

# The Fortification of Oxford during the Civil War

By ANTHONY KEMP

THIS subject was last touched upon in any depth in 1936,<sup>1</sup> and as a certain amount of new evidence has become available, it is felt that a reappraisal would be worthwhile. The surprising fact is that very little is really known about just what was constructed in the way of defensive works at Oxford between 1642 and 1646. The standard account of Civil War fortifications devotes just one and a half pages to the defence of the royal capital.<sup>2</sup> The main source for the period as far as Oxford is concerned, Anthony Wood, is full of snippets of information, but he was young at the time and not a military man.

As we are dealing with a technical subject the use of certain terms is unavoidable, and these are explained in the appended glossary. Fortification designed specifically for defence against attack by artillery began to develop during the latter part of the fifteenth century in Italy, for it was only then that gunfire began to be a serious menace to the vertical walls of mediaeval castles and cities. Various expedients were tried, all of which became reduced to the twin themes of reducing profile and using earth banking to absorb the impact of projectiles. By 1550, the use of the angle-bastion was firmly established as the norm for fortification design, spreading from Italy into France and the Low Countries.<sup>3</sup> In England, however, permanent defences never became a feature of the urban environment as they did on the continent. Lack of land frontiers, and strong central government under the Tudors, determined this, and by the beginning of the Civil War only two towns in Britain had any semblance of modern defences. Besides the coastal forts built by Henry VIII, only Berwick and Portsmouth possessed bastioned enclosures, both somewhat primitive in scope, and in the latter case, unfinished. Additionally, there was no body of professional military engineers, although many Englishmen had picked up the principles through serving on the continent. Thus it was that the Dutch system tended to predominate here during the seventeenth century, and there were several text books available.<sup>4</sup>

Once Oxford became the royal capital, it was obvious that it had to be defended, and the mediaeval walls were no longer satisfactory for the purpose. The whole area became one vast entrenched camp capable of housing the Royalist field army, and encircled by outlying garrisons. The city lent itself admirably to defence, as it is sited on a spur of land between two river systems—the Isis and Cherwell. By

<sup>1</sup> R. T. Lattey, E. J. S. Parsons and I. G. Philip, 'A contemporary map of the defences of Oxford in 1644', *Oxoniensia*, 1 (1936), 161–72.

<sup>2</sup> W. Ross, 'Military engineering during the great Civil War', *Professional Papers of the Corps of Royal Engineers*, XIII (1887).

<sup>3</sup> For a detailed account of the early development of artillery fortification, see J. R. Hale, 'The development of the bastion', in J. R. Hale, J. R. L. Highfield and B. Smalley, *Europe in the Late Middle Ages* (1965).

<sup>4</sup> For a concise explanation of 17th/18th century fortification and siegecraft, see C. Duffy, *Fire and Stone* (1975).

damming these, three sides of the city could be cheaply protected by inundations, leaving only the north face to be covered by a regular line of works.

The foregoing would have been obvious to any competent soldier of the period, and it was in the north that the first attempts were made to defend the city, as early as August 1642. These works consisted of 'a line of redoubts and a foot place' from the Cherwell to the Isis, together with primitive methods to protect the bridges at the south and the east.<sup>5</sup> These efforts were apparently destroyed during the brief Parliamentary occupation from September through to mid-October 1642. On 29 October, the King entered the city, and it is with the works constructed between then and the capitulation in 1646 that we are concerned here.

Artillery fortification is divided basically into two types—field and permanent. Field fortification comprises works thrown up during a period of hostilities, sometimes when faced by the enemy, while permanent works are those constructed during peacetime. Oxford never became a permanent fortress. It was defended by field works, which explains their impermanence, and masonry would hardly have been used. Whatever was built would have consisted of earth banks revetted perhaps by timber logs, on top of which guns were mounted, standing on wooden platforms.

