Minute No. 1106

3. 10. 09

W.O. Paper 77

4698

129. MINIATURE RIFLES, CARTRIDGES AND APPLIANCES.

\*Modified safety catch for W.O. pattern Miniature Rifle, proposed by B.S.A. Company.

B.S.A. Company, 12. 10. 09, forwards a riflet with modified safety catch as above. At present the safety catch cannot be put into the locked position when the rifle is not cocked, and this has been the cause of some trouble. If force is used to turn it over the stem is wrenched off, and this has happened in a large number of cases notwithstanding the issue of printed instructions on the point.

In the modified form now submitted the safety catch can be turned over to the locked position either when the rifle is cocked or uncocked, and in addition the parts

are strengthened.

C.I.S.A., 25. 10. 09—

The proposed alteration to the safety catch affects the design of the bolt, cocking piece, locking-bolt stem and locking-bolt head. It enables the safety catch to be applied in the fired as well as the cocked position. The former does not add to the safety of the rifle but will prevent the bolt being accidentally opened, and would prevent the locking bolt being strained, as may now occur if it is applied in the fired position.

From enquiries at the L.S.A. Company they state that they have had very few

instances of any breakages in connection with the locking bolt.

There does not appear to be any need for introducing this alteration at present, but if a new mark of this rifle is adopted in the future the alteration is worth considering.

D. of A., 2. 11. 09, forwards for Committee's remarks.

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10. The advantages and disadvantages of this pistol as compared with Service revolver, ascertained during trial, are as follows:—

Advantages.

(i.) Rapidity of accurate fire much greater.

(ii.) Superior balance, less jump, and greater accuracy.

(iii.) More rounds carried in pistol, which is rapidly reloaded with filled magazines.

Single shot firing, loading from "Holster," always possible.

(iv.) Automatic cocking and reloading.

(v.) Efficient safety arrangement, enabling pistol to be carried at full cock and thrown into action automatically on grasping the butt.

(vi.) Ammunition positively locked in barrel before releasing trigger.

(vii.) Rear sight adjustable for "line."

(viii.) Greater simplicity of design.

To strip pistol for cleaning no screws to be removed, only two screws in working parts as compared with 10 in Service revolver.

#### Disadvantages.

(i.)  $9\frac{1}{2}$  oz. heavier than Service revolver.

- (ii.) Special ammunition required, as, though of same bore, a lighter bullet is employed, and cartridges have an annular groove at base for extractor to grip.
- 11. If adopted, each pistol should be supplied with three magazines, one in place and two spare.

12. As a result of this trial he is satisfied that this pistol is vastly superior to the

Service revolver.

The increase of weight, which with two spare magazines amounts to 1 lb., is considered insignificant in contrast with the advantages obtained with this design of weapon.

13. He strongly recommends the supply of some of these pistols to each of the Divisions of Home and Atlantic Fleet for trial and report, with a view to future adoption.

D. of A., 24. 1. 10, fowarded for Committee's remarks.

The Committee recommend that the pistol be sent to C.I.S.A. to report as to whether the objections mentioned in *Minute* 1086/9. 7. 09 have been removed.

129. MINIATURE RIFLES, CARTRIDGES AND APPLIANCES.

Modified Safety Catch for War Office Pattern Miniature Rifle, proposed by B S.A. Company.

Previous Minute 1112 8. 12. 09.

D. of A. 23. 12. 09, approved Committee's recommendation to above Minute.

Noted.

V.O. Paper

Minute No.

1126

Minute No.

24.1.10

(Contd.)

W.O. Paper 77 15 4698

CORRIGENDA.

Minute 1107/3. 11. 09. In 4th line of C.I.W.'s Minute dated 14. 10. 09, for "O.F."

W. N. CONGREVE, Colonel,

President, Small-Arms Committee.

WAR OFFICE, 18th February, 1910.

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"The accuracy is satisfactory, and Commandant, Hythe, reports most favourably on the ammunition generally.

"It is considered superior to the Morris tube inasmuch as—

(1.) The balance of the rifle is not altered.

(2.) It can be loaded through the magazine.

(3.) The charger can be used in loading magazine.

"Aim can be taken with the Service sights, and therefore all operations connected with firing the Service rifle can be gone through in the prescribed form the same as for ball cartridge. The recoil of the rifle, which is one of the merits of using the Service ammunition, would of course be absent.

"Further, this ammunition is much cheaper than the '303-inch ball, costing 1871. per 100,000 rounds as compared with 475l. for the '303-inch, and as fired cases can be used over and over again no doubt the cost would be less in supply. The Morris

tube ammunition costs 86l. per 100,000 rounds.

"It would, therefore, be possible to increase the number of rounds per soldier from 25, as approved for use on miniature ranges, to about 65 rounds per arm, without any increase of cost. Moreover there would be a saving in the cost of transit, and in the making of the miniature ranges, as a weaker range would suit the Gaudet cartridge than the · 3()3-inch.

"From this it would appear possible to introduce a cartridge superior to that used with the Morris tube, which would give as good results at the miniature range as the

Service · 303-inch ball cartridge, and for a smaller expenditure.

"Samples of cartridges are forwarded.

"If the Commander-in-Chief approves, steps will be taken to give the ammunition an extended trial with the troops, with a view to its introduction if favourably reported on."

## ADJUTANT-GENERAL to COMMANDER-IN-CHIEF, 13th January 1903.

"Last year you decided that miniature ranges for use with the Service cartridge were to be adopted, so as to admit of the elementary instruction of the soldier in or close to barracks, in place of Morris tube ranges, which were to gradually become obsolete. The Secretary of State approved of the allotment of 8,000l. for the construction of miniature ranges.

"2. This proposal to introduce a reduced charge cartridge would, if adopted, reverse the above policy. I do not recommend it. As, however, the Gaudet miniature cartridge is a great improvement on the Morris tube, I think it and other similar A contrivances for the use of the auxiliary forces, in place of the Morris tube, should be first considered by the Small Arms Committee."

Minute No. 1153 28.7.10

129. MINIATURE RIFLES, CARTRIDGES AND APPLIANCES.

115. 24.

\* Japanese S.A. Miniature Cartridge.

Five cartridges as above were obtained.

W.O. Paper Branch Memo. M.O. 3 (d)

6337

C.S.O.F., 15. 6. 10—

Forwards R.L. design No. 16,947† and a section† of above cartridge. It is thought that this pattern of cartridge should give fairly satisfactory results at short ranges.

C.J.W., 24. 6. 10--

If a cartridge of this type is required for the Service, it is probable the Gaudet cartridge (Minute 737/16. 3. 03) would give much greater accuracy, but on the other hand it might cost more. It has a conical bullet instead of a spherical one.

C.I.S.A., 7. 7. 10 —

The Japanese miniature practice type of cartridge is not adapted to magazine loading and is therefore unsuitable for Service requirements, vide S.A.C. Report No. 12.

