The Evolution of the English Castle

with special reference to the castles of North Wales

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In this paper it will be taken as proved that the English castle was a Norman innovation and was not found in England in Saxon times. It is true that the Saxons built burghs in the ninth century in their struggles against the Danes, of which Ethelfleda's are the most famous, and of which Eddisbury and Runcorn are our nearest examples. These burghs are described as being either wrought or timbered and probably consisted of earth-works and a wooden stockade. At Eddisbury these were used to strengthen an already existing hill top, and of course wherever possible a hill would be chosen as the site on account of its natural strength. For a long time it was believed that these palisaded hills were taken over by the Normans and converted into castles.

This was the theory held by G. T. Clark in his *Mediaeval Military Architecture* (1884) and followed by Professor Freeman, but Mrs. E. S. Armitage has shewn in her *Early Norman Castles of the British Isles* (1912) that it is no longer tenable. The castle did not always or even generally occupy the site of the burgh for the simple reason that the burgh was usually the whole town and not a single hill. Tamworth is a good example. Here in the south west corner of the town commanding the junction of two rivers is a great earthen mound, obviously artificial, on which the Norman castle now stands, but it would be a mistake to think that this was the burgh. The whole town was the Saxon burgh and was surrounded with a dyke by King Offa which can be traced today. It was probably without any keep or citadel.

With this preface we come to the castle proper. Its introduction into England by the Normans was regarded by the Saxons with hatred and fear, and the name "Richard's Castle" given to a parish on the borders of Hereford and Shropshire records the feelings of the people when they saw the Norman Richard at work in the reign of Edward the Confessor. For it was built by William Fitz-Scrob, one of the Normans attracted over by Edward the Confessor's pro-Norman policy, and though Domesday Book names the place from the neighbouring vill of Overton, Richard's Castle is the name which has survived in popular memory.

It was a true instinct which made the castle unpopular. It was not only that it was foreign and novel, but that it stood for individualism over against the community life of the Saxon vill or borough. The castle is preeminently the home of one man, and why should the home of one man be strong enough to overawe the neighbourhood in which it was built? Richard's Castle heralded the change which was to come over English society when the process would be complete by which a nation composed originally of free men gradually became feudalised, so that every man had his lord.

But the castles before the Conquest were very few and none of them in Saxon hands, and it is to this fact that the chronicler, Ordericus Vitalis, attributes the feeble defence made against the Normans. They, on the other hand, used the castle as a base from which to conduct operations, and so they were the means by which they consolidated their hold upon the country. Thus William's first act on landing at Hastings was to construct a castle. The Bayeux Tapestry fortunately shows him doing so and the implement used is the spade. The men are busy throwing up a mound of earth which is crowned by a wooden building. This Tapestry, curiously enough, is the only evidence we have about Norman castles in the middle of the eleventh century. Four others besides Hastings are represented (Bol, Rennes, Dinan, and Bayeux) all on the continent, and they are all of the same type—an earthen mound with a wooden tower on top reached by a bridge or ladder of wood. It is now generally accepted that this was the normal type of castle built in England during the reign of the Conqueror, and it is so contrary to the popular conception of a castle that it merits a little closer attention.

The name given to the type is the motte and bailey castle. The motte or mound was not always artificial, but was sometimes a natural hill with its sides scarped. It was generally surrounded by a ditch, more often than not a dry one. Round the edge of the summit on which stood the timber tower ran a wooden stockade or an earthen bank. The bailey or courtyard was similarly defended and was connected with the motte by a wooden bridge. The ground-plan varied with the nature of the ground but often it was not unlike the figure 8, the small circle representing the motte and the larger one the bailey. It is generally accepted now that there was very little masonry work done before the reign of Henry II, comparatively speaking. Mrs. Armitage has examined every castle known to have been founded in the reign of William I and II, 84 in number, and gives cogent reasons for thinking that only in nine of them is there any masonry of that period. In other words 75 out of 84 were built of wood. William I is known to have built three of the nine, London, Colchester and Pevensey.

