TRIALS OF
MADSEN MACHINE RIFLE

MODEL 1919.

BEFORE THE

NEW ZEALAND EXPEDITIONARY FORCE

IN THE UNITED KINGDOM.

Carried out at Sling Camp, August, 1919.

I. PROGRAMME OF TRIAL AND RESULTS.

II. COPY OF OFFICIAL REPORT.

PILSUDSKI INSTITUTE ARCHIVES New York

TRIALS OF THE

MADSEN MACHINE RIFLE

British Model 1919. Bore .303.

Firing British Service Rifle Ammunition.

Invented, designed and manufactured by the

DANISH RECOIL RIFLE SYNDICATE

Frihavnen, Copenhagen, Denmark.

The trials to be carried out by Mr. L. With-Seidelin, Director, Danish Recoil Rifle Syndicate, by order of the

GENERAL OFFICER COMMANDING, NEW ZEALAND FORCES IN THE UNITED KINGDOM, at SLING CAMP, 6th August, 1919.

1. PRESENTATION OF MADSEN GUN, Model 1919.

A complete Infantry Machine Rifle Team with Madsen Gun and ammunition supply, also a Cavalry Machine-Rifleman with Madsen Gun to be presented. Short explanation of the Gun and equipment.

"Alfa" pattern, weighing 17 lbs. 6 ozs. with 18" barrel

"Beta" pattern " 17 lbs. 3 ozs. " 23" "

to be presented.

II. ACCURACY TRIALS:

Test No. 1. Accuracy test at 200 yards range. ALFA and BETA guns, 4 times each firing 10 single shots against bull's eye target at 200 yards range, and results of groupings of 100% and 75% hits to be noted.

Result at 200 yards:-

Gun Model	Shots Fired	Hits Total	Hits inside circle of 12" diameter		Hits inside circle of 8" diameter		Firer.
ALFA	10	10	8	80%	4	40%	Olsen
"	10	10	10	100%	5	50%	"
"	11	11	11	100%	7	64%	"
"	10	10	10	100%	4	40%	"
ALFA		Average:		95%	-	49%	
BETA	15	15	14	93%	11	73%	With-Seidelin
"	15	15	14	93%	14	93%	"
"	12	12	12	100%	8	67%	"
"	16	16	14	88%	9	57%	"
BETA		Average:		94%	-	75%	

Result of Test No. 1 repeated, at 200 yards.

Gun Model	Shots Fired	Hits Total	Hits inside circle of 12" diameter		Hits inside circle of 8" diameter		Firer.
ALFA	12	12	12	100%	10	83%	With-Seidelin
"	12	12	11	92%	9	75%	"
"	12	12	8	67%	6	50%	Col. Mead
"	11	11	11	100%	10	91%	Col. Stitt
ALFA		Average:		90%	-	75%	
BETA	11	11	11	100%	10	91%	With-Seidelin
"	12	12	11	92%	8	67%	"
"	12	12	11	92%	8	67%	Col. Mead
"	12	12	9	75%	7	58%	Col. Stitt
BETA		Average:		90%	-	71%	

II. ACCURACY TRIALS (Contd.)

Test No. 2. ALFA and BETA guns each firing (single shots) against 15 falling iron plates, size one square foot (flesh colcured) representing heads at 200 yards range, placed at irregular intervals and at various heights on sloping ground.

Firing to be continued until all plates are shot down. Time and number of rounds used to be noted.

RESULT:

ALFA GUN		BETA GUN	
Firer:	Olsen.	Firer:	With-Seidelin.
(1)	46 shots	(1)	19 shots.
	3 min. 55 secs.		1 min. 18 secs.

Test No. 3. ALFA and BETA guns each firing single shots against same target as in Test No. 2. during 4 minutes. Number of plates shot down and number of rounds to be noted.

RESULT:

ALFA GUN		BETA GUN	
Firer:	Olsen	Firer:	With-Seidelin.
	30 shots		24 shots
	2 min. 9 sec.		1 min. 33 sec.

When firing with the BETA gun, one of the iron plates was hit five times before it fell. If the plate had fallen by the first hit the result would have been:

20 shots

1 min. 17 sec.

II. ACCURACY TRIALS (Contd.)

Test No. 4. Accuracy test at 400 yards range. ALFA and BETA guns each firing: 4 times 10 single shots against bull's eye target at 400 yards' range. Results of groupings of 100% and 75% of hits to be noted.

RESULT at 40 yards. Firer: With-Seidelin.