If a miniature practice cartridge adapted to magazine loading is required there is one at hand in the Gaudet system.

D. of A., 9. 7. 10, forwards for Committee to see.

Seen.

arranged for between the shoulder of the pin and the corresponding shoulder in the bolt head when the rear end of the firing pin is flush with the rear face of the bolt head, and with a cartridge in the rifle the shoulder of the firing pin does not reach the shoulder in the bolt head by the amount of the clearance.

#### Commandant, Hythe, 21. 11. 10-

The rifles fitted with these bolt-heads have been tested by firing from 50 to 100 rounds continuously with each rifle, first with the firing pin well oiled, and then with the firing pin dry. A number of miss-fires occurred but all had been well indented, and the fault clearly lay with the ammunition and not with the rifle. The bolt-heads may be taken as having worked satisfactorily in all respects as, in addition to the above test, the bolts were drawn back each time exactly as when firing the full-charge cartridge and no breakages occurred.

The extractor of rifle No. 3275 failed to extract in a large number of instances.

D. of A., 1. 12. 10, forwards for Committee's remarks.

Minute No.
1168

13.12.10

(Contd.)

The Committee consider the result of these trials satisfactory and recommend the adoption of this design.

Minute No. 1168 13.12.10

117. BOLTS OF RIFLES.

123. 129.

Bolt-head of Rifle, Short, '22-inch R.F. Trial of strengthened design.

Previous Minute

28. 7. 10.

W.O. Paper

15

4773

D. of A., 29. 7. 10, approved Committee's recommendation to above Minute.

D.N.O., 24. 10. 10-

Forwarded report as under—

More extended trials of bolt-heads to this new design are being arranged for as regards Naval Service, the results of which will be communicated in due course.

#### REPORT BY CAPTAIN, H.M.S. "EXCELLENT."

A ·22-inch rifle fitted with the bolt-head of new design has been under trial and has fired 5,000 rounds. No jambs, miss-fires or prematures occurred.

The bolt was worked throughout the trial much as a bolt of an ordinary rifle would have been, with no special care or undue severity.

C.I.S.A., 7. 11. 10—

Forwarded following report on six rifles, short, '22-inch R.F., fitted with the strengthened design of bolt-head:-

1. Ten rounds of Service ammunition were fired from each of the six rifles as a preliminary test of correct working, with satisfactory results. One cartridge missfired in rifle No. 4280, but fired on second trial.

2. 500 rounds of Service ammunition were then fired from each of three rifles, Nos. 3980, 3275, and 4009. Two missfires occurred with rifle No. 4009, but both fired on second trial.

The rifles were allowed to stand for one hour after firing, before removing the bolts to enable the barrel to be cleaned, so as to give the fouling time to set. The bolts were then removed and kept for a week free from oil and without cleaning. They were then examined and the firing pins were found to be quite free.

3. Twenty rounds of Service ammunition, specially prepared so as to burst at the base on firing, were then fired from rifles Nos. 4009 and 3275, and 20 rounds of smokeless (cayenite) ammunition similarly prepared were fired from rifle No. 3980. In each case the bolts and firing pins were entirely free from oil. On the first day two miss-fires and on the second day one missfire occurred with No. 4009, but all fired on second trial. The bolts were removed from the rifle one hour after firing

without cleaning. On examining the bolts the next day, the firing pins in Nos. 4009 and 3275 were found to be set with fouling, but the firing pin of No. 3980 was found to be free.

Nos. 4009 and 3275 were then tested by loading with live cartridge cases (bullet and charge extracted), with the result that the firing pins were driven in and the cartridge cases only very slightly marked.

Without cleaning the bolts this test was repeated and the bolts allowed to stand

for a week free from oil without cleaning.

On examination the firing pins of all three rifles were found to be tightly jammed with fouling. They were then tested by loading the rifles with live cartridge cases (bullet and charge extracted). The cases were rather deeply indented, but were not fired by the closing of the bolt, and the firing pins were partly driven back. The failure to fire is due to the final forward movement of the bolt being controlled by the camway for the recoil stud of the bolt, which causes the firing pin to press, and not strike, the cartridge.

Following this the rifles, without being cleaned, were tested to see if they would

fire correctly.

No. 4009 failed to fire twice, but on the third trial the case was fired. Two more cases were fired satisfactorily, although the firing pin was still tight, but not fixed. The other two rifles fired satisfactorily.

4. This was a repetition of 3, with rifles Nos. 4280 and 3363 for Service ammunition, and No. 4146 for smokeless ammunition, but the firing pins were clogged with mineral jelly.

On the first day one miss-fire each occurred with Nos. 4280 and 3363. These

fired on second trial.

On the second day nine miss-fires and two hang-fires occurred with No. 4146. Of the miss-fires three fired on second trial and six failed on third trial. These missfires were, in the majority of cases, due to the reduction in thickness of the head of the cartridge to ensure blowbacks.

On examination at the completion of the test (i.e., after standing for one week

without oiling or cleaning) the firing pins were found to be free. 5. Rifle No. 4280 was tested by snapping 5000 times, and although the shoulder of the firing pin was set up, it continued to work satisfactorily, although not perfectly

free. The test was then continued until the rifle had been snapped 7500 times, when it loaded and fired satisfactorily, although the firing pin was tight in the bolt head owing to the burr at the shoulder.

#### CONCLUSION.

The conclusion to be drawn from this trial is that with a moderate amount of care no trouble should arise with a firing pin of this type, but, on the other hand, neglect in cleaning, especially after blowbacks, would cause the pin to become fixed, and if, on subsequent loading, the cartridge was not fired, which would probably be the case, the firing pin might be so tight in the holt head as to cause miss-fires, but such casualties should be indication to the user that the firing pin required cleaning.

With regard to the setting up of the shoulder of the firing pin due to snapping, it is considered that this does not occur in firing cartridges, as a slight clearance is

The rotary motion of the bolt-head could be communicated to the collar and screw by the firing pin being made slightly oval in section instead of circular.

C.I.S.A., 24. 6. 10—

It is not considered possible to overcome the objection raised at A of S.W.E.'s minute by the method proposed by D.N.O. The threaded shank of the firing pin would be too weak, taking into consideration the necessary pitch of the thread and the small diameter of the striker. Difficulties would arise in assembling as regards correct position and alignment, and, if not manufactured perfectly, friction would be set up, which would prevent the free movement of the firing pin and striker.

The objection raised at A of S.W.E.'s minute to C.I.S.A.'s proposal is assumed, but is not proved. The loose firing pin is quite a free fit and with care and occasional cleaning it is considered that there would be little tendency for it to

become fixed.

As now arranged it is very cheap and simple, and it is suggested that it be given a practical trial. Say 10 rifles be prepared and issued for trial.