There are several reasons for this preference for wood over stone.

1. In a hostile country speed was all-important and neither the king nor his barons could afford to wait for masonry. They needed instant protection.

2. An artificial mound could not safely bear the weight of masonry until about ten years after it had been thrown up.

3. Stone was a very expensive building material, while wood was plentiful and cheap; and after all, why trouble about stone when wooden defences were sufficient against bows and arrows?

Of the nine castles mentioned above none of them is built on an artificial mound; all are on the solid ground. Evidently the stone tower was looked upon as taking the place of a motte.

Once we have accepted the theory that the early Norman castles of the motte and bailey type were usually timber structures it is surprising how much evidence crops up to confirm it and how many difficulties it explains. It explains, for example,

how in the short reign of Stephen the land could become covered with adulterine castles, and how Henry II could have them demolished in a few years. It explains also in my opinion, some of the conical mounds dotted about the country which generally pass as some sort of tumulus. There is one at Hawarden, called Trueman's Hill, right on the old frontier between England and Wales. It is evidently artificial but excavation has shewn that it is not a tumulus; what more likely than that it is the site of some early forgotten border castle, afterwards replaced by the castle in the park? I believe it to be one of a line of five castles built to protect Chester from the Welsh. They are all of the motte and bailey type but only the motte remains today, and our imagination must do the rest. When they are plotted on a map it is difficult to avoid the conclusion that they are the work of one master-mind, possibly that of Hugh Lupus himself.

The line begins with Shotwick, for the ford which in those days crossed the Dee made it quite possible for the enemy to attack Chester from Wirral, and Shotwick castle would guard against that. Next came Trueman's Hill on the frontier as already described, and then Dodleston, $4\frac{1}{2}$ miles to the south east. Continuing in the same direction we come to Pulford in $2\frac{1}{2}$ miles and the same distance further on brings us to Aldford on the English side of the Dee. I suspect that the large gap between Trueman's Hill and Dodleston would be due to marsh land, for before the Dee was canalised in the eighteenth century there was a good deal of marsh land on both sides of the river.

To take these sites in detail. Shotwick was later on taken over by Edward I and rebuilt, but so little remains today that it is impossible to know what it was like originally.

Trueman's Hill is a conical mound, which no doubt was a little larger before eight centuries of weather had beaten upon it and worn it down, but it could never have been more than an outpost. It is defended on the west or English side by a gully or small ravine. The top of the motte has a diameter of 42 feet.

Dodleston was a much bigger place. The motte remains surrounded by its moat while another moat formerly surrounded the bailey. There would have been no difficulty in that low-lying land in keeping the moats full of water. The moat round the motte is very broad and deep, no doubt because so much earth was needed to make the latter. It suggests that forced labour was required for such a big undertaking.

Pulford is a much smaller site, defended on the south side by a tiny stream which was probably once much more formidable. The diameter of the top of the motte is the same as that of Trueman's Hill.

Aldford has the largest motte of the five, and must have been a very big undertaking. The bailey has almost disappeared; it ran in the direction of, and possibly included, the site of the present parish church.

So far I have dealt with only one type of early Norman castle, and that by far the commonest, the motte and bailey type. But mention must be made of another—or the other—the castle where no motte was necessary because it was founded upon

a rocky eminence. Beeston, though founded later than the period we are now dealing with, is a good example of the kind of site I mean. Here all that was necessary was a curtain wall, which for obvious reasons had to be of stone and for which abundant material existed ready at hand. Richmond and Bamborough are other examples.

We come now to the transition from wooden to stone castle's which took place roughly in the reign of Henry II (1154-1189). There were several reasons for it. For one thing, Henry's ruthless treatment of the adulterine castles would set men's minds moving in the direction of more durable and fireproof buildings. The only way you could protect a wooden building against fiery arrows tipped with burning tow was to cover the palisade with raw hides newly-flayed or soaked in water. But undoubtedly the chief reason was the introduction about 1100 A.D. of the stone-throwing machine as a weapon of offence, which was effective up to 80 feet. Stone walls now became a necessity. Probably the first part of the castle to be rebuilt was the gatehouse defending the draw-bridge; then the curtain walls, and last, the donjon or keep.