As to precisely what was built there are three drawings extant, two of which have to be dismissed (all three are reproduced in the 1936 article).<sup>1</sup> The first of these is the map in the Wood collection at the Bodleian,<sup>6</sup> upon which he has noted 'this map is made false'. Part of it is inverted, and in the absence of any scale or proportion it cannot be made to correspond with any of the positive evidence. The actual works portrayed are stylistic field works. The original is dated 1644, but it must have received a wide distribution as it appeared as late as 1697 on the continent.<sup>7</sup>

The second plan is the most controversial, and its authenticity was swallowed wholesale by the first person to discuss the defences in any detail—who, as a military man, should have known better.<sup>8</sup> It first appeared in the 1674 Latin edition of Wood's History of the University,<sup>9</sup> and is described as an *Ichnographia* (drawing of a ground plan), purporting to show the defences as they existed in 1648. This could hardly have been the case, as the works were slighted soon after the surrender. The authorship of this plan has been attributed both to Henry Sherburne and to Richard Rallingson, but without any evidence to support either claim.

Wood tells us that Sherburne drew 'an exact ichnography of the city of Oxon, while it was a garrison for his Majesty, with all the fortifications, trenches, bastions etc. performed for the use of Sir Thomas Glemham the governor thereof, who shewing it to the King, he approved much of it, and wrot (*sic*) in it the names of the bastions with his own hand'.<sup>9</sup> Thomas Glemham was the last governor of the city (Oct. '45–June '46), and the *Dictionary of National Biography*, under Edward Sherburne, says that his brother Henry was made chief engineer on the death of Sir

<sup>5</sup> H.M.C. Portland MSS. I.59.

<sup>6</sup> Bodleian, MS Wood. 276b art. 30.

<sup>7</sup> Bodleian, MS G. A. Oxon. 141. p. 6. From *Viaggi di Coronelli*, Venice, 1697.

<sup>8</sup> Maj. Gen. Gibbes-Rigaud, *The lines formed around Oxford by King Charles the First* (1880). Originally published in *Archaeol. J.*, c. 1850.

<sup>9</sup> A. Wood, *Athenae Oxoniensis* (1641–2 ed.), II, 704.

Charles Lloyd. This latter gentleman, however, did not die until 1661, and in the winter of 1644 was busily fortifying Faringdon Castle. He then went to Devizes as governor, where he was forced to surrender in September 1645, becoming a prisoner of war. Henry Sherburne was certainly in Oxford during the latter part of the war, as he was killed in a skirmish on 12 June 1646 and was buried in the city. There is no reason to doubt that Sherburne drew some sort of plan, and he could even have been Glemham's chief engineer at a period during which a great effort was made to complete the defences. This does not, however, necessarily connect him with the *Ichnographia*, the bastions of which bear no names.

The attribution to Rallingson is even more odd. Wood tells us that Rallingson drew an exact scheme or plot of the works, early in 1643,<sup>10</sup> for which he was awarded an M.A. that October. Persuading the University to grant degrees was a cheap method of rewarding his followers, and was thus a popular subterfuge for the impoverished monarch. Rallingson was a student who became first a Don and then a cleric,<sup>11</sup> and could hardly have had the expert knowledge to produce such a complicated piece of draughtsmanship. We know from documentary evidence that the works in 1643 were extremely primitive in concept and that nothing so complicated was proposed at the time. Gibbes-Rigaud,<sup>12</sup> who assumed that Rallingson was the author of the plan and that this represented the works actually built, stated that he (Rallingson) cribbed the idea for the design from a manuscript in The Queens College. Examination of this manuscript, however, shows it to be nothing more than a brief exposition of the various types of bastion—there is nothing in it even remotely resembling the trace of the *Ichnographia*.<sup>13</sup> The actual manuscript was dedicated to James Stuart, Duke of Lennox, and was dated 1631. How it came into the possession of Queens is unknown, but Lennox was in Oxford during the war—lodged in Christ Church. The assumption that Rallingson was the chief designer of the fortifications is still current.<sup>14</sup>