ALFA gun	Length		Height
12 shots, 12 hits inside square:	1'9"	x	1'4"
8 hits " "	5"	x	1'4"

BETA gun			
12 shots, 12 hits inside square:	2'6"	x	1'5"
8 hits " "	11"	x	1'3"

Test No. 5; Accuracy test at 800 yards range, ALFA and BETA guns each firing.

4 times 10 single shots against bull's eye target at 800 yards' range. Results of groupings of 100% and 75% of hits to be noted.

RESULT at 800 yards: Firer: With-Seidelin.

ALFA gun:	Length		Height
12 shots, 12 hits inside square:	1'11½"	x	2'3"
8 " " "	1'5½"	x	2'0"

BETA gun:			
12 shots, 12 hits inside square:	2'11"	x	2'5"
8 " " "	1'10½"	x	2'0"

III. TRIAL FOR HANDINESS AND PORTABILITY, also WATER TEST.

Test No. 6. 1,200 (Twelve hundred) rounds continuous rapid firing to be fired (without any support for gun or rifleman, who will fire the first 800 rounds in standing position and the last 400 rounds in kneeling position.

Target: the butts representing waves of infantry attacking in massed formation.

After 400 rounds and 800 rounds the gun shall be plunged into water in a ditch or the like and firing continued immediately thereafter, the gun being full of water.

After 1200 rounds the rifleman will advance showing ease of handling gun when barrel is hot, as the mechanism and casing remain cold.

RESULT:

This was carried out perfectly, 1,200 shots and cooling took 5 min.10 sec. The firer showed no sign of fatigue or exhaustion (see official report).

IV. ENDURANCE TRIAL.

Test No. 7. CONTINUOUS RAPID FIRING of 6000 (six thousand) ROUNDS.

Rifleman lying, gun using muzzle rest (detachable). The 6,000 rounds to be fired continuously in 15 bursts of 400 rounds each, the barrel being changed (in about 15 seconds) between the bursts and firing continued.

First 2,000 rounds to be fired against target (traversing screen) 3 ft. x 30 ft. at 200 yards range. Time to be noted for each burst, for each barrel-changing and total time for firing of the 6,000 rounds.

Points to be noted:-

1. Capacity of the Madson gun to keep up continuous rapid firing so as to replace the heavy machine guns when same not brought up in time, or otherwise not available.
2. Rapidity and ease of barrel changing, with bare hands, without tools, by rifleman alone, remaining in the firing position.
3. Mechanism and casing remaining cold whilst barrel is hot.
4. Water-cooling of hot removed barrel, with small regulation water-bags.
5. Automatic working of the mechanism.
6. Solidity of all parts of the gun.
7. No cleaning or oiling when gun is in action, no adjustment of return-spring or of any other part.
8. Traversing fire.
9. Ease of handling gun, without undue fatigue, during long continuous firing.
10. Ease and rapidity of changing magazines.
11. Efficiency of the flash-absorber.
12. Efficiency of the equipment.

ENDURANCE TRIAL - (Contd.)

RESULT:-

This test was carried out. The working of the gun was perfect: only a very few stoppages occurred in each case due to a defective cartridge such as: cartridge without cap, or without pawder charge; bent or much bulged cartridge; cartridge without canals leading from cap to powder charge, and a few without rim, etc. In each case the defective cartridge was easily cleared out in a few seconds and firing continued immediately.

1)	Burst of	400	rounds:	1 min.	25 sec.	Barrel-changing:	11½	secs.
2)	"	400	"	1 "	25½ "	"	11	"
3)	"	400	"	2 "	8½ "	"	10	"
4)	"	400	"	1 "	45 "	"	15	"
5)	"	400	"	2 "	10 "	"	14½	"
6)	"	400	"	1 "	30½ "	"	18	"
7)	"	400	"	1 "	37 "	"	11½	"
8)	"	400	"	1 "	25 "	"	14	"
9)	"	400	"	2 "	29 "	"	15½	"
10)	"	400	"	1 "	30 "	"	16½	"
11)	"	400	"	2 "	27 "	"	21½	"
12)	"	400	"	1 "	29 "	"	13½	"
13)	"	400	"	2 "	35 "	"	14	"
14)	"	400	"	1 "	47 "	"	12	"
15)	"	400	"	1 "	35 "	"	14	"

TOTAL for 6,000 rounds: 27 min. 18 sec. 15 barrel-changings 3 min. 32 secs.

RAPIDITY OF FIRE: maximum 282 rounds per min.
average 220 " " "
minimum 155 " " "

BARREL CHANGING maximum 21 seconds
average 14 "
minimum 10 "

The gun was never out of action except during the changing of the barrel, 10 to 21½ seconds

ALL THE TRIALS WERE CARRIED OUT WITH MORE OR LESS DEFECTIVE AMMUNITION ISSUED "FOR PRACTICE ONLY".

