Early Firearms and their influence on the military and domestic architecture of the Borders

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The introduction of firearms, and their subsequent development through the ages, did not by itself produce any dramatic changes in the evolution of Border architecture; there were much greater social and political influences at work. Nevertheless the new weapons did slowly but inevitably make their influence felt, at first only in the form of additional defence against the use of artillery from outside, later in the provision of gun-loops and shot-holes built into the *enceinte* walls of the more important strongholds, and finally in the general provision for their use from within the towers (and other 'houses') themselves. The absence of any such provision proves little or nothing, as it could be due to any one of a number of circumstances: too early, or late, a building date; lack of local freestone for the necessary dressings; the simple poverty of the owner or tenant; or the known reluctance, or refusal, of certain families and certain localities to adopt the new weapons. On the other hand, where a legacy of provision for firearms does survive, either in military or domestic architecture, it can be of great value in dating the work as a whole; while in the case of the lesser Border towers, it can also advance our knowledge of the Borderers as military tacticians and their surprisingly diverse attitudes towards the need for defending their homes at any given period of time, and what form that defence should take – from a passive retreat to a 'house of fence', armed at all points. Much of this depended, of course, upon their relationships with their neighbours.

But before we can fully understand the later alterations carried out to the great tower-castles of the fourteenth and fifteenth centuries, both to cater for and to counter firearms, or appreciate the slow but steady acceptance of the advantages – and limitations – of these new weapons, and the consequent desirability of providing for their use from within the later towers of the sixteenth century, up to the Union of the Crowns in 1603, and for some time thereafter, it is first neccessary to consider the progressive development and use of the weapons themselves.

The discovery of gunpowder and the advent of cannon

The history of firearms dates back to some time around AD 1000 when the Chinese first discovered a formula for gunpowder. Quickly appreciating the military potential of their discovery, they had evolved rockets and incendiary weapons before the end of the eleventh century; and from thence to cannon was but a short step. Gunpowder is subsequently reputed to have been brought to Europe by Arab scholars early in the thirteenth century. Certainly its existence was recorded in 1249 by the early English scientist Roger Bacon. It is next mentioned at the turn of the fourteenth century, when a Latin manuscript makes a direct reference to its manufacture in the west. By that time it had clearly become well established, for in the mid-1320s the earliest

records of cannon appear suddenly, and almost simultaneously, in three widely separated parts of Europe.

Earliest forms of cannon

In 1326 a document was published in Florence authorising the manufacture of brass cannon and iron balls for the territory's defence, and in the same year the first illustration of a cannon appears in an English manuscript. Although no examples of so early a date have yet been recovered in these countries, a handgun of the same bulbous shape and similar period as the English illustration has been discovered in Sweden. These latter weapons fired metal arrows or arrow-bolts, missiles based on those in daily use with the familiar longbows and cross-bows, but wholly unsuited to the explosive principle. However, it was not long before a vast improvement was effected by producing a tubular barrel, with a reasonably consistent bore, while the hopelessly erratic arrow-like missiles were replaced by balls of iron, stone and lead. Even then a very long time was to elapse before they became at all accurate, not to mention the numerous other technical problems involved.

Records of early ordnance in the field

Fortunately the early use (or absence) of firearms is much better documented than the details of their construction. In Scotland, for example, there is no mention of firearms amongst the detailed list of equipment with which Bruce's parliament of 1318 decreed every Scotsman should be equipped for war. The first record of their use in Britain is in fact in 1327, when Edward III's forces used the novel 'crakys of wer' against the Scots. King Edward is said to have used ordnance again at the siege of Berwick in 1333, and by 1338 guns are known to have been in use in ships. The English used them again at the siege of Stirling in 1342. Although they were still vastly inferior to the older, well-tried siege weapons, by the middle of the century they were being produced in a whole range of sizes and types, from large cannon mounted on heavy carriages to early forms of handgun. It was at this time that the great siege gun, or bombard, first made its appearance.

But whilst the enthusiastic royal patrons of ordnance were forging ahead with ambitious new ideas, there was as yet little or no real understanding of the science involved. Accidents from burst barrels occurred far too often, one of which led to the death of King James II during the siege of Roxburgh in 1460. The accuracy of the guns also remained deplorable. For example, it is on record that, at the siege of Ypres in 1383, two cannon fired 450 rounds between them without injuring a single man! Perhaps this was an extreme case. Nevertheless the psychological effect (on both sides) was still far greater than the material one. This was dramatically demonstrated during Henry IV's siege of Berwick in 1405, when the first shot fired by his great bombard made such a tremendous impact that the garrison was frightened into immediate surrender.

Flemish expertise

The Flemish quickly demonstrated a remarkable aptitude for this new science, until by the beginning of the fifteenth century they had established themselves as the foremost experts in both the manufacture and operation of ordnance. Indeed, whether as overseers of the various royal gun-foundries in Europe, or as gunners in the field, they maintained a near-monopoly. For more than a century the largest successful guns continued to be cast in Flanders itself. James I brought a great brass bombard from there in 1440, and this was soon followed by others, including the famous 'Mons Meg', 'The Great Iron Murderer', that recurs frequently in

subsequent Scottish history and is now proudly preserved at Edinburgh Castle. Thereafter references to artillery become increasingly frequent in Scottish royal records.

'Mons Meg'

The first certain reference to Mons Meg itself was during the siege of Threave Castle in 1455, when this giant bombard and other ordnance were dragged all the way from Edinburgh finally to end the Black Douglases' rebellion against the crown. This famous Flemish cannon, one of the largest ever made, was clearly a force to be reckoned with. During a salute from Edinburgh Castle in 1539 its stone shot of over 500 lb weight was recovered from some two miles away; this can be compared with the contemporary medium cannon, or culverine moyane, which could fire a 9 lb shot 2,500 yards, or even a mid-twentieth-century field gun, which has a range of from 3,000–11,000 yards (depending upon the charge).

Difficulty of transportation

These huge guns were very cumbersome and unwieldy, necessitating large and very solid carriages for their support and a team of horses to move them. In some instances it was easier to transport them as separate parts, and then reassemble them wherever they were required. But in either case their movement was a major ordeal. It is not surprising, therefore, to learn that the heaviest artillery was only moved when it was considered strategically essential. And although Mons Meg was retrieved from Threave soon after the 1455 siege, were the 'two great guns' there, that a convoy of ten carts was sent from Edinburgh to fetch in 1512, relics of the same siege?

High cost

By the middle of the fifteenth century the cost of heavy ordnance was becoming a financial embarrassment to the crown. Accordingly an appeal was made in 1456 to some of the greatest barons to make their own carts of war, with two guns and two chambers, and to provide a gunner to operate them. Materials also became increasingly scarce so that in 1474 it became necessary to send out messengers to obtain metal suitable for guns and clay for their moulds. This is the earliest direct evidence of guns being cast in Scotland, where the two main ordnance works were being established at the royal castles of Stirling and Edinburgh.

Artillery for siege work

Throughout the fourteenth century and during a major part of the fifteenth century artillery was used almost exclusively for siege work; and whether the objective was a solitary castle or a fortified town, the operations were normally mounted on a massive scale that permitted the slow and clumsy weapons to be set up and brought into use more or less at leisure. At this time there is no real evidence of ordnance being used in open battle; this development was yet to come, as it necessitated more versatile and mobile field guns. Even when such weapons did finally appear, they almost invariably had to be abandoned on the field in the event of a hasty retreat – a handicap not unknown even today. At Flodden, for example, the Scots could not hope to retrieve their guns.

Clearly those strongholds that stood high up on naturally strong sites or were defended by elaborate earthworks presented something of a problem. What was needed was a gun that could achieve elevation in the same way as the old siege catapults, and the designers of cannon were soon putting their ingenuity to work to produce a cannon with the same versatility. An inter-

esting picture of a walled town under siege *c* 1480[1] illustrates one way in which the problem was overcome. The besiegers are shown using two cannon: the smaller one, which has a stumpy barrel fastened to three heavy planks lying on the ground, is of no special interest; but the larger one in the foreground, even allowing for the usual artist's licence, shows a highly ornamental cannon, whose elevation could be adjusted about a central pivot on the barrel and then rigidly secured in one of about twenty positions with a peg at the butt end.

Castle design slow to be influenced

But while all this energy and ingenuity were being devoted to the use of artillery against fortified sites, what measures were being taken at the sites themselves to counter the new threat? The immediate changes were certainly not obvious. Presumably the architects considered that the already substantial walls and strong outer defences were equal to the challenge; and as their confidence was generally proved to be justified, it can have afforded little consolation to the masters of ordnance and their enthusiastic patrons. Gradually, however, with the development of more powerful and more sophisticated artillery, there was a shift of emphasis in the design of the great royal castles, the official military strongholds. The walls were lowered and further strengthened, while still later there were instances of mural chambers in the outer curtains being filled in solid to eliminate points of weakness.[2]

Effect upon the great Border towers

The attitude of the occupants of the great Border tower-houses, or tower-castles, of the fourteenth and fifteenth centuries to this form of warfare was primarily one of passive resistance. Like the great fortresses, the towers relied principally upon the massiveness of their walls and strong outer defences for protection. But after the turn of the fifteenth century there was also a new awareness of the importance to be attached to the choice of site, especially in view of the operational characteristics of cannon compared with the older weapons. No longer was it wise to erect a stronghold in a position like that of Drum,[3] where a convenient hillside gave artillery complete command over it; instead it was expedient to choose a site, either sufficiently defended by morasses and water to keep the guns at a safe distance – which was possible in parts of the Merse and Western Marches – or, more commonly, in an elevated position that was strongly defended by nature on at least two sides and could be adequately fortified on the others. Not surprisingly the best sites had already been occupied for centuries. In the event of these passive defences failing to deter the enemy, then a surprisingly effective, active defence could be carried on at close quarters from the timber hoardings or parapets, using such long-established weapons as arrows and stones. There was no provision for the use of firearms in their defence this early; the main weapon of the defenders was the longbow, and it remained so well into the sixteenth century, and still had its faithful adherents over a century later.

While the military fortresses were being specially modified to contend with the new siege weapons, the owners of tower-houses made little attempt to follow their example. Apart from relatively minor improvements in their construction and domestic facilities, the towers continued to remain literally lofty and almost stubbornly aloof. Their first minor concession to artillery was the re-introduction of a strengthened wall-base to resist heavy siege cannon should the need arise. Just as the great Norman castles had a batter at the base of their main

[1] Shown in *Les Chroniques d'Angleterre* in the British Museum.

[2] e.g. at Tantallon in 1529.

[3] A thirteenth century tower in Aberdeenshire, originally a royal hunting lodge, and probably the oldest tower-house as such in existence.

walls to resist undermining by early siege devices, so a number of the mid-fifteenth-century towers, such as Cessford and Comlongon, and also some of the lesser towers of a century later incorporated a splayed plinth course seemingly to resist the powerful impact of cannon shot[1] Perhaps one reason for the towers' apparent indifference to artillery was that these more or less private strongholds were not expected to resist a major onslaught involving heavy siege artillery; no national army normally either needed or was prepared to waste such effort against them; and the likelihood of these lesser strongholds coming under siege diminished with their size and their owner's importance nationally. The great siege of Threave in 1455 was exceptional, but so were the circumstances. What no one could foresee at this time of change was the somewhat ironic situation that was to arise at Cessford in 1523 (p 198), when that great tower, alone save for its own defences, was able to hold at bay the whole might of Surrey's army – in effect the same army that had annihilated the Scots at Flodden only ten years earlier. It is hardly surprising, therefore, that, when in practice it was considered expedient or necessary to take possession of these strongholds, it was more easily achieved by guile or 'persuasion'. In fact, subsequent history was to show that many towers and castles were easily taken by subterfuge, while a direct frontal attack was more likely to culminate in a complete impasse.

It was not until after the middle of the fifteenth century that the Scots made provision for the use of firearms in the defence of their Border strongholds, and even then it was to remain a rare feature for another 80 years or more. The earliest example in the Borders was at Threave, where gun-loops and shot-holes were liberally distributed in the new curtain wall and corner towers erected soon after the 1455 siege (p 204). However, no such provision was made in the tower itself nor at any other Border tower during this century. The new curtain wall at the royal castle of Newark, for example, which is well furnished with shot-holes and flanking towers, is clearly not earlier than the mid-sixteenth century (p 205).

Coastal and Border castles strengthened with artillery

In 1481 steps were taken to strengthen with 'artillery' the defence of coastal and Border castles, including Home, Edrington, 'and specially the Hermitage that is in most danger'.[2] Whatever form these defences took, there is no obvious sign of them at Hermitage, where all the surviving provisions for firearms date from 1540, when Lord Maxwell had the large, splayed gun-loops inserted into the tower's walls and probably also constructed at the same time the sixteenth-century gun-mount to the west of the tower. The gun-loops (or oversized shot-holes) are the largest in the Borders and the only ones large enough to have possibly been intended for use with small cannon rather than the more usual hand-guns – it is a fine distinction. There are, however, similar examples further north.

[1] The exact reason for these plinth courses will, no doubt, always remain an arguable point; different explanations may suit different circumstances. Comlongon is one of the earliest towers in the country, and certainly the earliest in the Borders, to have such reinforcement. This feature, which became fairly common among the Irving and Armstrong towers of Kirtledale and Eskdale a century later but comparatively rare elsewhere – only a few dozen examples are known – is often explained as a means of distributing the weight of the walls on soft or uncertain foundations. Certainly it could be a plausible explanation in some instances, especially at Cessford and Cockburnspath, where there are series of such courses buttressing the walls. But the feature is not found in many towers with obviously precarious foundations, such as Lochar Tower in Nithsdale, which has progressively subsided into the Moss, and been buttressed, until the wing finally collapsed as recently as 1969; yet it is found in classic local examples such as Bonshaw and Hollows, both of which are founded on cliffs of solid rock.

[2] *Acts of the Parliaments of Scotland*, vol. II, p. 133.

Roxburgh Castle

Compared with their enemies across the Border, the Scots were very slow to adopt cannon for defence: the English, on the other hand, were quick to appreciate its value. At the immensely strong fortress of Roxburgh, which they held during most of its active life, artillery and gunpowder were supplied to the garrison as early as *c* 1383; and again in 1417, after Commissioners sent to survey the decayed ruins the previous year had complained that there was neither artillery nor munitions for its defence, and the Scots had taken advantage of this shortcoming to launch an attack, new artillery was hastily brought from London. Still later, when the castle was rebuilt on a reduced scale in 1547, artillery was to play a major role. There were gun-loops to cover the great north ditch, a smaller ditch on the east side, and the SW entrance gateway, as well as substantial gun platforms behind the curtain walls on the north and east sides.[1]

Scottish artillery in the sixteenth century

Although the English had indisputably superior ordnance during the fourteenth century, the Scots had easily overtaken them in quality, if not quantity, by the end of the following century, a fact that was no doubt largely due to Scotland's close ties with the continent under 'The Auld Alliance' and other mutually beneficial treaties and 'understandings'. By 1496 reference is made to bombards, a brass gun, serpentines and culverines in the royal arsenal, while the royal workshops were busily engaged making gun-carts, ammunition-carts, limbers, wheels and stone shot. The English nevertheless remained undismayed after learning from a spy that they had nought to fear. The ordnance at that time was reported to have comprised 2 great curtalds, 10 falcons, 30 iron cart-guns, 16 close-carts for spears, and the various items of ammunition. Artillery was successfully used in putting down a rebellion in the Western Isles in 1503–4; and in 1508 there are detailed references to gun-casting in Scotland – though by no means with complete success. Whatever contempt the English may have had for the Scottish ordnance in 1496, it was a very different story after the tragic battle of Flodden in 1513, when the Earl of Surrey had to admit in a proud boast that the captured Scots guns were 'longer and larger' than any in his own king's arsenal. An English inventory of this 'marvelous and great ordnance of guns' lists 17 cannons, comprising 5 great curtalles (or large cannon), 2 great culverines, 6 great serpentines (or culverines moyane – medium), and 4 sacres (or culverines pikmoyane – small), with divers lesser ordnance. In connection with the transportation of this artillery, the Lord High Treasurer's Accounts record that 2 cannon were drawn by 36 oxen each, 4 small culverines by 16 oxen each, and 6 smaller pieces by 8 oxen each, while a crane was taken to mount the guns on their carriages. Gun stones were carried in baskets by 28 horses, and there were at least 12 carts of gunpowder.[2]

Thereafter heavy artillery continues to be mentioned until the middle of the century; but at the same time, far from fulfilling the early fourteenth-century prophesy that this dreadful weapon would quickly destroy mankind, there was a growing awareness of the disadvantages and inefficacy of this mode of warfare. A growing realisation of the practical limitations of these heavy guns, the ordeal of moving them about, and the rapidly increasing use of hand firearms, led to a severe curtailment in the use of artillery. A practical compromise had to be reached. Some cannons continued to have their uses in the field and in the defence of fortresses, but elsewhere they almost disappeared from the scene.

[1] See RCAM, *Inventory for the County of Roxburgh* for a plan, fig 518, and further details, pp 409–10.

[2] *The Scottish Castle*, Stewart H Cruden, pp 209–10.

Border towers under siege

Against this background, it is interesting to learn how two prominent Border towers fared when brought under siege in the sixteenth century, and the part played by cannon and other firearms during those sieges. The first concerns Cessford, one of the Borders' greatest early tower-house castles, which came under siege in 1523; the second, Bonshaw, one of the most important – though oft forgotten – lesser tower-houses, which was similarly confronted some 60 years later.

Cessford was besieged by an English force under the Earl of Surrey and Lord Dacre, supported by 11 cannon, lesser ordnance, archers, scaling ladders and other siege weapons. At one stage two culverines were sent round to open up a blocked window, and in this they succeeded – but, as it happened, to no ultimate purpose – while in the meantime the defenders were inflicting heavy losses among the English with the 'iron guns of the castle and stones cast down upon them'. The castle was finally surrendered due to a misunderstanding when the absent laird returned home. In his official report afterwards, Surrey said that he doubted whether the castle could ever have been taken by force.[1] The ineffectiveness of the heavy artillery of this period against such massive walling (from 12 ft to 13 ft 6 in thick) had been clearly demonstrated, while the outer earthworks alone, and no doubt the hill beyond, had presented no small obstacle. The same story is repeated elsewhere in Scotland around this time. In 1528 a siege of Tantallon Castle was called off after 20 days, when two cannon and a host of various smaller guns had failed to achieve any success; and in 1547 a similar siege at St Andrews Castle proved equally abortive.

