

HEREFORDSHIRE ARCHAEOLOGY

An archaeological survey of a Rifle Volunteers' firing range on Bromyard Downs, Herefordshire



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Summary:

A firing range or rifle range (HER 53707) shown by the first edition Ordnance Survey map of 1886 on Bromyard Downs used by the late Victorian Rifle Volunteer movement was investigated in order to determine the lifespan of the range and the weapons used there.

A metal-detector survey was carried out with local volunteers under professional supervision by Herefordshire Archaeology and showed that the rifle range had been used from 1860 through to a date probably in the mid-1880s but probably not long after 1890; the range was certainly officially disused by the early 1900s (2nd edition O.S.).

Three types of Victorian service rifle can be shown to have been used and the recovered ammunition shows evidence of some of the ballistic characteristics noted by users at the time. The survey also showed that the firing range – a widespread but little-studied archaeological monument type – retains its below-ground archaeological signature despite the post-war levelling of its earthworks

Disclaimer: It should not be assumed that land referred to in this document is accessible to the public. Location plans are indicative only. National Grid References are accurate to approximately 5m. Measured dimensions are accurate to within 1m at a scale of 1:500, 0.1m at 1:50 and 0.02m at 1:20m

Figures contained within this report contain material from the Ordnance Survey. The grid in this material is the National Grid taken from the Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office (OS Licence 100024168). This material has been reproduced in order to locate the site in its environs.

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The background to the project

This project forms part of the Bromyard Downs Project, a project funded by the Heritage Lottery Fund and principally aimed at the conservation and understanding of the Bromyard Downs, a rare area of historically grazed and managed Downland in eastern Herefordshire. The Bromyard Downs Project is run by Herefordshire Wildlife Trust, who together with the Bromyard Downs Graziers Committee and other partners are running a two year project encompassing all aspects of environmental and cultural heritage.

The archaeological elements of the project were first discussed and agreed upon during 2012, when Fran Griffiths (the Conservation Manager at Herefordshire Wildlife Trust) was producing the application for the Lottery bid. This report, (EHE80171), provides a description of the findings of the first element of the archaeological input into the overall project. The second element will be the investigation of the two World War II, "Herefordshire Maquis", observation bunkers within Warren Wood on the Downs. Both of these pieces of work are dedicated to Fran who passed away in 2013, well before her time.



Figure1: Location of the Rifle Range with reference to Bromyard town.

The Bromyard Downs Rifle Range was chosen as a research subject principally because there is so little information concerning this class of monument. Whilst there are approximately a dozen such rifle ranges in Herefordshire, none have been investigated archaeologically and whilst some basic documentary research has been done on a very few, this information is largely unsubstantiated. It is interesting to note that despite the 600 yard long rifle range on the Downs being clearly marked, with its yard marks every 100 yards, its windage flagstaff, targets and butts, on the 1st Edition Ordnance Survey Map (Figure 2); it was only entered into the Historic Environment Record as a result of this piece of fieldwork.



Figure 2: Extract from the 1st Edition Ordnance Survey Map 1886-7 showing the rifle range.

This therefore appeared to be an opportunity to archaeologically investigate a class of monument which have largely been ignored and in so doing, engage with a number of people from the local community who had not necessarily considered this feature as part of the history and development of the Bromyard Downs.



Plate 1: Site if the area where the targets were (middle distance, immediately below the tree-line). This is the area which was subject to the metal detector survey.

The site work comprised a Guided walk around the Downs in order to introduce the project and put the rifle range in context with the other features of historical interest, including the race course and golf course. This was followed by two days of metal detecting survey (18th & 19th August), under licence from Herefordshire Council, in order to retrieve spend rounds (bullets). These were then catalogued by type and calibre, matched to the firearms that they would have been fired from and therefore dated. The later part of the 19th century saw rapid changes in the development of both ammunition and firearm technology, making the dating of different types and calibres of ammunition relatively precise.

