a Country, simply because in no other country would the attempt be attended with success.

We are a peculiar people, & one of these peculiarities is [insert] consists [end insert], our jealousy of those who govern us. We dislike government interference in any thing & want but slight encouragement to economize our National expenditure to the very lowest limits. The spirit of liberty pervades all our institutions, & enterprises, & produces that individuality & independence of character, which makes the Englishman a marked man amongst the rest of his species.

Our canals, our railroads our navigation all those Institutions which in other countries are regulated by Government, are with us conducted by private companies. Until very lately the largest of our Colonial possessions was governed by a private [it is possible 'private' was meant to be deleted in an alteration] company; and now it appears we are raising a private [it is possible 'private' was meant to be deleted in an alteration] company for the defence of our homes.

I will not be rash enough to assert that the Volunteer Force [2] which is now rising up in this country, will be found equal on an emergency to an equivalent for [insert] 'for' crossed out [end insert] the regular army. I am well aware [insert] of [end insert] that many military officers shake their heads at the movement & say that rifle shooting is useless without discipline. Undoubtedly the want of organization & discipline must ever be the weak point in a force so constituted;--and we have a great authority for saying that in all the operations of War the morale bears to the Mechanical, a proportion of three to one. But, is not the morale greatly affected by the Mechanical? Confidence is the result of skill, and the skill of the soldier depends on his being trained to the use of his weapons.

Here then we come to the strong point of our Volunteer system, for it is incontestible [sic] that in accuracy of shooting our Volunteers, being men of a superior stamp of Energy, will excell [sic] any similar force of regular soldiers on the face of the globe.

Of organization & discipline I will therefore say nothing but have those most important qualities of efficiency, to whatever occasion is destined to bring them forth, & confining myself to the third element in the Art of War, the Mechanical, I will before entering upon the most practical part of my subject briefly glance over the History of War, so far as your time & my imperfect information will permit me, & endeavour to discover from past history, to what extent we may expect benefit, by rendering rifle shooting, a national movement. [Inserted notes alongside] Authority to use of courts weapons as a natives [illegible][end insert] Commencing with the earliest records known to us, we find amongst the Egyptian frescos ample evidence of the importance they attached to Archery, & other military exercises, altho' they were essentially a peaceful nation.

Many of the drawings on the Walls at Thebes, & other places represent men undergoing instruction in these exercises & some of the Instructors are drawn with the heads of birds which is their well known manner of representing their Gods, shewing that here as in Greek Mythology, archery, was so highly estimated as to be attributed to divine origin.

The Ethiopians were celebrated Archers. The Assyrian Sculptures bear ample testimony to the frequency of their *[insert]* 'their' crossed out, the military *[end insert]* exercises. The Persians prided themselves on Archery, and had an Archer stamped on their earliest coins as an emblem of power. Herodotus says that from 5 years old to the age of 20, they taught them only three things, to ride, to shoot & to speak the truth. The more modern Persians appear to have cultivated the shooting part of their education at the expense of veracity, for we are told somewhere by a distinguished traveller that they profess to split a horse hair with their arrows at the distance of six paces.

David is a memorable example of the triumph of skill over brute force. In the 20th chapter of Judges we are told that when the children of Benjamin gathered themselves together to go out against Israel they had amongst *[insert]* their people *[end insert]* them 700 chosen men, left handed every one of them whom could sling stones at a hairs breadth & not miss.

Here I may remark that this is not by any means the only example in which left handed men have been remarkable for skill in the use of arms. Some of the best shots I have seen have been men who fired from the left shoulder & aimed with the left eye.

The Achaeans & Balearians were examples of the value of skill & were much esteemed by the Romans. Livy says that the former practiced at small circles placed at a great distance, & that not only could they hit the heads of their enemies but any part of their *[insert]* 'their' crossed out, the *[end insert]* face, they aimed at & pierce through all defensive armour. The Balearians were trained from infancy – their mothers placing their food every morning at the top of a pole & only allowing them as much as they could knock down with their slings. When *[blank]* ~~apparent~~ approached the Balearic Isles he was obliged to cover the outside of his thighs with skins to break the force of the stones thrown from the slings.

In Homers Odyssey there is a passage from which we may learn a lesson even in the present day. Ulysses is described as shooting his arrow through a succession of small rings placed in line at some distance apart – from which we may infer that it was not accuracy only that they aimed at, but flatness of Trajectory; as it would be impracticable to shoot through a succession of small rings without imparting great velocity to the arrow.