Bonshaw became the object of Lord Maxwell's attention during a sudden flare-up in his feud with the Johnstons early in 1585. After the Maxwells had taken and burned Lochwood Castle, the seat of Sir John Johnston of that Ilk, the new Warden of the Western Marches, Johnston was forced to flee for safety to Bonshaw Tower, the seat of his chief allies, the Irvings. Lord Maxwell followed, bringing his cannon and other ordnance,[2] and 'so battered the Castell with artillerie that the house was almost gotten'. An interesting and enlightening picture emerges: Bonshaw Tower, described only two months later by the English Warden, Lord Scrope, as 'one of the strongest howses of that border',[3] was a sixteenth-century, 'lesser' tower-house, with walls up to 5 ft 9 in thick and strong outer defences for which no details are now available. Yet, in spite of the chronicler's account that it was 'almost gotten', and in spite of several unsuccessful pleas by Johnston for the English Warden's intervention, the tower survived not only this siege by Maxwell's artillery, but no less than three more attacks from him within the following 10 months, all to no avail and with no serious damage being sustained by the tower. So, although the cannon employed would undoubtedly have been of the smaller kind, Bonshaw had ably demonstrated that, when put to the test, these lesser towers did have the ability to hold their own against the lesser artillery which might be used against them.

The earliest handguns

In the meantime, while heavy ordnance was receiving pride of place in the sphere of firearms, handguns remained very much in the background. Indeed, during the major part of the fourteenth century, little attention appears to have been paid to them.

The earliest known example, which was found in Sweden, has been ascribed to the second

[1] 'I was very glad of the same appointment for in maner I sawe not howe it wolde have been won if they within wold have contynued their deffending'.

[2] During an earlier term as Warden of the Western Marches, Lord Maxwell had been supplied with ordnance by the crown to assist him in the pursuance of his office.

[3] *Calendar of Border Papers*, p 184.

quarter of the fourteenth century, but apart from its diminutive size there is nothing to distinguish it from the bulbous cannon shown in the Oxford manuscript of 1326 (p 193); and certainly there is no other known record of a handgun of so early a date. Towards the end of the century, however, handguns did begin to come into their own; their potential contribution as a complementary weapon was beginning to be appreciated, whilst improvements in manufacturing techniques made their production a worthwhile proposition. Their popularity was by no means universal, but among their patrons they were to become – very slowly – a major influence; and it is to them far more than to artillery that the Border towers were eventually to owe some major changes in their design and, to some extent, their very existence.

The handguns in production at the end of the fourteenth century were still very crude. They comprised no more than a simple barrel of very small bore, cast in either brass or iron, which was clamped to a pole-like wooden stock. There was as yet no firing mechanism – just a simple touch-hole, to which one hand applied the taper, or 'match', used for ignition, while the other held the gun. A fifteenth-century picture (of uncertain date) of a siege in progress shows several of the assailants using guns of this type at close range; there is also one large trestle-mounted cannon and an abundance of conventional archers.[1]

Later improvements

Clearly one of the armourers' first priorities in improving the design was to devise an integral firing mechanism, so that the gun could be held with both hands, thereby achieving much better control generally. The first such mechanism to appear was the simple 'matchlock', in which an S-shaped lever, pivoted in the middle, was fixed on the side of the barrel. By operating the lower part of this lever, or 'trigger', a match of tow and saltpetre fixed at the upper end was brought down on to the touch-hole. Although elementary in itself, and in spite of numerous subsequent variations and refinements, this basic principle was to remain the standard method of firing all handguns until the invention of the percussion cap many centuries later. With the introduction of this mechanism, the handgun had at last evolved into a shape and form that is comparable with the conventional rifles and shotguns of today.

For nearly a century the matchlock mechanism remained dominant, before, with the decline in emphasis on cannons and the rapidly increasing ascendancy of handguns, the armourers' ingenuity was at last directed in earnest towards the smaller firearms. From the turn of the sixteenth century, innovations of all kinds began to appear with great rapidity – although the majority brought with them new technical problems that were often not overcome until many years, even centuries, later. Leaving aside for the moment the whole range of early developments that fell within the popular contemporary designation of 'arquebus' and 'hakbut', a new firing mechanism known as the 'wheel-lock' appeared soon after 1500; and about 20 years later the first pistols appeared utilising this mechanism. At about the same time the more familiar 'flint-lock' mechanism that was to last for many centuries also made its debut. Rifling was tried as early as 1500, but failed for lack of suitable bullets. Experiments were also carried out with breech-loading guns, but this was never much of a success either before the introduction of the modern-type cartridge in the nineteenth century. One important reason for this innovation was to speed up the deplorably slow rate of fire, which is quoted by Cruden[2] as having been estimated at 10 to 12 arrows a minute for the longbow, 2 to 3 bolts a minute for the crossbow (surely a very optimistic figure for most models?), and a mere 6 to 7 balls an *hour* for the common hakbut – not a very comforting thought in a tight situation, especially if one bears in mind that the one-ounce

[1] *Firearms*, by H L Blackmore.

[2] *The Scottish Castle*, p 219.

ball fired by the last was both less effective and less accurate than the missiles discharged by either kind of bow. Not only was it necessary to allow the ordinary gun's barrel to cool down before reloading, but the breech loading system had the added advantage of using a series of boxes ready charged with powder, which could be clamped into the breech in quick succession. McGibbon and Ross[1] refer to a small cannon of this kind that was at Branxholme; it was 6 ft long and had a bore of 2¼ in. In practice, however, the idea did not become popular, principally because such a gun lacked the advantage of manœuvrability that was so essential for any handgun. Another innovation that made a brief appearance later in the century was an attempt at a repeater action.

'Arquebuses' and 'hakbuts'

By far the most important development from the original handgun was a range of technically unostentatious guns that generally came to be known as 'arquebuses', 'hakbuts', and eventually 'muskets'. These were the guns of the common soldier and the types commonly found along the Scottish Border after about 1540, and to a lesser extent during the preceding 50 years or more. Although in origin the names related to specific varieties of gun, in practice there was complete confusion in nomenclature – just as in the term 'pele' as applied to towers – so that by 1500 the term 'hakbut' and 'arquebus' were in common usage for most handguns, and by the end of the century the comparatively new term 'musket' had likewise superseded them.

Some time around the middle of the fifteenth century, a lug was added beneath the barrels of some of the larger handguns. This enabled them to be hooked over a support (often a wooden sill) to take the shock of the recoil, and led to the derivation of the term 'arquebus' or 'harquebus' on the Continent, and 'hakbut' or 'hagbut' in England, to describe such a gun. A good example of a hakbut dating from *c* 1470 is illustrated in the *Encyclopaedia of Firearms*,[2] where a simple handgun has its barrel clamped to the stock by an iron band while an iron lug is fitted into the underside of the stock's front end; and similar guns, of better finish but otherwise no different, were still being manufactured in Germany *c* 1510; neither had any lock mechanism. The same reference work, however, clearly illustrates the common misuse of the term 'arquebus' in reproducing a catalogue-type picture of some very ornate 'arquebuses' drawn *c* 1500; all are in fact basically similar, matchlock handguns, not one of which has a lug fitted. Not long after this time, references to 'hakbut-men' or 'hakbutters' carrying 'arquebuses', and 'arquebusiers' carrying 'hakbuts', become increasingly common, and clearly refer to the general range of handguns. One possible reason for the confusion in terminology may be that the same basic components were assembled in a variety of ways depending upon whether the gun was to be used in the defence of a stronghold (from a parapet or shot-hole), on foot in the field, or even on horseback. It is also worth noting that there seems to have been a complete absence of any alternative name.

Handguns become established in the Borders

The hakbut, or arquebus, was not generally known in Scotland until well into the sixteenth century. A royal command for military service drawn up in 1496 refers to bows, spears and axes, but there is no mention of firearms. The first mention of handguns appears in the Treasurer's Accounts for 1513, and thereafter reference to them becomes increasingly frequent, until by 1541 the stock held at Edinburgh Castle alone included 413 hakbuts and 8 culverines, with gunpowder, bullets, etc.

[1] *Castellated and Domestic Architecture of Scotland*, vol 4, p 206.

[2] Edited by H L Peterson, London, 1964.

It is generally true to say that the hakbut became a fairly common, everyday weapon from about 1540; and this is the period from which the incorporation of shot-holes in the fortifications of Border towers and other strongholds began to become widespread – although, as already mentioned, there were isolated examples dating back some 80 or more years earlier. It is, however, interesting to note that the 1540s were years of transition for firearms in Scotland, when they were to appear in abundance on one occasion and not on another. It may well be that it was their widespread use by the Continental auxiliaries serving with the Scots armies at this time, coupled with the state of virtually open war existing between England and Scotland, which hastened the change. After the battle of Pinkie in 1547, the English historian Patten records of the Scots army: 'Hakbutters have they few or none . . . they come to the field well furnished all with jack and skull (-cap), dagger, buckler, and swords all notably broad and thin, of exceeding good temper, and universally so made to slice, that as I never saw none so good, so think I it hard to devise a better; hereto every man his pike and a great kerchief wrapped twice or thrice about his neck, not for cold, but for cutting'.[1] But by early in 1549, when the Scots decided to recover Ferniehirst from the English, an advance party of the French auxiliaries included '200 arquebusiers', while the defenders also included arquebusiers among their garrison. However, the French eventually surrounded the castle 'so that no man dared show his face' while they forced a breach in the keep's walls.[2]

By the middle of the century, when a peace treaty was agreed between the two kingdoms, hand firearms were firmly established and in widespread use. It was at this time that parliament ordained that every Borderer should be armed with a hakbut, sword, dagger, spear (6 ells long – 18 ft 6 in), Jedburgh-staff, buckler, jack and leg-armour.[3] Handguns were very much in evidence again in 1570 when a new wave of English invasions broke out; and when a formal complaint was lodged in Dumfries in 1583 against a band of Border rebels, there are no surprises to be found among their weapons. The complaint declared that the rebels were 'all boding in fear of war, with jacks, spears, steel bonnets, Jeddard staves, long culverines, daggers and pistols, prohibited to be borne, worn, used, or shot with, as well by our Acts of Parliament as by our Acts of Secret Council'.[4]

Muskets

The musket, when it first appeared in the middle of the sixteenth century, was a quite distinctive weapon. With a long barrel, and weighing some 20 pounds, it was more of a hand-cannon, which could only be used with the aid of some support (usually a U-shaped stirrup on a wooden pole). In addition to this considerable inconvenience, the musketeer had to carry ready prepared powder charges (which were kept in wooden cylinders), a fine powder for priming, and the lead shot. And like all other early handguns they were entirely at the mercy of the weather; rain or damp rendered them useless. Accidents during loading were also common. In fact they were by no means a qualified success. Nevertheless, in spite of these handicaps, they had the advantages of being both cheap and easy to make, required little maintenance, and could inflict heavy casualties in close combat.

But whilst the musket was a clearly identifiable weapon when it first appeared, by the end of the century muskets and arquebuses (a name now more common that hakbut) had become merged into another common group of weapons, whose names were interchanged at random. The popular form of the new 'musket' was a much lighter weapon, which was to survive

[1] *Transactions of the Hawick Archaeological Society*, 1906 – 'Historical Notes relating to Branxholme', by W E Lockhart.

[2] *THAS*, 1910 – 'The History of Ferniehirst Castle', by G Watson.

[3] *The Armstrong Borderland*, by W A Armstrong, p 50.

[4] *Dumfries Sheriff Court Book*, 1577–83.

thereafter, almost unchanged, as the standard handgun in everyday military service until well into the nineteenth century.

Architectural provision for defensive firearms

Having described briefly, but fairly comprehensively, the various firearms that existed during the era of the Border tower-house, and the progressive developments that took place during that time, one must now consider in greater detail how the military 'architects' and their patrons made provision for the use of these weapons in the defence of their strongholds. Which castles merited, or could afford, the employment of cannon; and why was one tower strongly defended by a whole battery of shot-holes, while a contemporary one nearby had no such provision at all? When did gun-loops, gun ports and shot-holes first appear; what forms did they take, and why; and how effective were they? These are all important questions, which must be considered in some detail when analysing tower-house architecture, for, especially in later years, they form an integral part of the history and development of that architecture and of the life and times that influenced it.

Little provision for defensive cannon

Cannon as such did not play an important part in the life of the Border tower. Indeed, leaving aside the great tower-castles of the early period and the great garrisoned enceinte castles that survived as national strongholds, artillery rarely made an appearance in the life of the lesser towers, and on the few occasions when it did it was almost invariably small cannon operated in a very perfunctory manner. As regards the larger towers and other strongholds, the position is by no means clear. Cannon was certainly used *against* them, as at Threave in 1455, Roxburgh in 1460, and Cessford in 1523, as well as on many other occasions both at these strongholds and elsewhere right up until the Civil War in the middle of the seventeenth century. But evidence of cannon being used in their defence is less forthcoming. Mention has already been made of the order issued in 1481 under which various strongholds of national importance were to be strengthened with artillery. Both Home and Hermitage were included, but in neither instance is there any positive evidence left to show what works were carried out at this time. It was only at the key fortress of Roxburgh that gun batteries are known to have been installed from an early date, and this was under the direction of the English.

Hermitage Castle

The only other certain evidence of provision for cannon is at Hermitage, where, during the sixteenth century, a gun-mount was formed outside the tower and gun-loops were inserted within the lower walls of the tower itself. The latter were the work of Lord Maxwell, who repaired and strengthened the castle in 1540. They have every appearance of being typical sixteenth-century oval shot-holes, with the usual splayed oval opening on the outside, a circular hole for the gun-barrel in the centre, and a mural recess for accessibility on the inside. Basically, these are features typical of the shot-holes belonging to the second half of the sixteenth century; but at Hermitage their unusually large size, which necessitated their fabrication from many large well-cut ashlar blocks, including even a keystone over the outside opening (pl 24a), together with the location of some of them (such as the one inserted into the old first-floor entrance) (pl 24b), is fairly conclusive evidence that some at least were intended for use with carriage-mounted cannon and not handguns. At no other tower in the Borders are there remains that can so convincingly be ascribed for use with cannon – although most outer works at the various sites have long since disappeared.

'Gun-loops', 'gun ports' and 'shot-holes'

The difference between 'gun-loops', gun ports' and 'shot-holes' is largely academic, and even then one has only to refer to the writings of a handful of experts to realise that there is no general agreement in the use of these terms. In theory a gun-loop is a breach in a wall, splayed either horizontally or vertically (rarely in both directions), into which the muzzle of either a cannon or large handgun could be inserted to give an angle of covering fire, while a shot-hole was merely an aperture through which the muzzle of a handgun could be inserted for the same general purpose; but whilst there can be no argument about the designation of extreme examples of either kind, there is absolutely no dividing line between them as one passes through the whole range, and in Border parlance they are all termed 'shot-holes' in the works of the sixteenth century and later. In fact the term 'gun-loop', which some feel should more correctly be applied to the splayed shot-holes so common in the later towers, is rarely used in this context in the Borders. 'Gun port' is a more general term used by some writers, particularly when referring to the larger, early shot-holes and the later, splayed ones; it too is an expression rarely used (or applicable) in the Borders.

The earliest shot-holes

The first shot-holes as such appeared early in the second half of the fourteenth century, when, with the advent of smaller, more easily handled firearms, it soon became desirable to be able to use them from within existing fortifications. As a natural corollary of the long established arrow-slits, which, in a wide variety of decorative and functional shapes (according to the whims of individual masons), had served their fortresses faithfully for some three centuries, the earliest shot-holes were formed quite simply by enlarging the lower ends of the slits to take the muzzle of a gun, while the rest of the slit above continued to be used for sighting, as well as providing an outlet for the powder-smoke. A few of the thirteenth-century cross and vertical slits already had circular openings at their extremities, but their symmetry and form distinguish them from later conversions.[1] Although these 'converted' shot-holes were clearly a success, they never became common as such, perhaps because of structural difficulties, and were much rarer in England than on the Continent. The general principle, however, quickly became widespread in newly-built gun ports and shot-holes, and survived at least until the end of the fifteenth century, and in a few instances for another 50 years.

'Inverted key-hole' gun ports

The 'inverted key-hole' type of gun port is found in England throughout the second half of the fourteenth century, but seemingly did not cross the Border into Scotland until the middle of the following century. In essence these shot-holes were little different to the converted arrow-slits from which they derived, except that the gun aperture assumed greater importance and the slit above rather less, sufficient only for sighting. In addition, they were positioned in the fortifications at points much better suited to the early firearms – generally lower, with a more horizontal trajectory. The hole at the base was commonly about 6 in in diameter. Although only the stonework now survives, many of these early shot-holes contained a wooden support for the gun, either as a sill into which a spiked, rowlock-type, gun support could be inserted, or simply as a block to take the hook of early arquebuses. In a few instances slots may still be seen in the masonry where these blocks were secured.

[1] e.g. Both Kenilworth in 1240 and even the late castle of Raglan *c* 1470 had cross arrow-slits with a roundel at the end of each arm.

Shot-holes appear in Scotland

By the time shot-holes did appear in Scotland, they had taken on a number of distinct forms – such as at Threave (*infra*). Nevertheless they were to remain a rare feature in Scottish defences for some 80 years or more. The more common early form, which is found at several strongholds in Central Scotland, was no more than the typical, long, slit window of the period, with a shot-hole incorporated in the base; and it is only from the form of the masonry that these shot-holes can be identified as an original feature and not a later insertion. This particular type – the elongated, inverted key-hole – is often shown in late fifteenth-century drawings of fortifications from both sides of the Channel. A variant of it that also appears on similar drawings of the same period, as well as on the English drawing of Castlemilk (Dumfriesshire) made in 1547[1], shows a vertical slit with a *central* aperture; this was in practice a rare form of arrow-slit dating from the thirteenth century,[2] and there is no evidence that it was ever inserted as a shot-hole.