In any case, the authorship of the plan is immaterial. It represents a pure flight of fancy on someone's part and is typical of the graphical representations of fortified towns of the period. Whoever drew it certainly had some knowledge of the works constructed at Oxford, as there are sufficient similarities for it not to be dismissed out of hand. It shows a normal bastion trace fronted by a wet ditch, in which is a detached covered way or continuous counter-guard.<sup>15</sup> The enceinte follows an almost regular pattern around the city, which in view of the possibility of inundations was unnecessary. The trace was typical of the Dutch system, and was used with modifications by de Gomme after the Restoration, both at Tilbury and Portsmouth. Such a complex scheme, however, could never have been built with the slender resources that were available, and within the time. There would never have been enough troops to garrison it or artillery to arm it.<sup>16</sup>

<sup>10</sup> A. Wood, *Annals*, II, 462.

<sup>11</sup> J. R. Magrath, *The Queens College* (1921), I, 267.

<sup>12</sup> Gibbes-Rigaud, *op. cit.* note 8.

<sup>13</sup> Queens College, MS 372.

<sup>14</sup> A. Carter and J. Stevenson, *The Oxfordshire Area in the Civil War* (1976), 8.

<sup>15</sup> Ross, *op. cit.* note 2.

<sup>16</sup> At the surrender in June 1646, only 39 cannon were found in the city (E. Warburton, *Memoirs of Prince Rupert and the Cavaliers* (1859), III, 231n). For the garrison, see P. Young and W. Emberton, *The Cavalier Army* (1974), 61.

The most solid piece of evidence that we have is the drawing made by Sir Bernard de Gomme, which was obtained by the Bodleian in 1935.<sup>17</sup> De Gomme, sometimes referred to as de Gunn or Degum by Pepys, was borne at Lille in 1620, which was then part of the Spanish Netherlands. Indeed, it is possible that his name derived from de Gomez and that he was a Walloon. In his youth he served under Prince Frederick Henry of Orange, and came to England in 1642 in the train of Prince Rupert. He himself later said that he had served in the Royalist army as engineer and quartermaster-general, although there is no evidence to support this. His main job seems to have been as map maker to Prince Rupert, and his drawings of the main battles are valuable contemporary sources for the military historian.<sup>18</sup> After serving at Edgehill, in early 1643 he had a company in Blagge's regiment that was in garrison at Wallingford,<sup>19</sup> and in July he left with the train of ordnance for Bristol.<sup>20</sup> After this, his few known movements correspond with those of his master, whom he accompanied into exile after the surrender of the city in June 1646.<sup>21</sup> The lack of evidence about de Gomme during the period is hardly surprising—he was not a particularly important person, a captain, and one of the many foreign technicians imported by both sides. After the Restoration, however, he returned to claim compensation and joined the hordes of petitioners at Whitehall. Charles II employed him as a military engineer on such projects as the refortification of Portsmouth and the construction of the Plymouth Citadel. His greatest surviving monument is the magnificently preserved Tilbury Fort. He became engineer-in-chief to Charles II, and it is clear that he was highly regarded by his royal master, who transferred work to him that had originally been entrusted to others.<sup>22</sup> De Gomme died in 1685 and was buried in the chapel of the Tower of London.

The date of the de Gomme drawing, not discussed in the 1936 article, is somewhat of a mystery, which I will go into later. There is only one other drawing of fortifications during the Civil War made by him—that of a projected scheme for Liverpool, dated 1644, which was never carried out. This is absolutely conventional in design, with the castle being used as a citadel astride a bastioned enceinte—no double moat or complicated outworks of any kind.<sup>23</sup> Rupert was only at Liverpool for a short time, from the 7th to the 11th June 1644, en route for Marston Moor. As de Gomme drew a plan of the latter battle, we can assume that he was at Liverpool with Rupert and at least made the survey for his map of the fortifications at that time. There is no doubt that the Oxford drawing is by de Gomme, as his signature is unique and tallies with other examples.

The drawing itself is in the form of an engineer's working plan. The details of the interior of the city are simply sketched in to show the main churches, and were obviously of little interest to the author—he was not producing a fine piece of work for presentation to some nobleman or patron. In a further note to the 1936

<sup>17</sup> Bodleian, MS Top. Oxon. b. 167.

