



# Research Press Journal



Issue 9 | Summer 2020

[www.researchpress.co.uk](http://www.researchpress.co.uk)



*Curtis's & Harvey  
The Brunswick Rifle  
The National Match, 1864-1899*



ENGLAND															TOTAL	GRAND
DISTANCE															each	TOTAL
NAMES																
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	31	35
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	32	32
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	33	33
46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	34	34
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	35	35
76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	36	36
91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	37	37
106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	38	38
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	39	39
136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	40	40
151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	41	41
166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	42	42
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	43	43
196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	44	44
211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	45	45
226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	46	46
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	47	47
256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	48	48
271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	49	49
286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	50	50
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	51	51
316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	52	52
331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	53	53
346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	54	54
361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	55	55
376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	56	56
391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	57	57
406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	58	58
421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	59	59
436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	60	60
451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	61	61
466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	62	62
481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	63	63
496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	64	64
511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	65	65
526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	66	66
541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	67	67
556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	68	68
571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	69	69
586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	70	70
601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	71	71
616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	72	72
631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	73	73
646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	74	74
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	75	75
676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	76	76
691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	77	77
706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	78	78
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	79	79
736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	80	80
751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	81	81
766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	82	82
781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	83	83
796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	84	84
811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	85	85
826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	86	86
841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	87	87
856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	88	88
871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	89	89
886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	90	90
901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	91	91
916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	92	92
931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	93	93
946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	94	94
961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	95	95
976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	96	96
991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	97	97
1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	98	98
1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	99	99
1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	100	100

NATIONAL CHALLENGE  
BISLEY TROPHY  
RECORD SHOOT

# Research Press Journal

Editor: David Minshall

[journal@researchpress.co.uk](mailto:journal@researchpress.co.uk)

## Firearms

- Long range rifle fire. Long range target rifles. British military longarms. Small arms trials. Ammunition. Accessories. Gunmakers.

## Marksmanship

- Military marksmanship. The art of shooting. Long range muzzle loading. National Rifle Association. Creedmoor and the international matches.

## 19thC Riflemen

- Those who pioneered the sport of target rifle shooting from the muzzle loading and into the black powder breech loading era. Biography.

## Rifle Volunteers

- The Volunteer Force was established in 1859. From 1881 territorial regiments included regular, militia and volunteer battalions.

[www.researchpress.co.uk](http://www.researchpress.co.uk)

© 2020 Research Press



While every effort is made to trace copyright holders, we may on occasion have failed and apologise to anyone whose rights may have been infringed.

# Contents

Issue 9 | Summer 2020

## 3 Priming

*News, Events, People & Places*

- Book News
- Firearms Research

## 4 Black Powder Target Rifle Association ~ 2020 Update

by Robert Garibay

## 9 The Brunswick Rifle

by Arthur Hare

## 17 The Hounslow Powder Mills of Curtis's and Harvey's, 1896

by W.S. Curtis

## 21 Military Rifle Shooting in America

From *Arms & Explosives* (London), 1903

## 26 Luke and John Tippins

by David Minshall

## 28 The National Match, 1864-1899

by Nick Leaper

## On The Cover

### Volunteers at the Firing-Point, 1866

Henry Tanworth Wells RA (1828 - 1903)

courtesy *Royal Academy of Arts*

International Volunteer Match medal, 1884

*D.B. Minshall collection*

Scotland's National Match Record Score

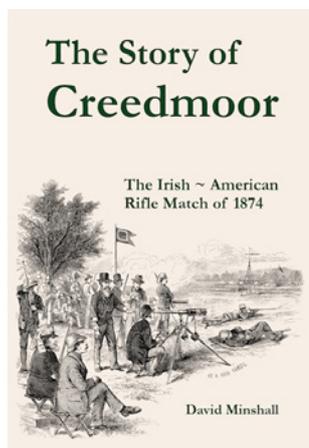
set in 1898

*Back Cover*

**Photographic booklet of  
Bisley Rifle Meeting, published c1900**

# Priming

## News, Events, People & Places



### The Story of Creedmoor

In 1873 riflemen of Ireland challenged the riflemen of America to a long range rifle championship. The challenge was taken up by the Amateur Rifle Club of New York, and the match took place in September 1874 at Creedmoor. The Irish Team used their Rigby muzzle loading match rifles. The American Team used Remington Rolling Block and Sharps match rifles, both newly introduced versions in response to the conditions of the match regarding rifle weight and trigger-pull. In 2002 *Research Press* published a booklet on the history of this rifle match. The story has been revised and expanded and it is now available in paperback or Kindle versions via Amazon. It's not a firearms history but background on the establishment of Creedmoor, the story of the match and the follow-up at Dollymount in 1875. Appendices provide historical information including correspondence relating to the match conditions, observations on rifles in use leading up to the match, full target diagrams for the Irish and American teams and more. The following page on *Research Press* web site links to various international Amazon sites:

[www.researchpress.co.uk/index.php/publishing](http://www.researchpress.co.uk/index.php/publishing)

### British Ordnance Percussion Muskets

I am researching British Ordnance Percussion Muskets for a book I am working on with De Witt Bailey and we would be grateful if readers would contact me please ASAP if they have any of the following British ordnance percussion smooth bore muskets in any condition:

- Sea Service Musket (smooth bore or rifled)
- Sergeants Musket/Carbine/Fusil
- Sappers & Miners Carbine
- Artillery Carbine
- Ordnance Musket/Carbine.

Contact: Adrian Roads

Email [adrianroads1@gmail.com](mailto:adrianroads1@gmail.com)

### Whitworth Rifle Research

Approached in 1854 by Lord Hardinge to investigate 'the mechanical principles applicable in the construction of an efficient weapon,' Whitworth's experiments revolutionised rifle design.

*Research Press* is now working with Bill Curtis and De Witt Bailey, who have an ongoing research project concerning original Whitworth rifles. If you have access to ANY original hex bore Whitworth rifle please note its serial number and letter for recording.

Please contact David Minshall at *Research Press* with details: [journal@researchpress.co.uk](mailto:journal@researchpress.co.uk)

*Irish and American Teams practice at Creedmoor, September 1874*



# Black Powder Target Rifle Association ~ 2020 Update

Robert Garibay

The Black Powder Target Rifle Association is steadily growing in popularity, membership and geographically. Even in the wake of the pandemic, shooters are showing up to shoot, socialize and support our efforts. The 2020 shooting season didn't look good from the get go, but gatherings can typically be managed safely on a target rifle range. Currently we have 55 active members including our first ever Junior Shooter, Emily Hayes out of Wyoming. She has joined us for 2 Wyoming midrange matches. The State Championship in Worland, WY and another match in Cheyenne. It was exciting to see a 15 year old join us,



## B.P.T.R.A

shooting alongside her Grandfather in competition.

Our initial launch of the BPTRA saw Colorado Rifle Club in Byers, CO host its first matches. We were very quickly joined by Cheyenne Rifle and Pistol Club in Wyoming. At the beginning of 2020 we were approached by the Worland Shooting Complex in Worland Wyoming regarding being a part of their Midrange State Championship event. We were happy they decided to join the BPTRA and saw good participation at that match.

The matches so far in 2020 have been predominantly midranges courses of fire with slight variants of each. Some



1st PLACE - ROBERT KIERNAN



2nd PLACE - JACK ODOR



3rd PLACE - CODY SMITH



1st PLACE POSITION - BRYAN YOUNGBERG



1st PLACE JUNIOR - EMILY HAYES

JUNE 6TH & 7TH

WORLD SHOOTING COMPLEX  
WORLAND WY



1st PLACE WOMAN - CECILE WIECHMANN



2nd PLACE WOMAN - LINDA BONEFIELD



*Participants of the BPTRA Midrange Champions*

200, 300 and 600 yards. Some 300, 500 and 600 yards. Some shot from the Position course of fire, some from the Any or Prone. Position matches usually mean offhand shooting at 200, sitting or kneeling at 300 and you may take ANY safe position at 600 yards. Usually if not always this means shooting from prone and cross sticks. All Cheyenne, Byers and Worland matches have been midrange courses of fire to begin the shooting season. This is a great way to warm up for the season and see what your rifle, ammunition, fouling control and techniques are capable of under the “somewhat” readable environmental factors of heat, cold, wind, pressure, etc. at reasonable distances.

The midrange events so far this year have produced some very good scores at times in fairly brutal wind and heat conditions. No match reports this year have reported of ‘bluebird’ conditions during many or really any relays within the matches so far. Since the association is still young, individual scores and aggregate records are set often. The more shooters we grow and matches we contest, the more these records will mean and get tougher to beat.



*Jack Odor, Winner of BPTRA Midrange Championships on right with Robert Garibay, left.*



*2020 Money Match*

As I write this we have just finished what I believe is the most challenging course of fire to date in the BPTRA. The High Plains 1000 yard Challenge Money Match. Otherwise known to locals as simply, The Money Match. Each day you shoot 3 times at a 1000 yards, 10 shots each. There is no aid from a spotter or wind coach during the match. It is you, your rifle, ammo, spotting scope and a shooting mat. You have 20 minutes to fire your sighters and your 10 shots for score. Regarding sighters, once you hit your target you only have 2 more sighting shots before you are forced to go for score. Some competitors will shoot a couple of fouling shots not exactly aimed at their target in order to have more shots down the barrel to foul their bore before going for score. You still have the 20 minute time limit which goes by much faster than you might think. If you were shooting an average of 14 shots that would give you just more than a minute and half to execute each shot. At the distance of a 1000 yards and the ever changing conditions of the range at Colorado Rifle Club, most competitors were finishing with no more than a couple of minutes left on the clock. Some did not get off their

last shots and many were shooting within seconds of the countdown to 0 time left. The match was designed with a shorter time period and limited sighting shots to force competitors to go for score early on in their string and to have to turn their sights and make adjustments by reading conditions accurately. There is not enough time to wait on a condition to come back and take your shot in this match. It is as much of a wind reading competition as it is a shooting competition for the individual. This is the reason we created the Rifleman category in the BPTRA. Meaning that you are not the classic team of shooter and spotter that you see in most matches. You have to accomplish both on your own. Any match in the BPTRA can be entered by a competitor in the Rifleman category, but the Money Match offers no other choice. Attendance for the match this year only saw a dozen shooters. Few brave to enter this type of competition but the rewards of what you learn in a very short amount of time on your own, gain you valuable shooting experience for the future. Everything leading to where that bullet hits after it leaves your muzzle lies squarely on your shoulders. How you loaded your

ammunition, how you read the condition in front of you, to how you broke the shot, are yours alone. This year the Day 1 winner of the Money Match was Robert Garibay and the Day 2 winner was Jack Odor. However, the gentleman who executed the most efficient for both days and left with the trophy and money, was Steve Farringer. A retired Manufacturing Engineer from Indiana shooting his Shiloh '74 in 45-70.