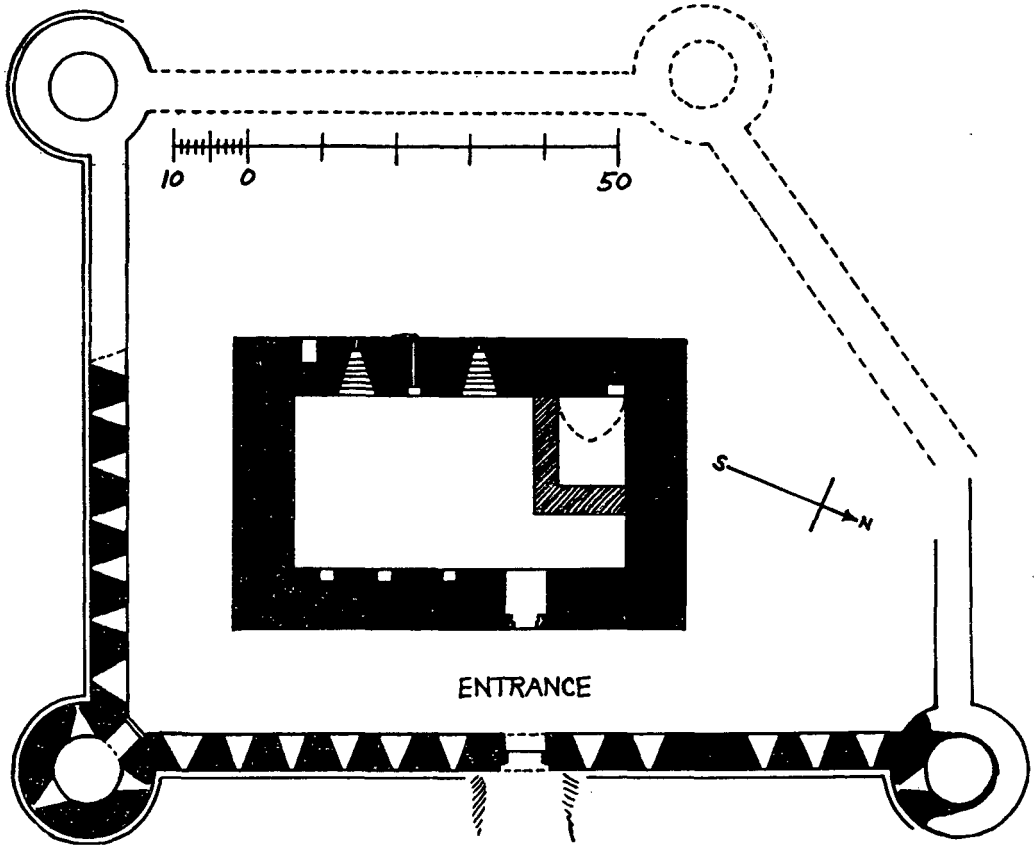


FIG 1 Threave Castle, ground-floor plan (after McGibbon and Ross)

Earliest shot-holes in the Borders

The earliest positively identifiable gun-loops and shot-holes in the Borders are those in the new curtain wall at Threave (fig 1). Fairly reliably dated to the restorations carried out there

[1] See *Transactions of the Dumfriesshire & Galloway Natural History & Antiquarian Society*, 1967 – 'The Platte of Castlemilk, 1547', by M. Merriman.

[2] There is an example at Trematon (*c* 1250) in Cornwall.

soon after 1455, these comprise a range of vertical gun-slits spaced at frequent intervals along the entire length of each (surviving) wall, backed up by shot-holes in the drum towers at the angles. It is fairly clear from the overall conformation of the former slits, which are splayed out towards the rear with high sills, that they were designed for use with guns and not bows. This leaves open the question of to what extent, if any, the slit windows in the later great towers of the fifteenth century were designed with a view to their possible use in defence. The entrance at Cessford is doubly covered by slit windows, while the basement windows at Spedlins are unique for their period in being at ground level; whilst the latter would have been more suited for use with longbows, at least one of the defensive slits at Cessford (the one at the foot of the stair, into which one has to climb up and along) might have permitted the use of a gun, but definitely excluded any other form of weapon.

The shot-holes in Threave's corner towers are 'ports' of two kinds (pl 23a). Those on the second storey were the relatively common, inverted key-hole type, while the lowest storey was equipped with the somewhat enigmatic 'dumb-bell' openings – of which more later (p 214).

'Armed' curtain walls

The outer defences at the great tower-castles have now mostly disappeared. However, apart from Threave's fifteenth-century curtain, there is one other notable exception in the Borders of a curtain wall, or *enceinte*, specially designed to cater for the use of firearms in defence. This is at Newark, where a new enclosing wall was erected in the middle of the sixteenth century to replace an earlier, more extensive one.[1] It incorporates a number of features of special interest, notably the combination of large, outward-looking shot-holes in the main walls (pl 21a) with small, inverted key-hole type, pistol holes in the flanking towers to provide protective cross-fire at close range. The shot-holes themselves will be dealt with under more appropriate headings later (pp 206–8).

The fundamental difference between the curtain wall of one of the great early towers and the corresponding barmkin at one of the lesser towers lay in their circumstances: the former was a fortified enclosure, housing not just animals but also a strong military garrison, as well as providing a place of refuge for the local countryfolk in time of war; while the latter was just a strong enclosure for the owner's livestock, important enough in its own way, but small. It should also be pointed out that the barmkin of a lesser tower very rarely provided additional defence on more than two sides.

It is perhaps of interest at this stage to note that by the time some of the great northern castles, such as Braemar and Corgarff, came to be re-garrisoned in the eighteenth century, the wheel of development in defensive curtain walls had to some extent turned full circle, certainly as far as the shot-holes themselves were concerned. There the new curtain walls were built on a multi-point star plan, such that every wall was fully covered by its counterpart, while the now-almost-traditional shot-holes were superseded by new gun 'windows', reminiscent of the early gun-loops at Threave (but larger) and, like them, splayed on the inner side only, thereby eliminating 'funnelling' whilst retaining greater manœuverability than ever before for the defending musketeers. But in comparing this highly sophisticated, late development with earlier works in the Borders, one must bear in mind that the military architects of the later age had over three centuries of experience to draw upon, as well as catering for garrisons whose numerical strength was only comparable with those who had been available at such great official fortresses as Newark, Cessford, Hermitage, etc. It would be unreasonable to try and equate these works, and the man-power available at them, with the defences of an ordinary Border tower.

[1] RCAMS, *Inventory of Selkirkshire*, 1957, fig 24.

The wide-mouthed shot-hole

Early in the sixteenth century a new form of shot-hole first appeared upon the Scottish scene. This was the widely splayed, horizontal shot-hole (or gun-loop), which is most commonly found at ground-floor level. The exact date of its inception is uncertain, but it was not until *c* 1540 that it really began to make its presence felt, its popularity coinciding with the rapid introduction of hakbuts and other handguns into fairly general everyday usage. It soon became widespread, and by the end of the century was a common sight throughout the Borders and elsewhere in the country. Although it remained a style peculiar to Scotland, it was generally considered well suited to its purpose; and it continued to serve as the standard defence for fortified houses until the last one was built at Leslie in Aberdeenshire in 1661.[1]

In order to achieve a maximum field of fire with a minimum weakening of the wall above, these new shot-holes were so constructed that their narrowest part, or 'throat', was in the centre of the wall, with the openings splayed out on either side (fig 2). The throat itself was a carefully cut sandstone block, usually varying in thickness from 4 to 6 in, which had to serve as the gun rest, as well as leaving sufficient space for sighting; there were no wooden supports in this type of shot-hole. Normally the block was pierced by a circular hole. This was commonly about 4½ in in diameter, though there was no uniformity, and sizes varied from 2¼ in at Drumelzier (ground floor) and 3 in at Hillslap to 6 in at Timpendean (pl 25c) and 7 in at Hoddom[2] and Lochhouse. The throat in Hillslap's southern shot-hole is unique of its type in being decorated on the outer face with four chamfered facets (pl 24d); the outer opening is also set higher than usual. The circular aperture is, however, by no means universal, and a number of other shapes are found – horizontal ovals at Blanerne (10 by 4½ in) and Bonshaw (7 by 4 in) (pl 24c), U-rests at Drumcoltran (4½ in) and Dryhope (6¾ in), an inverted U-rest at Hollows (4½ in) and crude square openings at Auchenskeoch, whilst at Barnhills (5 in) the construction is such that no separate throat blocks were employed; and at Newark, although the shot-holes along the main curtain walls have circular openings (3½ to 5½ in), those in the rather cramped southern and eastern flanking towers have miniature inverted key-holes (6 by 3½ in) for use with pistols or some other small handguns (pl 26a).

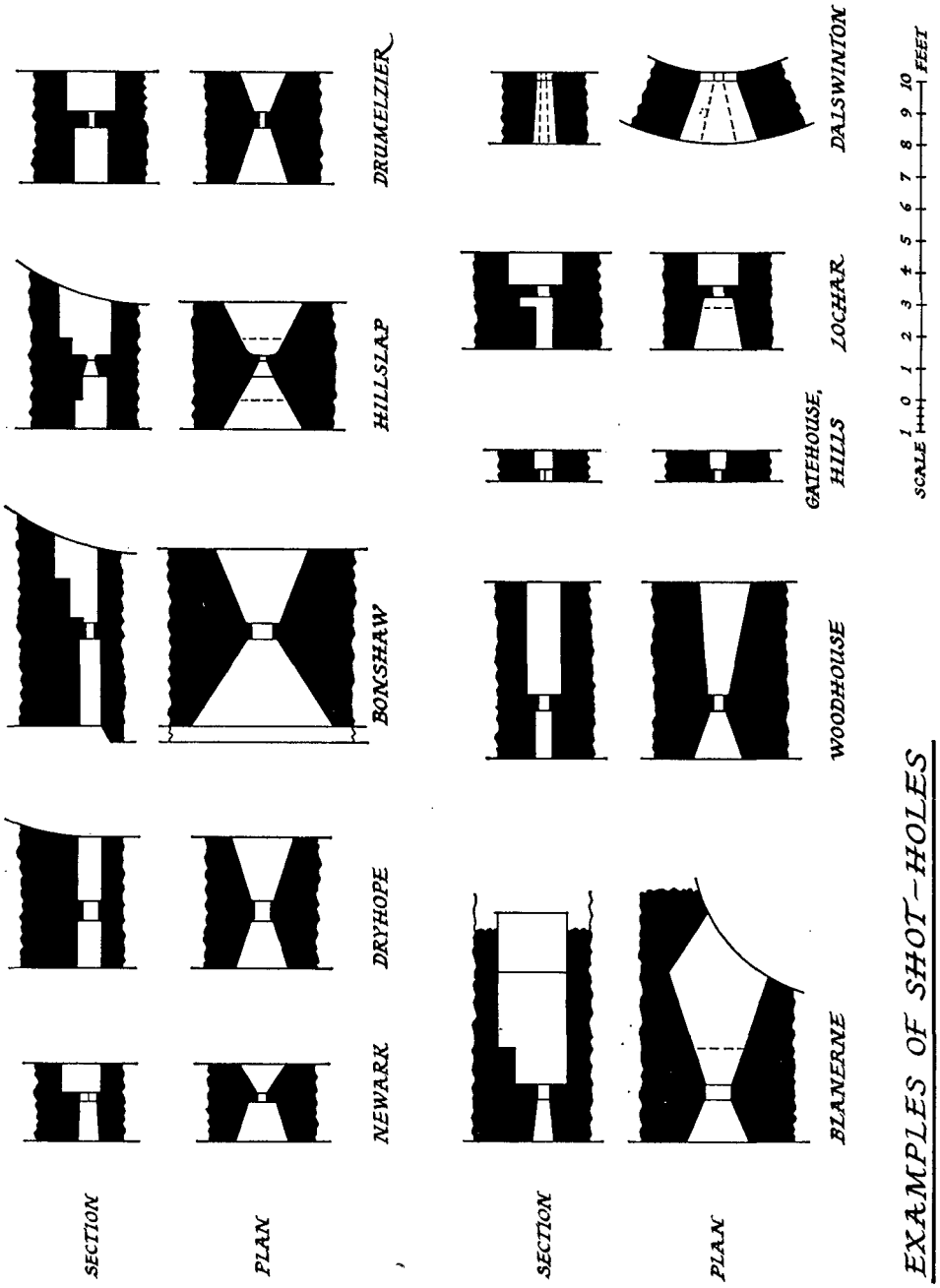
Outside the throat, the construction is almost invariably a plain, shallow splay, terminating at the wall-face in either the common oval opening or, more rarely, a rectangular aperture. With the exception of the great 'constructed' loops at Hermitage (p 202), the former type was made from two sandstone slabs, cut away to present a splayed slit with rounded ends. The rectangular aperture, on the other hand, was normally formed by using flat slabs for the sill and lintel, with separate stones for the intervening splays. The only known exception was at Evelaw, where the less ruinous of the two remaining shot-holes shows that it was made just like the common oval opening, except that in this instance the ends were cut square. Apart from Evelaw, the rectangular opening is found in Eskdale (Auchenrivock, Hollows and Langholm[3]) and Kirtledale (Blackethouse, Bonshaw, Ecclefechan,[4] Stapleton and Woodhouse), where it had no rivals, and at a few isolated towers widely scattered elsewhere – such as Auchenskeoch (where it was suited to the local granite), Branxholme, Drumcoltran (greywacke), Drumelzier (at ground

[1] Cruden's *The Scottish Castle*, p 220.

[2] At Hoddom each throat block has been made in two halves, divided horizontally, and because of its excessive thickness – 1 foot – even the block itself has had to be splayed at each face to permit the required degree of swivel.

[3] In 1585 Lord Maxwell was reported to have taken 'the house of Langholm . . . and hath placed therein gunners and men of his own' – *Calendar of Border Papers*, p 184.

[4] Otherwise known as the new 'Kirkconnel', beside the modern Kirkconnel Hall. It took its name from, and succeeded, an older Kirkconnel Tower that stood 3½ miles further east in what are now the grounds of Springkell House. It was an Irving stronghold, not to be confused with the Maxwells' tower of Kirkconnell near New Abbey – see p 216.



EXAMPLES OF SHOT-HOLES

FIG 2 Outer wall-face on left

level, but oval at higher levels), Dryhope (greywacke), Hillslap, Hoddom (in Annandale, but near the Kirtledale group) and Langshaw (greywacke).

On the inner side, there was usually a rectangular splay of rather more generous proportions, though the arrangement seems to have been largely dictated by the thickness of the walls. In the earlier towers, where the walls were commonly 5 to 6 ft thick, one usually only finds the shallow splay, so that the gunner had to stand some 3 ft behind the throat on which the muzzle of his necessarily long gun was supported (pl 25d); but as the thickness of the walls was reduced, one finds an increasingly larger recess on the inner side of the throat, allowing the gunner much greater freedom in the handling of his weapon. The limitations imposed by a wall's thickness is well illustrated at Newark, where the main curtain shot-holes are splayed each way through 5 ft walls, whilst those in the flanking towers, where the walls are only 2½ ft thick, have a squared recess on the inner side (pl 26a). Other examples of squared inner recesses are at Lochar and in the stair tower at Blanerne, where the shot-hole beside the entrance has had to have its inner recess offset to take account of the curvature of the stair-well. Normally all these shot-holes are roofed with flat slabs, but an exception is found at Branxholme, where the quite eccentric corner towers have walls varying in thickness from 4 to 7 ft. Although neither tower now retains a complete shot-hole (they have been closed up), the inner recesses of the semi-ruinous 'Tentyfoot' tower still possess their unique, original relieving arches.

Degree of cover provided

In considering the shot-holes of these towers in such detail – and they are a feature of especial importance – it is worth considering the cover that they provided in individual cases and its relationship to the thickness of the respective walls. One would, for instance, expect to find that the thicker the wall the narrower the angle, purely from structural considerations; and although there is a recognisable trend in this direction, it is by no means as marked as might be expected, and there are many notable exceptions. It can be readily appreciated that if complete cover was to be given to a plain keep, it would be necessary for the shot-holes on each side to cover 90°: in no instance has this been effected, but the unique D-plan addition at the west end of Littledean (pl 21b) has been carefully designed to provide two levels of shot-holes facing the rising ground on that side, each of which comprises five shot-holes with 36° splays (in a 6 ft thick wall) to give complete cover on that side, whilst the other sides are protected by natural riverside cliffs. At no other tower has it been possible to provide such complete cover without the use of flanking towers.

By far the strongest of the lesser towers (even without taking into account the former outer defences, which are known to have been substantial) was Bonshaw in Kirtledale (pl 22a) (see p 198), where the 5 ft 9 in thick basement walls are pierced by shot-holes with a splay of 53° (pl 24c), except on the north side, where, for some reason that is no longer apparent, the angle was reduced to 33° (fig 3). These outer openings are in fact so wide (up to 4 ft 5 in) that it is a source of amazement that the outer lintels have borne the wall above without the aid of relieving arches. In addition there was a smaller shot-hole at the foot of the stair-well (pl 25a) to cover the door (a feature peculiar to the Irvings' keep-plan towers), whilst at parapet level the shot-holes themselves were defended on the north, south and west sides, and the entrance doorway on the east side, by machicolations within the corbelled-out parapet wall: the parapet itself runs around all four sides of the wall-head without interruption.

In other towers with such thick walls the cover provided is approximately as follows (although the angle is sometimes less on one or more sides): Hoddom, 44° (for each of two shot-holes in the 8 ft 6 in thick east wall only: there are no shot-holes on the other sides);

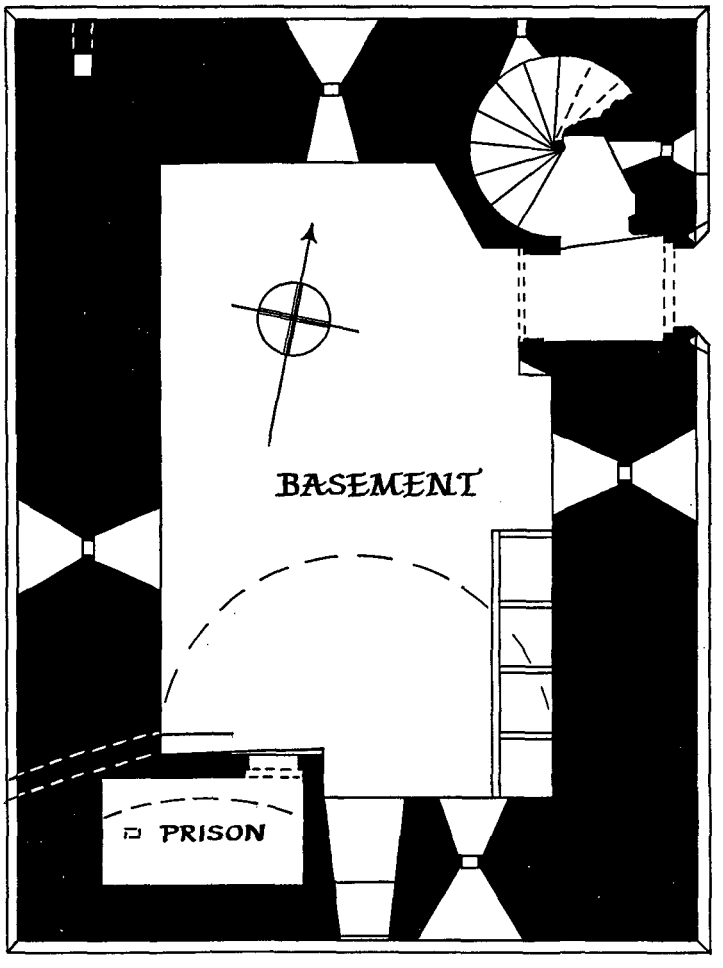


FIG 3 Bonshaw Tower, ground-floor plan (scale 1 : 96)

Branxholme, 36° (in walls varying widely in thickness up to 7 ft, as well as being quite erratically orientated); Lochhouse, 28° (6 ft); Stapleton, 47° (5 ft 8 in); Newark curtain wall, 25° (5 ft); Hollows, 45° and 34° (5 ft); Dryhope, 23° in the end walls (5 ft) and 38° in the south wall (4 ft 3 in); Barnhills, 55°, 40° and 30° (4 ft 8 in); and Woodhouse, 29° and 21° (4 ft 6 in). This is not a complete record, but it does give some idea of the protection afforded. By comparison, the similarly splayed, rectangular gun-loops inserted at three levels into the NE drum tower of Caerlaverock's great gatehouse during the second half of the sixteenth century – the same period – have angles of fire varying from 35° to 46°, through walls 5 ft thick.