(N.B. Please note that permission to metal detect on Herefordshire Council owned land is only granted for specific projects and is generally not allowed).

Historical background

In May 1858 the government responded to a growing popular demand for the strengthening of British defences in the face of a perceived threat of French invasion by authorising Lord Lieutenants to raise Volunteer corps under the provisions of the 1804 Yeomanry Act. On 1st July that year, Lord Palmerston's new administration announced that they would arm the volunteers with an issue of 25 Enfield rifles per 100 volunteers on condition that the corps provide a secure armoury, a safe range, adopt approved rules and be subject to military inspection (Beckett 1982, 23-7). With a persisting fear of French militarism under Napoleon III, 133 rifle corps were raised in 1859, attracting recruits at the rate of 700 per day, followed by a further 578 corps in 1860 – including Herefordshire's – and 36 in 1861. The Volunteer movement remained strong and numerous throughout the 1860s, 70s and 80s, and appears to have been guietly influential on late Victorian life. Nationally, it has been suggested, it made a substantial contribution to the patriotic, moral and militaristic values of the time (Beckett 1982, 197-203). Locally, the rifle volunteers could be a force for social change. In Shrewsbury, the need of the volunteers, often recruited amongst young clerks and solicitors, for target practice, added to pressure for an Early Closing Day. It rapidly became a socially significant activity, and a county rifle competition held in Shropshire in June 1861 was watched by a crowd estimated at between 20 and 30,000 (Dunham 1984). Throughout, musketry skills were paramount, and target practice - 'that interesting, healthful and manly exercise which the Rifle movement is supposed to supply' - was seen as the main way of maintaining the enthusiasm of the volunteers (Beckett 1982, 113).

The Herefordshire Rifle Volunteer Corps were raised in 1860. Eight were formed in Herefordshire and three in Radnorshire; Company D was raised at Bromyard in May as the 4th HRVC. They saw overseas service with the KSLI in South Africa from 1899-1901 and survived as Company F (Leominster and Bromyard) to be incorporated into the Territorial Army in 1908 (Hill, T, quoted in the Herefordshire Light Infantry (T.A.) website).

The site chosen for the 4th HRVC firing range was Bromyard Downs, an area of common land about one mile east of the town centre. A racecourse had been created there immediately after the Napoleonic Wars, (the first meeting being in 1820), and the range was created on the grassland within the racetrack towards its eastern side, away from the smallholdings that clustered around and encroached upon the down-slope side of the common, nearest the town.

The best single representation of the firing range, at what it seems was the end of its active life, is the Ordnance Survey's 1st edition 1:2500 plan, surveyed in 1885 and published the following year, (Figure 3). It consisted of three converging lanes, all pointing roughly south-south-east.



Figure 3: Extract from 1st Edition Ordnance Survey Map of 1885

The furthest firing point from the target was at 600 yards, just west of the racecourse track about 100m south of the Bromyard-Stourport road, in front of the Broad Oak this lane had a marker at 500 yards but no other firing points. Just to its east was a second lane with firing points at 500 yards (where there was some kind of square structure, probably a flat platform) and 400 yards, with a marker post at 300 yards. Just to its east, the third lane had firing points at 300, 200 and 100 yards. Given their close proximity, it is unlikely that more than a single lane was used at one time.

At the butts end, the map shows the targets (plural) as a solid square structure projecting forward from a short straight line. Immediately behind the targets was a backstop shown as an earthwork mound 11 yards long with its west end curving forwards. As well as a backstop, this may have acted as a mantlet, protecting the Volunteers on marking duty. Behind that, on the further side of the racetrack, was a second embankment on the hillside above, no doubt to stop high rounds from ricocheting off the rising ground; the map bears the legend 'Butts' between the two embankments. There was also a flagstaff a few yards to the east, which would have given formal warning that firing was taking place and would have aided the shooters by indicating wind strength and direction at the target. There is no sign of a second flagpole at the firing-point end though the map shows a 'picket' between the 500yds and 600 yards firing points.