V. VISIBILITY TEST.

Test No. 8. Gun to be seen at various ranges, when carried and when in position, to verify whether the Madsen gun can be distinguished from an ordinary rifle the upstanding magazine being covered by the head of the firer.

RESULT: The gun could not be distinguished from a servic rifle at 50 yards range or beyond. The magazine is not visible as it is entirely covered by the head of the firer when the gu is firing and turned downwards when the gun is not firing.

VI. ROUGH HANDLING.

The gun and the magazines to be thrown up in the air falling on the ground, to be walked on, kicked, etc., and fired immediately thereafter.

RESULT:

The gun and magazine stood this severe test without any difficulty.

VII. NIGHT FIRING.

Test No. 10. ALFA and BETA guns to be fired at night in order to determine whether any flash is visible in the darkness and if so to compare it with the flash emitted by the Lewis and Hotchkiss service guns and by the service rifle.

RESULT

The Madsen has less flash at night than the Vickers, Hotchkiss and Lewis Guns and a little less flash than the Service rifle.

VIII. MUD TEST.

Test No. 11. ALFA and BETA guns to be totally immersed in a bath of mud and water and to be fired immediately thereafter without any cleaning whatever, the mechanism still dripping with slime and water.

RESULT :

After total immersion of gun and magazine in mud and water the gun and magazine worked as correctly as if in a clean state.

IX. EXAMINATION OF MECHANISM:

Test No. 12.

The gun with its mechanism to be fully studied and its working explained in detail. All parts of the gun to be carefully examined to see whether any trace of wear or deterioration can be ~~detected after the~~ trials.

RESULT:

Everything found highly satisfactory.

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COPY OF OFFICIAL REPORTS.

on the

MADSEN MACHINE RIFLE, MODEL 1919.

After exhaustive trials with the

NEW ZEALAND EXPEDITIONARY FORCE.

Carried out at Sling Camp,

Salisbury Plain.

August, 1919.

HEADQUARTERS,
"A" GROUP, N.Z.E.F.,
Sling Camp.

8th August, 1919.

To:-

Brig.-General Melvill, C.B., C.M.G., D.S.O.

Sir,

I beg to submit the following report on the Madsen Gun:-

MAGAZINE:

Containing 44 rounds. A very simple magazine with no chance of cross feed. Will stand knocking about without being damaged. Magazine can be changed in under two seconds. Magazine can be loaded by hand swiftly. Test yesterday three magazines were loaded by hand at average time of 40" per magazine.

The magazine is completely covered and there is no need to keep cleaning the S.A.A. as in the case of the Lewis Gun - great advantage and saving of work.

MAGAZINE FEED:

Is adjusted as to obviate working of gun after last shot has been fired thus enabling firer to keep continuous observation of his target. Magazine lighter than the Lewis Gun - 67 lbs. saved in first line supply viz. 3,600 rounds.

LOADING MECHANISM:

Absolutely efficient giving positive feed no chance of cross or double feed as each cartridge is automatically separated from following cartridge. This is a great advantage over the Lewis Gun. There are no springs to get jammed or broken. Mechanical action so arranged to obviate any part wearing.

FIRING MECHANISM:

Excellent. By adjusting a small lever under the trigger guard single shots can be fired without the necessity as in the Lewis Gun of special loading of magazine or movement of the cocking handle.

CONCEALMENT:

This gun can be excellently concealed to look like a rifle. After many attempts it was found impossible to conceal the Lewis Gun under 400 yards.

FLASH:

A small flash occurs when the first shot is fired and then no flash can be seen. The gun will be tested at night during the next trial.

ACCURACY:

Will be included in next report.

SPARE PARTS:

This gun has great advantage over the Lewis Gun in that it has very few spare parts to be carried. These are carried in two small bags each weighing two lbs.

TOOLS:

The only tools necessary are small hammer and screw-driver combined and punch, and a lifting fork.

CAVALRY:

This gun can be used by the cavalry as easily as the infantry. If the Madsen Gun is adopted then the infantry and cavalry would be using the same gun. This would be another great advantage.

INSTRUCTION:

After two hours' instruction I was acquainted with the gun sufficiently to control and fire it. In my opinion after 15 hours' instruction any rifleman could take a Madsen into action and make full use of it. The Lewis Gun could not be controlled in action by a rifleman under 30 hours' instruction.

Owing to the great difficultywe had in training Lewis Gunners this advantage is of great importance.