Currently I'm packing up for the 2nd day of a 2 day midrange match held in Cheyenne, Wyoming.

I'll be shooting the BPTRA's MR-600 course of fire run by Match Director Dick Hennebry. 10 shots at 600 yards for 3 relays. 30 shots total for individual score. This is a great format for a stand along competition as well as testing your long range load to see how it's doing at a reasonable distance. Which is exactly what I'm doing. If you can put up a good score at 600 with predictable shots you have a chance or start at a load that should work well at 800, probably 900 and maybe at 1000 yards.

Cheyenne always has challenging conditions because of the Wyoming wind. Last match I attended there in May saw sustained 20-25mph wind with gusts reaching 40mph. It is very rare that I apply 18-19 minutes of windage to my rear Soule sight to shoot 600 yards, but I did that day.

The BPTRA is also currently preparing for our 2nd Annual Creedmoor Nationals Team Match. Right now attendance is planned full and a waiting list has begun. Shooters who attended previously were given first rights of entry in appreciation for their attendance



*Winner of the 2020 Money Match, Steve Farringer, holding the Buffalo Trophy on right, Robert Garibay on left*





*Cheyenne*

in our inaugural year. Next year we are working on a plan to make sure we get the top shooters from around country and hopefully see some more International participation. We want to ensure that this is the premiere and most competitive BPTR team match around. Team being shooter and spotter 2 man teams. The BPTRA tries very hard to recognize both members of the team as the Spotter has been the unsung hero at many events by our own peers and lack of recognition in past organizations. Both names go on the BPTRA's Creedmoor National Team Trophy. Shooter, Steve Baldwin, and Spotter, Ray Hanson's names were the first placarded on the Team Trophy from 2019. They proved too tough to beat last year, even though it was their first time to shoot at Colorado Rifle Club.

With continued support I see the BPTRA's growth continuing. We have started out with a good base of members, competitors and sponsors. Hopefully 2020 is somewhat unique with our current Covid-19 circumstances and shooters being hesitant to travel. I hope to report back to you again after our Creedmoor Nationals in September and very much want to thank David Minshall, the creator, researcher and author of his *Research Press* website and fine articles. We share his enthusiasm and love of the history of long range Black Powder Target Rifle competition. That is why we try and continue to preserve it.

For more information, news, match results and reports you can always visit us at: <https://bptra.org/>

*Robert Garibay  
Black Powder Target Rifle Association*



# The Brunswick Rifle

Arthur Hare



*The late Arthur Hare gives an illustrated history of this interesting rifle.*

This curious arm with its two-groove bore and belted bullet remained in the hands of Regulars, Militia and Native troops for almost half a century, despite complaints of the guns inaccuracy and difficult loading system. The weapon replaced the seven-groove quarter-turn Baker rifle that had been in use for almost 25 years. The Baker in turn replaced the old smooth-bore Brown Bess.

As well as an obvious requirement for improved long-ranged accuracy, there was also a need for a new ignition system to replace the old style flint action that had been rendered obsolete by the introduction of the percussion cap. George Lovell an Employee and later Inspector for Enfield dedicated himself to bringing the percussion system to the British military, and as early as 1831 began experimenting with various systems. On February 5th 1836, 2,000 new rifles were ordered by the Board, and George Lovell was instructed to provide a pattern similar to the Baker.

It was obvious that the Hanoverian oval bored rifle failed to impress Lovell, for the first model Brunswick he produced was rifled in the usual way, but with eleven grooves instead of seven. The twist of this rifling was increased to a three-quarter turn in the thirty inches of barrel. This, as he put it, was to give more rotation but less friction. The stock was not as straight as the Baker,



in order to give a better aim, and the furniture was of iron, blued or case hardened to avoid the glitter of brass. Other features

were a back-action percussion lock, and a fixed back-sight for 200 yards with a folding leaf for 300 yards (pictured).

The sword bayonet had a similar grip to the Baker hand bayonet, with a wide double-edged blade 17-in. long and was attached to a round lug near the muzzle.



The rifle was quickly put to the test. Officers of the Rifle Brigade were then invited to comment, but they seemed mainly concerned with the bayonet controversy. Lt.-Col. Eeles agreed that the new rifle should have a sword attached to the barrel "in the same manner that the swords were fixed during the time of the War." In May 1836, Lovell was, in fact, instructed to prepare an experimental rifle with a sword bayonet. This bayonet has a blade 25-in. long and a knuckle bar. On the other hand another Rifle Brigade officer, Lt.-Col. Brown, advised a long light bayonet instead of the short sword formerly supplied to the Rifle Corps.

In the meantime, Mr. Seabright, acting on behalf of the Duke of Brunswick, had submitted a rifle, which was stated to have been developed by his Field Adjutant, Capt. Berners then in use by the Duke of Brunswicks forces. It had a barrel 3 ft. 3 1/2 in. long with two wide grooves making a complete turn. Lovell tried it out against his eleven groove rifle and, although it was very similar to the Hanoverian rifle of 1835, he was immediately impressed. "Certain it is", he reported, "that the shooting of this Rifle in my hands has been very excellent and I would therefore propose to make further inquiries into the principle upon which it is

## The Brunswick Rifle

constructed.” The only objection he found was the difficulty of placing the belted ball in its proper position on the muzzle in loading.

Maj. Dundas and the Woolwich Committee were not so enthusiastic. They agreed the “it shot as well after 50 rounds had been fired from it as at the commencement of the day’s practice without having been once wiped out”. But they pointed out that a cartridge could not be used, and concluded: “This rifle is infinitely more correct in its firing at long ranges than the common rifle, but from the ball having less initial velocity, it requires a complication of sights which together with its great weight (10 lb. 7 oz.) and less facility in loading would render it very unmanageable for the use of troops in the field”.

On Boxing Day, 1836, Millar reported that the rifle had four great advantages over its rivals:

It was as accurate as the others at short distances, and superior at long distances. There was no difficulty in handling or loading it. It shot correctly for a longer period without cleaning. The greater smoothness of the barrel made it less likely to wear away than those with projecting bearings or lands.

In 1837 the decision was made to adopt the Brunswick system. The weapon was of .704 caliber with a 33 1/16 inch browned barrel incorporating a hooked breech. The .704 caliber was chosen so that standard infantry musket balls could



be used if necessary. The furniture which included a butt-box cover, ramrod pipes, trigger-guard, buttplate and fore-end cap were of brass.

The back-action was case hardened and the ramrod was polished bright. Lovell told the Board that he had second thoughts about the rifling of his new pattern rifle. One he had made with the two grooves in the style of the Brunswick had proved superior to the eleven-grooved model.

As the general design of the rifle had been agreed with the Rifle Brigade and orders had been placed for materials, the question of rifling was now urgent. During November and December, six of Lovell’s first model two groove rifles were given a searching test by a Committee of Officers under Maj.-Gen. Millar, Director of Artillery.

The rifle was similar in appearance to the original eleven-grooved model but it now incorporated the Brunswick rifling made to a caliber of .654 in. with the twist increased to a complete turn. Two of the faults to which the Committee had objected in the Brunswick specimen had been removed. Where the rifling left the

muzzle, Lovell made two semi-circular notches into which the belt of the ball fitted a considerable help to loading.

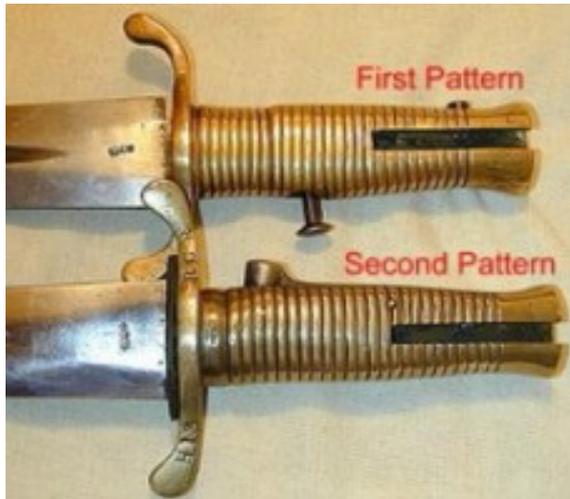
The total weight was also reduced to approximately 9 lb. The bayonet had a more substantial handle and the blade was lengthened to 22 in.

The round lug on the barrel was replaced by the old flat bar (pictured *overleaf*) with its



*Unmarked Back-Action Lock of 1st Pattern*

notch towards the muzzle. It should be noted that Lovell moved this bayonet bar back from the muzzle so that when the bayonet was fixed, its guard was not in front of the muzzle - the main fault of the Baker.



Left: First & Second Pattern Bayonets

The first bulk order for the setting up of 1000 rifles at Enfield was given on 25th October 1837. In January of the following year, it became apparent that 600 of these would be required urgently for Col. Brown's Battalion of the Rifle Brigade and that the Enfield factory would not be able to supply them in time. The whole of the order was, therefore, put out to the trade in London at a charge of 38s per rifle. The first Brunswick rifles to be made were set up by the following gunmakers:

Tomas Potts	212
Wm. Heptinstall	55
Barnett & Co.	212
Reynolds & Son	55
Lacy & Reynolds	210
Yeoman's & Son	55
E. J. Baker	146
Thomas Leigh	55
William Parker	80
W. Mills & Son	55
R. E. Pritchett	80
W. T. Bond	55
Thomas Ashton	80

It was ironical that these gunmakers should at the same time be fulfilling the last orders for the old flintlock rifles.

In January 1837, the Adjutant General Maj.-gen. Sir John MacDonald, approved of the suggestions made, and the 2000 rifles in course of preparation were ordered to be made accordingly. Lovell had already made one slight alteration before this by changing the furniture from iron to brass. On 3rd February however, he put forward his plea for the standardizing of the ball for military use. Under these proposals, the bore of the rifle would be increased to .704 in. The Board in conjunction with the Commander-in-Chief formally agreed to this policy on 4th August. Several of these musket bore rifles were set up right away as patterns.

Troops were issued with the bullets tied up within greased calico patches and marked with a black band to show the location of the belt to aid in loading.



Wrapped ball



Belted ball

## The Brunswick Rifle

The best effect was obtained by using a loose ball in a greased calico patch, and it was suggested that two thirds of the ammunition should consist of this kind, with the powder charge of 2 ¼ drams contained in blank cartridges.

The remainder should be normal cartridges with balls of 17 to the lb. for use in the line when rapid firing was necessary. Under ideal conditions high rates of fire - for a rifle - had been recorded; with the belted ball, 10 rounds in 7 ½ minutes, and with the cartridge, 10 rounds in 4 ½ minutes. This compared with 10 rounds in 3 ½ minutes, the average with a smoothbore musket.

The powder charge of 2 ½ drams of coarse musket powder was sealed within blank paper cartridges. Soldiers were also supplied with standard infantry cartridges containing powder and smooth ball so the weapon could be fired rapidly should the need become necessary.