The nature of the targets is not evident from the map evidence alone. Local tradition states that one was a solid iron plate, a tradition that is fully consistent with the many flattened bullets recovered together with small flakes of iron that may well have spalled off the back of such a plate as bullets struck the front (see below). It would presumably have had a target painted on its face that was marked or whitewashed when the fall of shot had been recorded. It is understood that parts of the target frame remained *in-situ* until the 1960's at which point it was taken to a scrap yard just off Pannier's Lane, where it is thought to still be. Iron targets used in 1860 on the Rifle Volunteers' range at Altcar, Lancashire, were said to be responsible for accidents as markers were cut and bruised by flying bullet fragments (Cook 1989, 19).

No user's experience of the range has been recorded. While undoubtedly safely placed, pointing away from populated areas and with the ground rising from c.630 feet at the 600-yards firing point to c.740 feet on the hilltop behind the butts, shooting would have taken place across the slight declivity in the concave slope such that the shorter distances would have been shot fairly noticeably uphill. The SSE direction would also have been a problem in some light conditions: a challenge perhaps for the iron sights of mid- and late 19th-century service arms, though all of the rifles which can now be shown to have been used there would have been quite at home at the 600-yard distance. The earthworks are said locally to have stood until the late 1950's or early 60's, when they were bulldozed flat.

The metal-detector survey:

The areas immediately in front of and behind the target location were surveyed using metal detectors. This was in order to retrieve a sample of spent rounds and to look at their distribution relative to the mapped features and the present topography.

The principle metal detector used was a Minelab Xterra 705. The location of each find was recorded using a Garmin 60CSx, hand held GPS unit. The locations were then transferred into Mapinfo GIS in order to produce illustrative plots in relation to the 1st Edition Ordnance Survey Map of 1886-7.



Plate 2: Teams of volunteers excavating and locating spent rounds.

Two period firearms were loaned by Herefordshire Museum Service during the period of site work, (a 3 band Enfield 1853 pattern and an 1860 Martini Henry .577) in order to illustrate the types of firearms being used on the range, (see plate 4). A Lee Enfield 1916 SMLE rifle was supplied by Nigel Baker to show how far the technological development of firearms had gone within a period of 50 years or so.



Plate 3: Excavating a spent round from the race track.



Plate 4: Volunteers and staff with the "tools of the trade" including period firearms.



Figure 4: Plot of all rounds recovered during the survey in relation to the mapped rifle range features on the 1st Edition Ordnance Survey Map extract of 1886-7.

The finds

81 lead objects identified as rifle rounds were recovered by metal detection, in various conditions, together with a number of small flakes of iron or lead, identifiable as bullet fragments or flakes spalled off the back of the iron target believed to have been used. Visual inspection and initial measurements with digital callipers showed that the identifiable bullets could be attributed to two calibres: 0.450 inch and 0.577 inch, with a single .303 round. The latter, a typical Mk VII type (pointed) .303 head with a pronounced boat-tail (tapering rear end) had lost its cupro-nickel jacket and was reduced to its iron core; it was however of relatively modern appearance and may have represented unauthorised use of the range in the 20th century, after its official disuse.

In addition to the bullets described below, the metal-detector survey also yielded the base of a metallic cartridge of .577 Boxer type, a single .303 blank cartridge case and an unidentified round of probable 9mm calibre.

0.577-inch bullets

50 bullets were of 0.577 calibre and were divisible into two types. The first type ('**Type 1**', 15 examples) were round-nosed soft lead bullets about an inch in length (1.0" to 1.02"), smooth, with deep hollows in their bases, except for two which retained a wood or clay plug. They were weighed on scales, revealing a weight-range of 475 grains to 510 grains, with most examples at 480 or 485 grains.



Figure 5: Plot of .577 rounds recovered during the survey in relation to the mapped rifle range features on the 1st Edition Ordnance Survey Map extract of 1886-7.