We have pictured the early castle as a mound with a palisade encircling the top of it. When this palisade was rebuilt in stone a shell keep was the result, and incidently this was the best way of distributing the weight on an artificial mound. Cases in which a new tower of stone was built on the mound in place of the wooden tower are rare. When it was desired to rebuild the wooden tower it was generally found necessary to choose an entirely new site, as at Rochester. This replacement of stone for timber went on into the reign of Henry III. As late as 1246 that king wrote to John de Gray, Justice of Chester, "We command you that you cause to be removed the wooden fence around our castle of Chester, and that you cause the said bailey to be enclosed with a stone wall." In 1225 the same king had ordered the palisade of no less a castle than York to be repaired and it survived about, another hundred years, though the keep or donjon within it was rebuilt of stone in the 13th century. Builth castle was not rebuilt in stone until 1231. The first stone towers were rectangular with their angles strengthened by pilaster buttresses, formed by thickening the two adjacent walls. The tower was usually entered by steps leading up to a door in the first floor. Loopholes in the ground floor were very narrow and set high up, but the upper floors had wider windows. A trap door in the ground floor led to the cellar, which was used, not as a dungeon, but as a magazine for food and arms. A well stair was usually placed in one of the angles of the tower, but in a different angle at each stage, so that the intruder would have to cross each floor in his ascent. It will be seen that the whole thought of the builder was concentrated on defence, not offence. He wished to make his home difficult to enter, not easy to leave. There must surely have been times when the garrison would find their stronghold converted into a trap, and whereas they could boast that one man could prevent any enemy getting in, the enemy could retort that two men, stationed outside the door, could keep any of the garrison from coming out. It was also bad for morale and led to the men becoming defence-minded.

The chapel was an important part of the building, but it was impossible to spare much space for it in the keep. At Hawarden it is in the thickness of the wall, with a squint from a window embrasure at the west end. At Flint it was in the window embrasure itself, where Richard II heard his last Mass as a free man. Such chapels were too small for use by the garrison and must have been for the Lord of the castle and his family only. The chapel for the garrison would be in the bailey. In Chester castle the chapel is not in the keep, but in what is called Caesar's Tower, and occupies a whole floor. Fireplaces are found in the upper floors of most tower keeps, and there must also have been a well. That at Flint could be worked from any floor. When the castle was placed upon a rock the difficulty of supplying it with water was of course vastly increased. Yet I suppose no baron in his senses would build a castle unless he knew that he could overcome that difficulty, and in some cases the only way was to try and see. For example at Beeston castle surely the well must have been made first, for it has to penetrate the solid rock for a distance of 366 feet before it reaches water. That is to say, the Earl of Chester bored a hole right through the hill from top to bottom, a marvellous piece of engineering with the equipment of those days. The chances against his success were condiderable and he would hardly have built the castle first and risked finding the water afterwards.

Rectangular towers had two great disadvantages, and it is surprising that the fashion lasted as long as it did. It was quite impossible for the defenders to see what was taking place opposite the angles of the tower, and it was just at these angles that the enemy would begin his mining operations, especially as the angle stones were the ones which could be most easily picked out. The defenders in reply erected on top of the walls a temporary wooden platform which overhung (bretasche) and from which they could drop things on the assailants. These in their turn built a wooden shelter tunnel-shaped of wicker work, roofed with raw hides, (mantlets). Under cover of these they would commence operations on the angle stones, if they did not tunnel underground. In doing the latter they removed the earth below the walls to a considerable depth. The difficulty was to ensure that the tower would not fall until the mining party had withdrawn. They got over this difficulty in an ingenious way. As the mining proceeded they inserted timber props to take the place of the earth they removed. They then filled up the spaces between the props with straw and brushwood, lit it, and retired to a safe distance. As soon as the fire burnt through the props the tower would come crashing to the ground. At Margat in Syria in 1285 the Saracens completely undermined the foundations of the circular keep. The sultan, however, was anxious not to destroy it, for he wished to occupy the castle himself. He therefore invited the Knight-Hospitallers, who were defending the castle, to send a deputation to view the mine. They did so, and the castle at once surrendered. (*Crusader Castles.* Robin Fedden, 1950.)