In 1841 a second model Brunswick was introduced. It was similar but substituted a conventional sidelock for the back-action version. Comparing this to the third pattern lock you will note that the plate that helps contain the mainspring is fixed from the interior with a screw, a factor which was eliminated in the third pattern where the plate was brazed. The second pattern lock on the left also shows the early style 'Hook mainspring' as compared to the later lock on the right with the 'Stirrup-fastened mainspring'.



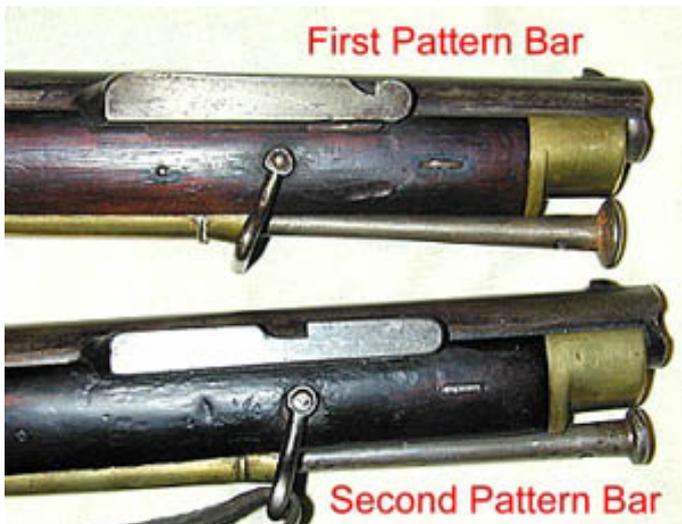
*Interior of Second Pattern Lock*



*Interior of Third Pattern Lock*



*Second Pattern Action  
The screw head protruding  
into the sideplate is visible  
below the hammer face*



*Barrel proofs Second Pattern*

The hook breech was eliminated and the sword bar was modified by moving the catch notch to the center for more stability. The first pattern bar had the bayonet fixed to the front end which was changed later and also adopted by the Second pattern. The forend and both bars are shown above.

The Buttplate of the early Brunswick had the brass plate fixed to the stock with pins that went through the stock aligning with the mounting brackets of the stock interior.

Later the plates were mounted with screws and you will also note a difference in the length of the buttplate tang. Pictured (right) are plates from the second pattern Brunswick rifle and the weapons were dated 1844 and 1847 respectfully.



With the pattern of the rifle settled, there came next the question of accessories. Lovell submitted a set of implements in September, but Charles Manton won a minor triumph by getting his Rifle Brigade officers to approve a set of his own design. This consisted of a ball drawer, a brass jag and a combination lever and a pricker. It should be explained that the ramrod had a flat pommel and a hole for the lever at one end, and a brass tip with female thread for the jag at the other. Lovell also introduced the muzzle tampion (stopper) in 1843.

*The barrel was fastened with three wide metal keys.*



## The Brunswick Rifle



*Barrel Tampion (Stopper)*



*The Brunswick Rifle Barrel "JAG"  
As per example shown in the book:  
British Military Firearms 1650 - 1850 (Plate 74, pg.242)  
[Hamilton May Collection]*



The Brunswick sling was of one piece leather 1 & 3/8 inches wide and 32 inches long. It was tied to the lower swivel by a leather thong. The latter part went through the upper swivel, came down and fastened to a leather button.

The example *above* was made to conform to the original pattern by the late Victor Zubatiuk.

The method of carrying these implements and also the linen patches had now to be decided. When Lovell designated the butt box, he apparently intended it for greased patches and a piece of rag for wiping the barrel. In January 1839, however, Maj. Boileau submitted a design for a large rectangular cavity with a turn catch or button to hold the implements, and a smaller round one for the patches or grease. Although Lovell objected, this large trap, six inches long was adopted. The butt box involved two compartments, one to hold loose patches and the other set up to secure a three armed combination tool.

Lovell had brought into production, three entirely new standard weapons, a carbine, a musket, and a rifle. While undertaking a host of other duties, he had been responsible

for practically the whole of their design and he was naturally proud of his achievement. Learning that his carbine had been called the Victoria Carbine, but that his musket had been designated Lovell's Pattern, he wrote, in March 1839, to ask that the rifle might be named "Lovell's two-grooved Percussion Rifle", he went on: "I am satisfied that my system is the best yet ... My carbine has been named after the Queen, which gallantry and loyalty will not allow me to find fault with - but I should like to have credit for the Musquet and Rifle". The Master General replied that as the rifle was a modification of one sent by the Duke of Brunswick, it should be called "Lovell's improved Brunswick Rifle."

*Pictured is six inch patch box introduced 1839*



This was hardly a generous action especially as, in 1841 when it was suggested in some quarters that a presentation should be made to Capt. Berners, the Master General then stated that the rifle was developed from the Hanoverian model.

In his endeavors to improve the accuracy of his rifle, Lovell found that, with the normal casting of lead ball and particularly the belted shape, there was a perceptible variance in the weight due to faulty casting, impurities and air bubbles. In October 1837 he proposed that the rifle balls be made by the compressing machine of David Napier, an engineer, which produced a smoother finish and a more solid result. Made in this fashion they weighed 559 grams or 12 ½ to the lb. Extensive tests were carried out between cast and compressed balls and in March 1839 a Committee came to the decision that, while compressed balls made little difference in a musket, there was an advantage to their use with rifles. An agreement was reached to purchase Napier's machine for 1000 British pounds, subject to twelve months maintenance and a further payment of 500 pounds if satisfactory. The latter was duly authorized on 18th April 1842.

A variant of the infantry rifle was introduced in 1840. When the musket bore was adopted, as standard for all arms, Lovell had to design a new Sergeants musket. He proposed a smoothbore musket for Sergeants of the Line regiments and, for Sergeants of the Guards, a gun with the same barrel as the rifle, which could take a common cartridge. He decided this after reading that the French had adopted rifles for the N.C.O.s. The Musket was similar to the infantry rifle except that it had a 2 ft. 9 in barrel for use with a socket bayonet.

To return to the infantry rifle, two more alterations were to be made. In August 1841, Lovell discarded his back-action lock in favor of a lighter lock with a side action, which could be fitted to all the standard firearms. The new lock was fitted to 4,000 rifles ordered on 31st October 1845. Half of the rifles were made at Enfield and the balance by the London gunmakers.

The London gunmakers, Lacy & Reynolds introduced the last change in October 1847, when they submitted a rifle with an improved spring catch for the sword bayonet. The notch on the bayonet bar was half way along, instead of near the muzzle. Conversely, the release button on the bayonet handle is close to



*Lock Plate Dated 1847*

the crossguard instead of being in the middle. This stronger fitting was approved for general adoption by the Commander-in-Chief in June 1848. The Brunswick bayonet was after all a heavy weapon weighing nearly two pounds.

During 1850, a further batch of 4,000 rifles was put under construction but by then a new conception of rifle was under preparation and in May the board agreed the Brunswick would be superseded by the Mini. On October 1852 the stock of Brunswick rifles was reported at 11,530. Of these 1,312 were engaged in the fighting at the Cape and 624 were with the Canadian Rifle Regiment. With the end of the Brunswick in sight it was decided to complete only those rifles for which there were materials in store. In January 1853 the Rifle Corps were told to hand in their Brunswicks in exchange for the Mini, or Pattern 1851 rifled musket.

The Brunswick was revived in 1864 when some were made for the East India Government. They may be identified by the arrow over the letter I on the lock plate. Another noticeable difference was the size of the ramrod, being slightly reduced. Privately made Brunswicks have been noted with dates in the 1870's. In spite of this apparent popularity, the Brunswick received more unfavorable criticism than any other British arm. During the Enfield trials of 1852 the comment was made: "The loading of this rifle is so difficult that it is wonderful how the regiments can have continued to use it so long. The force required to ram down the ball being so great as to render a man's

## The Brunswick Rifle

hand too unsteady for accurate shooting". It is all very strange when one considers the careful trials, which led to its adoption.

Brunswicks were issued to rifle regiments in Britain, Canada and other colonies as well as select units of the East India Company. *Pictured below* is the Third Pattern issued to the Sikh Regiments. Note the letter I below the arrow and the later date of 1865. It was also adopted by several units in several guises.

Regimental marks of the Royal Canadian Rifle have been found on both first and second pattern bayonets. The photo below shows the RCR stamps and the two different Regiment or Companies of H13 and G11.



*3rd Pattern Barrel Proofs*



*Regiment marks to date are only found on the butt-plate tang*



*Royal Canadian Rifle Regiment Cross-guard Regimental Markings*

# *The Hounslow Powder Mills of Curtis's and Harvey's, 1896*

*W.S. Curtis*

The Hounslow Gunpowder Mills were of considerable antiquity. They were a well-known landmark three hundred years ago and in 1727 were occupied by a Mr. Smith. He was succeeded by a Mr. Hill, and followed by Isaac Butts who sold out to the partnership of Harvey and Grueber. The Grueber family were associated with other mills in different parts of the country.

It was in 1820 that the author's direct ancestors, Sir William Curtis (Fig. 1) and his son Charles Berwick Curtis together with Sir William's nephew Thomas Curtis bought out the interest of Mr. Grueber and established the celebrated name of Curtis's and Harvey. Sir William was a famous banker, Alderman and Member of Parliament for the City of London and in 1797 had been Lord Mayor. He was Colonel of the 9th City of London Volunteers and a Colonel of the Honourable Artillery Company as well as its President from 1795 until his death in 1829.

The firm grew from strength to strength, acquiring other mills throughout the United Kingdom as the Nineteenth Century proceeded. A list of the names taken over includes Clyde Mills, Argyllshire (1844), Alfred Burton, Tonbridge (1859), Glyn Neath (1864), Karnes Gunpowder Company, Scotland (1886). There was even a branch in Canada. In 1898 the Company was Incorporated at which point it included in the amalgamation:- Curtis's and Harvey, John Hall and Son Ltd. (Faversham), Pigou, Wilks and Laurence Ltd. (Dartford), Hay, Merricks and Co. Ltd. (Midlothian), Ballincollig Royal Gunpowder Works (Cork), The Midlothian Gunpowder Co. Ltd., (West Calder), The Kennall Vale Gunpowder Co. (Cornwall), The East Cornwall Gunpowder Co. (Liskeard). The War and Sporting Smokeless Powder Co. (Ipswich).

The original Hounslow Mills remained in production right up to the end of the First World War when the combined explosives manufacturing capacity of the nation had become so vast that extensive amalgamations and necessary closures had to take place. The resulting merger known as Explosives Trades Limited became Nobel's Industries and finally Imperial Chemical Industries.