Plate 5 : Type 1 0.577 bullet

Type 2 0.577 canellured bullet

A larger group of different 0.577 bullets ('**Type 2**') was identified, with 18 intact and a further 8 damaged examples. These were distinguished by their external grooves or cannelures, designed to hold a lubricant wax to ease the passage of the round down the barrel and keep the fouling soft. These too were round-nosed, of soft lead, with either three or four cannelures and of 1.0" to 1.02" length. Only one was seen to have a deep hollow base but all the others (except severely damaged examples) appeared to have base plugs of different (non-lead) material left in situ. The weight range of these rounds was lighter than that of the Group 1 0.577 rounds, at 435-455 grains. An additional distinguishing feature of this group was the presence of a hollow nose, revealed when the bullet had suffered minor damage. There were a number of examples where a bullet had completely flattened against a hard face into a penannular (doughnut-like) form, and fragments of similar form suggest that in some cases the bullet disintegrated on impact.

0.450 bullets

31 bullets of this calibre were recovered; 7 were damaged but 24 were fully measured and weighed. All were of hardened lead with a round nose, slightly recessed flat base and two cannelure grooves, but two types could be distinguished. Type 1 (12 examples) were longer and heavier, with a weight range of 440 grains to 460 grains and a length of 1.2 inches (1.181-1.241"). Type 2 (5 examples) were shorter and lighter, with a length of 1.0 to 1.151 inches and a weight range of 365 to 430 grains.



Figure 5: Plot of .45 rounds recovered during the survey in relation to the mapped rifle range features on the 1st Edition Ordnance Survey Map extract of 1886-7.



Plate 6: Type 1, 0.450 Long bullet

Type 2, 0.450 Short bullet

The bullets: identification and discussion

The type 1 (smooth, 475-510 grain) 0.577 bullets can be identified as rounds shot by Pattern 1853 Enfield rifled percussion muskets. A muzzle-loader, the bullets were made smaller than the bore (0.568 rather than 0.577) for easy loading and, with a hollow base, expanded on ignition of the charge to make a gas-tight seal and to engage the rifling. Later, to give even greater expansion, a plug was fitted in the base cavity, as in the examples here. Lubrication was provided by its waxed paper wrapping (Reynolds 1960, 17; MLAGB website Bill Curtis *Managing the Enfield* pt 2).

The type 2 (cannelured, 400-470 grain) 0.577 bullets can be identified as rounds shot by breech-loading Snider conversions of P53 Enfields. Adopted in 1867, these rifles used expanding metallic cartridge cases designed the year before by Colonel Boxer (inventor of the expanding base plug). The case was of paper covered brass, with percussion cap ignition in the base and a propellant of 70 grains of black powder. The bullet had a base cavity fitted with a plug (wood, later compressed clay) and a cavity in its conical end to reduce weight in relation to length. This was either sealed over at the nose surface or filled by a wooden plug (Reynolds 1960, 18-20). A contemporary account of the Snider round noted the difficulties of the bullet design as 'the least satisfactory part of the ammunition' such that 'all that can be said is that the present bullet gives an accuracy and general shooting power about equal to that of the old Enfield, and superior to it in one respect – viz., that the wounds inflicted by the hollow-headed bullet are much more severe than those inflicted by a solidheaded round ('An officer of the Royal Artillery' in the Technical Educator 'Weapons of war' V, HBSA website). This account is consistent with the state of many of the rounds recovered here. Even if it was not the designer's intention, these are effectively hollow-point rounds, or expanding ('Dum-Dum') ammunition, banned as a weapon of war under modern international law.



The 0.450 inch bullets of both types (440-460 grain long and 390-430 grain short) represent the introduction of the Martini-Henry breech-loading service rifle of 1871. The cartridge was rolled-brass with a charge of 85 grains of a black powder, The

bullet wrapped in greased paper. The two bullet types may reflect the standard Mark III ball cartridge of 1873, and the lighter-loaded Mark IV of 1874, designed with a lighter bullet of 410 grains for carbines to reduce the recoil which, already impressive in the heavy service rifle, was downright fierce in the lighter carbine (Edwards, Martini Miscellany, HBSA website; Reynolds 1960 21).