S.W.E., 4. 7. 10—

Agrees with C.I.S.A.'s remarks that the method of attaching the firing pin to the striker would make the firing pin weak and liable to be broken at the screwed shank, and that there would be a difficulty in assembling it. The striker in two parts, as proposed by C.I.S.A., would be cheaper to manufacture than the Service pattern, the estimated cost being as follows:-

Service pattern.				C.I.S.A.'s design.	
Head Striker			d. 19.6 7.9	Head Striker (in two parts)	d. 18·4 6·3
			27.5		24.7

D.N.O., 8. 7. 10—

Concurs in referring this question to Small Arms Committee.

He asks that the matter be considered urgent, as manufacture on bolt-heads for experimental ·22-inch R.F. rifles and tubes has been suspended pending decision on design.

D. of A., 29. 7. 10, forwards for Committee's remarks.

The Committee consider that the present pattern of bolt-head is too weak, and they recommend that the design suggested by C.I.S.A. should be tried for Land Service as well as for Naval Service.

119. AUTOMATIC PISTOLS.

Colt Automatic Pistol, 45-inch calibre.

Previous Minute 995 12. 8. 07.

A sample of the above pistolt was submitted by the Colt Patent Fire Arms Manufacturing Company.

C.I.S.A., 13. 6. 10—

The pistol is very similar to that reported on in November, 1905 (Minute 939, 8. 1. 06), from which it only differs in the following particulars:—

Weight.—2 lb. 2 oz ( $1\frac{1}{2}$  oz. heavier, due to increase in the weight of slide by about 1\frac{1}{2} oz.).

Rifling.—Width of grooves about 173 inch (03 inch narrower); width of lands about .06 inch (.03 inch wider); twist of 1 in 42.7 calibres (decreased twist).

Foresight.—Of German silver instead of brass.

A small projecting stud has been formed on the top of the barrel at the breech end which prevents the bullet end of the cartridge tipping up when loading from the magazine, and so jamming the action.

The comb of the hammer is of a different form, facilitating cocking by hand.

Further particulars are as follows:—

Weight of bullet .- 199.5 grains. Weight of cartridge. -- 301.7 grains. Weight of charge. -5.8 grains; smokeless.

Material of envelope.—Copper nickelled

Minute No. 114-8 28.7.10

W.O. Paper N.O. 7635 117. BOLTS OF RIFLES.

\* Bolt-head of Rifle, Short, '22-inch, R.F., Navy report defect in.

D.N.O., 27. 4. 10-

123.

Trials have recently been carried out by Navy with '22-inch R.F. Short solid bored rifles similar in external contour to the Service Short rifle. It would appear that the bolt-head tenons are somewhat weak.

He asks whether the defect can be overcome either by using more suitable steel in future supplies or by re-designing the bolt-head.

S.W.E., 3. 5. 10-

The difficulty in re-designing the bolt-head is that the eccentric position of the striker necessitates a large hole being made in the bolt-head to enable the latter to be screwed on. The size of the hole cannot be reduced without reducing the eccentricity of the striker.

It has been found that no other material withstands the continual knocking to which a bolt-head is subjected better than wrought iron, which is used at present.

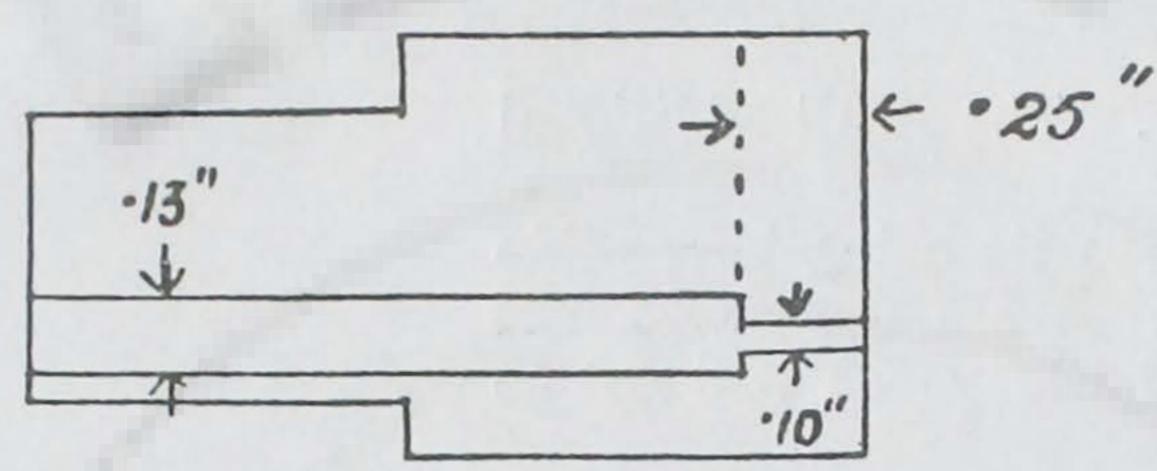
He is unable to recommend a better material.

The breakages of bolt-heads are caused by violently drawing back the bolt to the full extent, and so giving the head a severe blow against the resistance shoulder. A circular† has been issued to the Land Service pointing out the necessity of avoiding undue violence, and he suggests the adoption of a similar course in the Navy.

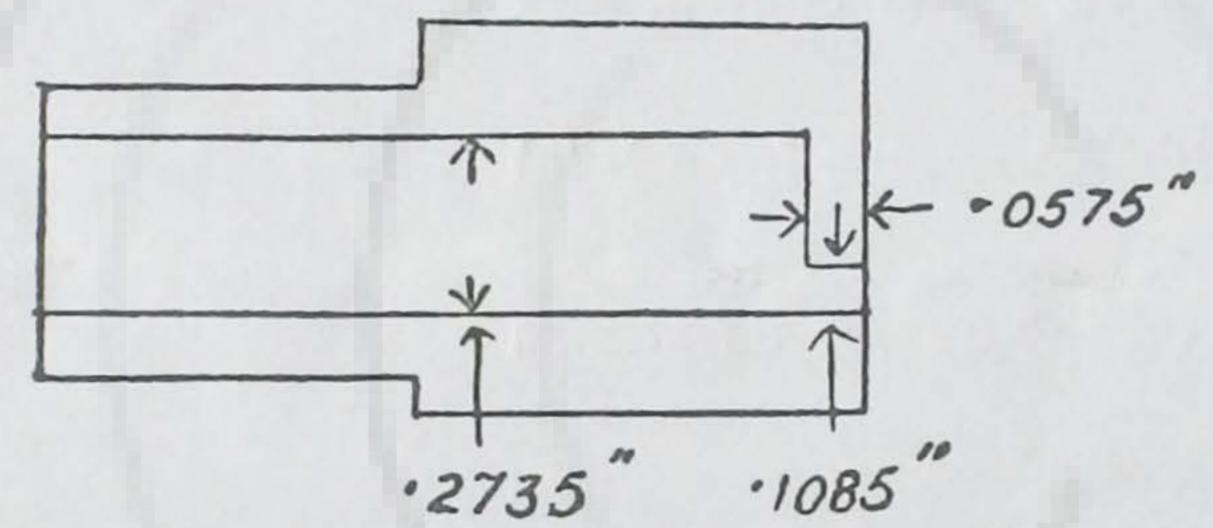
C.I.S.A., 18. 5. 10—

Submits a possible alternative design of bolt-head and striker for 22-inch R.F. rifles, the bolt-head being left stronger.