*Fig. 1. Sir William Curtis (1752-1829)  
from the 1814 Portrait by Sir Thomas Lawrence*

This brief look at the background to the Company sets the scene for an interesting description of the Hounslow works made by William Oliver Greener (the son of the well known gunmaker, William Wellington Greener) in his capacity as Editor of the trade magazine THE SPORTING GOODS REVIEW. This journal was a monthly production which started in 1888 and, at first, dealt mainly with the shooting trade although by the late 1890's bicycle matters had increasingly taken over its columns.

**In February 1896, Greener toured the works and his description is worth quoting in full as it gives a very fair idea of the extent and diversity of this operation.**

“Before ever a nitro-compound had come to dispute for supremacy in the market and the field, the black gunpowder manufactured at Hounslow had secured the suffrages of the shooting world. The glories of black powder are to some extent eclipsed now, its younger rivals elbow it more and more into the background every year, but for certain purposes (in which in the opinion of experts, wildfowling may often be included) it still holds its own, as it will do probably for many a day to come. Whether or no black powder will ever be entirely superseded, is to our mind questionable, but Messrs. Curtis's & Harvey, with that vigorous young off-shoot, “Amberite” grafted on the old stem, are excellently equipped for whatever may befall, and meantime, a large section of the public both at home and abroad, still pin their faith to the Hounslow and other similar manufactures, in preference to those more modern compounds whose often brilliant performances are occasionally marred by the erratic eccentricities incident to youth.

“The Hounslow Factory is very advantageously situated. Within easy distance of London, and having excellent facilities for the transport of materials both by rail and water, it affords a contrast in this respect to similar establishments elsewhere.

“On approaching the factory from the Hounslow station, its chimneys are quickly seen rising above the plantations which at this point border the Hanworth Road, and the advantages-natural and artificial-of the site, become at once apparent. Presenting ourselves at the lodge gate, and giving up matches and cigar case, we pass the belt of trees, and make our way to the offices, whence under the courteous guidance of Mr. J. R. Knights, the manager of the factory, we commence our round of inspection.

“Although, of course, the fact is known to readers, it may be well here to premise that the manufacture of black powder is by no means so complicated as that of nitro compounds in their present state, owing in great part to the simplicity of the ingredients used, which consist essentially of saltpetre, sulphur and charcoal.

“We make our way first to the ovens, where alder, willow, and dogwood, are reduced to charcoal, the first two for export and the latter for the best sporting powders. These ovens consist of large cylinders, arranged, some horizontally, others vertically, in which the wood is charred to the required state. Outlets are provided for the escape of the tar and acid which are collected in receptacles provided for the purpose, and

the progress of the charring is judged by the colour of the smoke there issuing.

“A building is next visited, where the double refined saltpetre is being carefully powdered and sifted through fine sieves. Here is also to be seen the plant for refining crude saltpetre, a process no longer carried on at the works.

“Passing on we reach the brimstone mill, which we enter in a pair of overall boots, henceforth our constant companions. Here the pure sulphur is ground under heavy stone runners, and subjected to a sifting process, by means of a powerful fan, at the end of which it is found reduced to the finest powder. The motive power for this, and many of the other mills, is furnished by a water-wheel driven from the River Colne, which runs through the grounds.

“Attention is next directed to the mixing house, where charges of either fifty or sixty lbs. of the correct proportions of the three constituents are thoroughly mixed. The mechanism employed consists of a series of hollow revolving drums into which the mixture is introduced, together with a number of lignum-vitae



Fig. 2. Curtis's & Harvey's 1896 Advertisement showing both Black Powder and Amberite Canisters

balls. At the expiration of a given period, the drum being opened, the balls drop on a grating beneath, and are received in a leather lined receptacle, the mixture falling through, and being collected in bags each containing a charge.

“Visiting the incorporating mills, we see the charges being ground beneath heavy metal runners, inner and outer ploughs being provided to keep the mixture always in the path of the revolving edges. A number of groups of these mills were visited, each consisting of six, three on either side of an engine house, and all driven from overhead shafting. We were afforded an opportunity of inspecting the group where the recent accident occurred, which it will be remembered was unattended by any loss of life or limb. The cause was plainly to be seen in a fractured spindle, flawed from the inside, an unfortunate mishap, against which all precautions are powerless to guard. It is surmised that the washer between the boss of the spindle and the boss of the runner fell amongst the powder when the spindle came out, causing the explosion. It is just possible that had the accident occurred in the daytime, the increasing looseness of the washer might have been noticed, but at night so slight an alteration in its position was most unlikely to attract attention. It is recorded that the only man who was injured when the explosion happened, took the occurrence with the utmost sangfroid, and was one of the first to render assistance with the hose and pumps. It speaks well, too, for the construction of the mills, that only three out of the six in the group exploded.

“But to resume. The finished charge is now conveyed in leather covered barrows from the incorporating mill to the hydraulic press house, where it is first carefully sieved, and then pressed. This process is effected by placing layers of powder, carefully gauged as to quantity, between plates of ebonite, and submitting them to steady pressure in a hydraulic press, from which they emerge in the form of hard cakes. The hydraulic power here is provided by pumps contained in an adjoining pump-room, and the building is surrounded by an earth mound.

“The next process to be performed, is that of forming the powder into grains. The pressed cake being received in the granulating house, passes through toothed rollers and on through smooth rollers until the requisite degree

of fineness is obtained, when the resultant meal is sifted by means of a sifting frame; thence it is conveyed to one or other of the series of glazing houses, and submitted to a glazing process. These houses contain a series of large wooden cylinders all revolving steadily on an axis, much after the fashion of glorified churns. In these, the powder remains for ten, twelve, or fourteen hours, and is transformed into one or the other of the familiar forms of black or brown sporting compounds. The motive power at the glazing houses is provided by a large water wheel.

“The powder is now subjected to a drying process in the stove house, which is kept at a temperature of 100 to 150 degrees Fahrenheit by steam from the boiler houses, the explosive being spread out on trays which are contained in racks almost filling the house.

“After inspecting these, we walk some little distance to the dusting house, noting on the way – the elaborate precautions taken against fire or explosion. Embankments and earth traverses abound, plantations of trees yet further isolate the erections, the river is diverted in all directions, hose pipes and stands are met with everywhere, and lightning conductors, frequently tested are fitted to most of the buildings.

“In the dusting house, the powder is passed through a series of screens kept constantly agitated; each screen is of different mesh, and as the process proceeds, the powder is fed into bags, each containing a stated quantity of a given size, according to the screen from which it was received. In this part of the factory, there is no water power immediately available, but the force is transmitted from a water wheel by means of a teledynamic rope.

“Returning towards the office, we visit a house where the bags of powder are being headed up in casks and boxes ready for transit; and inspect also the two large storage magazines almost hidden behind a high, tree-crowned embankment, which surrounds them on all sides.

“At this point, having inspected the main process from start to finish, and visited just half the factory, our guide proposes luncheon, and accordingly we betake ourselves to a region where the temperature is no longer subject to such violent fluctuations, as perforce attend the visitor to a powder factory on a frosty February

morning.

“After luncheon, a profitable half hour is spent in looking over the samples of the various productions of the works, ranging from S.B.C. for 100 ton guns, to the finest sporting powder – and all the familiar intermediate compounds. Pebble powders, black and brown prismatic, blasting pellets, diamond grain, basket, &c, are inspected, and afterwards we see some specimens of various spurious labels, imitations of those issued at the factory. “Curtis's & Marvey, of Hounslow,” are presumably a firm “made in Germany”. “Curtis's & Harvey” we seek for in vain in “Hounslow and London”; while the various firms who are the only makers of the Diamond Grain Powder, seem in number as the sands of the sea. Ingenuity worthy of a better cause has been displayed in imitating both canisters and labels, but Messrs. Curtis's and Harvey can scarcely be expected to appreciate the subtle flattery conveyed. Dealers in explosives, more particularly abroad, should take special care, in the first place that the flasks and canisters are genuine, and secondly that the seal above the cork is unbroken, when handling powder purporting to come from these works.

“Resuming our round, we make our way to the pellet press house, where the circular blasting pellets are produced in one operation. The pressure here is provided by an hydraulic accumulator. Next the labelling house is visited, where a large staff is constantly employed affixing various labels to the tins and canisters, ranging in capacity from an ounce to twenty-five pounds. At the packing house we see the tins filled with powder, sealed down, packed in boxes, and made ready for transit, or for storage in the magazine. Next we visit the large steam cooerage (so far as we know, the only one attached to a powder factory), and the box making establishment

where the familiar white wood cases are being rapidly turned out.

“Passing on, we are conducted to the canister department, where sheets of thick tin are being transformed into canisters, flasks and bottles of various shapes. In the next house these receive several coats of paint – blue, red, yellow – are varnished carefully, and then stored. In the stores adjoining, they remain packed on shelves until required for issue.

“One or two other stores are visited, we look in at the large well appointed stables, see the proof ground, pass some of the workmen's dwellings, and so bring our visit to a conclusion. At the office, we bid farewell to our courteous and obliging cicerone, and as we take our last glance around the wide expanse of the factory, a place almost historic, by virtue of its long association with the favourite pursuit of sportsmen, we feel that the high expectations we had formed of it have been most fully realised.

“The illustration [Fig.3] represents only a very small portion of the factory, as no complete view of it could be obtained owing to the wide area its buildings are distributed over. To attempt a general photograph would be merely to reproduce a picturesque expanse of well-watered and well-wooded landscape, a park-like scene which the various mills and buildings can scarcely be said to mar. It is indeed, only upon close inspection that one realises the huge extent of the industry carried

on within the boundaries of the factory, which has for years past provided employment for a very considerable staff of workmen and others, and the output from which in all the various classes of explosives manufactured, has associated the name of Hounslow with that of Messrs. Curtis's & Harvey in every country of the world.”