<sup>18</sup> Cal. St. P. Dom. 1660. 268.

<sup>19</sup> *The Royalist Ordnance Papers*, Oxfordshire Record Soc (1964 and 1975), B.70 and B.101.

<sup>20</sup> *Ibid.*, B.139.

<sup>21</sup> Warburton, *op. cit.* note 16, III, 234.

<sup>22</sup> S. Pepys, *Naval Minutes* (Ed. R. J. Tanner, 1926), 28.

<sup>23</sup> B. L. Sloane, MS 5027 A.f. 69.

article,<sup>24</sup> Varley states that the representation of the fortifications was conventional and not drawn to scale. Careful examination, however, shows this to be untrue. The scale, both by comparison with such features as roads and by actual measurement, is entirely commensurate with such works—which consisted of large piles of earth which had been excavated first from the ditches and then heaped up to form ramparts. It is certain that the drawing remained in de Gomme's possession, as the Parliamentary siegeworks of 1646 are marked in with different ink but in the same handwriting. He could well have done this during the course of the actual siege, or at some later date (which will be discussed below).

Before proceeding to consider the evidence for the actual works constructed, there is one further item to be examined. This is a painting of the siege of Oxford by Jan de Wyke (or Wyck), which has been loaned by the Earl of Dartmouth to the Oxford City Museum. At first sight this looks to be most interesting from the historical point of view, but close examination leads to disappointment. Jan de Wyke was born in Haarlem around 1650 (various dates are quoted) and died at Mortlake in 1702.<sup>25</sup> He came to England with his father Thomas after the Restoration, and was one of a group of Dutch artists employed by the Duke of Lauderdale in redecorating Ham House. He specialised in battle scenes and in military portraits (The Battle of the Boyne and the sieges of Namur and Naarden), and at Blenheim there is an equestrian portrait of William III.

Above the actual Oxford painting, there is a strip showing a panorama of the city. This is a direct crib from Loggan's *Oxoniae Prospectus ab Oriente* from his map of 1675. The painting itself is also a crib, as well as being a rather crude piece of workmanship. The foreground, apparently on a hill to the north of the city to give an oblique aerial view, would be in Summertown, but as every cyclist knows, the Banbury Road is more or less level. This foreground shows a group of officers, soldiers and rustics in a conventional manner. The view of the besieged city itself is mostly two-dimensional and is an exact copy from the de Gomme drawing. Wyke only shows the churches that de Gomme shows, and the mediaeval wall is represented by a thick red line. To add effect, a few cannon, clouds of smoke, and troops skirmishing near St. Clements have been put in. Thus, Wyke can only have painted the work when in possession of both a copy of the Loggan map and the de Gomme drawing. Who commissioned the painting we do not know for sure. William Legge, the ancestor of the Earl of Dartmouth (his son became the first Baron and was Governor of Portsmouth at the same time as de Gomme was working there) was governor of Oxford from January to September 1645. He was then disgraced along with his friend Prince Rupert, but remained in the city until it surrendered. Being one of Rupert's entourage, he would certainly have known de Gomme, and either he or his son could have asked Wyke to do the painting. If this is true, however, why was the city shown from the outside with great emphasis placed on the Parliamentary operations? An old Royalist would surely have wanted a picture of brave Cavaliers defending the ramparts. After the Restoration, there were not

<sup>24</sup> *Oxoniensia*, II (1937), 207.

<sup>25</sup> For Wyke, see *Bryans Dictionary of Painters and Engravers* (1934), 370, and E. Waterhouse, *Painting in Britain* (1953).



many Parliamentary commanders who would have wanted a painting to glorify the capture of the one-time royal capital. Thus we have a mystery on our hands. It could be, however, that de Gomme was approached by Wyke some time in the 1670s, lent him the drawing and at the same time added in the Parliamentary siege-works as well as giving the artist an eye witness account of the action.