The transition from the rectangular to the circular tower took place towards the end of the twelfth century, say the reign of Richard I. Such towers have no angle stones, and no dead ground which cannot be overlooked from some loop or other. The curtain wall, too, was strengthened by semi-circular towers projecting

at intervals and enabling the whole face of the wall to be brought under fire. It was in Richard I's reign that the cross bow was introduced into England and could be employed in the cramped embrasures of a castle loop, where the long bow would have been impracticable.

Now as the curtain walls of the bailey were strengthened, more and more did the engineers come to put their faith in them rather than in the keep. The bailey gave them freedom of movement—for which purpose the middle of it was always kept clear of buildings—and eventually tended to become a large shell keep in itself. If it were taken, the fate of the keep was sealed. For example, when Richard I's famous castle of Château-Gaillard was taken by Philip Augustus "the defenders, driven back from one bailey to another, seemed to have renounced the opportunity of final shelter afforded them by the keep, and to have made an attempt to evacuate the castle by a postern before they fell into the hands of the enemy." (Hamilton Thompson, p. 77.) Yet all through the long reign of Henry III the motte and bailey type persisted and it was left to the initiative of Edward I to break away from the old tradition.

Let us now illustrate these general statements by means of local examples. Hawarden castle is of the regular motte and bailey type. The motte is remarkably high and the bailey lying at its foot is completely commanded by it. It stood in those days on the English side of the border—Hawarden was in England until the time of Henry VIII—and was more than once destroyed by the Welsh and rebuilt, a fact which points to timber buildings only. Llewellyn destroyed it in September, 1265, and it was again destroyed in the rising of the Welsh on Palm Sunday, March 2nd, 1282. It must have been shortly after this that the present stone keep was built by the Lord of Montalt. It must have been one of the last of its kind to be erected and probably only because the ground plan required it.

The remains of Caergwrle castle, a few miles to the south, probably date from the reign of Henry III. The rocky hill on which they stand is crowned by the remains of a shell keep, while the bailey is on the slope of the hill, separated from the keep by a dry ditch. On the other side of the keep the hill is precipitous. Little is known of its history. It does not seem to have been taken by the Welsh in the Palm Sunday rising and in the summer of that year it was being put into a better state of defence. 20 carpenters and 12 masons were being employed on it, one of whom fell from the high tower of the castle and was compensated by "12 pence of the King's gift". Casks of lime were brought out from Chester and in connection with this we have the interesting entry "To 6 men loading one cask from a broken cart to another—4 pence". The materials bought throw some light on the nature of the defences. It took "2 carts and 10 horses to carry timber from the wood to the castle". Hurdles are also mentioned and charcoal for the use of the smith, a lock for the entrance door and feathers for arrows. We learn also that the king paid a shilling a head for Welshmen, using the phrase in its original and literal sense.

Another building of the time of Henry III is the sole remaining tower of Chester castle. The chapel which it contains is in the Early English style and has

been assigned to the year 1265. Presumably the rest of the tower is of the same date, but if so we have a typical rectangular tower, of the type popularised by Henry II, being built right in the middle of the reign of Henry III. The architect was the celebrated Richard the Engineer, who only twelve years later was employed by Edward I on the circular tower at Flint.