Bolt-head.—With eccentric striker hole of the form indicated in sketch.



For comparison is added a sketch of bolt-head rifle short, 22-inch R.F., Mark I., as now manufactured.



Striker.—This is made in two portions. The main or hammer portion being screwed into the cocking piece in the usual manner, and the separate firing pin portion passing through the bolt-head.

The main portion is of the ordinary form, but with the firing pin portion removed down to the collar. The grooves through the collar being arranged so that they are

clear of the firing pin.

The firing pin portion is a compound pin of cylindrical form to suit the striker hole illustrated above, and of such length that, when forced forward by the main portion of the striker and the rear end is flush with the face of the tang of the bolthead, the point protrudes the correct length from the face of the bolthead.

A sample bolt-head and compound striker; as proposed, approximately correct

to dimensions, are forwarded.

S.W.E., 26. 5. 10-

The alternative design certainly results in a much stronger bolt-head.

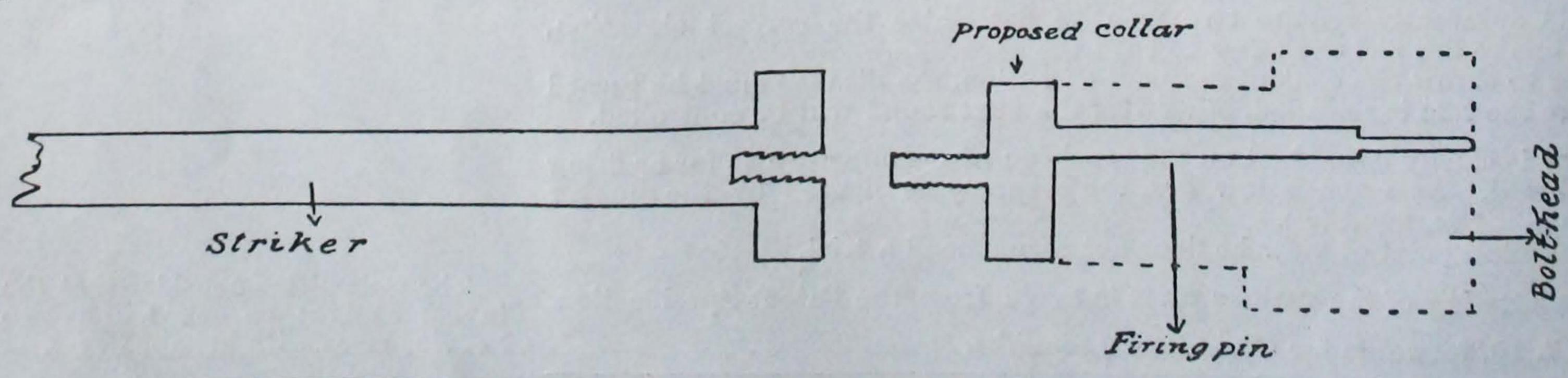
There is, perhaps, a little extra care required in assembling the firing pin and the bolt-head in order to ensure the double adjustment, viz., at the screwed end of the bolt-head and at the shoulder of the pin.

There is a slight objection to the design in the fact that the floating firing pin is not withdrawn in the bolt after firing, so that, should it become fixed in the forward position owing to fouling, or to the shoulders on the pin getting set up, or to any other cause, the point of the pin would come into contact with the cartridge cap when the breech is closed on the next round.

D. of A., 1. 6. 10, informed D.N.O. that for Land Service it had not been thought necessary so far to take any action beyond issuing a caution as to the liability of the bolt-head to damage.

D.N.O., 7. 6. 10—

Asks whether it would not be possible to overcome the objection to the new design mentioned at A of S.W.E.'s minute of 26. 5. 10 above, by fitting the end of the firing pin with a collar, &c., as shown on sketch below, which would enable the firing pin to be screwed into the striker at the same time as the bolt-head is screwed on.



115.		
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	,, LieutColonel A. L. Tisdall, R.A	1120 II.
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	*Hand-firing and muzzle attachments for use with 303-inch blank ammunition *Instructions for use of muzzle attachment for ball firing. Question of alterations to	1159 1138 II.
	*Kjellman machine gun and tripod, submitted by LieutColonel Sir E. Duraud, Bart.	
	*Menteyne machine gun	1154 II.
	*Muzzle attachment, and blank ammunition for use with *Perino machine gun, submitted by Messrs. J. & P. Hill	1142 II. 1172 II.
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	Report by Experimental Officer, School	
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	*Steam condenser, Vickers, Sons & Maxim's pattern Report by Experimental Officer,	1154 I.
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	*Bolthead of rifle, short, '22-inch, R.F. Navy report, defect in Trials of strengthened design  Magazines— Modification to magazines to suit new pattern pointed bullet, proposed by C.I.S.A.  Slings and swivels—	1168
	*Bolthead of rifle, short, '22-inch, R.F. Navy report, defect in Trials of strengthened design  Magazines— Modification to magazines to suit new pattern pointed bullet, proposed by C.I.S.A. Slings and swivels— *Alteration to sling and swivel of Service rifles, proposed by Mr. A. J. Raven,	1168
	*Bolthead of rifle, short, '22-inch, R.F. Navy report, defect in Trials of strengthened design  Magazines— Modification to magazines to suit new pattern pointed bullet, proposed by C.I.S.A.  Slings and swivels—	1168
145.	*Bolthead of rifle, short, '22-inch, R.F. Navy report, defect in Trials of strengthened design  Magazines— Modification to magazines to suit new pattern pointed bullet, proposed by C.I.S.A. Slings and swivels— *Alteration to sling and swivel of Service rifles, proposed by Mr. A. J. Raven,	1168
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	*Bolthead of rifle, short, '22-inch, R.F. Navy report, defect in Trials of strengthened design  Magazines— Modification to magazines to suit new pattern pointed bullet, proposed by C.I.S.A. Slings and swivels— *Alteration to sling and swivel of Service rifles, proposed by Mr. A. J. Raven, Gunner, R.N  Pistols.  Alteration to Webley pistol ammunition specification as regards pressure and velocity Trials of cartridges with bullets of Eley's design against ammunition with R.L. design No. 16,626 of bullet	1168 1169 1124; 1131 1173 1155
	*Bolthead of rifle, short, '22-inch, R.F. Navy report, defect in Trials of strengthened design  Magazines— Modification to magazines to suit new pattern pointed bullet, proposed by C.I.S.A. Slings and swivels— *Alteration to sling and swivel of Service rifles, proposed by Mr. A. J. Raven, Gunner, R.N  Pistols. Alteration to Webley pistol ammunition specification as regards pressure and velocity Trials of cartridges with bullets of Eley's design against ammunition with R.L. design No. 16,626 of bullet  Report on Bisley Meetings. Conditions laid down by N.R.A. Council for sights to be used in "Service Rifle" com-	1168 1169 1124; 1131 1173 1155
	*Bolthead of rifle, short, '22-inch, R.F. Navy report, defect in Trials of strengthened design  Magazines— Modification to magazines to suit new pattern pointed bullet, proposed by C.I.S.A. Slings and swivels— *Alteration to sling and swivel of Service rifles, proposed by Mr. A. J. Raven, Gunner, R.N  Pistols. Alteration to Webley pistol ammunition specification as regards pressure and velocity Trials of cartridges with bullets of Eley's design against ammunition with R.L. design No. 16,626 of bullet  Report on Bisley Meetings. Conditions laid down by N.R.A. Council for sights to be used in "Service Rifle" com-	1168 1169 1124; 1131 1173 1155
144.	*Bolthead of rifle, short, '22-inch, R.F. Navy report, defect in  "Trials of strengthened design  Magazines—  Modification to magazines to suit new pattern pointed bullet, proposed by C.I.S.A.  Slings and swivels—  *Alteration to sling and swivel of Service rifles, proposed by Mr. A. J. Raven, Gunner, R.N  Pistols.  Alteration to Webley pistol ammunition specification as regards pressure and velocity.  Trials of cartridges with bullets of Eley's design against ammunition with R.L. design No. 16,626 of bullet  Report on Bisley Meetings.  Conditions laid down by N.R.A. Council for sights to be used in "Service Rifle" competitions. 1910  Report by Experimental Officer, School of Musketry, on Annual Meeting, 1910.	1168 1169 1124; 1131 1173 1155
144.	*Bolthead of rifle, short, '22-inch, R.F. Navy report, defect in Trials of strengthened design	1168 1169 1124; 1131 1173 1155
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# PROCEEDINGS OF THE SMALL-ARMS COMMITTEE FOR YEAR 1910.