With later towers, where walls are thinner and defence with shot-holes was in general no longer taken seriously enough in the Borders to merit careful planning, shot-holes are rarer at ground level and tend to be more showy than useful. Some corresponding figures are: Oakwood, 33° (4 ft 4 in); Blanerne, 36° (4 ft 3 in); Fisher's, 70° (4 ft); Hillslap, 60° and 49° (4 ft); Drumelzier, 40° (3 ft 6 in); Lochar, 40° (3 ft); and Corbet, 65° to 75° (2 ft 3 in)[1]. Amisfield, on

[1] Other Border towers with splayed (oval) shot-holes, and which are not mentioned elsewhere in this paper, are Burnhead and Lanton.

the other hand, provides unique examples of two special features as regards shot-holes, but these will be dealt with presently.

One problem that was inherent in the design of splayed shot-holes was that of 'funnelling'. This was exactly what the term implies, namely that any shot or arrow falling within the perimeter of the not-inconsiderable outer opening would, by the very shape of the splay, stand a good chance of being guided through the 'throat', with disastrous consequences for anyone on the other side. Little attempt seems to have been made to overcome this handicap in Border towers – unless the revival of the 'dumb-bell' shot-hole (p 214), with its central constriction, was aimed at trying to reduce this danger – but at the nearby castle of Drochil (*c* 1578) the outer splays were deliberately 'stepped' to prevent just such an occurrence. Indeed, this lack of concern was not confined to the Borders, for throughout the country the standard oval splay survived right to the end. In later Border towers, however, the basement shot-hole is found to be lacking in favour. It rapidly disappeared from the scene, whilst the smaller shot-holes at higher levels were retained for much longer to cope with any minor emergency that might arise; and in general the latter type, being situated in relatively thin sections of wall, was splayed on the inner side only, leaving a minimum aperture in the outer wall-face.

Splayed shot-holes above ground level

There are some instances where splayed shot-holes have not been confined to the basement level in early works, and although the reason is not always the same, it is usually readily apparent.

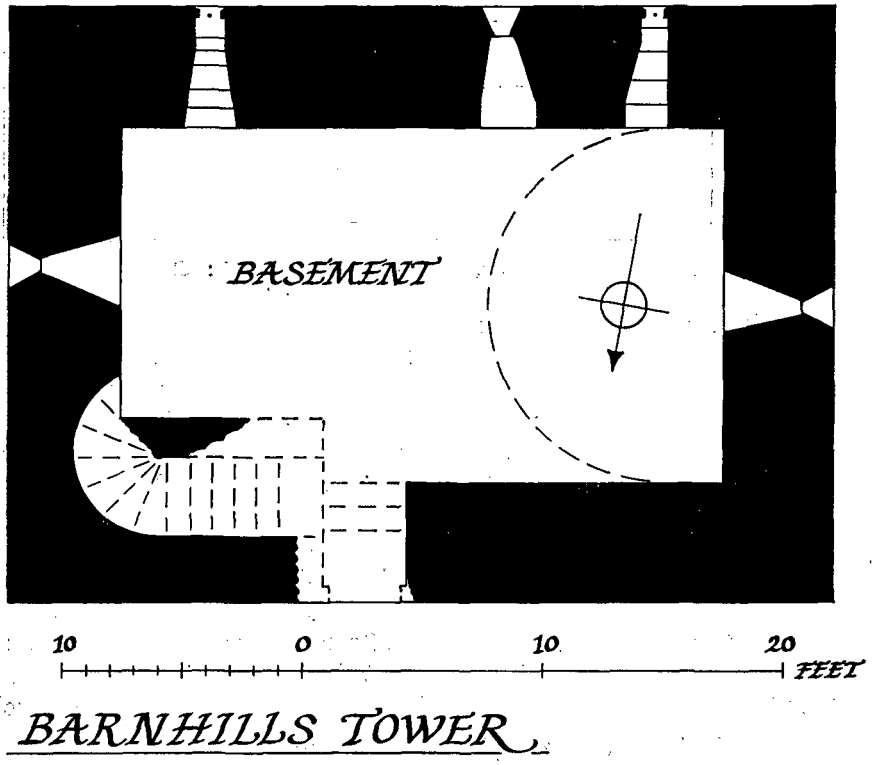


FIG 4

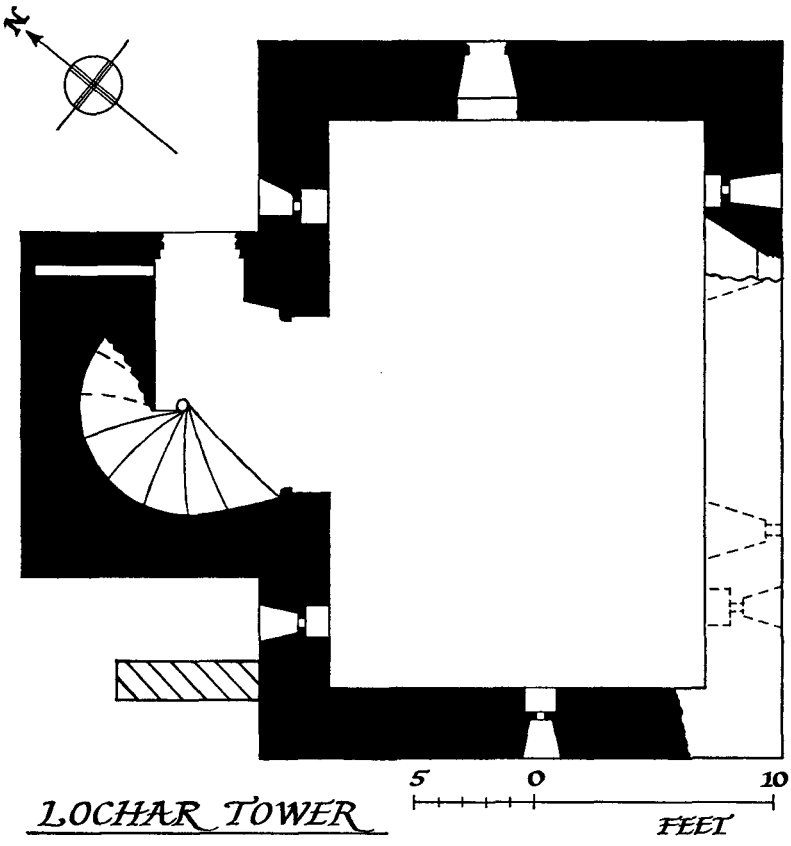


FIG 5 Basement

Mention has already been made of the two levels of shot-holes in Littledean's D-wing; this was to provide cover over the rapidly rising ground on that side. The same reasoning is found at the very ruinous tower of Fulton, where two shot-holes face west from the unvaulted ground floor, while on the north side, where the ground rises to meet a steep hillside beyond, the only one (surviving) is at first-floor level. At Dryhope, on the other hand, there are no shot-holes confronting the rapidly rising hillside to the north: instead, the builder has enclosed the tower's entrance within the barmkin on that side and relied upon the parapet walk above for his final defence. Barnhills likewise has no shot-hole on the uphill side (fig 4).

With most barmkin walls now totally absent, and even their locations usually lost, it is impossible to be certain in some instances whether a bold showing of shot-holes at a high level was a means of firing over the walls, the provision of back-up fire power, or just a method of increasing the range and hindering any would-be aggressor. At Lochar, for example, the tower was liberally equipped with splayed shot-holes both at ground- and second-floor levels, whilst additional flanking cover was provided for the entrance by a larger, unsplayed shot-hole on the first floor. Corbet, also, which appears from its excessively small size to have been a defensive corner tower in a courtyard plan[1] rather than a dwelling-house, has an abundance of shot-holes at two levels (pl 22b). Another example of multi-storey shot-holes may be seen at Fisher's Tower,

[1] Cf. Branxholme and Cowdenknowes.

Darnick, where, although the original building was altered almost beyond recognition by additions and alterations during the seventeenth and eighteenth centuries, the east wall still retains certain original features of interest. These include two splayed shot-holes, one on the ground floor and the other on its own (i.e. not beneath a window) to the right of the old hall fireplace above. This defensive strength makes an interesting comparison with the apparently almost passive resistance offered by the adjacent Darnick Tower (*infra*).

But if the reasoning behind the last three arrangements is a little uncertain, the Tweedies intention at Drumelzier is crystal clear. Some time during the latter part of the sixteenth century, this Upper Tweeddale clan, who were notorious for their feuding mode of life, deemed it desirable – if indeed not essential – to provide their chief seat with what in fact amounted to a small gun-battery. This was housed within a tall new tower, which they attached to the extreme SW corner of their existing house[1]; and although small in plan, this new appendage could boast no less than four floors of splayed shot-holes in each of its four walls. At ground level they were of the less usual rectangular pattern, but the others were all of the common oval type, except that in this instance they were inserted beneath grilled windows,[2] unconsciously anticipating the way in which shot-holes were subsequently to be phased out in the Borders (p 220).

At Darnick and Buckholm, however, the emphasis was reversed: the former tower sports a solitary splayed shot-hole beneath the second-floor window flanking the entrance, while Buckholm also possesses but one shot-hole, rather inexplicably tucked away in a corner of the basement – except that it was a corner unprotected by the barmkin. Smailholm, on the other hand, was basically too early in date to be equipped with shot-holes, although a lone, inverted key-hole one covering the entrance doorway from the first-floor vestibule above it could in fact be original. The solitary splayed shot-hole high up in the west wall of the garret was a later addition; it was inserted to provide some extra protection for the barmkin gateway and high ground approaching it on that side, the only ready means of access to this naturally strong site.

Shot-holes inserted at Amisfield

It is perhaps appropriate at this point to consider the lower shot-holes at Amisfield Tower, for they are a unique and most interesting insertion in work dating from the same general, early period as Smailholm.

Although Amisfield is quite justifiably recognised as the ultimate architectural achievement in the development of the simple tower-house plan – such north-eastern towers as Craigievar belonging to a different class – the impression given in all the published books on Scottish architecture that Amisfield was built as a unit, a tower that arose from the ground to reach its highest point, the watch turret on the east gable, all around the year 1600 is quite erroneous. There is no doubt whatever that the entire basement and lower part of the hall walls, together with the straight, wide, mural stair connecting them, belong to the early period just mentioned, some 60 or more years before the present superstructure was built; and this conviction was fully endorsed by such eminent authorities as the late Dr R C Reid and, latterly, the late Dr W Douglas Simpson.[3] Not only are the two styles totally unrelated and quite distinct, but in some places in the outer wall the division between the two building periods is readily visible to an experienced eye (in spite of a good attempt at matching the masonry to an homogeneous whole). This is particularly true along the north wall, where a few incomplete courses of ashlar divide the rubble work; in the west wall, where the rubble work just perceptibly changes its character; in the south

[1] RCAMS, *Inventory of Peeblesshire*, 1967, vol II, fig 234.

[2] RCAMS, *Inventory of Peeblesshire*, 1967, vol II, fig 236.

[3] Amisfield Papers.

wall, where the lower part of a possible first-floor entrance may still be traced above the lower one; and to a lesser extent in the quoins (always a feature worthy of special note). If further proof were needed, a careful geometric survey of the overall basement plan has revealed a structure so deceptively erratic in its angles and measurements as to be surveyor's veritable nightmare (or challenge!), a classic example of early sixteenth-century unconcern for architectural niceties (in striking contrast to the superb quality of the work *c* 1600), indeed almost comparable with Neidpath in its eccentricity[1] and not as shown on the conveniently squared-off plans previously published.

This early basement was a vaulted chamber with walls averaging about 4 ft 8 in on the west, north and east sides, and 7 ft 9 in to 10 ft 6 in on the south side, where the guardroom and mural stair were respectively housed. At each end there were two finely splayed slit 'windows', with an additional, widely splayed one high up at the east end for illumination. This unusually generous supply of openings for a basement was further augmented by a single one in the north wall and another in the south wall of a sunk, vaulted recess (averaging 7 ft 4 in wide by 6 ft 3 in deep, and only 4 ft 9 in high) formed under the stair.

When at some later date (possibly before the 1600 rebuilding) a Charteris laird wished to incorporate splayed shot-holes into the walls of this basement, an exceedingly difficult task was

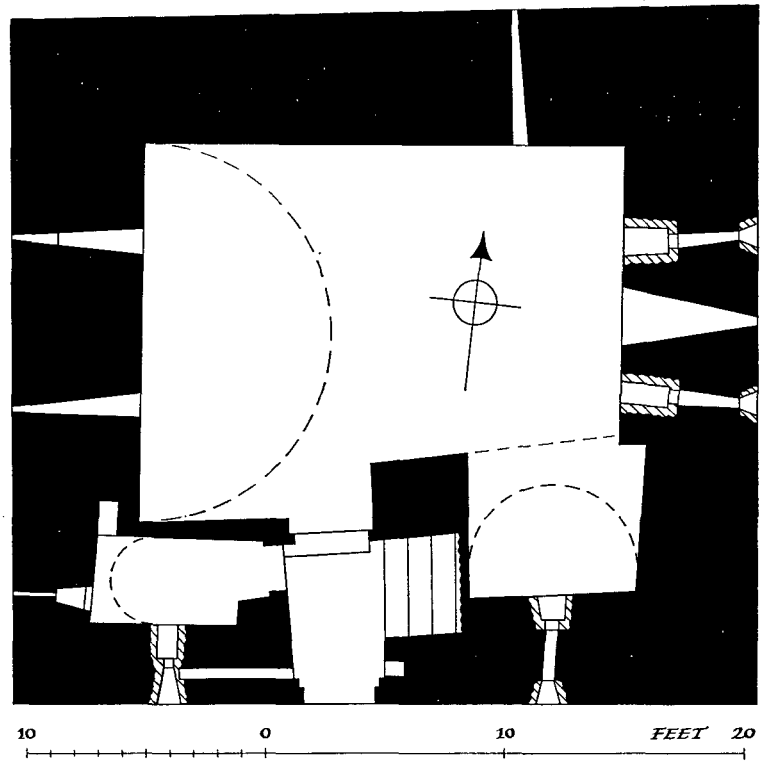


FIG 6

[1] RCAMS, *Inventory for Peeblesshire*, p 243 ff.

achieved by the simple expedient of a novel compromise (fig 6). It is, however, noted that this was only done on the south and east sides, leaving the other two sides untouched. But then the position of the barmkin is not known.[1] It was not unusual in many of the later towers for shot-holes to be incorporated into the fabric largely, or even solely, for show. The same could also be said of some earlier fortifications where the 'show' was intended to be psychological rather than ornamental; and this was partly the case at Amisfield, for typical, oval-splayed, shot-hole openings were inserted into the outer wall-face where the lower eastern slits, and the southern one from the stair undercroft, emerged (pl 25b); the rectangular splay in the outer part of the guardroom window, however, appears to be original. To any potential aggressor the impression given by these four splays was that they provided fire cover over angles of 41°, 36° and 30° respectively, whilst in fact the maximum possible angle of fire through the old slits was very small, and by the time throat blocks had been inserted from the inside it was correspondingly reduced to a mere 6° (in the 5 ft 9 in east wall), 10° (4 ft 6 in) and 20° (3 ft 4 in). It is only from the existence of the throat blocks, and the trouble taken in their installation, that one can be certain that these shot-holes, however restricted, were modified for actual use, and not just for show. The psychological effect upon an invading force of being confronted by such apparently lethal-looking shot-holes and live shot of unknown capability should not be underestimated. How could an enemy be aware of their severe practical limitations, even if he neglected the defence from higher levels (see p 221)?

'Dumb-bell' shot-holes

The 'dumb-bell' shaped shot-holes present something of a mystery. The ones at Threave are vertical, and experts can only assume that their design was not purely functional (pl 23a). The suggestion that the upper hole was to permit quicker clearing of the smoke is unconvincing. This form of shot-hole was rare indeed in its early days, and then it disappeared completely for over a century. It finally reappeared late in the sixteenth century; but this time it was resurrected in a new form.

Remains of these later dumb-bell holes are found at Amisfield, Hills, Greenknowe, Ferniehirst and Bonshaw: at the first two towers they are clearly intended as decorative, shot-hole type slit windows, a solitary one at Amisfield serving the hall's close garderobe, while Hills has no less than three, one for each garderobe and a third in the wheel-stair at a level in between, all in the east wall;[2] at Greenknowe a similar stone has been incorporated, horizontally this time, near the top of the wing's north wall during modern restoration work; at Ferniehirst a large opening, cut rather crudely from two stones and set vertically in the large, SE round tower, also appears to have been re-used (especially in view of the present castle's date and history); and the more carefully cut block at Bonshaw (pl 26d), which was recently recovered from the foot of the adjacent cliff, has been identified as belonging to some restoration work carried out on the outer defences there *c* 1570–85.[3]

Dalswinton Castle

At Dalswinton alone in the Borders may this revived style of shot-hole still be seen *in situ*, where it has the added distinction of providing the only known instance of the Z-plan of defence being employed strictly within the Border area – the nearest comparable examples being at

[1] There has been a low lean-to added on the north side at some period, but one would expect this to have been later.

[2] The lower two are now obscured by the abutment of the later house.

[3] *TDGAS*, 1967 – 'A recently discovered Shot-hole Block at Bonshaw Tower', by A Maxwell-Irving.

Auchenskeoch (late sixteenth century) in Eastern Galloway and Drochil (*c* 1578) in NW Peeblesshire. This late tower-house appears to have been built early in the seventeenth century to supersede the old castle nearby. Very surprisingly, it is built on low ground overlooked by two hillocks. Although now largely ruinous, it does retain several features of especial interest, most notably an elaborate subterranean basement and the NW corner tower, which houses both the entrance and the (main) wheel stair (fig 7). It is this latter feature that clearly illustrates how the Z-plan of defence was used in practice, with the splayed shot-holes positioned to give a fairly good degree of protection to the house as a whole, each diametrically opposed corner tower being designed to cover one half of the house and the ground beyond.