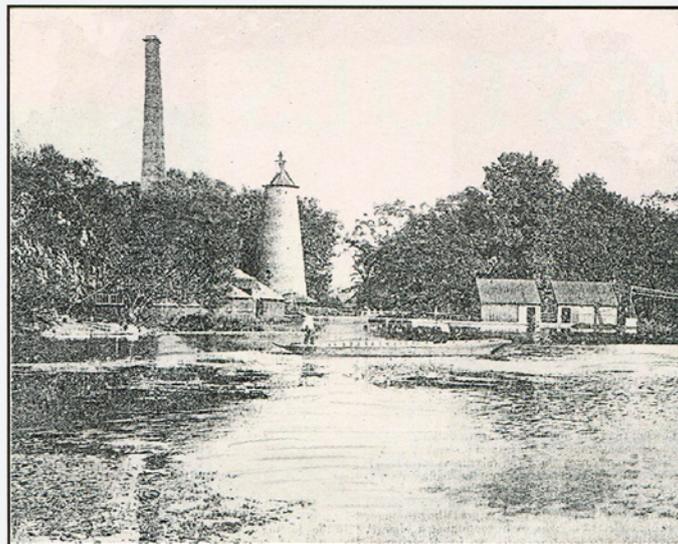


Fig. 3. A view within the boundaries of the factory



# Military Rifle Shooting in America

*First published in Arms & Explosives (London), 1 July 1903*

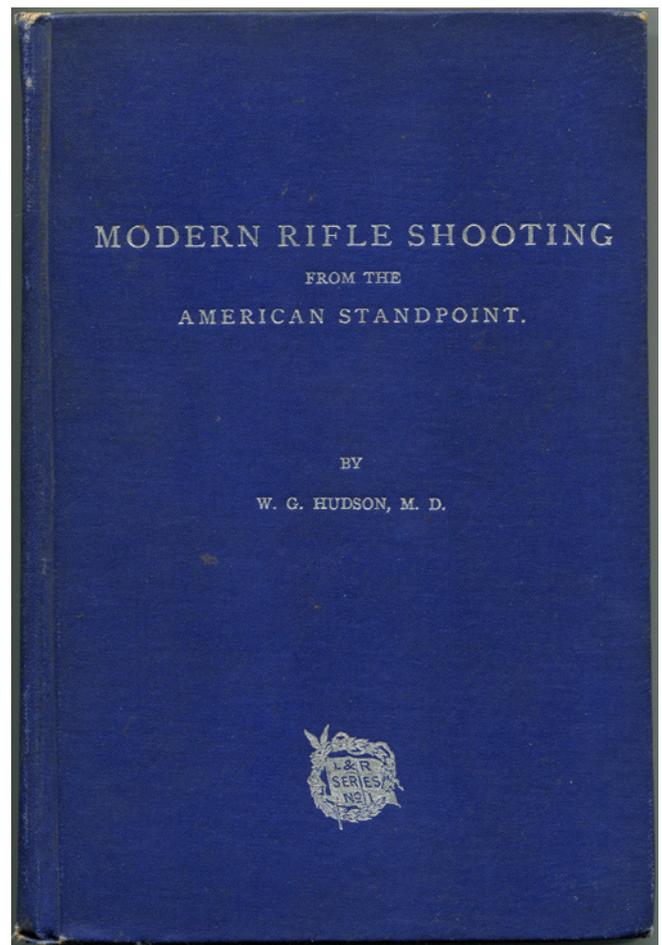
The visit to these shores of a United States team to take part in the contest for the Palma Trophy<sup>1</sup> at Bisley on the 11th inst., naturally creates interest in the position of that country as a centre of rifle shooting. Most of us know how far the Americans have reached in the development of rifle shooting at the shorter gallery and sporting ranges. But on the matter of military rifle shooting we hear very little of their doings, and the impression is general that they are only just alive to its importance. Notwithstanding this, we are in the habit of looking on the Americans as a nation of rifle shots.

This is what Dr. W. G. Hudson, undoubtedly one of the finest shots they have on the other side of the water, has to say on the subject: "One of the most unfortunate ideas that has ever prevailed is that so often heard expressed in the words 'The Americans are a nation of riflemen.' Indeed, the saying is a relic of the day when it was literally true – the early days of our history, when to be a good rifle shot was necessary as an important aid in replenishing food supply, and as a means of preventing premature baldness through the efforts of the then ubiquitous Indian. But times have changed, and while the possibilities of the rifle have been developed to a degree never dreamed of in those

days, familiarity and skill with the weapon as a national accomplishment have dwindled, until now the saying sounds more like a sarcasm than an aphorism. True, there are groups of men here and there even more skilful than our ancestors; but as skill with the rifle is now not generally recognised as an immediate necessity, there is little incentive to acquire and maintain it except as a sport and in connection with military duties."

The aptness of the quotation may strike many of our readers as remarkable; but the explanation of its source will show how it is that we have been favoured with interesting material at a seasonable opportunity. The Laflin and Rand Powder Company

1. The Palma Trophy, originally known as the Centennial Trophy, was first competed for at Creedmoor, USA, on 13/14 September 1876 between teams from Australia, Canada, Ireland, Scotland and the United States of America. The second match, in 1877, was again at Creedmoor and between Great Britain and the United States of America. With no further challengers, the United States fired the match in 1878 unopposed, after which the competition fell into abeyance. It was not revived until 1901 when teams from Canada and the United States of America competed for it at Sea Girt, New Jersey, USA. With Canada's win, the subsequent match in 1902 was held at Rockcliffe, Canada, this time between Canada, Great Britain and the United States of America. As winners in 1902, Great Britain hosted the 1903 Palma Trophy match at Bisley.



*Modern Rifle Shooting from the American Standpoint  
by W.G. Hudson  
(Laflin & Rand Powder Company, USA, 1903)*

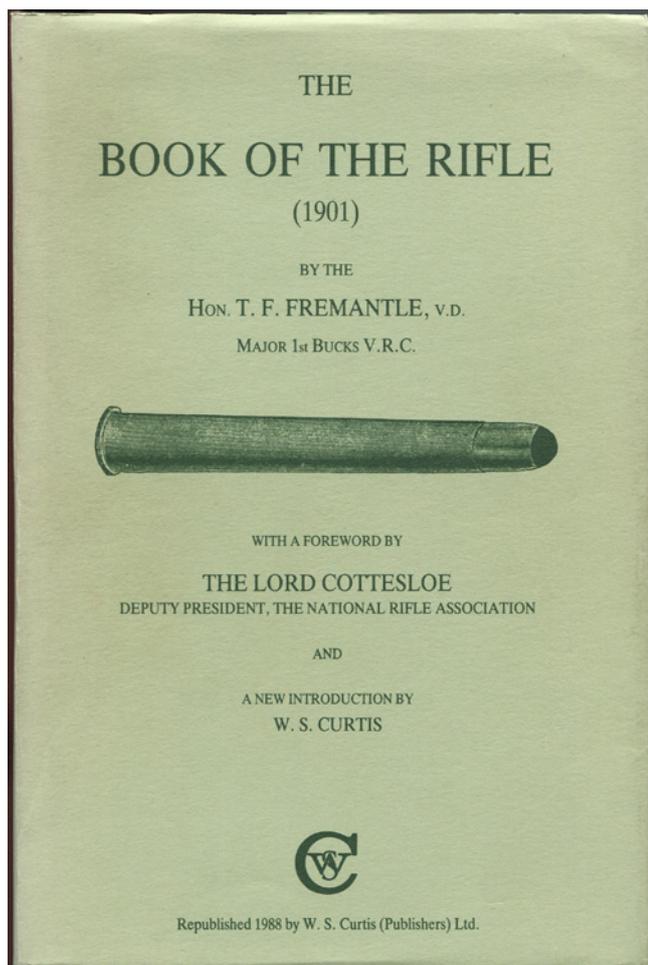
## Military Rifle Shooting

have just sent us a copy of a work published by them, which is entitled "Modern Rifle Shooting from the American Standpoint." The author is the Dr. Hudson already referred to, and the subject of his discourse is exclusively on matters appertaining to military and match rifle shooting. The book is written with the style and delicacy of touch of a cultured thinker, while the practical quality of its information is what one would expect of an exponent of shooting of the calibre of the author. Admittedly it cannot compare with a tour de force such as Major Freemantle's "Book of the Rifle," nor similarly does it quite reproduce the carefully-recorded observations published by such an authority at the ranges as Mr. Tippins [see *Luke and John Tippins*, page 26. Editor]. On the other hand,

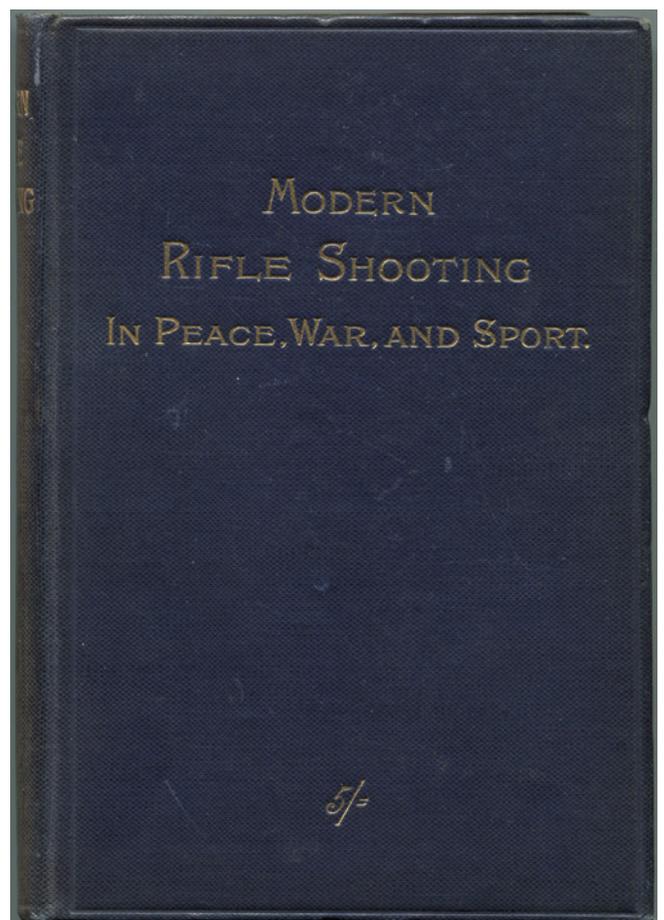
Dr. Hudson expresses his indebtedness to both these writers for many of the ideas that have been welded into his own experiences.

He has, therefore, taken up the pen with a view to dealing with the American aspects of a form of sport at which we on this side have admittedly had the longer acquaintance, and he writes upon it with the assurance that comes from having excelled at all branches of the more typically American forms of rifle shooting, he having been among the most prominent advocates of more extensive patronage of the essentially military branches of sport with the rifle.

On the subject of Schuetzen rifle shooting, what he has to say is most interesting, his general view being that, in spite of the apparently artificial character of



*The Book of The Rifle*  
by T.F. Fremantle  
(Longmans, Green, and Co., London, 1901)



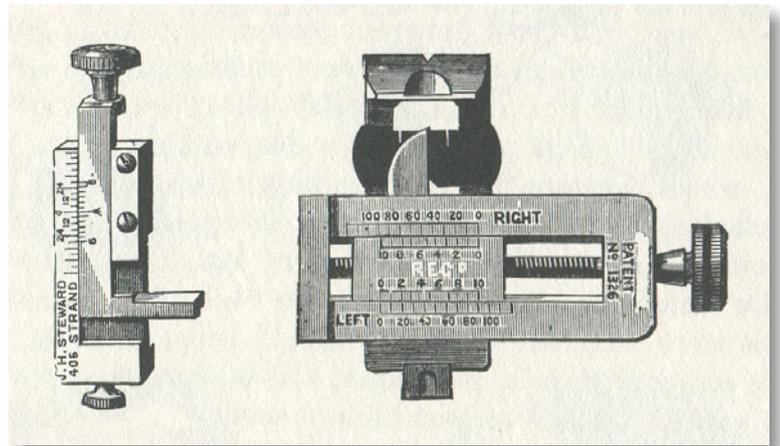
*Modern Rifle Shooting in Peace, War, and Sport*  
by L.R. Tippins  
(J.S. Phillips, London, 1900)

this kind of shooting, its educational value cannot be gainsaid, besides which it has the advantage of affording facilities for practice at a very cheap cost in ammunition. In fact, it is easy to see that Dr. Hudson sees in military shooting the need for expenditure of so much money on high-priced ammunition as to make it inadvisable to start circumventing the complexities of wind allowance until the art of holding and pull-off has been mastered under more economical conditions. But it is, as he says, in long-range shooting, undoubtedly, that the rifleman finds the highest development of the sport. It is, therefore gratifying to note that of late years the military and match rifle have approached very near to each other.