This is precisely what we are striving to attain now with our small bore rifles such as the Lancaster, Enfield & Whitworth small bores. The larger Enfield now in use in the service is probably as accurate as is necessary for present purposes – indeed the shooting of our soldiers tho rapidly improving has not yet been brought to correspond with the accuracy of the weapon at long ranges and it is probable that were a more accurate ~~weapon~~ *[insert]* arm *[end insert]* placed in their hands no increased effect would result from it on service. Increased initial velocity & the consequent flatness of Trajectory is however a great desideratum; by it the error due to misappreciation of distances is diminished & as judging distance is one of the most difficult parts of the Musketry training to acquire, a flat trajectory becomes a most important quality in a good military rifle. It also causes the bullet to sweep over a large portion of the field of battle without rising higher than the head of an infantry or cavalry soldier, & thereby increasing the chance of hitting in its course some of the enemies lines or columns. No better plan could be devised for testing the merits of a rifle in this respect than by firing through rings in the manner Ulysses is represented to have done.

If it were desirable to multiply examples from ancient history much might be said of the merits of the Roman soldiers, Josephus Polybius & all who have written on the subject attribute their universal success to their skill in handling their arms. Their training we are told was so incessant that they looked forward to a campaign as a release from the fatigues of their ordinary duties.

From the middle ages we may collect many proofs of the good effects of encouraging shooting amongst the people. Sir Walter Scott in Old Mortality describes the Festival of the Popinjay as practised in Scotland towards the latter part of the 17 Century.

"This he says was an ancient game formerly practised with archery but at that time with fire arms. The sport consisted in shooting at the figure of a bird suspended from a pole & decked with *[illegible, possibly partly or pretty]* coloured feathers, so as to resemble a popinjay or parrot. The competitors discharged their fuses and carbines in rotation at the distance of 60 or 70 paces. whose ball brought down the mark held the proud title of Captain of the Popinjay for the remainder of the day, & was usually escorted in triumph to the most respectable change house in the neighbourhood, where the evening was closed with conviviality, conducted under his auspices, & if he could afford it, at his own expence. *[sic]*

In Holland in the 13 Century we read of the aristocratic Guild of Cross bow men; the members of which were obliged to prove their noble descent, & to take a solemn oath to devote their

whole time to shooting & allow no other pastime or exercise to take up any part of their leisure. Once a year a grand match was held under the patronage of some saint to whose Church steeple, the bird or semblance of a bird hit by the victor, was affixed. The conqueror was the Roi des Arbaletiers, for the coming year, and received a jewelled decoration, which he was entitled to wear for 12 months, after which, he returned it to the Guild to be again contended for.

On the first introduction of the Harquebus [3] into Holland in 1566 great attention appears to have been paid to training as we read in Grimstones History of the Netherlands "The State unwilling to be without such Weapons when need should be, sent for the expertest workmen in that art from all parts of Christendom, & for the skillfullest gunners, to instruct & train their youth, and because the countrie people should not be ignorant thereon; and it was decreed that in every village under their protection, two young men should be chosen to practice this exercise, & for recompence should be freed from all subsidues & impositions, & that these young men at a certain day in the year, should meet at the nearest Castle or City to shoot a mark, when his village that should shoot the best, was for one whole year freed from all tax & tribute."—

This seems to have given a great impulse to shooting & in after years the Dutch appear to have been celebrated for the effect of their fire. For describing the battle of Malplaquet Chevalier Follard who was an eye witness of what he described, says that the French owed their defeat in a great measure to the superiority of the Dutch Infantry fire, on account of their being better trained by constant practice in the use of their Arms.

But the period which most interests us on account of the parallel which it affords to the movement which is now going on in this country is that, which embraces the archery of our old English bowmen, viz the 14, 15 & 16 Centuries. The English Infantry says, the present Emperor of the French in his "Etudes sur le passé et l'avenir de l'Artillerie" [4] was composed of Archers who used with wonderful ability a bow the length of a man's stature'. The great efficiency of our men in the use of this weapon was owing mainly to the exertions of King Edward 3, who enforced the practice of archery by every Englishman, on Sundays & holidays. In the days of Edward the 3^d [insert] IVth [end insert] a statute was passed ordering that every Englishman should have a bow of his own height, and ordering Butts to be constructed in every Township, also imposing the penalty of a halfpenny on anyone who neglected the practice of Archery. All those now overcrowded districts in & about the City which we somewhat inappropriately call fields, were then in reality the fields in which the butts were erected, & Archery carried on. From this time to the reign of Henry 8th & even Elizabeth the use of the long bow continued to be the favourite exercise of the entire population. Latimer encouraged it from the pulpit, calling it a Godly Act, a wholesome exercise and much commended in Physic. Roger Archer Latin Secretary to Edward 6th Mary & Elizabeth wrote a book upon it which like all his writing was remarkable for the purity of its style.