One very fine shot-hole survives unaltered beside, and facing north from, the entrance doorway (pl 26c). It has a 35° angle of fire. There was presumably another such shot-hole facing west, where a window has subsequently been broken out. A further two similar shot-holes survive in the east and south sides of the tower, so arranged that they give good flanking cover along the outside of the north and west walls of the house respectively. Unfortunately no part of the SE corner tower now survives above ground level, but a similar arrangement of shot-holes there would have completed the basic defences, covering the south and east walls as well as the ground immediately beyond.

It will be appreciated that these shot-holes only covered about half the ground over which an enemy could advance – roughly the same proportion as in the majority of 'keep-shaped' towers; but the great advantage lay in the fact that these shot-holes were only of real use in close combat, when they gave full protection to the building's main walls, whilst further defence could be effected from the parapet or other defences at higher levels. In addition, the corner towers of Z-plan castles were themselves almost invariably both covered and backed up by further defences in the main block itself, and there is no reason to suppose that this was not the case at Dalswinton too.

All the shot-holes at Dalswinton are of the horizontal, dumb-bell type. There is nothing unusual in their arrangement, nor in the cover provided, but why were they enlarged at each end, both on the inside as well as the outside, to form the dumb-bell shape? There are two possibilities. Either it was an ornamental embellishment – a comparatively rare concession amongst the Borders during the troubled years of the 1570s, if, as believed, this style was first revived in the Borders that early – or, more likely, it was only at the enlarged ends that the larger handguns could in fact be used.[1] The latter explanation is further supported when one considers the limiting dimensions involved: at the inner end of these shot-holes the enlarged portions are 4 to 4¼ in in diameter, opening out to some 6½ in at the outer face, while the central constriction is only some 2 to 2¾ in deep, adequate for sighting but barely sufficient for any but the smallest handguns at close range. By comparison, the average throat size in the more conventional shot-holes is about 4½ in.

The 'crosslet' shot-hole

On the Continent the original cross form of shot-hole (derived from the cross arrow-slit) survived as a diminutive crosslet;[2] but its sudden, isolated appearance in Aberdeenshire during

[1] At Tolquhon (*c* 1595) in Aberdeenshire, the entrance gateway is flanked by two, dumb-bell type shot-holes, with a third enlargement in the centre. These are thought to have been designed partly with an eye to decoration, while other, more conventional shot-holes provided the main defence; and at the nearby House of Schivas this effect was carried yet another stage further.

[2] The superb, late fifteenth-century castle of Mansanares in Spain has some fine examples in its curtain wall, although in this case the shot-holes are surmounted by double crosslets.

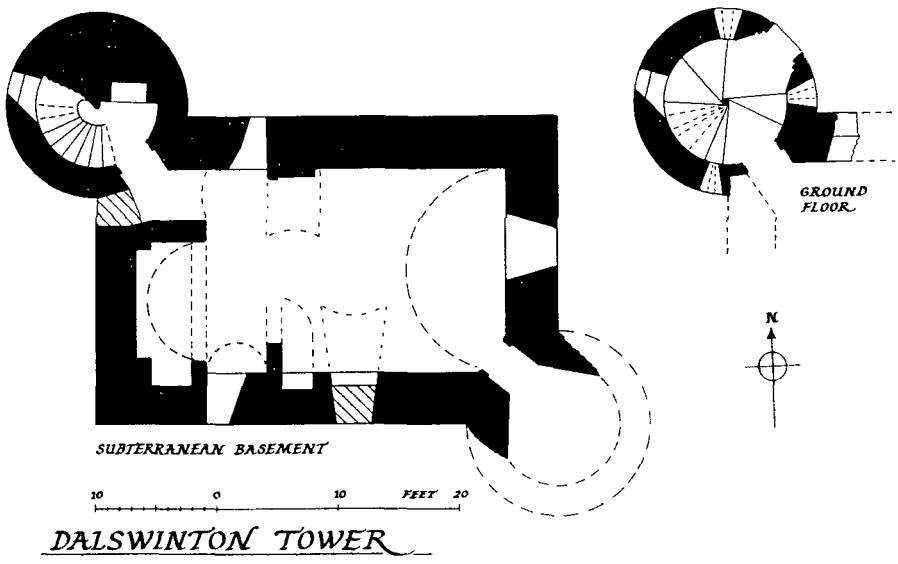


FIG 7

the last decade of the fifteenth century was wholly unexpected,[1] when, in 1491, crosslet style shot-holes were incorporated in the new castle of Ravenscraig, near Peterhead.[2] And although it was a solitary instance, it was not forgotten. Half a century later, this, by now quite archaic, type of shot-hole was resurrected by the local master-masons, no doubt as much for its aesthetic qualities as its practical value. However, it never became common, and there are only about half a dozen examples known in the country, mostly dating from just after the middle of the sixteenth century. Only one is outside the Aberdeenshire area.

This interesting exception is found at Kirkconnell Tower, near New Abbey in Eastern Galloway, where one, small, crosslet shot-hole is set in the outer wall-face on each side of the basement and then splayed inwards through the 4 ft 7 in thick wall (pl 27a). The shot-holes themselves are each 21 in high overall, with an 11 in cross arm; both slits are 4 in wide, and the lower aperture is 5¾ in in diameter. This tower was almost certainly built as a plain, rectangular keep, to which the present stair wing was added in the seventeenth century – as was also done at many other towers. It would be hard to put an exact date to the original work, but it probably belongs to the third quarter of the sixteenth century when, *c* 1560–80, a number of Aberdeenshire influences of that period appear to have been brought to the West March.[3]

Absence of shot-holes

There are a number of areas and individual towers where shot-holes are conspicuously absent. There are several reasons for this. Firstly, many more towers than is generally believed

[1] A similar form, but on a larger scale, had been employed at Hurstmonceux in the south of England in the middle of the century.

[2] Cruden's *The Scottish Castle*, pp 212–15. It was 3 ft 9 in high overall, with a 2½ in shot-hole.

[3] Another notable example is the so-called 'Crusader Stone' at Bonshaw, a pendant boss in the entrance vestibule beautifully carved with the sacred monogram 'I.H.S.', a feature also found in Aberdeenshire around this time. It had previously been ascribed to the late 1540s, but on a reassessment of the overall architectural evidence is now more reasonably expected to belong to the 1570s. The earlier dating had previously arisen because of a known connection between Aberdeenshire and the Western March at that time. During the years 1544–1546, John Brown, the last abbot of Sweetheart (New) Abbey, was busily engaged upon extensive restoration work at his abbey in a final attempt to save it from the fate that was undermining all the religious establishments at the hands of the Reformation. To oversee this work he engaged a master-mason from Aberdeenshire; and it was he who – erroneously, as it now appears – had been presumed to have been responsible for these incidental works exhibiting a northern influence.

have lower fabric which belongs to an earlier period than the present, rebuilt superstructure, and which pre-dates the general introduction of shot-holes. An instance has already been cited at Amisfield. In these earlier works, the vaulted basement, which is usually the only part to have survived, had no more than very small slit windows to provide some ventilation and a modicum of light, without in any way weakening the tower or permitting an enemy to fire it by feeding combustible material into the basement – a popular *ruse-de-guerre* with the English. Another reason for the absence of shot-holes is found in the small, lonely, and isolated towers that are tucked away amongst the hills, far from the usual routes of invading armies and marauders – towers such as Woolandslee, Manorhead, and Kinnelhead, and many another that is now represented by no more than a grass-covered heap of rubble. They usually belonged to relatively insignificant individuals, who are unlikely to have possessed firearms or been subjected to a major attack, and who, in any case, did not have the means of acquiring the necessary freestone for architectural refinements, however minor.

A more significant reason for the absence of shot-holes was an initial distrust in this form of defence in certain areas (e.g. Parts of Nithsdale) and among certain families. Nor was the reasoning of this minority of lairds, who were often persons of some consequence, altogether ill-founded. As already stated (p 199), and in spite of some two centuries of development, no handgun was yet capable of matching a bow in either accuracy or rate of fire; and the latter were not suited for use from these towers except from a parapet walk. Furthermore one has only to consider the layout of a typical tower to realize the extreme limitations of these fine-looking new features in practice. Some at least, if not all, of the early shot-holes either opened directly on to one or other of the outer defences, or else looked out across some naturally defensive chasm, so that until an enemy had overcome the first line of defence and confronted the tower itself they were of no use whatever, except as a morale booster; and by that time the enemy was often too close for them to be used effectively, the main defence having to be carried on from the parapet above with any weapons available. This should not, however, be interpreted as an indication that these shot-holes were a rather useless, popular gimmick; but that appears to be the light in which their detractors saw them. Certainly they had their shortcomings, but these were gradually counteracted by various improvements in their positioning – such as the Z-plan already referred to at Dalswinton (p 214) and multi-level gun batteries (pp 211–12) – although in the Border area, where strongholds were generally of greater moment than elsewhere, improvements were noticeably slower to take effect, and were by no means always logically thought out. One reason for the apparent resistance to change was dictated by the unsettled state of Border life, which gave the towers' owners little opportunity for rebuilding or improvements unless it was forced upon them. A more obvious reason, though, stemmed from the very existence of the multitude of small towers in the area. In their sixteenth-century way of life, all but the poorest families built for themselves a small, fortified tower-house, and any thought of something more elaborate was out of the question: they had neither the manpower nor the means either to erect or to defend a stronger structure. It is this social and historical background to the ordinary 'Border tower' that makes it quite unrealistic to try and equate its defences with those of the larger, more sophisticated, and more peacable, tower-houses of the Lowlands and the NE counties.

Another fact worth emphasising again was the strength inherent in these towers. Mention has already been made of two strong towers that successfully withstood sieges (p 198). But there was probably no time when the defiant strength of an average tower was better demonstrated than in the famous, triple 'siege' of Stapleton in 1626. Although not a siege in the true sense, inasmuch as Sir John Charteris of Amisfield was commissioned to recover the property for its rightful owner without serious damage, this conventional 'keep-plan' tower, which was

defended by four main shot-holes, an additional smaller one beside the entrance, and the parapet above, was successfully held by two rebels and a handful of retainers for more than six months before the increasingly vast, official force – it eventually numbered 4 earls, 2 lords, 3 knights, and 7 lairds, with all their forces – was able to eject them.

Overall defensive plan

The majority of Border towers equipped with shot-holes date from the second half of the sixteenth century, the greatest number probably belonging to the middle years of this period. When built on the rectangular, or 'keep', plan, the most normal arrangement was one shot-hole on each side of the basement, with the occasional provision of an additional shot-hole beside the entrance (e.g. Bonshaw, Robgill and Stapleton). With towers on the L-plan, however, the arrangement was less consistent – although the majority have been so altered that complete details are no longer available. Hillslap (1585) and Evelaw would appear to be typical examples where there were apparently no shot-holes in the wing, but one in each face of the main block, the one in the re-entrant angle serving to cover the entrance. Greenknowe (1581), on the other hand, has a guardroom in the wing, which is equipped with a single shot-hole facing east across the courtyard to where outbuildings formerly stood, while the only provision for firearms low in the main block is a large, splayed, slit window covering the entrance in the re-entrant angle. Elshieshields, too, has but a single round shot-hole, splayed only on the inside, to flank the entrance;

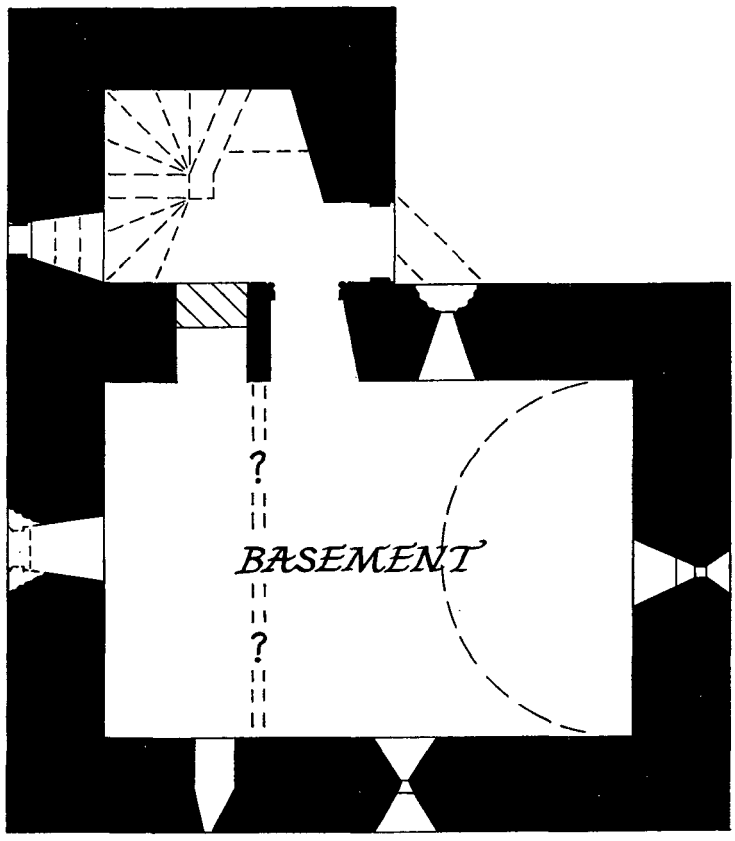


FIG 8 Hillslap Tower, ground-floor plan (scale 1 : 96)

and at Langshaw a rather crude, splayed shot-hole was situated beside the original entrance in the main block's portion of the re-entrant angle. Mention has already been made of the unusually strong defence provided at the T-plan tower of Lochar, which was apparently either rebuilt or restored in 1622; and there has also been reference to other towers where, for one reason or another, a more elaborate system of defence has been employed within the structures of the towers themselves. The ultimate development in basic tower-house defence – as compared with domestic comfort – is generally considered to have been the Z-plan. The only true example of this arrangement within the Borders was at Dalswinton, where little enough now remains (*supra*). The even more dilapidated remains of the castle of Auchenskeoch in Galloway and the much grander remains at Drochil in Peeblesshire are also on the Z-plan; but both are outside the territory generally associated with 'The Borders' and Border history.

Barmkins and gatehouses

A stronger initial defence would have been provided if shot-holes had also been incorporated in the barmkin wall, for normally at least two sides of a tower were enclosed within its courtyard and unable to contribute much to the latter's defence. There is, however, no evidence among the few surviving remains of these walls to suggest that any such provision existed. Indeed, enough remains at Buckholm to indicate that there were probably no apertures within the wall, while the gateway had to rely for its defence upon the effectiveness of the strong iron yett and reinforcing drawbar. A similar arrangement appears to have existed at Hills, except that in this instance the gateway was later either altered or rebuilt to incorporate a gatehouse overhead, the architectural style of which suggests a date late in the sixteenth century (reputedly 1598), some 30 years after the tower itself was built. At no other lesser tower in the Borders can an original barmkin wall be identified that survives in any part to wall-head height. Yet at these two towers alone one finds a fairly obvious explanation for this omission – even though the towers themselves can only manage one real shot-hole between them!

In times of trouble all the local horses and cattle were herded into the barmkin for safety. This was the enclosure's prime *raison d'être*, when it became a seething mass of frightened animals, often far too many to be housed within the stables and other outbuildings. To try and man open shot-holes at ground level in such a situation was out of the question. The only alternative was to carry on the defence from a higher level, and this was just what they did. At both Buckholm and Hills the remains of an open parapet walk may still be seen, whilst elsewhere in Scotland there are several small tower-houses that retain much more complete barmkin walls, all of which are built on the same principle. Few were any better equipped for defence, although exceptions are found at Mains of Fintry (1562) in Angus and Muchalls (1619) in Kincardineshire.[1]

Ground-level defence of barmkins, however, was not altogether unknown, but it does seem to have been restricted to gatehouses where these existed. At Bonshaw, for instance, the dumb-bell shot-hole block already referred to (p 214) must have come from some part of the outer defences, and 'the outer gate of the fortalice' is referred to in a deed of 1582. Lag is also known to have had a gatehouse, although it now lies in a heap of rubble around the remains of the gateway, but an old engraving of it when it was less ruinous[2] shows no evidence of defence from below. The gatehouse at Hills, on the other hand, does appear to have been manned from two levels.

[1] Mains of Fintry has an unusually high curtain wall with rounds at the corners, a semi-circular turret corbelled out over the gateway incorporating both shot-holes and machicolations, and the unique feature of shot-holes built into the merlons of the embattled parapet (reminiscent of early medieval arrow-slits in the same position): Muchalls was less ambitious, with corner rounds in the parapet and shot-holes at ground level on either side of the gateway.

[2] *The Historical Families of Dumfriesshire*, by C L Johnstone, p 75.

The guardroom itself is built out over the gateway on projecting piers (2 ft 4 in wide); it incorporates two, small, inverted key-hole type shot-holes (5 in high by 3 in in diameter) in its outer wall (pl 26b). In addition, there have been crosslet shot- or spy-holes in the north side of this gateway, both at ground level and in the guardroom above. The latter is now filled in, but enough remains of the lower one (with a wall recess behind it) to indicate that it must have been intended for use and not just for show, even though, being now blocked on the inside, it is not clear how its use was contrived in practice. It does, however, seem probable that these were only spy-holes, as the guardroom has a 'window' of similar shape in its inner wall.[1]

Later trends

By the end of the sixteenth century basement shot-holes were beginning to go out of fashion in the Borders. There were exceptions, but with the anticipation of more peaceful times ahead, followed by the Union of the Crowns in 1603, these were very few and soon ceased altogether. At the same time, however, local feuding and a deeply inbred distrust of one's neighbours, often built up and proliferated over many generations, could not be forgotten overnight, so that there was a period of perhaps half a century during which the legacy of the shot-hole, and what it represented to the Borderers, continued to live on. This was found in the small window and turret shot-holes that were incorporated in new works during the last two decades of the sixteenth and early part of the seventeenth centuries.

Unlike the earlier splayed shot-holes in window breasts, which unashamedly challenged intruders from the windows of such towers as Drumelzier and Darnick, the new form was generally a compromise between ornamentation and utility, with the emphasis sometimes tending one way and sometimes the other. The change represented an intermediate stage in the withdrawal from fortification to peaceful domesticity; but as in all other aspects of architecture, one cannot draw any hard and fast line between any one stage and the next: shot-holes of both types co-existed in the same towers over a period of at least 20 years. While some towers omitted the lower shot-holes at an early date, others held fast to the old traditions, stubbornly maintaining an outward appearance of great strength (perhaps with good cause) long after their neighbours had progressed to greater domestic comforts. Nisbet House in Berwickshire is an outstanding example in the latter category – not least because an existing castle was actually pulled down to make room for it. Although not built until *c* 1630, this large mansion has the most spectacular array of splayed shot-holes in the Borders: they are liberally distributed at every level from the basement to the wall-head, in the main walls, wings, stair towers, and turrets, sometimes in window breasts and elsewhere on their own. Some are of the conventional oval shape, but others have an additional downward splay, presenting the appearance of the letter 'T'. Even later at Traquair, the square NW corner turret, which was not added until 1642, rather surprisingly incorporates an unusual form of shot-hole that first appeared further north towards the end of the previous century (pl 28d). It is a form of double splay, in some respects similar to the horizontal dumb-bell type of shot-hole, and it appears in each of the turret's rounded corners to face outwards beyond the house. One can only conjecture that its revival at such a late date, and in an otherwise almost undefended house,[2] was a precautionary measure associated with the contemporary Civil War.