MAXIM GUNS.

C.I.S.A.'s design for firing Miniature Ammunition with the Maxim Gun. 108.

> Previous Minute 1188 III. 30. 5. 11.

C.I.S.A., 28. 6. 11—

Two sets of adapters (10 each), 1 tube, Morris, 22-inch, for R.F. cartridges, and one set of instructions, have been issued to Hythe to-day. The remaining tube will

be issued on receipt from S.W.E.

The two sets of adapters are slightly different from one another. Those shown to the Committee (Minute 1188 III./30. 5. 11), drawing 718,† gave a little trouble in the lock, owing to the gib and extractor spring entering the striker recess. The difficulty has now been overcome in the second set, drawing 721.†

Commandant, Hythe, 11. 7. 11—

### REPORT ON ADAPTERS FOR USE WITH MAXIM GUN.

In neither pattern of adapter is the base of the cartridge sufficiently supported. The result is that many cases are considerably bulged and, with A.I.D. design 721, some 50 per cent. of the cases are burst at the rim, and in several instances the base has been separated from the body of the case. Two adapters were put out of action at the first trial owing to the separated portion being jammed in the rear part of the adapter.

The joint between adapter and tube is not gas tight, and this, added to the

bursting of the cases, makes the groups larger than they should be.

It was necessary to use a hammer to remove the cases from the adapters in several instances. The shoulder of the ejector is too low down, and the small diameter portion should be increased in length to enable the case to be completely forced out of the adapter.

The ammunition used is dated 4. 3. 10, and is the newest on charge of the school. A comparatively small amount of nickel in the bore prevents the insertion of the tube, and nickel is much more common in Maxim gun barrels than in rifle barrels.

Considering these points and also the delay caused by emptying and reloading the adapters, it is thought that the original device proposed by Captain Shaw is more satisfactory for the purpose, in addition to which its prime cost would probably be considerably less than that of a reasonable proportion of adapters per gun.

C.I.S.A., 10. 8. 11—

It is difficult to overcome the trouble of burst cases without going in for a more elaborate and expensive form of adapter. This seems hardly necessary, as, owing to the protection afforded by the breech casing, there can be no question of injury to the firer.

Although accuracy must be affected to a certain extent, the results obtained here during trial were considerably better than would be expected from the average "peace" barrel firing ball ammunition at the same range.

A more satisfactory implement is necessary for the removal of fired cases, but it

is thought that this could be arranged for.

Difficulty in inserting the tube, as anticipated by Hythe, cannot occur, as the tube is only intended for use in a D.P. barrel from which ball ammunition is never fired.

If the equipment per unit were to consist of say, 20 or 25 adapters, there should be little delay in reloading, assuming that groups of 10 rounds were fired; S.W.E. can say as to comparative costs, the apparatus designed by Captain Shaw being still in this Department.

S.W.E., 4. 9. 11—

The comparative cost of Captain Shaw's device and A.I.D.'s alternative method is as follows:-

Captain Shaw's device (as per pattern) ... 3 17 4 Including all A.I.D.'s method ... 1 16 0 charges.

These estimates are got out for the price in supply assuming that orders are given for from 50 to 100. In the case of the A.I.D. method, the estimate includes the price of 20 adapters; the preparation for the manufacture of these adapters would cost about 50l., which is not included in the estimate.

D. of A. forwarded for Committee's consideration and remarks.

C.I.S.A. should be asked to try and overcome the defects mentioned.

Minute No. 1188 III. 30. 5. 11 129.

III. C.I.S.A.'s Design for firing Miniature Ammunition with the Maxim Gun.

Previous Minute 1176 I. 11. 11. 11.

W.O. Paper 47 405 D. of A., 12. 1. 11, approved recommendation to above Minute.

C.I.S.A., 19. 5. 11—

Captain Shaw's design has been departed from and his design consists of—

(a.) A · 22-inch tube which fits into the gun barrel.

(b.) Steel adapter for ·22-inch R.F. cartridges.

By this means loading and firing can be performed as in actual practice with Service ammunition, the belt, of course, having to be pulled by hand.

The Committee saw a demonstration of this apparatus at Enfield on 30th May.

The Committee recommended that two tubes and a suitable number of adapters be provided and sent to Hythe for trial.

#### CORRIGENDA.

Minute 1179 1./6.3.11. Previous Minute should read 957 v1./18.6.06.

W. N. CONGREVE, Colonel,

President, Small-Arms Committee.

WAR OFFICE,

11th July, 1911

### PROCEEDINGS OF THE SMALL-ARMS COMMITTEE.

(MEETING HELD AT ENFIELD.)

### 30th MAY, 1911.

MINUTE 1188.