LIGHTNESS OF GUN:

The lightness of the gun is gained in the parts where there is not any strain. The parts where strain comes are made extra strong which is not so in the Lewis Gun. There are no small parts or springs that have to take any strain. After careful examination there seems to be no part that can cause any trouble at all. The mechanism seems to be perfect.

GENERAL:

In the opinion of the three Detachment Commanders and myself after careful examination and testing, the gun is far superior in all respects to the Lewis Gun.

I strongly recommend that the Madsen Gun be adopted in New Zealand in place of the Lewis Gun.

I have the honour to be, Sir,
Your obedient servant,
(Signed) ALAN W. STITT,

Lieut.-Colonel,
Commanding "A" Group, N.Z.E.F.

HEADQUARTERS,
"A" GROUP, N.Z.E.F.,
Sling Camp.

13th August, 1919.

To:
Brig.—General C.W. Melvill, C.B., C.M.G., D.S.O.

Sir,

I beg to submit a further report on the Madsen Gun.

ACCURACY:

The Gun was tested at 200, 400 and 800 yards - results below.

200 Yards:

Alfa Gun.

12 shots	- inside	12"	12 shots	inside	8"	10	shots.
12 "		"	11 shots	"	"	9	"

Beta.

11 "		"	11 "		"	10	"
12 "		"	11 "		"	8	"

400 yards:

	Length		Height.
Alfa.			
12 shots	1'9"	x	1'4"
8 "	5"	x	1'4"
Beta.			
12 "	2'6"	x	1'5"
8 "	11"	x	1'3"

800 yards.

Alfa.			
12 shots	1'11½"	x	2'3"
8 "	1' 5½"	x	2'0"
Beta.			
12 "	2'11"	x	2'5"
8 "	1'10½"	x	2'

Captain With-Seidelin fired throughout this test.

Colonel Mead and myself fired one burst with each gun at 200 yards with the following results:-

Colonel Mead:

Alfa.	12 shots	inside	12"	8	inside	8"	6.
Beta.	12 "	"	"	11	"	"	8.

139
118

Colonel Stitt:

Alfa 11 shots inside 12" 11 inside 8" 10.
Beta 12 " " " 9 " " 7.

This I think proves the accuracy of the Gun, as neither Colonel Mead nor I have fired a gun or rifle for over a year.

FLASH:

The gun was fired at night. The first shot makes a flash like a rifle. The following shots make a very dull flash which is much harder to pick up than that of a Lewis Gun or Vickers Gun. The flash of the Madson Gun is far less than that of the Hotchkiss. In my opinion it is a better gun than the Lewis for night firing. Gun fired single shots alternately with a service rifle and it was noticed that the Madsen Gun has slightly less flash than the service rifle.

MUD TEST:

The gun was dropped into a bath of mud and slime and entirely submerged. It was then picked up and fired immediately without a stoppage. This is the greatest advantage over the Lewis Gun, which if treated similarly would jam immediately.

GENERAL:

The Madsen Gun has been thoroughly tested by the Detachment Commanders and myself. Its chief advantages in our opinion are:

(1) Lightness -- being almost half of the Lewis Gun.

(2) Simplicity of mechanism and loading.

(3) Coolness of all working parts after very prolonged bursts of fire.

(4) Impossibility of cross feeds in loading mechanism.

(5) Firing of single shots by simple and immediate adjustment of a lever.

(6) Lightness and efficiency of magazines giving perfect loading.

(7) Entire absence of breakable parts.

(8) Ease of fire from standing position.

(9) Very slight recoil causing no fatigue or discomfort to firer. During trial lasting three hours one man alone fired 8,000 rounds and showed no signs of fatigue or exhaustion.

(10) Simplicity and rapidity of loading magazines by hand.

(11) Barrel can be cooled instantly by plunging gun in the muddy water found in a ditch, shell-hole or the like.

(12) Barrel with breech can be changed in twelve seconds by one man in all firing positions and with bare hands. No tools required. Hot removed barrel is cooled by air or water whilst firing continues with second barrel. With Lewis Gun barrel changing takes twenty minutes, requires many tools and almost total dismantling of gun.

(13) Madsen Gun therefore can keep up continuous firing for any length of time until its two barrels are worn out. Renewal of barrels is quick and easy.

(14) Dust, mud, sand, water, etc. do not affect the perfect working of the gun.

The Detachment Commanders and myself are convinced that the Lewis Gun possesses no advantage whatever over the Madsen Gun while the Madsen in our opinion is far ahead of the Lewis Gun.

We strongly recommend that the Madsen Gun be adopted in New Zealand.

(Signed) ALAN W. STITT,

Lieut.-Colonel,

Commanding "A" Group, N.Z.E.F.