[1] Because of the gateway's obvious restoration or rebuilding in more recent times, it is now impossible to determine the exact details of the original structure. In the altered work some of the moulded stones of the archway have been re-arranged, the draw-bar holes have disappeared, and the wrought iron gates are replacements.

[2] The oldest part of the house is a small tower, built in the 1490s before shot-holes had come into vogue; and although a licence was issued for its extension and fortification in 1512, there is no evidence that this work was carried out. The central block was added in the mid-sixteenth century, but the only apertures in the basement of this work are ventila-

Purely functional turret shot-holes

In connection with the new trend, one should bear in mind that, while the changeover to fewer, and less spectacular, openings was largely dictated by the anticipation of a more peaceful future, the reduction in their size was made possible partly by thinner walls and partly by a vast improvement in the quality and performance of the smaller firearms. This is particularly apparent when one considers the very small, purely functional shot-holes that are found high up in some corner turrets and watch towers. These first appeared in the Borders some time *c* 1580 and survived for about a quarter of a century. But unlike the semi-decorative new shot-holes (*infra*) which appeared around the same time, and owed their origin largely to the same circumstances, the purely functional ones were quite distinctive. They made no attempt to be decorative: on the contrary, although they were slightly splayed on the inner side to serve their purpose, the opening presented in the outer wall-face, angled steeply downwards either to flank the main walls from stair or corner turrets, or to cover neighbouring ground from an even higher vantage point, was invariably a very small aperture, usually of rectangular section, that was almost invisible from the ground far below. Typical examples are found in the corner turrets at Greenknowe (1581), Amisfield (1600) (where the apparently small slits are most deceptive in actually measuring 2 ft by 2½ in and 1 ft by 4 in at the lower and higher levels respectively), and Spedlins (1605), and in the open rounds at Bemersyde (1581). The latter case, however, is unusual in that, whilst the rounds on the south front are plain, those on the north side each have a shallow central embrasure, beneath which an additional round shot-hole has been included to face straight out horizontally.[1]

Elshieshields, on the other hand, retains no evidence of having been provided with turret shot-holes.[2] At first this seems surprising, bearing in mind that it was built by the same master-mason who later rebuilt nearby Amisfield, but the answer here appears to lie in the watch-turret. This latter feature, which served as an open look-out at the tower's highest point, incorporates the same type of miniature shot-hole immediately below its moulded coping on the east, south and west sides, providing a substantial degree of cover over the surrounding ground (pl 27c). By comparison, the covered watch-tower at Amisfield, perched within the east gable, was less well appointed so far as firearms were concerned. Relying upon the turrets for the main high-level defence, this look-out post was well equipped with small windows (that could have been used in defence if the need arose), provision for a temporary platform over the stair-head on the north side, and even a small fireplace for the sentry's comfort; but the only shot-hole was one small one, some 64 feet above the (original) ground level, angled down to cover the east side of the tower, which received less cover than the other sides from the turrets.

tion slits. It was not until a further addition was made some 30 years later that shot-holes were actually included in the fabric; but because of numerous subsequent modifications, we cannot now tell how extensive these defences were, the only surviving evidence being a partially filled-in splayed shot-hole in a window-breast beside the new entrance. It is, however, not without significance that, when further additions were made in 1599, incorporating corner turrets with their own shot-holes (see p 223), the new windows which were inserted into the west wall of the earlier basement at the same time did not, apparently, include provision for the use of firearms.– See RCAMS, *Inventory for Peeblesshire*, p 311 ff.

[1] The two parapets at this tower are reputed to have been altered in 1690, although the actual fabric and mouldings appear to be original.– See *THAS*, 1926 – 'Bemersyde Tower', by J P Allison.

[2] The three, very small apertures distributed around the wall-head of each corner turret have never been satisfactorily explained. Their disposition would tend to suggest an active defensive role; but on closer examination, their location unnecessarily high up the turret walls, well out of normal reach, and the form of the openings themselves, with no downward splay, would rather suggest otherwise.

High-level defence at Hoddom

A unique variant in high-level defence is found at the massive, late sixteenth-century tower of Hoddom, seat of the powerful Lords Herries. Here, in addition to the familiar open parapet walk with corner rounds, which runs around the wall-head of the main block before communicating with the higher wing through doorways at each end, and which, with or without crenellations, was normally considered perfectly adequate protection for defenders at this level, the builder clearly deemed further measures necessary. These took the form of shot-holes within the parapet wall itself, backed up by machicolated projections in the middle of the north and east walls and over the entrance doorway in the re-entrant angle, the machicolations being boldly corbelled out beyond the line of the adjacent walls. The remarkable feature about the shot-holes here is that, instead of being situated within the corner turrets – as at Bemersyde (*supra*) and other towers further north – they are built into the main parapet walls immediately adjacent on either side, facing straight outwards, and with no structural downward splay and very little cover to either side (pl 28a). Yet there is no doubt that their purpose was solely utilitarian, their very existence being virtually invisible from below. On the other hand, their justification and effectiveness must be considered very dubious, while the possibility that they were used solely as spy-holes is even less likely. The apertures are all rectangular in shape, but vary in size. A typical example (in the NE corner) opens out from 4 in wide on the outside to 11½ in on the inside, with a uniform height of 1 foot through the 1 ft 9 in thick wall.

Decorative 'shot-holes' in late work

Unlike the purely functional types just described, the majority of the new, less aggressive shot-holes took the form of a small circular aperture, in the outer face of a wall or turret, that was commonly embellished with some form of decoration, such as a hollow-moulded surround; or they might be opened out either partially or wholly to some other shape, like the popular quatrefoil. Windows in some stair turrets and garderobes also followed the same decorative style, so that often one cannot be certain whether they were intended to be merely a reflection of the new style of shot-hole (or vice-versa), or to serve a dual role in an emergency. A classic example of this is found at Oakwood (1602), where the second floor garderobe was lit by a small circular window, with a hollow-moulded surround, that is identical to the shot-holes in some of the window breasts on the same floor. Other decorative shapes employed for these 'windows' included vertical dumb-bell openings at Amisfield and Hills; also a quatrefoil and a cross at Amisfield (1600); and both lancet and circular shapes lighting the wheel-stair at Fourmerkland (1590). A less ambiguous example was found at Hutton, where a large house was added to the old tower in 1573. In this instance, a quatrefoil shot-hole at the foot of the main stair not only served to protect the new entrance, but also had to provide much of the illumination for the entrance vestibule.[1]

Shot-holes in window breasts were not particularly common in the Borders. Mention has already been made of those at Oakwood, which are found beneath the main windows of the principal second floor chamber (pl 27d). An early example of a plain hole may be seen (blocked up) in the north wall of the old NE tower at Cowdenknowes, at what was originally first-floor level; but as this courtyard corner tower (cf Corbet, p 211) has been completely altered internally, largely as the result of its new role of main entrance to the adjacent mansion, its original features have been largely destroyed. Similar unadorned examples are found beneath the turret windows at Ferniehirst (1598), flanking the walls; but in this instance they are supplemented by additional

[1] These features were regrettably removed when extensive alterations were carried out by the late owner; see McGibbon and Ross, *Castellated and Domestic Architecture of Scotland*, vol 4, 193 f, for details of the former arrangement.

holes with quatrefoil mouldings facing out from between the windows, while the round holes beneath the small stair windows have moulded surrounds similar to those at Oakwood (pl 28c). Other examples of the latter form are found at Greenknowe (1581), where two such holes are situated in the stair turret between the first and second floors to cover the re-entrant walls; and at Isle (1587), where a single window looks out from the middle of each of the two turrets, while moulded circular shot-holes to one side cover the most vulnerable approaches from the W and NW (pl 28b). Corner turrets also survive at Fourmerkland (1590) and Barjarg (1590's); but as both have their upper parts completely rebuilt in restoration, no defensive features survive. Apart from the 1642 turret at Traquair already mentioned, there are two more, round turrets on the west front, both of which date from 1599. Of these, the one to the SW still retains a pair of circular shot-holes with hollow-moulded surrounds looking out from between the flanking windows – a reversal of the more usual arrangement, where windows look out while shot-holes cover the walls.

Besides the 'decorative' openings already mentioned at Fourmerkland, there is a rather enigmatic shot-hole in the tower's NW wall at second-floor level. It is 6½ in in diameter at the outer face, and opens out through the 2 ft 8 in thick wall to 2 ft 4 in high by 1 ft 3 in wide on the inside. Whilst on the one hand it is hard to accept that this substantial aperture, which has a very narrow splay (22°), and which faces away from the most likely direction of any attack, was the only true shot-hole in the tower, on the other hand it does cover some of the firmest neighbouring ground, and was also on a side that was probably not contained within the barmkin. Furthermore, it is wholly unconvincing as a window, decorative or otherwise, especially as there is an original, conventional window further along the same wall.[1] One is inevitably drawn to the conclusion, therefore, that this feature was indeed intended primarily as a shot-hole, similar to the 'extra' one (8 in in diameter) covering the entrance at Lochar (p 211), which it most closely resembles.

Ornamental 'shot-holes' at Fairnielee

Finally, before leaving the diminutive forms of semi-ornamental shot-holes, mention must be made of the house of Fairnielee, near Selkirk. Representing one of the earliest 'architect-designed' mansion-houses in the Borders, apparently built around the turn of the seventeenth century (the date is uncertain), it was designed throughout as one unit, with the accent entirely upon space, comfort and symmetry. Yet it could not completely forsake the styles and ornament of the period, and almost inevitably included corner turrets at each end of the SW front. Nor was the purpose of these turrets forgotten. Whilst they were no doubt designed as much for their aesthetic appearance as anything else, with decorative corbel and offset courses, they nevertheless still included beneath the windows small, almost insignificant 'shot-holes' in the style of the period, with the same quatrefoil moulding on the wall-face as is found in Ferniehirst's turrets. The only difference at Fairnielee is that these shot-holes never penetrated the wall; they were there solely as external decoration, the ultimate, if a little premature, stage in the disappearance of the shot-hole from dwelling-houses.

ACKNOWLEDGMENT

The writer gratefully acknowledges the assistance of the various owners (and custodians) of all the tower-houses and other fortified sites within the Scottish Borders, who, by granting him unrestricted access to the properties in their care, public or private, and whether mentioned or not, have made this brief but comprehensive survey possible.

[1] This tower was restored and slightly modified over a century ago, but from the available evidence it is not thought that any original features of importance were destroyed as a result.

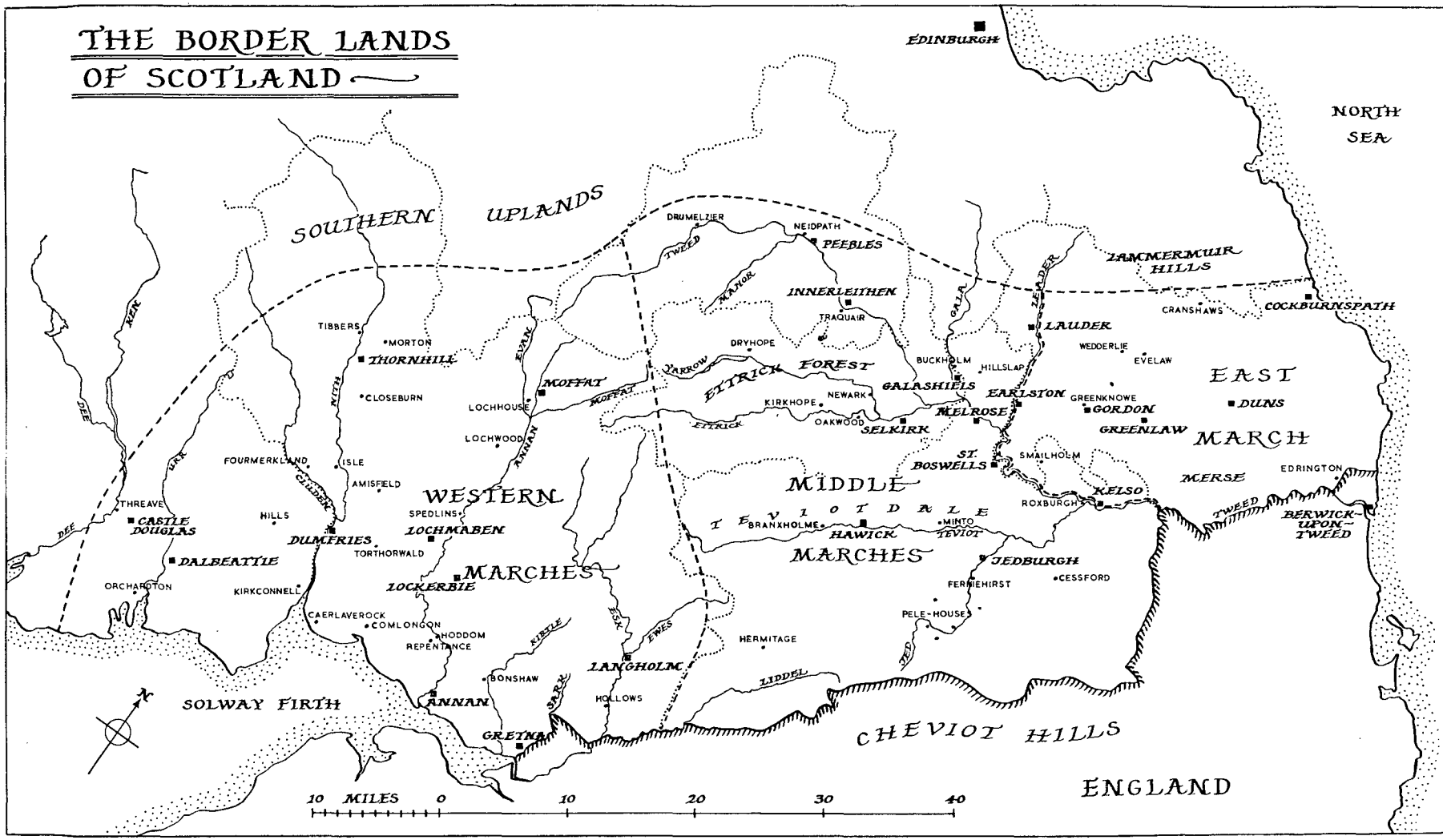
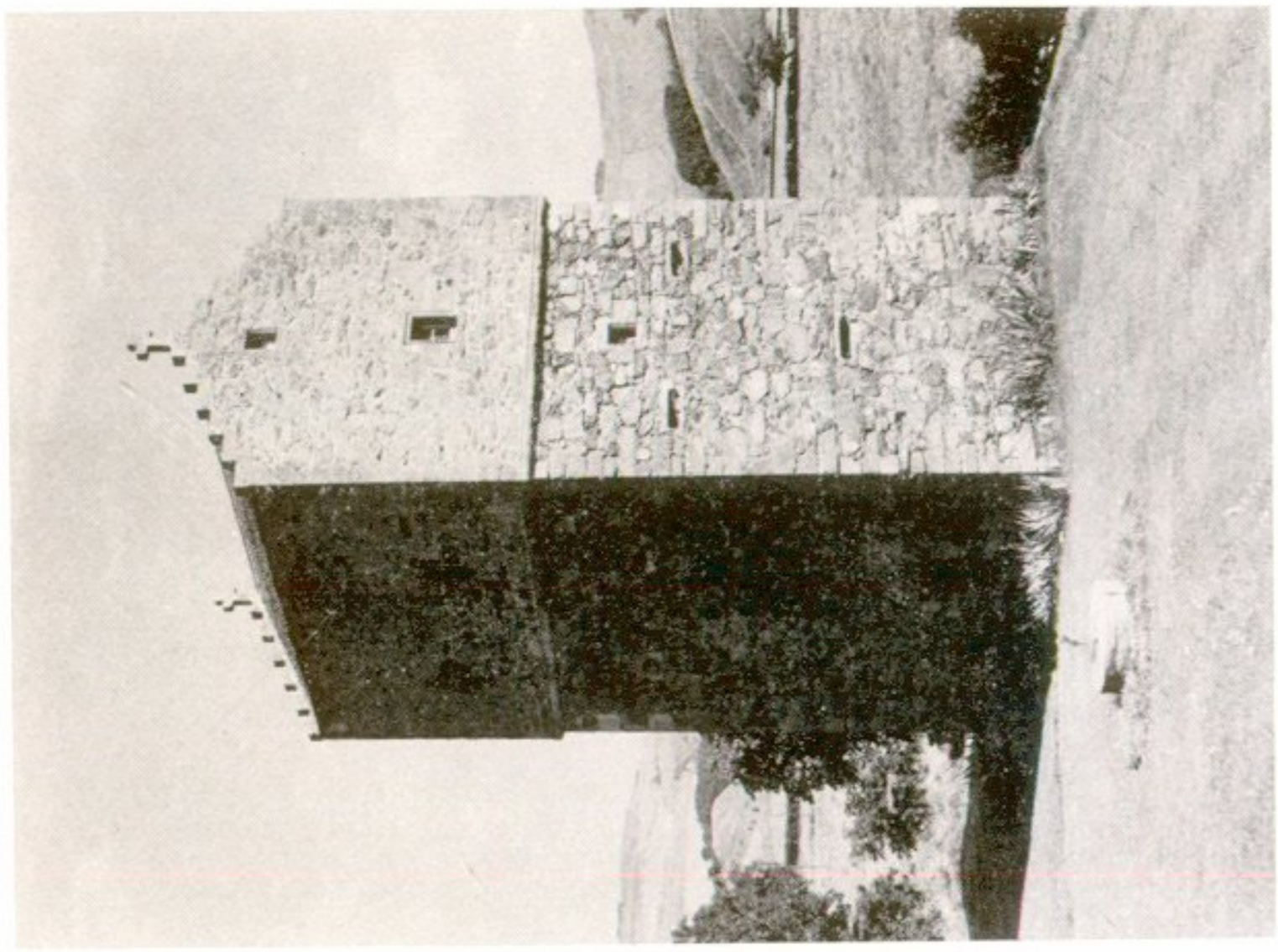