President.

Ex-officio-Commandant, School of Musketry, HYTHE...

... Colonel W. N. Congreve, V.C., M.V.O.

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Members.

Ex-officio {CHIEF INSPECTOR, WOOLWICH ... Lieut.-Colonel J. H. Mansell, R.A. CHIEF INSPECTOR OF SMALL ARMS ... Lieut.-Colonel A. L. Tisdall, R.A.

NAVAL MEMBER ...

... Colonel L. T. Pease, R.M.A.

CAVALRY REPRESENTATIVE

... Lieut.-Colonel M. L. MACEWEN, 16th Lancers.

INFANTRY REPRESENTATIVE

... Major B. W. L. McMahon, Durham Light Infantry.

TERRITORIAL FORCE REPRESENTATIVE ... Lieut.-Colonel the Hon. T. F. FREMANTLE,

Bucks Battalion, Oxfordshire and Buckinghamshire Light Infantry.

Associate Member.

Ex-officio-ASSISTANT

Military

ORDNANCE CONSULTING

Officer for India ... ... Lieutenant E. Parbury, R.A.

Secretary.

STAFF CAPTAIN (A. 3) ...

Captain C. W. Scott, R.A.

142. MAXIM GUNS.

I. Savage-Armstrong Machine Gun Steam Condenser.

Minute No. 1188 1. 30.5.11

Previous Minute 1176 II.

11. 1. 11.

The Committee witnessed a trial of this steam condenser as modified by C.I.S.A.

The trial was satisfactory.

The Committee recommend that

See action to Minute 1197 II./

the condenser be sent to Hythe for

further trial.

W.O. Paper 84

2088

108

II. Blank-firing Muzzle Attachment.

Previous Minute 1181 6. 3. 11. 1188 11. 30.5.11

Minute No.

The Committee witnessed a trial of the muzzle attachment for use with 303-inch

12. 6. 11.

blank ammunition proposed by C.I.S.A. 200 rounds of blank, charge 16 grains, size 1, were fired satisfactorily. There were no signs of unburnt cordite.

W.O. Paper 84 787

(B218) 57 7/11 H&S 279-1wo

### Commandant, Hythe, 7. 11. 10-

Agreed with C.I.S.A.'s remarks. If desired, the condensers could be tested more fully at Hythe during the Maxim-gun course, which assembles on the 25th November. It is probable that arrangements could be made for filling the water jackets with hot water.

#### Commandant, Hythe, 12. 12. 10-

The value of this device is undeniable, in respect both of its preventing a visible amount of steam from escaping and of its saving water by condensation of the steam blown off from the barrel casing.

It, however, requires modification. The constriction of the escape passage, aided by the pressure of the water in the condenser bag, causes steam and water to be blown from the front gland and into the breech casing. To remedy this the interior diameter of the plug and tube should be increased to 0.6 inch, thus giving rather more cross-section area than the present steam escape hole.

The attachment of the tube to the barrel casing should be made by means of a screwed plug. or, better, a plug with bayonet joint so as to allow of quick connection or disconnection. The present coned plug has to be lashed to keep it in position.

The indiarubber joint between tube and plug should be done away with, as the

rubber will perish rapidly under the influence of the heat generated.

The tap undoubtedly prevents the loss of a small amount of water when the gun is being carried, but looping the tube over the gun, or removing it and replacing the cork plug, should serve the same purpose and make a tap unnecessary.

Minute No. 1176 II. 11.1.11 (Contd.)

The Committee recommend that C.I.S.A. should endeavour to remove the defects of the apparatus and that a fuller trial be then carried out.

Unit.

Remarks.

1st Bn. Royal Irish Fusiliers (continued.)

The brass screw plug was covered with asbestos which is quite useless in retaining the plug in the steam escape hole.

The rubber tubing perishes with the heat very quickly and after about a week's use this

tubing would have to be renewed.

The metallic tubing should be carried on the limber when the guns are not being used, and when moving from position to position it should be thrown over the man's shoulder to avoid the strain that would be put upon it by the men coiling it up and putting it violently into a pocket.

The cloud of steam that arises from boiling water would expose the position of the most carefully concealed gun at any distance.

No water was forced through the rear gland into the mechanism.

A bag of water is very inconvenient to carry about if the neck cannot be made watertight which cannot be done with cord. The addition of a metal neck with a large tap to admit the metallic tubing going into the water inside and to absolutely seal the water by the turn of a screw would be a great improvement.

Cannot furnish report. The condenser was attached to the machine-gun during the experimental course but the water in the jacket did

not boil.

The course does not allow of a fair trial of the condenser. The greatest number of rounds fired continuously being only 100, and as there is a wait for checking targets between each detail firing 100 rounds the water shows no signs of boiling until some 7 or 8 details have fired, and is then only really boiling for a matter of several seconds. Consequently he has been unable to give the apparatus as thorough a trial as he should have wished, but was nevertheless able to note the following points:-

The rubber joint from metal tube to brass plug perished and split almost directly the gun

got hot.

The asbestos packing round brass plug failed to give plug a firm enough seating in steam escape hole; it was therefore able to drop out.

At no time did water in bag become more

than lukewarm.

While bag was in use no steam was visible, but he believes bag would require fastening down if firing was continuous, as the force of the steam, which is considerable, would tend to move it.

Under the circumstances it was impossible

to judge of its serviceability.

The apparatus seems portable and handy, as it can easily be placed in a man's pocket or haversack.

He carefully examined the rear gland of the mechanism: as far as he could tell, no water had been forced back into the breech mechanism of the gun.

Cannot furnish report as there was not sufficient time to test the condenser. Only on one occasion for a short time was there any steam

at all, and then very little.

Some useful points are brought to notice by 1st Bn. Leicestershire Regiment and 1st Bn. Royal Irish Fusiliers, and their experience is similar on most points. The weather has been abnormally cool this summer, and has added to the incompleteness of the test.

The apparatus seems to be portable, with certain minor alterations. The cloud of steam given off by the boiling water would tend to locate the Maxim gun from the enemy's point of

view.

2nd Bn. King's Own Yorkshire Light Infantry.

1st Bn. Leicestershire Regiment..

1st Bn. The Buffs ...

6th Infantry Brigade

General Officer Commanding, 2nd Division

C.I.S.A., 4. 11. 10—

It does not appear from the above reports that the condenser has been given a trial full enough to thoroughly test it. Like the apparatus tried here, it must undoubtedly condense the steam, and so serve to conceal the position of the gun, but, unless the water has been boiling for some time and giving off steam freely, the chief fault of the apparatus is not likely to develop—i.e., there will not have been sufficient increase in pressure to cause water to be blown past the packing gland and gunmetal valve. This fault could possibly be remedied by increasing the diameter of the steam escape hole so as to admit a larger plug and so leave the nett area of the steam escape hole at its present size. The plug should screw into the steam escape hole to prevent any possibility of its being blown out. The necessity for a tap does not seem clear. The suggestion of the Officer Commanding, Royal Irish

I. \*Arrangement for Use of '22-inch Rifle with the Maxim Gun; proposed by Captain F. L. Shaw, 5th Bn. Lancashire Fusiliers.