Henry III was not an originator. He made additions and repairs, replacing timber structures with stone, as we have seen, but there does not seem to have been much development in style during his reign, nor did he build any new castles, except one or two in Wales, such as New Montgomery, Diserth and Mold. Attention was chiefly concentrated on strengthening the curtain wall and the gateway, especially the latter. The gateway was usually a narrow passage between two towers, approached by a drawbridge and closed by a gate, which opened outwards. Within that was the portcullis. Loops from the guardrooms on each side commanded the gateway and the passage, while long rectangular slits in the vault (machicolations) commanded it from above. Hamilton Thompson says that "the common idea that molten lead was poured through these holes on the besiegers is a mere legend". Lead was much too valuable to be used in this way, although of course it could be collected after the fray and used again. "Powdered quick lime, however, may have been used with more deadly effect." Sometimes the passage was continued outside the two flanking towers through an outwork or barbican. It will be seen that more and more attention of the defence is centred on the gateway and the curtain walls, and that the keep is taking a secondary place, preparatory to vanishing altogether.

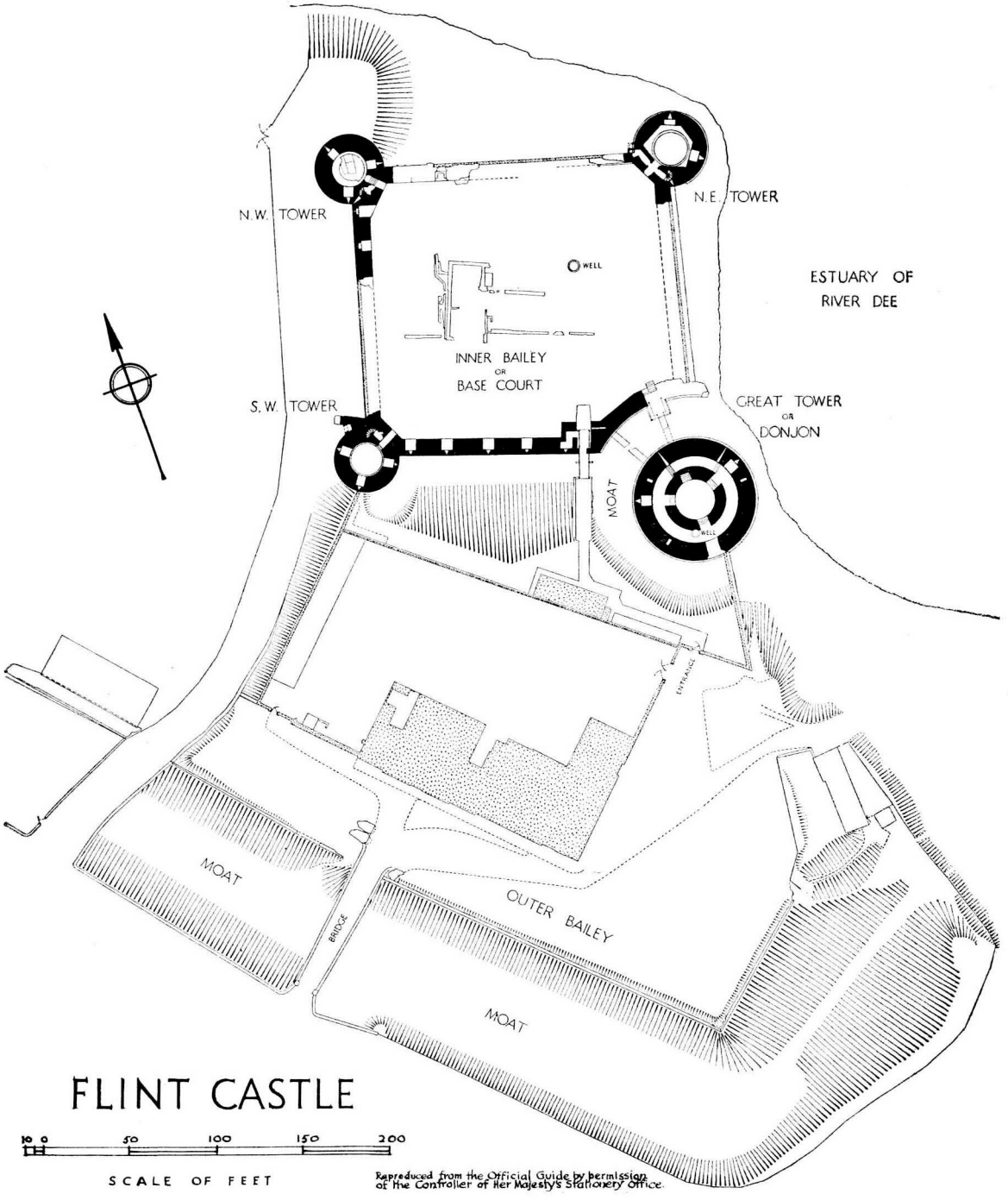
This is the case at Beeston, where there is no donjon tower and the keep is practically the inner bailey. The entrance is by a narrow rocky stair between two massive semi-circular towers whose loops command the stairs. The remains of a portcullis are visible. Beeston castle and its twin, Chartley in Staffordshire, were built by Ranulf, Earl of Chester, on his return from a crusade in 1220. As he was inclined to be friendly with Llewellyn the Great — indeed his nephew John married Llewellyn's daughter two years later — it is evident that these two castles were a threat to the king. Beeston is of great natural strength, perched as it is on the summit of a cliff, precipitous on two sides and defended on the other two sides by an immense ditch hewn out of the solid rock. The curtain wall, both of the outer and the inner bailey, is well guarded by semi-circular towers placed at intervals along it. The outer bailey slopes down the hill and is large enough to shelter a small army. Such an extent of curtain wall to defend must have been a source of weakness rather than of strength, one would have thought. The approach to the gateway of the outer bailey winds along a narrow sunken road, exposed to the arrows of the archers on the curtain wall and in the gatehouse. Chartley, being built on an old site, follows the old ground plan which was of the motte and bailey type. The motte was artificial and was crowned by a circular stone tower which covered the whole of the summit. A shell keep, in fact. But though the ground plan differed perforce from that of Beeston the masonry work is practically identical.