Previous to the embarkation of the Spanish armada, the Pope sent emissaries to England to report upon the character & resources of the people. In their Report a manuscript copy of which is, I believe in the Vatican Library it is stated that the whole nation took such delight in Archery that there was no rank or progression that did not pursue it [2 or 3 words heavily crossed out] enthusiastically and that the children were taught to draw the bow from the age of 10.

From all this we may see what a firm & lasting hold an institution of this kind may be expected to take in this Country when properly encouraged by the Government & by the press.

Fortunately all attempts which have hitherto been made for the invasion of England have been warded off by the hand of Providence before the enemy reached our shores: but should a hostile force ever effect a landing on our Coasts, there can be little doubt they will meet with such a reception as shall cause them to repent bitterly their rashness in attempting it. I believe that in default of a large standing army raised as in other countries by conscription, nothing will contribute more to this object, than the encouragement of rifle shooting amongst the people. By this means the whole able bodied population of the Country, will be brought half way on the road towards becoming soldiers, when an emergency renders it necessary. It is now time that I should say a few words on the Instruction in firing of modern armies.

Ever since the introduction of fire arms the English appear to have neglected target shooting In 1676 Lord Orrery complains of the want of it & recommends the use of medals with ribbons or prizes for the best shot. In 1762 & 1777 we find two works which may be considered the first attempts to introduce a uniform system of drill & discipline into our Service. It is remarkable that altho both of these works both of these works enter into the most minute

details of the interior economy & management of a Regiment, and includes the most carefully drawn up regulations for Camp and Quarters, with instructions for parade, drill & even cleaning of accoutrements, & are apparently got up with the view of leaving no part of the soldiers education untouched – yet there is not one word about instruction in firing in either of them -- & as a proof how little attention was paid to accuracy of fire, we find that at the word “fire” the soldiers were taught to “pull the trigger briskly” thereby prescribing the very fault which in the present day occupied so much of the Instructors time in correcting, as being incompatible with any thing like good shooting. In the former of these works first published by Humphrey Bland Esqre Lieut Genl of his Majesty’s [illegible] & afterwards republished in 1762, the author regrets the absence of any work of the kind since the writings of the Earl of Orrery 50 years previously: so that we may reasonably conclude that the practice of target firing in common with the other suggestions of that Genl were neglected during the whole of this period. The author however speaks highly of the fire of the Dutch Infantry.

In a work on the art of War published in 1809 some rules were given for target practice, recommending that the target should be 5 feet in diameter, & painted in circles in order that the riflemen might calculate their proficiency in firing. But by far the best work that appeared up to that time was a book called “Twenty three years practice with rifle guns” by Ezekiel Baker Gun maker published in 1804—[5]

amongst other useful hints which we get from this work, we may quote the following:

“no noise or conversation to take place whilst any one is presenting or taking aim, as it will take off the attention. The rifle should be held firm in hand, in all positions in presenting to fire: Lying on the belly, it will be found difficult for the left hand to grasp the stock forwards; in that case, the sling or belt should be pulled firmly back, to keep the rifle steady while firing. To fire off hand without a rest; the right foot should be behind the left about 16 inches, the left knee upright and not bent, the right elbow down towards the body, the butt of the rifle in the hollow of the shoulder, the body easily bent forwards, so that the right eye comes over the great toe of the left foot. If the body is more bent, the man will not stand so easy, nor yet so steady ; the left hand, when presenting, to be forwards on the swell of the stock, the sling under the elbow, which will make it firm and steady. In taking aim, lay the muzzle to the lowest part of the object it is intended to strike, then bringing it up gradually to the part to be aimed at, In taking aim, lay the muzzle of the rifle to the lowest part of the object it is intended to strike, then bring it up gradually to the part to be aimed at, in bringing up the rifle the forefinger to be kept light on the trigger, when up the point intended, draw the front sight into the notch of the back sight, the fire must then hold his breath and pull gradually without any snatching, so as that will alter the direction of the rifle. In taking aim, a soldier may sometimes hold his breath so long, as to cause a trembling: in that case, the rifle should be taken down, take breath, and aim again. As I never could fire so true, as when I took the first sight. ... After the trigger is pulled, keep the rifle firm to the shoulder, till the ball strikes the target at 100 yards, this will be known by hearing the ball strike or hit ; as that will prevent any startling or throwing back the head, as is often the case in firing. A rifleman should practice to pull the trigger, with a wood driver in the cock, till he can fire off his piece, without startling or shaking the muzzle of his rifle.; this is a part that every rifleman should be well acquainted with, as it will make him have more command of his rifle. [*Handwritten addition*] Here we have the position drill [end addition]