Distribution

The rounds were recovered from two distinct areas: soft ground immediately in front of the former target position, and the much harder ground of the racecourse track, above and behind the targets. The overall distribution of the rounds is in fact extremely tight in terms of the arc of fire and faithfully reproduces the NNW-SSE axis of the range with no lateral spread beyond the target area: a testimony to the accuracy of the Bromyard Volunteers, though not perhaps to their range-finding with the slow, heavy, high-trajectory rounds available at the time. The recovered rounds represent undershoots, overshoots and ricochets. The soil profiles observed when recovering the rounds appeared 'normal' in the sense that there was no hint of an added depth of soil resulting from the bulldozing of the butts earthworks, and the distribution is fully consistent with this observation: the rounds were, it seems, found where they fell (though with some soil movement down the bank behind the race track), and were not contained in soil spread around when the range was removed.

Discussion:

The use of the firing range

The rapidly-changing technology of the second half of the 19th century means that the lifespan of the range can be accurately estimated. The conditions under which the Rifle Volunteer corps were raised makes it probable that the firing range was built in 1860 when the Bromyard unit was formed. The volunteers would have shot with the P53 Enfield. The Snider breech-loading conversion was adopted as the British service arm in 1867 and, while it might be thought that there would be a time-lag between its adoption by the Army and its appearance on a rural Volunteer corps rifle range, this may not have been the case. At Altcar in Lancashire Martini-Henrys were seen on the range the same year they were adopted for general service (1871) though Sniders were still in use alongside Martini-Henrys in 1881. The first Lee-Metford (0.303 inch), introduced in 1888, was seen on Altcar Range the following year, and they were used in large numbers there by 1892 (Cook 1989, 42, 45).

.303 rounds are notable for their absence from this collection, aside from a single stray round of later type. The calibre was in general service from 1888 when the Lee-Metford was introduced, and the lack of a single early .303 round suggests strongly

that either the range was disused as early as c.1890, or that the Bromyard unit was moribund and never re-equipped with the new repeating arms of the 1880s.

The second edition O.S. plan of 1904 not only shows the firing range 'disused' – a golf course had been laid out across the 600-yard firing point. It looks as if, by c.1900, an activity that had only forty years before been thought essential to the defence of the realm had been eclipsed.

The archaeology of firing ranges

Military firing ranges, particularly rifle ranges (as opposed to artillery), are rarely the subject of archaeological investigation. Where they are, the emphasis is usually on the survival and condition of surviving buildings and other standing structures (e.g. Dalland and Scott 2008) and not on the evidence for their use and evolution. This is despite their very common occurrence and widespread distribution. This is very evident from the Ordnance Survey 6-inch and 25-inch mapping of the 1880s, when the Volunteer movement was still active and many or even most English market towns could boast their own firing range, usually on common land or farmland within easy reach of the built-up area. In Herefordshire, Leominster's range lay just east of the town, Ross-on-Wye's range to the south, both designed to fire into rising ground (see Figure 6).



Herefordshire Rifle Volunteer firing ranges: 1 Kington; 2 Aston Ingham, Newent 3 Bromyard Downs; 4 Leominster; 5 Ross-on-Wye Figure 6: Comparative plans of 5 Volunteer rifle ranges.