The reign of Edward I marks a turning point in the evolution of the castle,

and the change is due to the king himself. As Prince of Wales he had seen his father's castles captured by the Welsh — Diserth and Deganwy in particular — and could appreciate their weak points. As a crusader he had studied the castles in the Holy Land and in Syria and on his way home through France he had had opportunities of gaining further information. Therefore it is not a coincidence but cause and effect that in his reign the curtain wall drives the keep out of existence. As North Wales was the scene of his experiments we can study his work on the spot. He began with Flint in 1227, which he had to approach from Shotwick.

Shotwick castle stood on the right bank of the River Dee, whose waters must have almost washed its walls. They are now more than a mile away across dead flat marshes. All that is left of the castle is a motte in a field with a ditch on the landward side and a horse-shoe shaped-bailey. So lonely and desolate does it appear today that it is difficult to believe that kings have come and gone within its walls. Yet such is the case. Lysons (*c.* 1800) says that Henry II lodged there on his way to and from Ireland and it is well known Edward I crossed from there to build Flint castle opposite. There was a ford there, which would account for the building of a castle in such a remote spot. Matthew Paris records that Henry III placed there in honourable captivity one of the many Owens, a grandson of Llewellyn the Great, and it was from there that he "fled like a hare" into Wales and set up the standard of revolt. (J. E. Lloyd, *History of Wales.*) No traces of masonry now remain, but Leland says the ruins of the castle were there in his day, and there is an old print published in "Memorials of Old Cheshire" which shows a square roofless tower. No doubt Edward I brought it up to date, and the road he made to it from Blacon is still visible.

Flint castle was built on the Welsh bank of the River Dee to guard the ford and to provide a base on the coast for the conquest of the country. While the castle was a-building the king moved down stream to Basingwerk, which he fortified temporarily. The ground plan of Flint is extremely interesting and at first sight puzzling. You can consider it either as a unique specimen — what a botanist would call a "sport"— or else as a very important link in the evolutionary chain. For whereas formerly the keep has been carefully guarded by an outer and an inner bailey, here it is apparently placed between them. It would seem that Edward was here experimenting and that the massive circular tower which looks so much like the keep was really the gatehouse, placed there to protect the entrance to the inner bailey, and that the keep was eliminated altogether. If this theory is correct Flint marks a great step forward in the planning of castles, and it is significant that never again did Edward build a keep. The architect was James of St. George, assisted by Richard the Engineer. A roll in the Public Record Office gives us the number of men employed in the first month and from it we learn that out of a total of £922 12s. 8d. expended, £613 2s. 8½d. was spent on making dykes. During the first week, for example, there were 950 dykers employed as compared with 230 carpenters, 100 tree-fellers, 320 woodcutters and 200 masons. Another week the number of dykers had risen to 1340 and the masons had sunk to 50. The probable explanation is that the dykers were