Captain Shaw, 31. 10. 10-

Forwarded a sample of the above together with the instructions for adjusting and

using the apparatus, as under.

The trigger of the rifle may be attached to the firing lever of the Maxim gun by a short length of flexible wire or a fine chain. He has found that a piece of ordinary string will do, but owing to its stretching it is not very satisfactory. This wire should hook on to the trigger and be passed outside the left handle and hooked on to the firing lever near the double button.

He stated the apparatus had been in use in his unit for about 2 years with considerable success, and has, he thinks, assisted the machine gun detachment in their training. Its value when used in conjunction with a landscape target consists chiefly in (a) the detachment can perform all the drill on the guns as when firing ball ammunition, (b) the firer can see where his shots strike on the target, so that in searching, sweeping, ranging fire, &c., mistakes are at once discovered.

Instructions for Adjusting and Using the Miniature Rifle with the MAXIM GUN.

1. Place the gun at about 25 yards from an aiming mark, and if mounted on a wheeled carriage chock up the wheels. Adjust the tangent sight to zero, and align

the sights on the aiming mark and clamp.

2. Place the Miniature rifle firmly in the holders, if necessary wrapping it round at the points of contact with flannelette, first having removed the butt. Fasten the circular bands securely round the barrel casing of the gun so that the sights on the rifle are nearly horizontal, and the rifle is in position on the left side of the gun. The

rear holder should grip the rifle round the handguard.

3. Remove the bolt of the Miniature rifle, and conveniently clamp the elevating screw and traversing slide screw of the holder near the breech. Look through the bore of the rifle and bring the line of fire on to the aiming mark by means of an assistant adjusting the elevating screw and traversing slide screw near the muzzle of the rifle as directed. Fire a trial shot and note where it strikes the target, also note where the sights are directed. By firing a few further trial shots and using the sights of the rifle, and making slight alterations in the adjustment as before, the aiming mark will be easily hit. Finish by clamping carefully, and attach the trigger of the rifle when at full cock to the firing lever of the machine gun. The whole of the above process should take not more than 10 minutes.

Commandant, Hythe, 15. 12. 10-

The device appears to possess great possibilities and to be well worth taking up. It has been in use by the present Maxim gun class, and both instructors and students are much impressed with its value.

A number of lessons in elementary training can be exemplified by means of it,

and interest should be stimulated by its use.

It is thought that the clamps could be made lighter without detracting from their efficiency, and the substitution of wing nuts would simplify the operation of attaching and adjusting the rifle. The shape of the rear clamp requires slight modification to avoid damage to the handguard.

It might be advisable to consider the provision of an air rifle in substitution for the 22 inch rifle. Air rifles are largely used for similar purposes by the Navy at Whale Island, and are found to give excellent results while reducing the expenditure

on ammunition very largely.

D. of A., 19. 12. 10, forwards for Committee's remarks.

general principle a good one, and

Machine-Gun II. Savage—Armstrong Steam Condenser: Report on Trials of.

Previous Minute 1154 III. 28. 7. 10.

G.O.C.-in-C., Aldershot, 8. 10. 10—

Forwarded précis of reports on trials of the above-named steam condensers. A far more exhaustive trial is necessary before it is possible to arrive at a decision as to whether this device is worth adopting.

> Remarks. Unit.

1st Bn. Royal Irish Fusiliers

During the 6th Brigade Maxim Gun Course the greatest number of rounds fired continuously was 100. It has therefore been impossible to report on all the items required.

Only twice did the water in the barrel casing boil after about 700 rounds had been fired, and 100 rounds were fired with the water boiling.

On the first occasion the water in the canvas bag was cold and every bit of steam was condensed.

On the second occasion the bag was filled with boiling water. The action of the steam on the boiling water caused a very small amount of steam to rise from the neck of the

bag.

Committee consider the they suggest that the device be sent to C.I.S.A. to see if he can improve upon the design.

> Minute No. 1176 11. 11.1.11

Minute No.

1176 I.

11.1.11

W.O. Paper

405

W.O. Paper 2088

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TO THE

## PROCEEDINGS OF THE SMALL-ARMS COMMITTEE FOR YEAR 1911.

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119.	Automatic Pistols.	
	Borchardt (or Parabellum) auto-pistol Colt, '45-inch, 1911 model, auto-pistol Frommer automatic pistol Parabellum (or Borchardt) auto-pistol Police pistol—	1221. 1222. 1223. 1221.
	Adoption of ·32-inch Webley & Scott auto-pistol  *Report on trials of ·38-inch and ·32-inch automatic and ·22-inch single action  Wounding power trials	1210; 1220. 1195. 1201.
122.	British Rifles.	
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	Captain Shaw's arrangement for use with Maxims	1176 I. 1188 III; 1213.
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	Ross rifles	1217 I.
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109	Chargers for Magazine Rifles and Carbines.	
100.	*New design of charger, proposed by Armourer Staff-Serjeant T. McConnell	1192.
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115	Foreign Arms.  Austrian—	
	Sword-bayonet for the Mannlicher rifle, M. 1895	1193
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(d.) Miniature Ammunition.

The D.G.O. asked the Committee in February to consider the question of introduction of Miniature Ammunition to replace Morris Tube when worn out. Trials at Hythe were carried out with seven systems that had been brought to the Committee's notice from time to time, recommendations being made to inventors as to main conditions ammunition should fulfil. No trials were at this stage conducted with Major Gaudet's system, as this had already been tried in 1902 and favourably reported on. As a result of report the Committee selected types put forward by Messrs. Kynoch and Ewart, but on inquiry, the latter proving too expensive, further trials were arranged between Messrs. Kynoch's and Gaudet's cartridges. These are now proceeding.

VI. Cordite.

Experiments with Tubular Cordite M.D. were continued, Programme No. 3. Hythe reported that with cordite made up into cartridges to give 20 tons pressure, velocity was 2,235 f.s. and recoil was sufficient to affect the shooting of recruits.

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### Annual Report of the President, Small Arms Committee, for the Year 1903.

THE DIRECTOR-GENERAL OF ORDNANCE.

SIR,

I HAVE the honour to submit the Fourth Annual Report of the Small

Arms Committee appointed in January 1900.

The Committee's work has been continuous throughout the year, and 22 meetings have been held, one of these taking place at Bisley during the Annual July Rifle Meeting.