Bromyard, and other Herefordshire firing ranges

The Ordnance Survey first-edition 6-inch and 25-inch maps of the 1880s provide a snapshot, not just of the Bromyard Downs range, but of all the Herefordshire Volunteer units' ranges across the county (and, of course, across the country as a whole), showing what permanent infrastructure was in place at each site. From the maps (see figure) it can be seen that the Bromvard range was, like most Volunteer ranges, extremely simple, though some were even more basic in the facilities they offered. Simplest of all was the range on Coppet Hill, Goodrich, with a single lane ending at a target in a small excavation marked as an old quarry, with no intermediate firing points indicated and no flagstaffs. At Aston Ingham near Newent, too, a single target was accommodated in a small delve cut into the rising ground, though here the distances marked by the Ordnance Survey at 100-400 yards probably represent actual distance-marking posts at the firing points. At Ledbury, unusually, targets were provided at two distances. More work had gone into creating the ranges at Bromyard, Kington and Leominster. Kington offered distance-marked firing points out to 800 yards, Bromyard 600 yards, and Leominster squeezed in a firing point at 550. Targets (plural) are shown on each of these ranges, housed in cuts into rising ground at Leominster and Kington and in front of stop-butt earth banks on two levels at Bromyard. Flagpoles are shown at Bromyard and Leominster.

Best equipped of all the county ranges was Ross-on-Wye. The Ordnance Survey shows this to have had eight lanes and eight targets with firing points out to 800 yards. Two flagstaffs are shown, one each side of the targets. Four 'Markers' Huts' are also shown (one per two targets) – in front of the targets, presumably (hopefully) set below the ground surface. Whether this was a common arrangement at the time is not currently known to the writers, though markers' huts from map evidence are referred to in HER entries from as far apart as the Valle Crucis and Farm Cottage ranges in Clwyd-Powys and the Riddlesdown range in Croydon (ADS website). It differs substantially from later practice, in that it implies that marking did not take place under cover (as it does with a gallery range where targets are raised in a counterweighted frame), and that firing had to cease before scoring/marking and patching or repainting took place. The Ross-on-Wye range was nevertheless clearly in a different league to those of the other market towns. It was attached to what the maps show as a 'Camping Ground (Militia)', and a permanent military base was to develop there.

The range at Ross-on-Wye is the only one in the county to survive in use to the present day, converted to a gallery range but now used only at much shorter distances than the Victorians' 800 yards, the further firing points showing as earthworks. The fate of the other ranges, and their current condition as field monuments, is beyond the scope of this project and has not been investigated. Nevertheless, the question arises –did the other county ranges (except Ross) also go out of use in the 1880s, as Bromyard did, and, if they did, does this reflect the waning popularity and activity of the Rifle Volunteer movement – or was it the deliberate result of centralised decision-making reflecting a greater concern for safety following the introduction of the higher-velocity .303 round after 1886? (1).

The archaeology of firing ranges: the national picture

Military firing ranges, particularly rifle ranges (as opposed to artillery), are a familiar and recurrent feature of Historic Environment Records, though very few have been investigated in detail and the present writers are unaware of any over-arching narrative of their history, form or development. A rapid search of the Archaeological Data Service website shows that it contains 224 records for England, 77 for Wales and 74 for Scotland. On close examination these totals fall slightly (for example, they include archaeological features on firing ranges counted independently) but they certainly dramatically under-represent the true number of ranges across the country. For example, where county SMRs or HERs appear to have undertaken a systematic trawl of first-edition Ordnance Survey mapping (the source of the vast majority of SMR entries) the totals are remarkable – Somerset, for example, has 27 rifle ranges listed; other counties (e.g. Suffolk) do not appear at all, though Volunteer ranges were certainly present. The Defence of Britain project recorded 56 ranges in various parts of the country. Firing ranges, particularly relating to the Rifle Volunteer movement, have also been noted as a recurrent monument type on town commons (Bowden, Brown and Smith 2009). In most instances the records relate only to the occurrence of a firing range on contemporary mapping, though in a smaller number of cases the survival and form of the firing range as a field monument has been noted. This is also the case where firing ranges are found as part of a larger military establishment, as on the Salisbury Plain training area, and as adjuncts to permanent army camps (Schofield 2006). Occasionally, field visits reveal an abandoned Volunteer rifle range in good, very readable condition, as at Attermire, near Settle, where the butts, firing-point platforms and cast iron targets of 1860 all survive (N Yorks. Dales National Park Authority prn NYD 3666D). Occasional excavations are listed though in most instances the range is just one set of features in a larger archaeological landscape. No other instances have been found of an investigation deliberately seeking spent rounds, though at Shapwick Down, Somerset, the National Trust SMR records lead bullets being recovered from the ploughsoil.