Rifles throwing to the right or left, is sometimes owing to the trigger pulling too hard, and at other times, to the man throwing his head too far over the centre of the stock, which causes a cross-sight. The trigger should not be pulled so hard as to alter the direction of the rifle in firing. If the rifle is found to throw to the right, the back sight should be drove to the left, and the front sight to the right.

Baker recommends, that the soldier should be taught to take aim with both eyes open, this however is not found to be the best way of teaching soldiers, although it may answer well enough for sportsmen who are not stinted as to the amount of ammunition they use in practising themselves.

He also recommends constant practice in judging distance: He says: “A rifleman to judge of his distance, should be in the habit of stepping his ground, from 1 to 300 paces, or any other distance that may be thought proper; and let him fire at any object at the distance he steps to;- by this continued practice, he may learn to measure the distance with his eye to a tolerable certainty at any time; this he should practice in different places, and in all sorts of weather: in windy weather it is necessary a rifleman should practice; which will instruct him what allowance to make from the object to be fired at, either to right or left; as the wind has

great power on the ball at long ranges.

In that most excellent and clever work of Dr Robert Jackson's, entitled "Formation, Discipline and Economy of Armies," first published in 1804, we find some valuable remarks bearing upon this subject; [6] Confidence he says results from the skill which commands effect, but skill can only be acquired by knowledge of principle and daily practice in application. Every man is awkward, and most men are diffident, in the use of fire-arms at the commencement of their military career; many are more than diffident. The young soldier often draws the trigger of a loaded musket with symptoms of fear, similar to that of a man who puts a match to the train of a loaded mine. The case is new to him; for the customary mode of training in field-days and firing blank cartridge gives no knowledge of the firelock as armed for war. It is then an instrument of death, and the inexperienced recruit is not always without apprehension that the explosion may recoil upon himself."

[*reversion to handwritten text*] Dr Jackson also complains that the point at which the drill of the soldier chiefly laboured was the superior rapidity of loading & firing in regularly measured time, & that the just direction of the fire which effects destruction scarcely appeared in the calculation. Such explosions he says may intimidate by their noise, but it is a mere chance if they destroy by their impression. The real object of the soldiers study is the discomfiture of the enemy. The justness of aim is the main and ultimate object of Instruction, and as it is the object which a rational system of military instruction might be supposed to inculcate, it is a matter of surprise it should be so little cultivated. The firelock is an instrument of missile force. It is obvious that the force which is missile ought to be directed with aim, otherwise it will strike only by accident. If the destruction of the enemy be the object of a battle, the arrangements of modern Tactic & the drillings of the soldier counteract the purpose. History furnishes proof that the battle is rarely gained by the scientific use of the musket; noise intimidates, platoon firing strikes only at random, and the charge with the bayonet decides the question. He recommends the abandonment of the three deep line of Infantry as being incompatible with effective firing. On the subject of Instruction some valuable hints are given in the following passage

[*more pasted in printed extracts*]

"The degree of perfection attainable by individuals in the art of firing has great latitude. Some remain inferior to others in spite of all their endeavours to excel. Few fire well without instruction, and without practice. The knowledge how to direct fire upon given points is a most essential part of the mechanical soldier's study; consequently the office of giving instruction on that head commands especial attention. As the knowledge of it is important to success, it will not be denied that the duty of instruction ought to be committed to persons who are sufficiently master of science to explain the principle upon which perfection depends, who are capable of pointing out the right way of attaining it, and who are themselves capable of shewing, by example, the perfection to which the attainment may be carried. The young soldier judiciously treated, and with the example of instruction judiciously directed, becomes enamoured of his arms, and ultimately of his profession. He perceives that he acquires knowledge; and, in proportion as he acquires knowledge, he becomes confident in himself. He is thus rendered courageous by art, for courage of a certain description is the product of the practice alluded to.