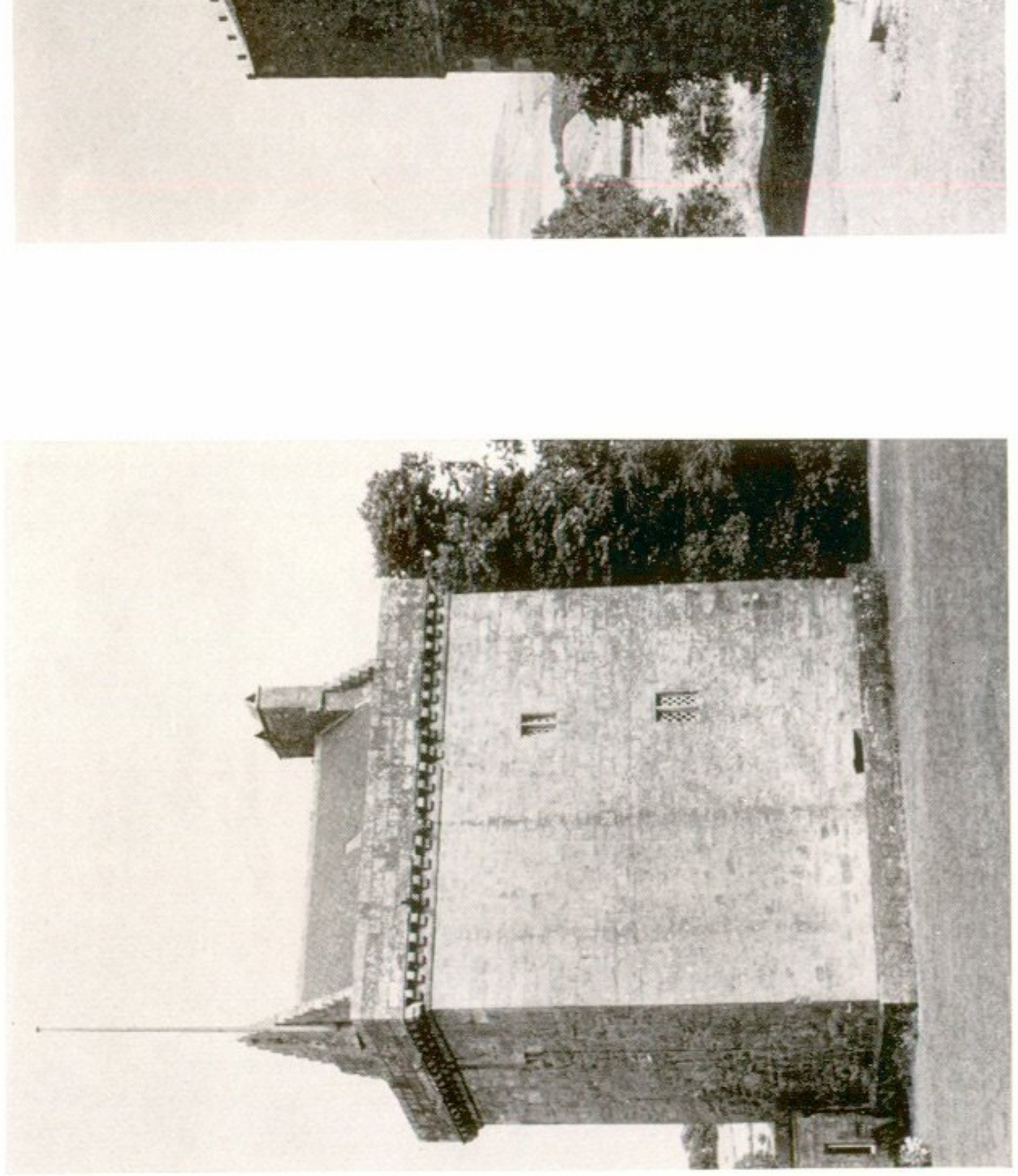
FIG 9 Map of principal Border castles and towers

a Newark Castle from the S, showing shot-holes in curtain wall (fifteenth century) and S flanking tower (mid sixteenth century)

b Littledean Tower: lower level shot-holes obscured by rising ground

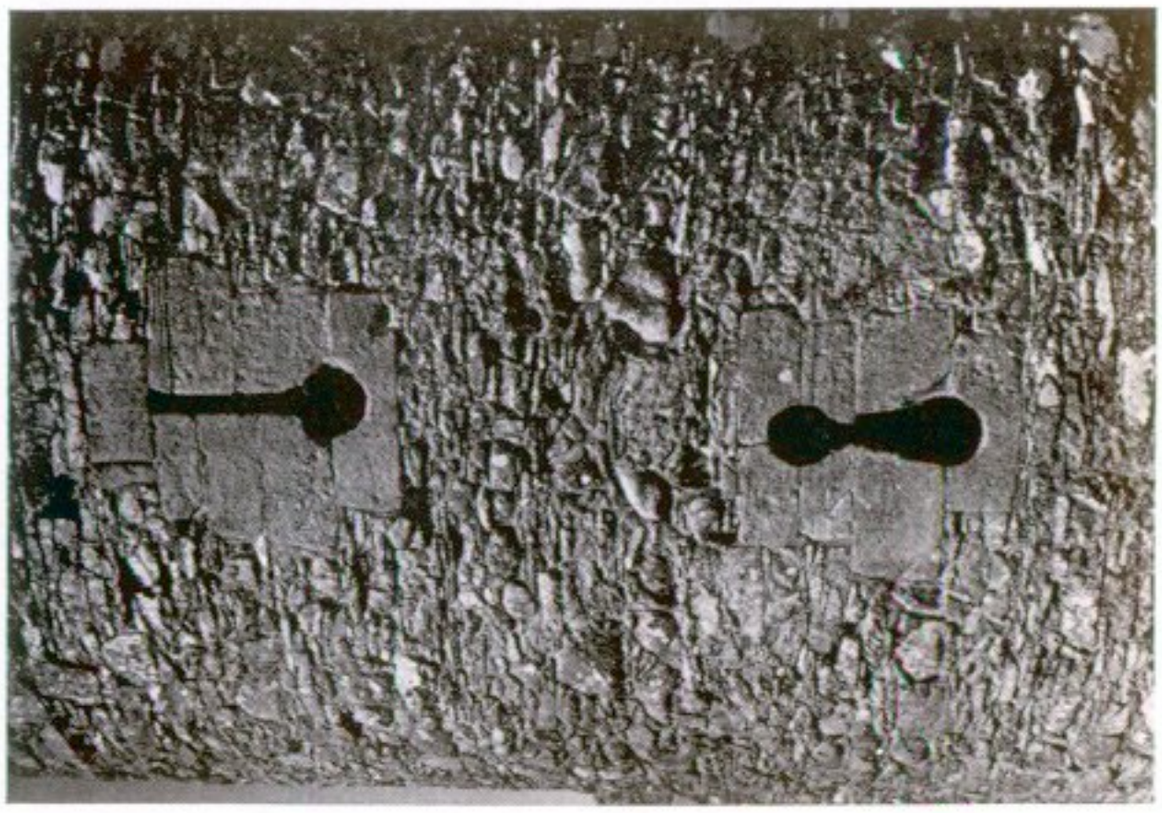


b Corbet Tower; restored but retaining its multi-level shot-holes (*c* 1570s)



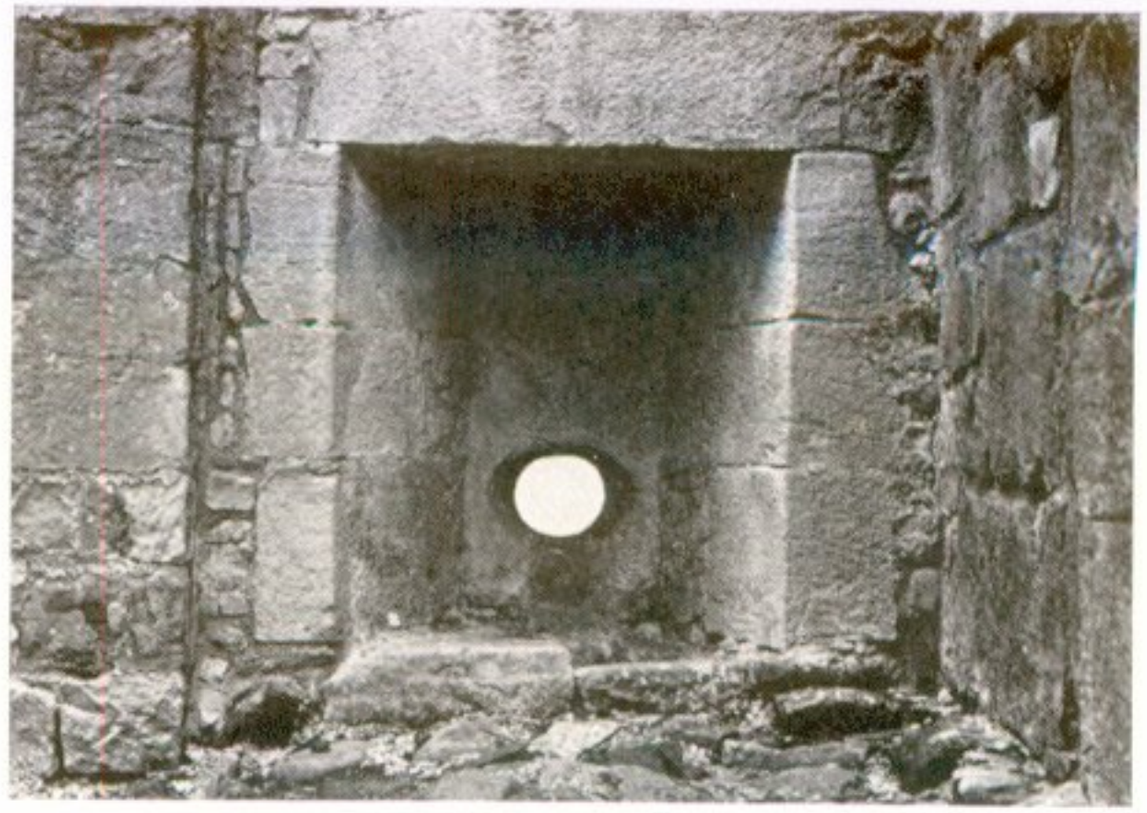
a Bonshaw Tower; fairly typical ground-level defence, strongly backed up and covered by a parapet walk with machicolations (third quarter sixteenth century)

b Greenknowe: vertical gun-loop covering main entrance (1581)

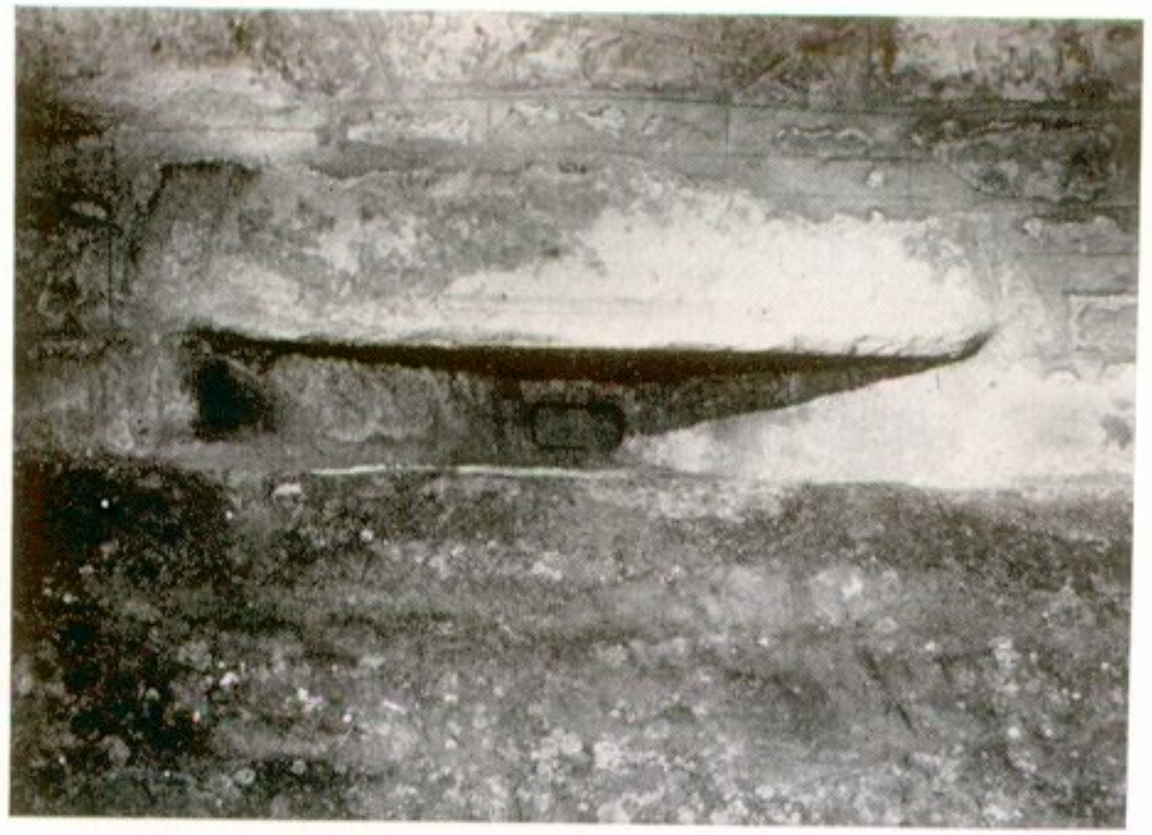


a Threave: vertical dumb-bell and inverted key-hole shot-holes in SE corner tower of curtain wall (late fifteenth century)

a Hermitage: oval splayed shot-hole inserted in old W entrance doorway, seen from outside (1540)



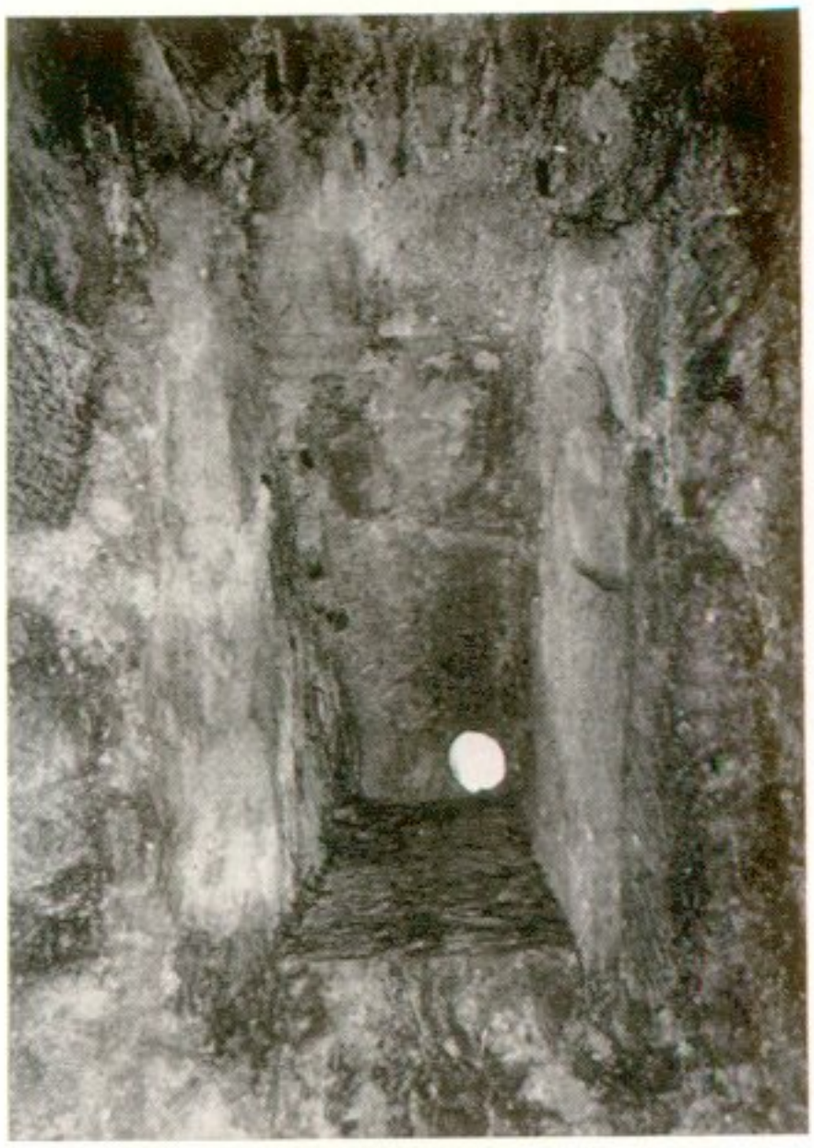
b Hermitage: shot-hole in old W entrance seen from inside



c Bonshaw: rectangular splayed shot-hole, S basement (third quarter sixteenth century)

d Hillslap: rectangular splayed basement shot-hole (1585)