Very little has so far been published concerning

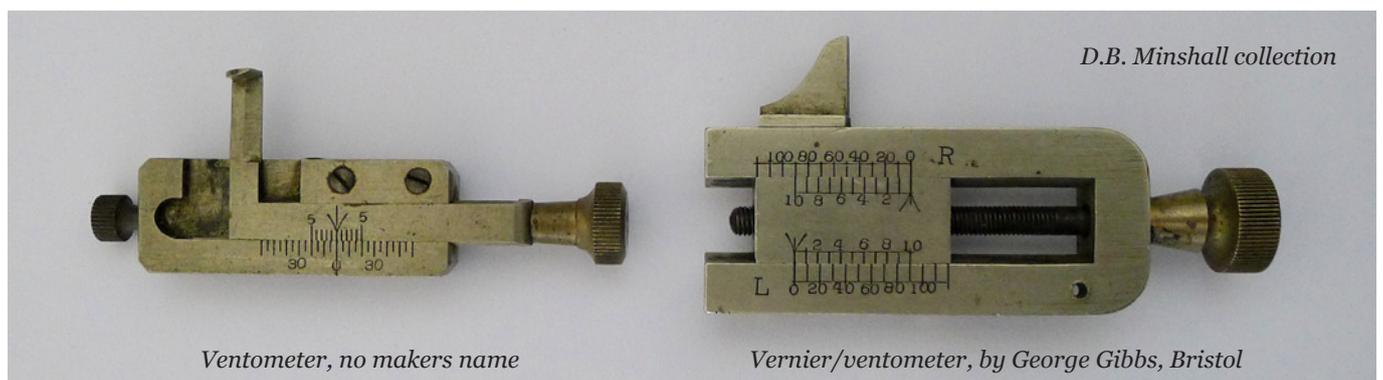
the American Krag rifle and the particulars published in Dr. Hudson's book will be all the more interesting on that account. The chapter on the sights of the Krag rifle will be found among the most interesting in the book. As is well known to those who have examined specimens of this rifle, the sights are the best adapted for target shooting among practically all military types of fire-arms. The Doctor speaks sympathetically of the British shooter, who must reverse the bar, and paint white lines to allow for windage<sup>2</sup>. He puts the argument colloquially by saying "let us thank the good Lord that we have an effective wind gauge on our rifles." The information he has to give upon this rifle will shortly require to be re-written when the new Springfield weapon is issued to the troops.

2. For Service Rifle competitions, rules of the National Rifle Association allowed black or white lines to be painted temporarily upon the bar of the rear sight. The average allowances for wind could thus be made by painting a white line as far from the centre as was necessary before beginning to fire. The minor adjustments were then made by aiming a little to the right or left of this line as the wind varies from shot to shot. Sight elevators, often referred to as verniers with reference to the scale with which they were marked, were detachable tools used to precisely adjust the elevation of military rifle sights. There were also small instruments known as ventometers that were used to mark the wind line accurately on the sight bar. They were sometimes fitted to the elevation vernier. (See *The Book of the Rifle* by T.F. Fremantle, 1901).



Above:

Left, a ventometer to mark the wind line on the straight bar.  
Right, an elevation vernier fitted with a ventometer.



D.B. Minshall collection

Ventometer, no makers name

Vernier/ventometer, by George Gibbs, Bristol

The general design of the Krag backsight is very similar to that applied to the latest patterns of the Mauser and Mannlicher rifles of continental make, the wind adjustment on the American rifle being provided for by the lateral adjustment of the bar carrying the notch. In referring to various forms of match sights, the Doctor deals with nothing that will be unfamiliar to those in touch with English practice. He speaks also of the optical sights, which consist of a small concave eyepiece in the aperture of the back sight, and another glass of large diameter at the muzzle, these serving to define the target while using the ordinary sights. He says that this represents a new principle so far as he is aware. We could quote as an anticipation, Dr. Common's sight<sup>3</sup> on the same principle as used at last year's Bisley meeting. If this does not ante-date the King Optical Company of New York, who have just brought out the sight referred to by Dr. Hudson, we could quote English Letters Patent of thirty years ago which disclose the principle of adopting the galilean telescope system of lenses to rifle sighting.

The history of the development of the modern American .300-bore bullet is most instructive. This is

how Dr. Hudson relates a very interesting incident: "Until the Summer of 1902 we were unable to procure good bullets, and, in fact, were not even certain until then that the chief source of our trouble was in the bullets. At that time, with an important international match (Palma) on hand, and none of our ammunition giving really satisfactory results at the long ranges, I wrote an appealing letter to Mr. W. M. Thomas, the ballistic expert of the Union Metallic Cartridge Company, telling him of our troubles, and how we had experimented with everything else, but that it took a cartridge factory to conduct experiments in the production of metal-jacketed bullets. Mr. Thomas agreed to help, and the result of his efforts was the production of the first really satisfactory bullet of this character we had had." Mr. Thomas's attention was called to the fact that all the rifles the team had to shoot with, measured .308 in. to the bottom of the grooves, while all the bullets were smaller in diameter than the standard. He, therefore, made the new bullets .3085 in. in diameter. The shape was altered and various other changes were made, of which particulars are not given, but to use the Doctor's own words, "the new bullet marked a new era in our

3. Dr. Andrew Ainslie Common (1841-1903), F.R.S. was a well-known astronomer, and also spent time in the design of telescopic and optical sights for the Royal Navy and the Royal Artillery. In 1902 he sponsored a 1,000 yard 'Optical Sights Competition' for service rifles during the National Rifle Association meeting at Bisley. The rules required the sight to be detachable, not to exceed three ounces in weight or 50s. in price complete. He provided sights of his own invention which were available for use if desired. The consisted of a single lens as fore-sight, the ordinary aperture sight being the back-sight. The "Common" magnifying sights competition was again held in 1903, but for the last time, Dr. Common having passed away in June.

Pictured is a **Martin Lens Sight** (c1910). "Can be used on any rifle. It enlarges the object, and gives clear definition. Being indestructible and portable, it is the ideal sporting, target, or military sight," (The Field, 21 May 1910). Whilst this post-dates the original article by several years it is illustrative of a form of sight using a

large diameter magnifying lens that can be fitted at the muzzle of the rifle. This sight can be folded down into a protective case whilst still on the rifle.



*D.B. Minshall collection*

long-range shooting, for the misses became infrequent even at the longest ranges, and the scores suddenly jumped up to a standard that had never before been reached except with match rifles.”

Turning to the N.R.A. [UK] Annual Report, this is what Major Freemantle says about these same bullets: “In view of the very high scores made in practice by the Americans, scores which the (English) Service rifle and ammunition seem incapable of equalling, and in view also of the small vertical deviation noticed during the match on the American targets as compared with those of the other teams, it may be presumed that the team from the United States held a decided advantage as regards their rifle and ammunition.” It might be replied that the British team won the match. It did; and this is how Dr. Hudson, a member of the team, explains it, and Major Freemantle’s account of the incident and the scores made shows it to be true: “We profited by the good weather conditions of the morning and gained a lead of 22 points over the English team at 800 yards. But in the afternoon, when the 900 yards’ stage was about one-third completed, very bad weather conditions arose, with rapid changes of light caused by clouds scudding by; the wind came in fierce gusts, veered continually from one point to another, and small but strong eddy currents formed on the range. Under these conditions, with nearly every flag pointing in a different direction, the only reliable way to estimate the wind was by observing the mirage through a telescope trained on the target. This the English team had found in their three weeks’ practice to be the only reliable way of gauging the wind on that range, while we were almost totally unfamiliar with that method, and had not even brought a suitable telescope with us. The result was that the Englishmen overcame our lead and gained 12 points on us. At 1,000 yards the conditions had settled a little, and we just held our own; but were unable to overcome the 12 points lead.”

This really summarises the condition of American long-range target shooting. We in England have reduced the shooting to a science, but we take the rifles on trust; that is if our own rifle is beaten, we take over the Mannlicher. In the United States they are of a more experimental turn of mind, and Dr. Hudson reckoned that where there was an error, its source could be traced. They found the right bullet at once. We, in the person

of the English captain, are still complaining about the .303 service bullet. Armourer-Sergeant J. E. Martin, proprietor of the well-known Glasgow gun business of that name, was armourer to the team, and his time was mainly spent in scrubbing the nickel out of the barrels that had accumulated after each shoot. We believe the English team used extra power ammunition, thereby accentuating the “nickeling” tendency.

We have not stood quite still over here. We are at least on the way to the discovery that an extra good quality of nickel jacket will foul the barrel even in the presence of unusually high velocities, less, than that on the ordinary service bullet. We have more information than we are at liberty to publish; but when the time comes we shall be able to see whether there is not after all, more in the bullet than our philosophy has hitherto dreamed of. In the last match we were handicapped by bad shooting rifles, but managed to pull up the loss by better judgment of the fortunately tricky conditions of wind and light that came to our rescue.

Since then the Americans have no doubt learnt to place more reliance on the telescope than on the flags. We on our side are likely to be better equipped with ammunition than on the former occasion. In the Palma match, the American outers and misses showed a tendency to shoot right and left of the bull, which is a question of the man behind the gun, while the British misses were mainly due to elevation, which is a question of the rifle. This, then, is a summary of American rifle shooting, judged by reference to the English standard. The question shortly to be settled is, on what side does the balance of advantage now lie<sup>4</sup>.

*Footnotes by David Minshall  
All books from the D.B. Minshall collection*



---

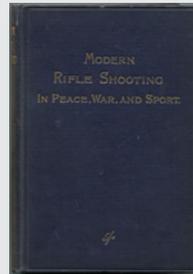
4. The Palma Trophy was competed for by seven teams in 1903; Australia, Canada, France, Great Britain, Natal, Norway and the United States of America. The match was won by the United States of America.