It is almost superfluous to repeat, that attainment of skill in the use of arms is an important object in war; and, as such, an object to be prosecuted scientifically and steadily. With this view, it is suggested that during the period of military training, and after six months of previous education, three days in the week be set apart for the practice of firing ball-cartridge, and that seven ball-cartridges be allowed to each man for the consumption of the day. This implies some expense of money; but as the knowledge of firing with ball is the only part of training which forms a soldier expressly for his ostensible purpose, it is to be hoped that the higher powers of the state will consider the subject with its reasons, and institute such a system of military education in all its branches as may attain the end for which an army finds a place among national establishments. It is not pretended to penetrate the reasons which influence the scanty supply of leaden bullets; but it is evident that it is not economical in the true sense of the word. In actions which are fought under common circumstances, one ball does not strike out of one hundred, or even a greater number; and as it is known that one in three at least will strike within the volume of a man's body, at the distance of one hundred or one hundred and twenty paces, if directed by a hand of the requisite skill, it follows, that one man who is master of this part of his duty is equal to thirty or more who are equally perfect in tactic and manoeuvre, but who have not practised and learned the art of directing fire upon

distant points with care and precision. If this be true, and it is capable of proof, the mode of training suggested in this place is demonstratively economical; for, judging by effect, it may be said to multiply the army throughout by thirty or a higher number. The advantage of skill over inexperience is here striking, and it is presumed that, if twenty-one ball-cartridges be fired under good instruction every week, for the space of six months, the proposed perfection will be attained by all such as have a good sight, a steady hand, and a firm courage.

Besides the qualities of arms considered as arms, the acquaintance which the soldier individually has with them is of importance in assuring that precision in effect which constitutes superiority. In this manner, while the barrel of the musket is straight, and proved to be true as well as strong, the lock ought to be perfect in all its parts, and easy in its movements; for it is obvious to common sense that undue force applied to the trigger disturbs the level, and thus affects the direction of the ball. But, in addition to the actual perfection of the arms, it is useful that the soldier be familiar with his musket, and correctly acquainted with its properties. By long possession he becomes enamoured and fond of it, as a part of himself. He learns, by practice, the precise charge of powder which gives the best effect; for, though two firelocks may be of the same apparent calibre, there is something in temper not susceptible of measure or estimate by calculation, which considerably modifies results. Hence there is nicety in determining the true measure of the charge according to the temper of the piece, as well as according to distance and other circumstances of the object to be struck, that can only be ascertained by correct and actual experiment; experiment ought therefore to be applied to the case.

The execution of fire-arms varies according to the nature of the ground and the presentation of objects at nearly equal distances. The first trials with fire-arms are supposed to be made on level ground, and the first judgment on the effect is formed from such trial. This we infer from the mode of drilling that is commonly adopted; but such drilling furnishes only an imperfect illustration of the fact. Military actions do not always, do not even ordinarily, take place on level grounds; it is therefore proper that the soldier, in order to be properly instructed, be exercised in firing at objects on ground of varied form and aspect, such as those on which military combats may or do occur. It is necessary, for instance, that he ascertain the distance on the level plain at which he can promise with certainty to strike the object at which he aims, that he ascertain the same effect as directed from a height to a level, or across a ravine or hollow way to another height. If he view all the forms and presentations of the object with a just eye, measure the distances and bearings correctly, and estimate the effect by knowledge previously gained by experience, as he is confident of his power and master of his act, he does not expend his ammunition unskilfully, or squander at random the means on which his own life and the success of the military enterprise depends.

The subject of directing fire rightly is important; and it may be added, in illustration of its importance, that eighty or a hundred thousand ball-cartridges are often fired in the course of a military action without killing or wounding more than five hundred men. In such case, (and such cases are not rare,) it is evident that there is an expense of ammunition without an effect commensurate to the expenditure. If the non-effect arise from distance or position, the military officer in command commits an error. If the distance be just distance for action, if the enemy be duly exposed, and if the troops be carried into the field in a proper manner, and the effect be such as is stated, it is evident that the soldier wants skill, or that he wants discipline and courage necessary for the direction of the skill which he possesses. Want of skill is always accompanied with hurry and confusion; and a soldier who wants skill, that is, who is not confident of producing a given effect by a discharge of his musket, has no calculation. He knows that he is in possession of an instrument of destruction. He is ignorant of its true value: he loads and fires in haste and confusion, in hopes of finding himself under the cover of its smoke, or of drowning his fears under its noise. But as he has no skill, and, from want of skill, no precise object in view, the mind is blank, and the act is in a manner void. In this case, the remedy against panic consists principally in the noise and order of the explosions — and that is precarious. On the contrary, the skilful soldier is confident of an effect resulting from his skill. He is master of himself on all occasions, and according to his position, and his bearings, he is almost certain of diminishing the number of the foe by every ball discharged; thus every discharge adds to security, both in his own idea and in reality.