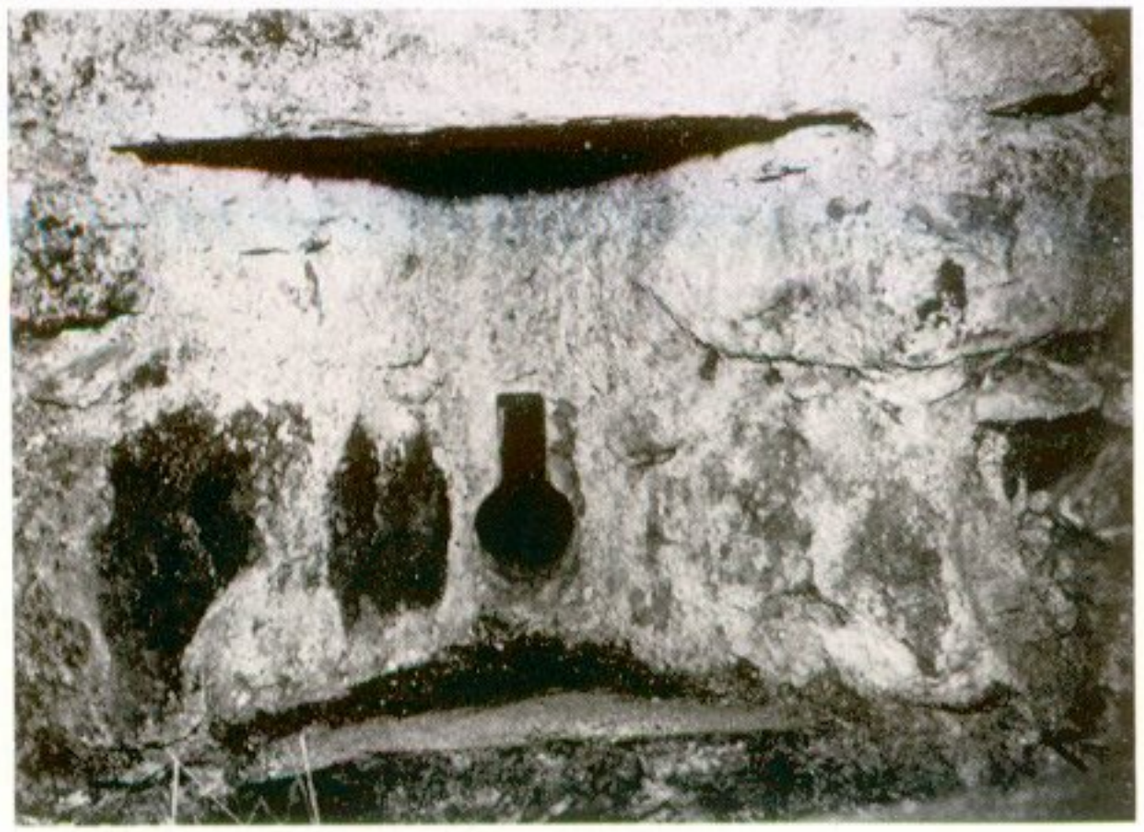
b Amisfield: splayed shot-hole dressings inserted into outer face of existing slit window (late sixteenth century)



d Littledean: inner side of shot-hole

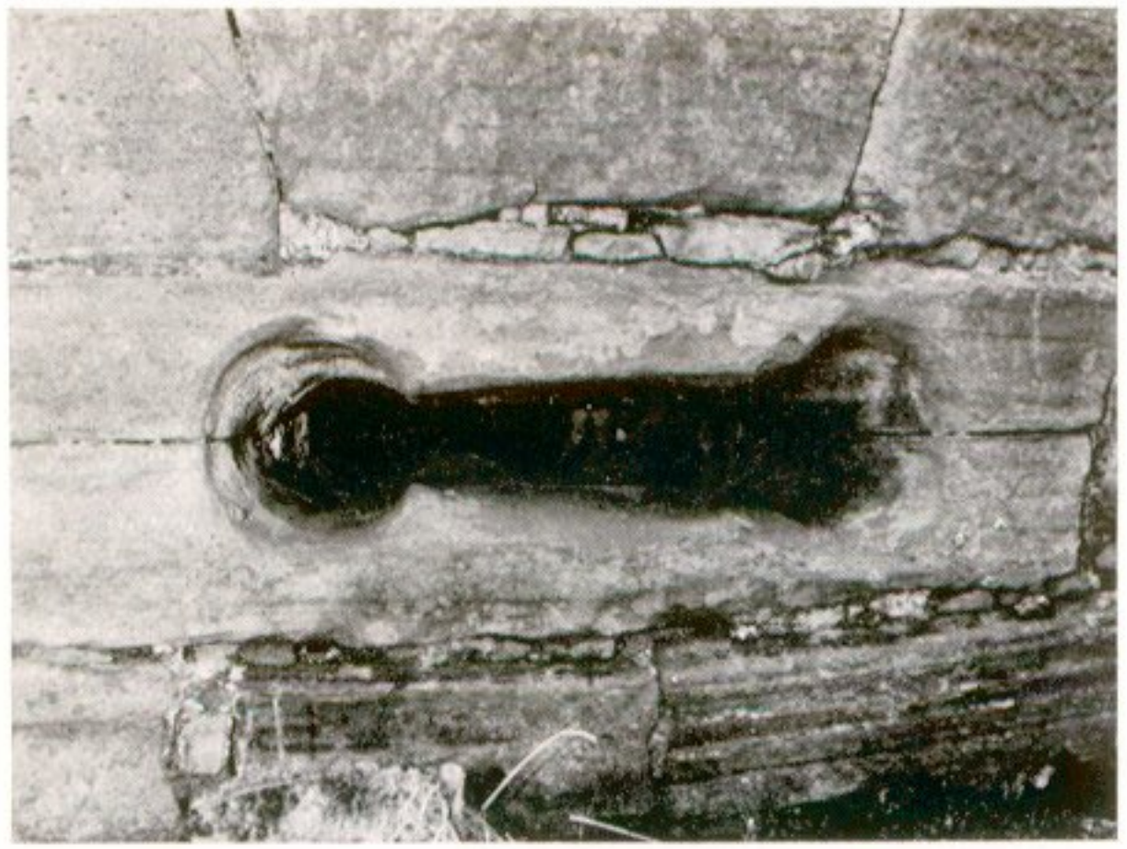
a Bonshaw: guard's shot-hole at entrance, from outside (third quarter sixteenth century)

c Timpendean: inner side of shot-hole



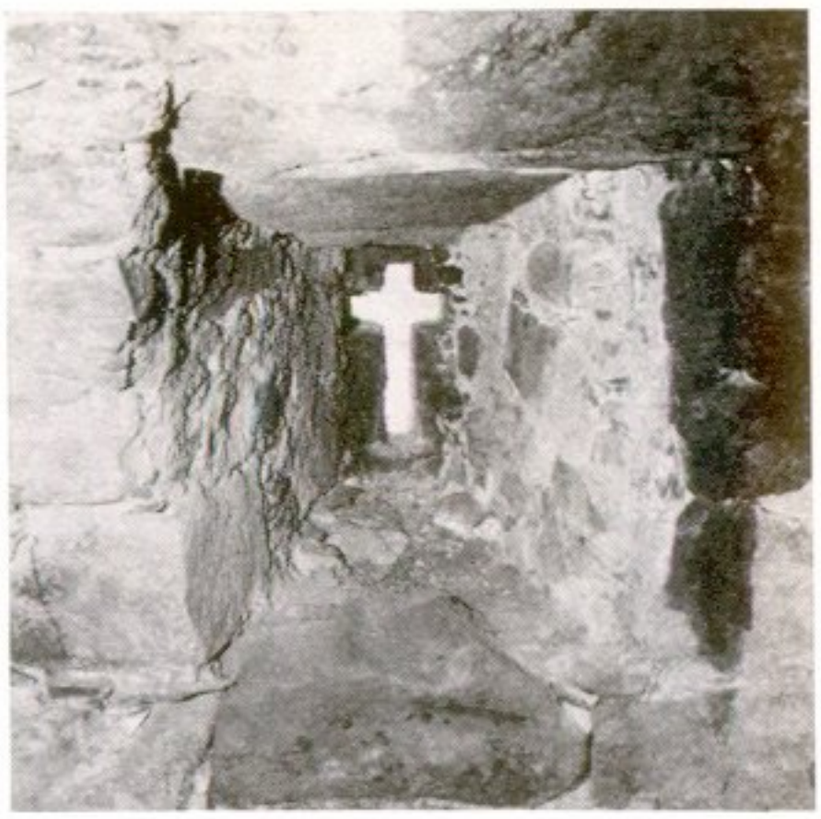
a Newark: miniature inverted key-hole shot-hole in S flanking tower of curtain wall, from inside (mid sixteenth century)

b Hills: outer wall of gate-house guardroom with royal arms and shot-holes (1598)



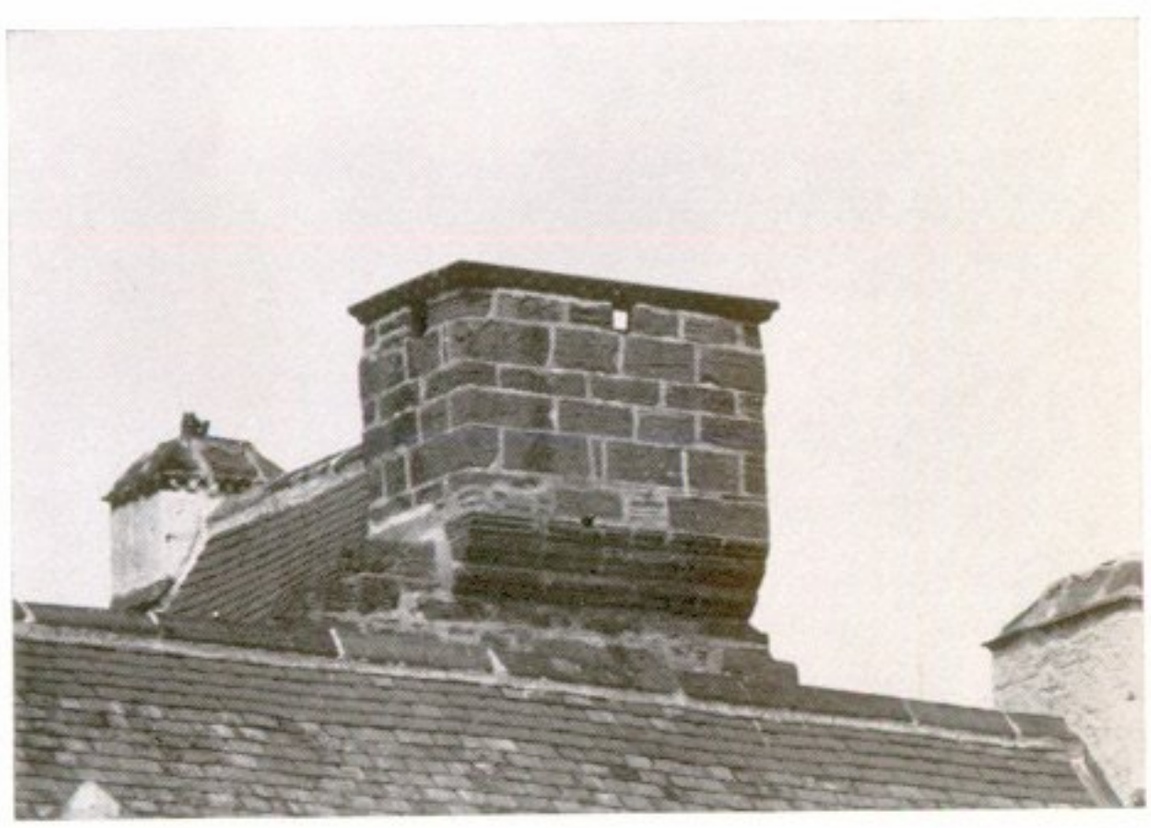
c Dalswinton: dumb-bell shot-hole in NW corner tower (early seventeenth century)

d Bonshaw: shot-hole block recovered from outer defences (1570s)

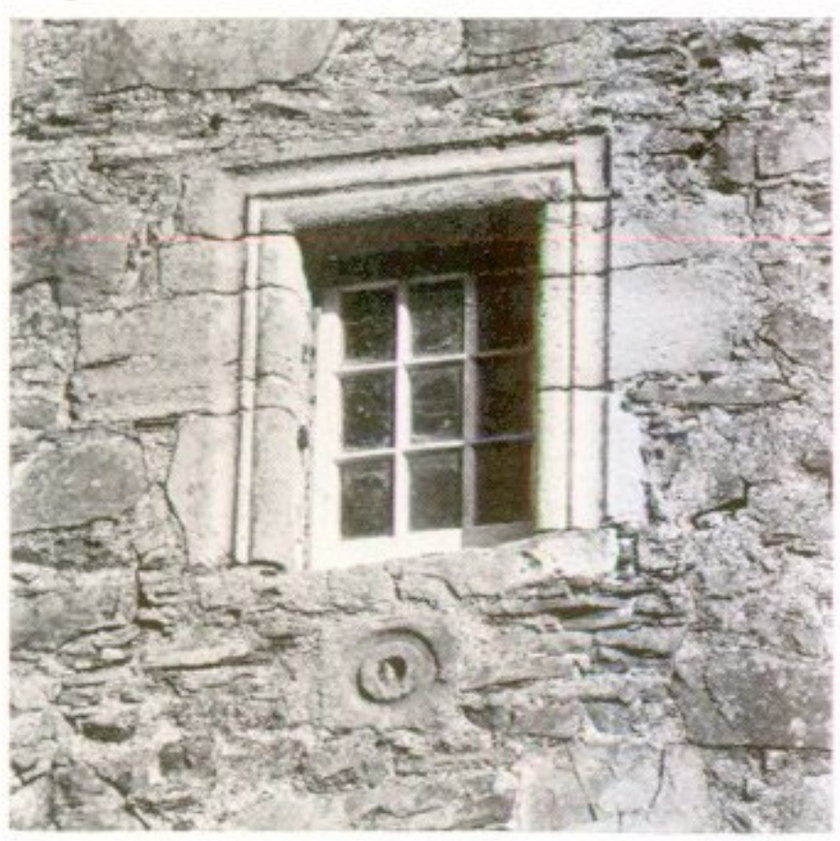


a Kirkconnell: inside of basement crosslet shot-hole

b Nisbet House: T-shaped shot-hole



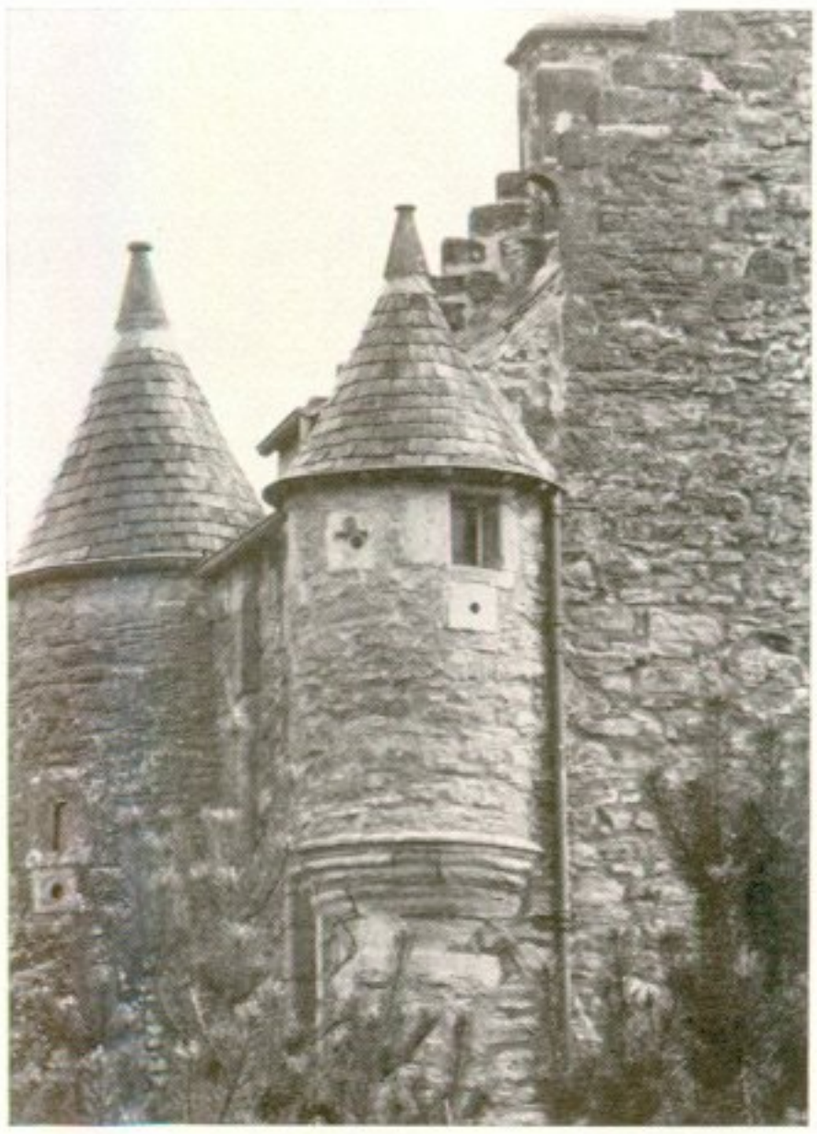
c Elshieshields: beacon look-out with shot-holes in wall-head (1590s)



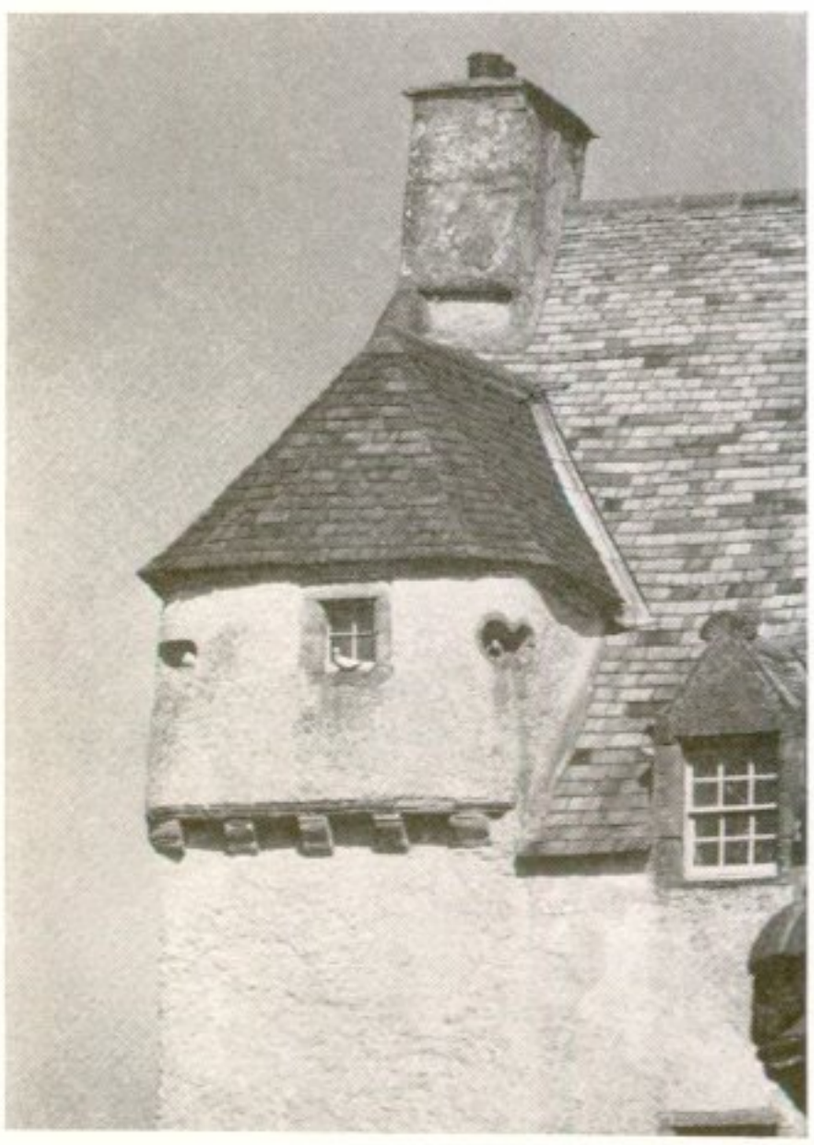
d Oakwood: window-breast shot-hole (1602)

a Hoddom: NE corner round on parapet walk with protected shot-holes on either side of open embrasure (later sixteenth century)

b Isle: SW turret with flanking shot-hole (1587)



c Ferniehirst: wing turret and head of stair turret with variety of plain and adorned shot-holes (1598)



d Traquair: NW corner turret with shot-holes (1642)