### Luke and John Tippins

**Luke Tippins** (1858-1940) was a well known Bisley rifleman. He was a school master by profession and headmaster of Mistley Norman School, Essex. In the 1901 census he identified his profession as "Schoolmaster," and in 1911 as "Schoolmaster & Riflemaker." He eventually became a full-time gunmaker. He enlisted with the 2nd Volunteer Battalion, Essex Regiment in 1892, who with the army reorganisation of 1908 became the 5th Battalion, Essex Regiment. In his 1908 Territorial Force attestation papers he identified his trade as "Schoolmaster & Rifle Expert." He served with them until 1914, when he was discharged in consequence of being medically unfit for further military service. Luke authored *Modern Rifle Shooting*, *The Service Rifles*, and *The Rifleman's Companion*.

Luke's son, **John Tippins** (1887-1914) was a gifted rifle shot, as will be seen from his obituary below. In 1911 he was identified in the census as a rifle maker. Like his father he served with 2nd Volunteer Battalion and the 5th Battalion, Essex Regiment. In 1914 he sought overseas service, but did not see the year out, being killed in action in November 1914.

*David Minshall*



"MODERN RIFLE SHOOTING: IN PEACE, WAR, AND SPORTS," by L. R. Tippins. (J. S. Phillips. 5 shillings.) Taking the place of the author's work on the same subject, rendered out of date by the adoption of the Lee-Netford, this concise and practical text-book on rifle

shooting makes its appearance very opportunely on the eve of Bisley, at a time when skill with the rifle has been recognised in the highest quarters as an urgent national need. The author shows a thorough grasp of his subject, the result, it is plain, of careful study and experiment joined to long and wide experience. Written in the plainest, but at the same time, clearest possible style, with a summary for convenience of the reader at the end of each chapter of the chief points it contains, this publication should do much to spread a better knowledge of rifle shooting, and lead to greater skill with the Service Arm in peace and war as well as in sport. Published at a reasonable price, and in convenient form, Mr. Tippin's work should be found in the library of every user of the rifle. (*Sporting Gazette*, Saturday 14 July 1900)

### Obituary, Luke Tippins

THE LATE Mr. L.R. TIPPINS. The funeral took place on Feb. 2 at St. Mary's of Luke Ricketts Tippins, of The Haven, Mistley, who was 81, and for many years headmaster of Mistley Norman School. He made a study of the science of explosives. Every he and his son – the famous Bisley shot Sgt John Tippins. who was killed early the last war – entered for the shooting competitions of the National Rifle Association, and the experiments they carried out, were of great value to the nation. He wrote important books on rifle shooting. During the time Mr. and

Mrs. Tippins were at Mistley Norman School a large infant room was added, and parents and scholars presented the couple with a bookcase. Mrs. Tippins died in 1925. Miss Tippins their only daughter, then became headmistress of Wrabness school, to be near her father. Until a short time before his death Luke Tippins was chorister at St. Mary's Church and a member of the Parish Council. The funeral service was conducted by the Rector, the Rev. J.G. Madeley, and many were present. (*Essex Newsman*, Saturday 10 February 1940)

## Obituary, John Tippins

### DEATH OF A FAMOUS BISLEY SHOT

The well-known Bisley shot, Corporal John Tippins of the 2nd Essex Regiment, formerly sergeant in the 5th Essex and 8th Essex Regiments, has been killed while fetching water for his Maxim. Corporal Tippins was in the final stage of the King's Prize Competition in 1908, 1909, 1910, 1911, and 1913; he won the Wimbledon Cup in 1910, the Association Cup in 1909, the Aggregate Service Rifle Championship in 1911, and took first place in the second stage of the Albert Competition in the same year. (*The Times*, 23 December 1914)

The following was published in *De Ruigny's Roll of Honour*. This Roll of Honour was originally compiled into 5 volumes by the 9th Marquis of Ruigny and Raineval who was very interested in genealogical research. It contains biographies of over 26,000 casualties of the Great War. Casualties include men (both officers and ranks) from the British Army, Navy, and Air Force.

TIPPINS, JOHN, Corporal and Acting Sergt., No. 3105, 2nd Battn., Essex Regt. son of Luke R. Tippins of Mistley, Essex, Schoolmaster and Rifle Expert; born. Winsford, Somerset, 10 March, 1887; educ. Norman School, Mistley, and privately: served first in 2nd Vol. Battalion, Essex Regt., then in the 5th Essex (T.F.) as Machine Gun Sergt, and finally in 8th Essex (T.F.) as Motor Cycle Sergeant; joined 2nd Battn. as Private 18 Sept. 1914, in order to get at once to the front, and was appointed Corpl, and left for France the following day, and was killed in action at a farm near Armentieres, 26 Nov. 1914, having been appointed Acting Sergt., in charge



ENGLISH TEAM WINNERS OF THE MACKINNON CUP BISLEY

Postcard sent by John Tippins, 30 July 1907.

Private J. Tippins is in the back row, standing third from left.

of a machine gun a few days previously. Buried in 2nd Essex Cemetery, near Armentieres; unmarried. John Tippins was one of the finest rifle shots in the United Kingdom. He qualified for the final stage of the King's Prize Competition at Bisley in the years 1908-11 inclusive and in 1913; he won the Wimbledon Cup, 1909, the Aggregate Service Rifle Championship, 1911, and took first place in the second stage of the Albert Competition the same year. He shot in the Elcho, Mackinnon, and Challenge Trophy teams, and was one of the Empire Team chosen to go out to Australia, whose departure was prevented by the outbreak of war. On the night he fell, he had gone himself to get water for the Maxim in his charge, as it was a dangerous job in daylight, and was killed on his return. Capt. Binstead (since killed) wrote: He had already gained for himself a reputation as a daring sniper and splendid shot, which had spread far beyond his own regt., and which had he not been shot, would, I feel, have obtained for him a coveted distinction.

# *The National Match*

## *1864-1899*

*Nick Leaper*



**B**y 1864 the National Rifle Association's Wimbledon Meetings had been taking place for 4 years. Most of the competitions were individual matches with the exception of the Elcho Shield, a long range match between England and Scotland with teams of 8 shooters. Following the success of the Elcho Match it was thought desirable to have a similar short range match for the Enfield Rifle. The new match was to be called the "International Enfield Match" although it was also referred to as the Simultaneous Enfield Match. It was first shot in 1864 between England and Scotland. Teams of 20 a side, at 200, 500 and 600 yards. 7 rounds each per range, with the Hythe (kneeling) position being used. This first match was won by England with a score of 1016 out of 1680 with Scotland scoring 963.

In **1865** Ireland made their first appearance in the International Enfield Match. The team was Captained by Major A.B. Leech who was a great supporter of rifle

shooting, although the choice of a team was restricted by their being no established Volunteer Force in Ireland. The team selection therefore was restricted to serving volunteers in battalions within Britain, the match being shot at Wimbledon and won by Scotland.

**1866.** The match conditions had always been that the winning team nominated the venue for the next match. Scotland being the preceding years winner required the match to be held in Scotland however considerable objection was raised due to the inconvenience to other teams having to make the long journey specially for the match when the majority of participants would be present at Wimbledon for the N.R.A. meeting. Scotland insisted with compliance with the rules and the match was held in Edinburgh with England winning and Ireland not sending a team. The original rule was to come back to haunt the match some 10 years later and it would be many years before the match was regularly held during the N.R.A. Meeting.

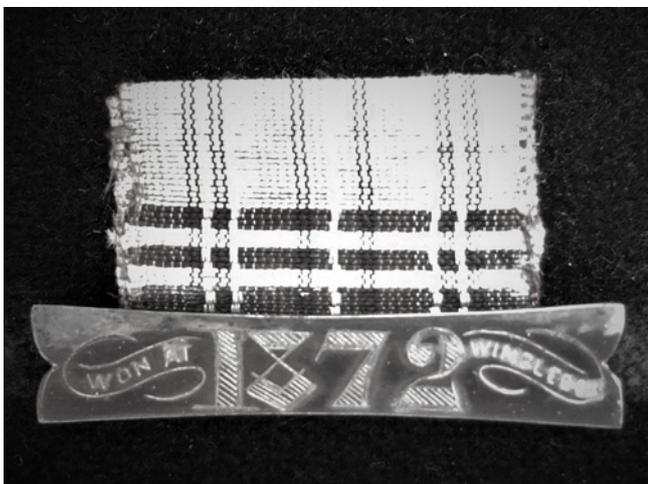
**1867.** The match was again shot at Wimbledon with Scotland winning for the second time. For some years previously the NRA and Gunmakers Company had presented purses to the winning team and highest scores in the whole match but this had stopped some years previously. In 1867 The Gunmakers Company presented a silver trophy which was to be held by the Captain of the winning team until the next competition for the trophy.

**1868.** Scotland having won the match in 1867 the match was shot on the 10th June in Edinburgh. The match was again won by England with a score of 1068 against Scotland's 1057 and Ireland 980. Again the rule regarding the winning team hosting the match raised its head with the argument that a second Scottish defeat negated the argument of having the match in the host country but it would be nine years before the issue would be finally settled and the Match would always be held at Wimbledon until the move to Bisley in 1890.



1865 Medal given to winning Scottish XX

**1869.** Much discussion took place in 1869 as to the rifle to replace the Snider. The recommendation from the War Office that the Martini-Henry should be adopted was not received with unanimous approval. The NRA Committee's choice fell upon the Henry which had been placed second in the trials. Each of the rifles had good and bad points but had been placed either first or second in competitions at Wimbledon that year.



1872 Ribbon given to English XX



1873 Ribbon given to English XX

## The National Match

**1870.** This year the match was won by England with a score of 1076. Scotland 1041 and Ireland 1032. The Gunmakers cup and purse for highest score in the Twenty was won by Cpl Hepplestone of the 1st Manchester with a score of 68. The Elcho and National Trophy were mounted on gun-carriages on Saturday the 20th August, each drawn by 6 horses to the Guildhall in London and presented to the Lord Mayor for safe keeping until the next meeting. The practice of the trophy being presented to the Lord Mayor of London or Provost in Edinburgh continued well into the 20th Century when due to the age and fragility of the trophy it would have a permanent home in the NRA museum at Bisley where it can be seen today.

**1871.** In this year the match had a change of name and became “The International Challenge Trophy”, due in part to the issue of the Snider rifle to Volunteers which required a change in the Service rifle conditions. Scotland won and under the migratory clause the match would have to take place in Scotland. Scotland won the match with 1105 marks. England 1090 and Ireland 1031. The Gunmakers Cup being won by Ensign Gray, of the 1st Ayr with 63 marks.

**1872.** The match this year was again shot in Scotland. This time in June during the City of Edinburgh and Mid-Lothian RA meeting, with England narrowly beating Scotland by 3 marks.

**1873.** The match was won by England.

**1874.** The match was won by Scotland.

**1875.** Scotland having won the previous year the match was held at Edinburgh on June 19th with



Scotland again winning with a score of 1112, England second with 1092 and Ireland third with 975.