The opinion of the late Comdt., Hythe, on this point, based on a trial of a sample of the U.S.A. Springfield Short rifle specially bored for use with adaptors and short miniature ammunition, fired with the "Short 40" and "Short" cartridges supplied by K.N.M. Company, in comparision with the solid bored 22-inch Short rifle and the Service aiming tube was as follows (W.O. paper 0153/1689, dated 15. 4. 08):—

"The accuracy of the American rifle with the adaptor was inferior to that

obtained with the other two weapons.

"The advantage of the adaptor lies in its use for rapid firing, but its weight, 565 grains, as compared with 420 grains, that of the Service cartridge loaded, and 175 grains, that of an empty cartridge case, detracts from its value in this respect, and, in my opinion, rapid loading is best taught by means of dummy cartridges.

"The want of accuracy above referred to is attributed to the use of the

adaptor."

The question of an adaptor was dropped.

He asked if, in view of this, it was desired to reopen the question.

Comdt., Hythe, 1. 4. 11.

Quite agreed that adaptors are not worth consideration. His proposal, above, was that a magazine something on the lines of that on the War Office miniature rifle might be fitted. He can quite see it is difficult, but does not think it anywhere near impossible.

#### D.M.T., 4. 4. 11—

Forwarded above minute by Hythe, and asked that the question of fitting a magazine to the Short 22-inch R.F. rifle on the lines of that fitted on the War Office miniature rifle may be considered.

#### S.W.E., 13. 6. 11—

Forwarded R.S.A.F. design 2,727† showing the 22-inch R.F. rifle fitted with a magazine to hold five cartridges. This is the magazine for the War Office miniature rifle.

It has been necessary to shorten the bolt and make a longer bolt-head. The striker is in two parts, and a magazine guide has been fitted.

### G.O.C.-in-C., Scottish Command, 7. 6. 11-

A trial has been made by various units of the magazines issued for use with Short 22-inch R.F. rifles, and from reports the result is quite satisfactory, i.e., the rifles accustom recruits to handle a weapon resembling the Service rifle.

He is of the opinion that all such rifles should be fitted with a magazine, but that it should be without platform or bottom, so as to allow the clear ejection of the cartridge cases. At present the ejected case lodges on the platform, and has to be picked off or shaken out by turning over the rifle after each round.

#### D. of A. forwarded for the Committee's remarks.

The Committee recommend that two rifles be altered to R.S.A.F. design 2,727 and issued for trial.

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UI HUU.

### FINAL OPINION.

For the purpose indicated, he is of the opinion that both weapons, 32 and 38, would have a certain stopping and disabling effect if discharged with moderate precision—the 38 having the more crushing effect.

D. of A. forwarded for Committee to see.

Seen.

Minute No. 1202 9.8.11

W.O. Paper 77 15 4805

129. MINIATURE RIFLES, CARTRIDGES AND APPLIANCES.

117. \*Question of fitting a Magazine to Rifle, Short, '22-inch R.F.

G.O.C.-in-C., Scottish Command, 19. 1. 11—

Representation has been made as to the desirability of fitting a magazine to the Short ·22-inch R.F. rifle, on the grounds that recruits are liable to get into the habit A of loading with the left hand too close to the trigger-guard.

All O's.C. Infantry depôts in his command are unanimous that considerable advantages would be gained by the fitting of a magazine, and are of opinion that men would thereby become accustomed to handling a rifle which resembles as much as possible the Service weapon with magazine attached.

D. of A., 10. 2. 11-

Informed D.M.T. that the magazine was omitted from this rifle as unnecessary. If the platform is left in the magazine, as the cartridges are not ejected they are apt to cause jams; if the platform is removed, the magazine merely becomes a receptacle for empty cases.

The objection raised to the absence of a magazine is a training one, and if he (D.M.T.) supports the proposal magazines might be issued to Scottish Command for

trial

The cost of supplying magazines would be very small.

Comdt., Hythe, 15. 2. 11—

Agreed with proposal at A above, and considers that the fitting of dummy magazines to minature rifles is very desirable. If a real practical working magazine for these rifles could be got it would be of great assistance to training. He hoped the question would not be lost sight of.

D.M.T., 17. 2. 11—

Forwarded and concurred with the minute from Comdt., Hythe, above.

He agreed with the suggestion to send magazines to the Scottish Command for trial.

Twelve magazines were issued to Scottish Command for trial by various units on 10. 3. 11.

D. of A., 27. 3. 11—

Informed D.M.T. that the only practical way, as far as can be seen, to obtain a working magazine with 22-inch R.F. ammunition is by using an adaptor (i.e., the cartridge is inserted in a case resembling the ball cartridge).

Minute No. 1153 28.7.10

W.O. Paper Branch Memo. M.O. 3 (D) 129. MINIATURE RIFLES, CARTRIDGES AND APPLIANCES.

115.

\* Japanese S.A. Miniature Cartridge.

Five cartridges as above were obtained.

C.S.O.F., 15. 6. 10—

Forwards R.L. design No. 16,947† and a section† of above cartridge. It is thought that this pattern of cartridge should give fairly satisfactory results at short ranges.

C.J.W., 24. 6. 10--

If a cartridge of this type is required for the Service, it is probable the Gaudet cartridge (Minute 737/16. 3. 03) would give much greater accuracy, but on the other hand it might cost more. It has a conical bullet instead of a spherical one.

C.I.S.A., 7. 7. 10 —

The Japanese miniature practice type of cartridge is not adapted to magazine loading and is therefore unsuitable for Service requirements, vide S.A.C. Report No. 12.

If a miniature practice cartridge adapted to magazine loading is required there is one at hand in the Gaudet system.

D. of A., 9. 7. 10, forwards for Committee to see.

# INDEX

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# PROCEEDINGS OF THE SMALL-ARMS COMMITTEE FOR YEAR 1909.

Modified Safety Catch for W.O. Pattern Miniature Rifle, proposed by B.S.A. Company.

Previous Minute 1106 3. 11. 09

W.O. Paper 77 15

4698

D. of A., 4. 11. 09, approved Committee's recommendation to above minute. B.S.A. Company was informed of decision on 16. 11. 09. They replied, 20. 11. 09—

"From this reply we are rather inclined to think that in submitting the suggestion we may not have made ourselves quite clear. All we ask is to be allowed to make a slight alteration in the safety catch by which it can be turned over to the safe position when the rifle is not cocked.

"If our request is granted, and the Inspection Department will view and mark rifles so altered, it would overcome a distinct trouble which arises from the fact that users of the rifles, in attempting to place the safety catch in action while the rifle is not cocked, break off the point of the locking bolt. In consequence of this we are frequently asked to replace locking bolts, and the impression on many users is that there are defects in the manufacture.

"This is what we wish to avoid.

"We should therefore be glad if the matter might be re-considered, and, if desired, our representative would call at the War Office to explain it more fully."

D. of A., 24. 11. 09, forwarded for Committee's remarks.

The Committee agree to reconsider their previous decision and are now of opinion that the B.S.A. Company might be allowed to embody this alteration provided no question of patent or increase of price is involved.