at work on the dyke round the new town as well as on the moat round the castle, and it may also have been that some of the original defences were of timber, for the king was in a hurry. This would account for the carpenters who would be required for the stockade. The king lay at Basingwerk, as we have said, and apparently would ride over from time to time to see how the work was progressing. For on one occasion the accounts record that "certain dykers working well" received an extra 3/- "of the gift of the king". The ditch round the town of Flint can still be traced in places, and the plan of the town is a good instance of symmetrical mediaeval planning — unless the symmetry is due to the military mind, for the same thing can be seen at Winchelsea, which was another of Edward I's construction.

Edward's next task was the re-building of Rhuddlan on a new site, which he did in the same year (1277). In fact the two buildings may have been going on simultaneously. The old castle of Rhuddlan was of the motte and bailey type, and had failed to keep out the Welsh. The new castle was built about 300 yards lower down the river, and unhampered by any earlier building Edward was free to put his own ideas into execution. Here again there is no attempt at a keep at all; all the strength lies in the curtain walls and the gate houses, especially the latter. But the importance of Rhuddlan in the evolution of the castle lies in the fact that here for the first time the king introduced the concentric plan, which he had seen employed to good effect in Syria and Palestine by the crusaders, who in their turn had seen it at Constantinople, which was defended by a triple circle of walls, the inner one being higher than the outer. This concentric plan is not so apparent from the ruins which remain at Rhuddlan, for the outer bailey has disappeared, though the line of the moat shows where the wall ran. The fact that there were two gate-houses at opposite corners of the inner bailey shows that the castle was intended for offence as well as defence. G. T. Clark has enumerated the various defences of the Edwardian gateway. It was wide enough to admit a wain or three men marching abreast and was defended by flanking towers. A stranger entering would first run the risk of stones being dropped on him through the slot above the door. He would then pass under the portcullis and through two wooden doors, opening inwards and secured by wooden bars. Passing under a second portcullis he would find the same defences repeated over again — in case of an attack from within the castle. Thus the gateway is becoming a self-contained fortress, in fact a keep.

This is seen still more clearly in the next castle Edward I built, that of Harlech. This is also concentric in plan, but there is a marked evolution in the gateway, which is a complete mansion in itself with its small chapel above the entrance. The castle is situated like Beeston on a lofty rock, almost impregnable on the western or sea side. On the landward side, where is the gateway, a dry ditch has been cut out of the rock which is crossed by a drawbridge. The concentric plan is very clearly seen here. The outer wall is very low and is completely dominated by the unusually lofty curtain wall of the inner bailey. The space between the two walls is called the lists. At Harlech a wall has been built across the list on the south side to bar the progress of the enemy if he managed to effect an entrance and turned left-handed rather

than face the entrance to the inner bailey. In order to effect an entrance he would have to pass through a barbican defended by two small towers. The only other entrance was a small doorway in the north wall of the inner bailey which opened just opposite a postern in the outer wall, flanked by half-round bastions. From this postern a steep path led round the castle to the S.W. angle and thence down the cliff.