**1876.** The Match now known as the “International Snider Match” was again won by Scotland at Edinburgh and it was now agreed between the Captains and Ex Captains of the Twenties that in future the match should be shot at Wimbledon, however the decision was not taken well by Scottish riflemen who said they would refuse to accept the decision and compete under these terms.

**1877.** “The International Snider Trophy” again had a change of name, this year becoming “The National Challenge Trophy” or the “National Match” as it is usually referred to today. Unfortunately, the match lost much of its kudos due to Scotland refusing to enter a team.

**1878.** A change of conditions for the match as the Martini-Henry became the rifle of choice. England winning with a score of 1635 with Ireland second with 1565. Scotland again declined to shoot. Scotland were to refuse to shoot in 1879 and it would not be until 1880 that they took part again. Wales raised the question of entering a team in 1878 but it would not be until 1882 that the Principality

Top to bottom:

- English XX 1st type badge
- English XX 2nd type badge
- English XX 3rd type badge
- English XX reserve badge



Scottish XX team bullion badge



Irish XX 1st type badge



Welsh XX First appearance in team badge



Scottish XX sleeve badge 2nd type



Irish XX 2nd type badge



Welsh XX additional year badge



Scottish XX additional year badge

entered a team. The introduction of the Martini-Henry bought about an immediate increase in scores with the average in the National increasing from 61.9 to 81.7.

**1880.** A compromise agreement was reached with the Scottish XX without altogether surrendering the position they took in 1877. In 1880 the Match would be shot at Edinburgh and in 1881 at Wimbledon and the winning team would have the next match in their country but the match should not be held more than two

consecutive years away from Wimbledon. Agreement was also reached to allow a Welsh XX team to enter in 1880 but it was not possible to organise a Welsh team that year. England won with a score of 1773. Scotland 1700 and Ireland 1591.

**1882.** The Field Memorial Challenge Cup was instituted in this year. The rules being that it was to be awarded as an independent prize for Martini's at 600 yards restricted to members and ex members of the XX in the National Match. Capt. J.W.P. Field, Musketry Instructor of the H.A.C from 1866 to 1879- the year of his death he had been Captain of the England XX team. A Memorial Fund was raised by Major Waller who was his successor in the post. The Cup to be awarded to the highest score in the winning team. In 1882 this was Corp. Geddes of Galloway. The match took place in June at Darnley, with Scotland running out the winners with 1753. England 1734 and Ireland 1546. The Welsh were unable to form a team due to the

## The National Match

expense of travelling North. Ireland's score reflected the difficulty of getting their best shots to make the journey. In the 20th Century the Field trophy was to be awarded to the Captain of the winning team for a period of one year.

**1890.** The first Bisley meeting. Scotland won the match and issued a special badge to each member of the team.

**1895.** Saw the introduction of a badge which could be obtained by past members of the Elcho, Regulars and Volunteers, Whitehead, National Trophy, China Cup, Kolapore Cup. United Services and Mackinnon Matches. Possibly because many of these matches already had their own badges it doesn't seem to have been much applied for, and certainly does not appear to have been in much evidence and the design is not now known but examples of a silver badge with pin brooch are in evidence with "China Cup" inscribed and the same badge was issued to members of other team matches.

**1897.** The Martini-Henry now disappeared in favour of the Lee-Metford and competitions where Volunteers were using the Lee-Metford were now called "Service Rifle" competitions. Again, the objections to holding the National Match in Scotland raised their head when Wales and Ireland declined to enter teams whilst they would certainly have entered if shot at Bisley. Scotland won.

**1899.** Scotland having won the match again in 1898 were entitled to hold the match in Scotland. Major Thorburn Captain of the Scottish XX was of the opinion the match should however be held at Bisley. This was also agreed by the new Captain Major Brock, this concession was much appreciated by the other three competing teams and made Scotland's subsequent win all the more palatable for all.



*1890 Scottish XX special winners badge*



*Silver sleeve badge given to winning team*

### The Trophy

Without doubt the National Rifle Association holds one of the finest collections of silver in the UK, if not the world, for competition in rifle and revolver shooting. This has come about in main by the patriotic feeling within the country due to the perceived threat of invasion and the formation of the Volunteer Movement. There was a time when the Press actively supported and presented trophies for competition. The Times, Graphic and indeed until quite recent years the Daily Mail and Telegraph supported and sponsored prizes at the Imperial Meeting. The

National Trophy was produced by Elkington & Co. of Birmingham, it is of solid silver and in the neo-grecian style. 1.600m long x 0.610m wide and 1.145m high and of substantial weight. Of cruciform plateau shape with a laurel leaf border pattern. The centre of the trophy is a two-storey pedestal. At each end of the plateau is an allegorical group, one representing Peace and the other War. Figures of Volunteers stand on either side of the pedestal. Peace is represented by a figure of Minerva standing within an ox drawn cart and War by Mars within a chariot. Inscribed on the plinths are the mottos "Si Vis Pacem Para Bellum" or "Defence not Defiance" which is also seen on many Volunteer medals of the period. Four other allegorical groups sit around the plateau. One side representing the blessings of Peace and the other side the evils of War. The figure of Patriotism stands on the top of the central column guarding the shields of England and Scotland. Seated putee figures in front of the pedestal are holding shooting accessories.

### Badges and Medals

Early on in the competition bullion badges and “dangler” medals were introduced for members of the England and Scottish XX. A print in *The Graphic* of 1871 entitled “Crack Shots” clearly shows members of the English XX with a circular white bullion badge with a cross of St. George in the centre. H.T. Wells’ R.A. “Volunteers on the Firing Point” (*front cover*. Ed.) shows John Heaton with a small cross of St. George on his left sleeve over a Queens final badge; these were undated. Later the date year of the match was embroidered and match reserves had a small R in the bottom arm of the cross.

The 1871 print appears to show one of the Scottish team with a cross of St. Andrew cloth badge on his sleeve which were given to members of the Elcho team. This appears to be the only indication a cloth badge was awarded and no cloth badge was given for the National until after 1920 when the attractive silver and enamel badges ceased to be awarded, presumably due to cost.

*Medals.* Match conditions dictated that winners of the match would be provided with a medal presented by the losing side. In the case of Scotland winning, the English team presented a round silver medal to the Scottish side with the figure of St. George imposed on a cross of St. George with an outer border with the inscription “International Volunteer Match” Inst. 1864. The reverse was inscribed with “Won by Scotland” and the year within a laurel leaf border.

In the case of England winning, the Scottish team in the early years presented a small section of tartan ribbon with silver plaque with the year and “won at Wimbledon or Edinburgh” engraved upon it. At a date post 1880 a silver medal comprising the cross of St. Andrew within a wreath of laurels and the wording “International Volunteer Match” on a tartan ribbon took its place. Subsequent inclusion in a winning team was rewarded with a year bar added to the ribbon as per the picture of Arm. Sgt. Ingram of the Scottish team.

To date we have not found evidence for Scottish Bullion badges in the early period of the match, we do know that in the 1870’s a small “dangler” medal with year bars were given to members of the Scottish team.

This medal was of blue enamel with the cross of St. Andrew and a central thistle. Later a much larger

silver and enamel shield with the date of the match and inscribed “International Twenty Match” and the Scottish Lion and crown to the centre. Post 1900 they were hallmarked and produced by Duncan of Edinburgh. Subsequent appearances attracted a small year brooch bar worn on a ribbon as illustrated in the picture of Armourer Sgt. Ingram shown in Bloomer’s book on Scottish Badges to Highland and Lowland Regiments. In 1890 at the first Bisley Meeting, Scotland again won the Match and those in the winning team received a special badge with “Won by Scotland” added to the inscription.

Post World War One it appears the silver brooches fell out of use, probably due to cost and a bullion badge was introduced with smaller year badges of the same appearance as the silver types. The Irish XX introduced a small green badge with a central Harp which was later changed to a and subsequent year bars. Also the Welsh XX introduced a badge with dragon and smaller year bars.



Arm. Sgt.  
Ingram

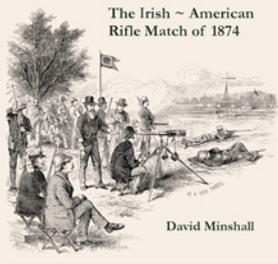


*Obverse and reverse of medal  
given by Scotland to  
English XX winners*



*Obverse and reverse of  
Scottish XX team dangle 1867*

## The Story of Creedmoor



## The Story of Creedmoor: The Irish ~ American Rifle Match of 1874

by

David Minshall

In 1873 riflemen of Ireland challenged the riflemen of America to a long range rifle championship. The challenge was taken up by the Amateur Rifle Club of New York, and the match took place in September 1874 at Creedmoor. *The Story of Creedmoor* discusses the establishment of the Irish Rifle Association, Creedmoor rifle range, the 1874 match and the follow-up at Dollymount in 1875. Appendices including correspondence relating to the match conditions, observations on rifles in use leading up to the match, full target diagrams for the teams and more.

[www.researchpress.co.uk/index.php/publishing](http://www.researchpress.co.uk/index.php/publishing)

## Long Range Black Powder Rifle Target Shooting



Long range target shooting with the percussion muzzle loading rifle and black powder cartridge rifle.

Historical study and shooting today.  
19th Century competition at Wimbledon, Creedmoor and Dollymount. The rifles, ammunition and equipment, riflemen and gunmakers.

[www.facebook.com/groups/researchpress](http://www.facebook.com/groups/researchpress)

## Muzzle Loaders Association of Great Britain



*The MLAGB was formed in 1952 and is the Governing Body for muzzle loading within the UK.*

*Its objectives are to encourage an interest in muzzle loading firearms, to promote, regulate and safeguard their use and to preserve their freedom of collection.*

[www.mlagb.com](http://www.mlagb.com)

## Historical Breechloading Smallarms Association



*The HBSA was founded in 1973. The fundamental aims of the HBSA are to encourage the Preservation of Historic and Heritage Breechloading firearms and to foster the research and study of all aspects of the subject, from the aesthetics of sporting guns and the engraver's art to the functional aspects of firearms used by the soldier, target shooter and the sporting shooter.*

[www.hbsa-uk.org](http://www.hbsa-uk.org)

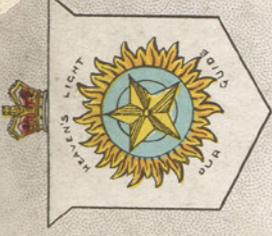
CAPE COLONY



CANADA



INDIA



AUSTRALIA



VIEWS OF

# *Bisley Rifle Meeting and Camp.*

THE SHOOTING HEADQUARTERS

# OF THE BRITISH ARMY

ALDERSHOT.  
PUBLISHED BY  
*Saunders & Co.*



REGISTERED DESIGN