A rapid search for firing ranges designated as protected heritage assets discloses two scheduled as Ancient Monuments: a rifle range target at Berry Head Fort, Torbay, and a gallery range with a stop butt and firing point at East Weare, Dorset (scheduled November 2015) (2); a range and two rifle-range targets are listed (Grade 2) at Keelby, Lincolnshire, Burton-upon-Trent, and at Upton-on-Severn, Worcestershire.

Recommendations for further work

Bromyard and Herefordshire

Further work could be done on the rounds recovered by this project. Their distribution has been plotted by calibre, but not by weight; patterns may emerge from further analysis of this material. Of greater interest and urgency is perhaps the location of an alleged original target from the Bromyard range. Said to be in the yard of a local resident, if it can be positively identified it should be recorded and preferably preserved as part of the archaeological heritage of Bromyard Downs.

Very little has been written about the Bromyard Rifle Volunteers; very little seems to be known about them. Initial enquiries to Herefordshire Archives and to the Regimental Museum suggest that neither of those bodies have worthwhile archives relating to the Bromyard unit. Nevertheless, it might well be possible to piece together a history of the unit, its personnel and significant events in its lifetime, from press accounts – as was done for Shrewsbury (Dunham 1984). There, the Volunteer movement was a significant factor in the social and political life of the late Victorian

town over a period of three decades. It remains to be seen what sort of individuals formed the Bromyard unit, and what role they played in the town.

As discussed above, the fate of the other 19th-century Herefordshire ranges (other than Ross-on-Wye) and their condition as field monuments is unknown, but could easily be established by rapid visits.

National

Wider-ranging research was not possible in the context of this brief, locally-based community-archaeology project, but from the minimal information gathered on the wider context of the Bromyard Rifle Volunteers' range, and from feedback on an earlier draft of this report, it appears that there are many aspects of Volunteer and other rifle ranges that are not at present understood. It is not at present possible to comment on the number of such sites across the country, other than to say that the total population figure is unknown, but likely to be somewhere in the high hundreds. It is probably no exaggeration to state that virtually every market town in England had a range; for every drill hall, somewhere nearby, there was a rifle range. To what extent the disuse of many local ranges reflects the gradual decline of the Volunteer movement, or centralised decision making, is also unclear, at least to the writers. It has not been possible to establish for this report (though the information may well be readily available elsewhere) how and when the design of rifle ranges was systematised, and by what process markers' huts and cast-iron targets set up in small quarries gave way to fewer, larger, gallery ranges of brick, concrete and iron.

The fate of most 19th-century local ranges as archaeological monuments is also unclear, the majority of HER/SMR records being based on map evidence without field visits. The survey of the Bromyard Downs Volunteers' range has also shown that, despite the removal of the earthworks and the obliteration of the range as a visible field monument, it still has a below-ground archaeological signature and, moreover, that this is recoverable and can be used to date the use of the range with greater precision than its appearance and disappearance on successive Ordnance Survey map editions. The same is likely to be true of other ranges of the period: as well as contemporary earthworks and, occasionally, surviving fixtures such as targets and target frames, they may also be expected to harbour an informative below-ground artefact assemblage.

Footnotes

- 1. Thanks to Wayne Cocroft for this suggestion
- 2. Thanks to Dr Paul Stamper for this information

Archive and artefact deposition

The finds archive comprises: 83 bullets or spent rounds 2 cartridge cases 15 impact spalls from the metal target.

The paper archive comprised 25 digital images (photographs) 7 Mapinfo data files 1 correspondence file This document.

The Archive will be deposited with Herefordshire Museum Service.

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HBSA: Historical Breechloading Smallarms Association

MLAGB: Muzzle Loading Association of Great Britain