Conway (1285) was probably the next castle to be built, though the dating of these last four castles is uncertain. It stands in a very strong position at the junction of the river with the sea, and the side which is not protected by natural water has an artificial ditch for its defence, beyond which is the town. The castle is divided into two wards by a cross-wall. The main entrance is at the west end of the lower ward, which is itself protected by six massive drum towers. The upper ward has two more, making eight in all. Although there does not appear on the plan to be a fortified gatehouse as at Harlech, yet the entrance is very strongly defended. If you wished to enter the castle you must start from the town, which is itself walled and follow a rising causeway to the ditch, which is crossed by a drawbridge. This brings you to the gate of the barbican, defended by a portcullis. The barbican itself is a narrow passage threatened on one side by one of the massive drum towers and on the other by the curtain wall containing two smaller towers. The actual entrance to the bailey has no flanking towers because it is within reach of the two drum towers, but it has its portcullis.

In a narrow barbican like this only a small detachment could enter, and they would have little chance of survival.

There was another entrance to the castle at the other end, but this was defended by a barbican almost big enough to be called an outer bailey, which reached to the edge of the rock on which the castle was placed, and could only be approached by a stairway which wound its way up from the sea between two walls.

Caernarvon came next. The plan is similar to that of Conway — an irregular polygon divided into two wards, the upper ward placed where sea and river join. The main entrance to the lower ward, called the King's Gate, is in the middle of the side wall next to the town and is guarded by a splendid gatehouse. Another smaller entrance accessible only by water is at the east end of the ward, called the Queen's Gate. In the upper ward or inner bailey at the opposite end of the castle is the Water Gate, through which one entered, not the bailey itself but an exceptionally large tower, called the Eagle Tower. In a large castle like this a double entrance was an advantage, enabling the garrison to make a sortie from one gateway while the enemy were besieging the other. The most imposing feature of Caernarvon castle is the south and south-west curtain wall fronting the River Seiont. Here it is pierced by three rows of loops, one above the other, so that three rows of archers could shoot simultaneously or in turn. In the latter case the hail of arrows might be almost unceasing.

Beaumaris, which was built shortly after Caernarvon, shows a return to the concentric plan, and is a very perfect specimen of it. Situated on flat ground by

the sea, the castle was entirely surrounded by a moat filled with water at high tide. As at Harlech, the outer wall is very low compared with the inner wall, which completely dominates it. The inner ward has two entrances opposite each other, reminding one of Rhuddlan, only there the entrances are diagonally opposite to each other at corners. At Beaumaris each entrance is defended by a very formidable gatehouse. The one on the south (sea) side has a spur wall running out at right angles to the curtain wall, with a passage in it looped in both faces and protected by a tower. This would have to be captured before the gateway in the outer wall could be entered, and this would be only the beginning of trouble, for the inner gateway was defended by a barbican, forcing the attackers to make two right-angled turns before they could reach the portcullis. The other entrance in the north curtain wall looking towards Anglesey is a large postern protected by four buttresses which jut out from the wall, each one pierced with a loop. The curtain walls are very strong with loops wherever possible and reached by a passage in the thickness of the wall. "No other Edwardian castle presents so perfectly scientific a system of defence." (Hamilton Thompson).

Denbigh was the last of the North Wales castles to be built and was the work, not of the king, but of one of his subjects, Henry de Lacey, the last Earl of Lincoln, who died in 1310. Probably the castle was not completed until after his death. It stands on a hill top overlooking the town, the slopes of the hill steep on three sides but sloping more gradually on the north, where an extensive outer bailey protects the entrance to the inner bailey. Here we find the gatehouse fully developed. Defended by a dry ditch and drawbridge and portcullis, the entrance is through a noble archway, flanked by two octagonal towers and backed by a third, the three enclosing a central octagonal hall. This was protected against attacks from inside the bailey by portcullis and doors upstairs and down, and so could hold out even if the rest of the castle was captured.

With Denbigh the evolution of the mediaeval castle was complete. It had reached a state when it was impregnable and could only be reduced by famine or by gunpowder.

We have seen how it began, with a simple motte and bailey composed of earthworks and surmounted by a timber tower and palisade. Then came the substitution of stone for timber, with a rectangular tower for the keep. In the reign of Richard I the circular tower came in while Edward I abolished the keep altogether and strengthened the gate house instead. This was the final form of the castle which lasted through the Middle Ages until the introduction of gunpowder ushered in a new era.