[Back to handwritten text] Dr Jackson was a man of great practical experience as well as scientific knowledge, having been attached to the [insert] Russian [end insert] & other

Continental Armies during the War, it is therefore satisfactory to know that he considers the English [the draft ends here, note that 3/4/4 continues from this point]

Notes by transcriber

[1] This paper appears from the reference to the Volunteer Force in paragraph 5, to date from very early in Pitt-Rivers' life when he was a professional full-time soldier, probably to shorting after May 1859 when the volunteer force was first mooted (see note 2). At this time Pitt-Rivers (then, obviously, actually known as Augustus Lane Fox) had returned from his service in the Crimea (the crisis that impelled the establishment of the Volunteer Force) and his service in the School for Musketry instruction in Malta (in August 1857), was only undertaking regimental duties (i.e. had no actual posting), was living in London and beginning his involvement with learned societies by reading papers at the Royal United Services Institute on June 14 1858 the improvement of the rifle (NB this is not that paper), and the Royal Geographical Society which he joined in March 1859. Until March 1861 he lived under the cloud of a professional dispute about his training methods in musketry (he was eventually acquitted). It is not known who this paper was given to, nor is it included in Bill Chapman's bibliography—the fullest listing of Pitt-Rivers' published works. It seems likely, therefore, that it was only read out not published. The two drafts are written on the blue sheets folded into foolscap that Pitt-Rivers used at other times, there is some evidence that hand written lines in pencil were added to 3/4/3, presumably to improve the neatness of the text. The handwriting of 3/4/3 is very different from Pitt-Rivers' later handwriting, it is possible that it is his own hand, but trying to be neat or (perhaps more likely) it is another's hand, producing the final copy? One could speculate that the hand was Alice Pitt-Rivers as she is thought by Bowden and Chapman to have been more involved in Pitt-Rivers' professional career at this stage than later. It is certain that the handwriting differs again from the second version of this draft paper, see 3/4/4, where the handwriting is more similar to Pitt-Rivers' usual scrawl and there are still crossings out so it would still appear to be a draft, possibly an earlier draft than 3/4/3. Comparisons between the texts of these two drafts and the copy of the printed paper 'Treatise on Instruction of Musketry'. [Hythe School of Musketry, A.H. Lane Fox. 1854] show that it is very similar with entire passages from that source, indeed virtually identical in the way entire sections are formed. The sources have been shaped in slightly different ways though, and these 2 texts are much shorter than the treatise. One could conclude, therefore, that both were drafts of a spoken paper to an unknown audience after May 1859 which he drew up and are based upon the work in the Instruction of Musketry.

[2] Volunteer Force. See [http://en.wikipedia.org/wiki/Volunteer_Force_\(Great_Britain\)](http://en.wikipedia.org/wiki/Volunteer_Force_(Great_Britain)) which states: 'The Volunteer Force was a citizen army of part-time rifle, artillery and engineer corps, created as a popular movement throughout the British Empire in 1859. Originally highly autonomous, the units of volunteers became increasingly integrated with the British Army after the Childers Reforms in 1881... On 12 May 1859 the Secretary of State for War, Jonathan Peel issued a circular letter to lieutenants of counties in England, Wales and Scotland, authorising the formation of volunteer rifle corps ... and of artillery corps in defended coastal towns. Volunteer corps were to be raised under the provisions of the Volunteer Act 1804 ... which had been used to form local defence forces during the Napoleonic Wars.'

[3] Also spelt Arquebus, early muzzle loaded firearm.

[4] See <https://archive.org/details/tudessurlepasse03napogoog>, Napoleon III, Paris, 1851. Napoleon III was in power from 1852 to 1870 (so this paper must date within this period).

[5] See <https://archive.org/details/twentythreeyear00bakegoog>. Note that this extract from Baker's book is pasted onto the blue sheet from an unknown printed document

[6] <https://archive.org/details/asystematicview00jackgoog>