The actual process of fortifying Oxford was both long drawn out and dogged by shortages of all kinds. It is obvious that all concerned were aware of the fact that the north front was the vulnerable point and it was there that work started in 1642.<sup>26</sup> Both the 1645 and 1646 siege operations were directed from the north. Varley gives a useful account of the progress of this first line of works,<sup>27</sup> the extent of which can be determined by the evidence contained in the Royalist Ordnance Papers. A line was constructed from Gloucester Hall (now Worcester College) through St. Giles and the garden of Wadham, to Holywell, which was armed with ordnance by August 1643.<sup>28</sup> The large bridgehead work around St. Clements was started in April of that year and was armed in June.<sup>29</sup> There was also work in progress in the Meadows and at South (Folly) Bridge.<sup>30</sup>

It is probable that Sir Charles Lloyd was the first chief engineer and was responsible for the design of the early works.<sup>31</sup> As a young man he had served with the English regiments in the Low Countries, and from 1638-40 was engaged in fortifying Berwick. The first governor, however, was Sir Jacob Astley who also had a wealth of foreign experience including service under Gustavus Adolphus. He could have had a hand in the fortifications, as well as another of the imported specialists, a certain Beckman who was in the city during 1643.

In addition to the new defences, there are indications that the old walls were used to a certain extent. Wood mentions that one of the mediaeval towers on the wall fronting Merton was cut down to mount a cannon. Another example of the use of the older works can be seen behind the chapel at New College, where there is a tower in which neat gun-ports have been cut into the late mediaeval arrow loops. Looking at the de Gomme drawing, we see that the mediaeval wall both to the south of Merton and to the north of New College is emphasised by a much thicker line, which leads to the conclusion that both these stretches were incorporated in the overall defensive scheme—perhaps as a retrenchment in case the main line was breached.

So, towards the latter part of 1643, we have evidence for a line of works across the north front from Worcester College to Holywell, together with defences for the bridges and some sort of construction in the Meadows to the south, all armed with an astonishing variety of guns.<sup>32</sup> Examination of the de Gomme drawing shows a thinner line behind his main fortifications, which when plotted onto a modern city map gives us roughly the line of these older works.<sup>33</sup> The trace is irregular with no

<sup>26</sup> *R.O.P.*, *op. cit.* note 19, 468, B.50.

<sup>27</sup> F. J. Varley, *The siege of Oxford* (1932).

<sup>28</sup> *R.O.P.*, *op. cit.* note 19, 468, B.145, B.156, and B.168.

<sup>29</sup> *Ibid.*, 469.

<sup>30</sup> *Ibid.*, B.59 and B.89.

<sup>31</sup> For the Royal proclamation of his appointment, see Bodleian, ADD. MSS. D.114 f.22.

<sup>32</sup> *R.O.P.*, *op. cit.* note 19, B.272.

<sup>33</sup> Lattey *et al.*, *op. cit.* note 1, 165.

provision for proper flanking fire along the ramparts. It was in fact a somewhat amateurish effort, but commensurate with the meagre resources available. It can also be assumed that this line was the basis of the defences as late as the summer of 1644 when Waller and Essex were in the area. On 20 July, Waller reported 'I find Oxford much stronger fortified than it was when I was here last, the new works being finished, and the whole north side palisadoed'.<sup>34</sup> An earlier Parliamentary reference to the works is also interesting. The Journal of Sir Samuel Luke for the date of 16 March 1643 has the following to say: 'The workes about the towne against New College are finished and made wonderful strong. There is a mount made in the Colledge, about six score within the workes. Against Wadham Colledge there is a mount cast uppe where there is two peeces of ordinance, but the workes are not finished. Att the next church to Gloster Hall the workes are not finished, and there is a very easie entrance'.<sup>35</sup>

In Waller's report there is no mention of any double line or sophisticated out-works, and after this date, evidence for the progress of the fortifications becomes sparse. In July 1644 there was certainly work in progress in the area of the Magdalen College Walks, since orders were issued for supplies to be sent to a labour squad there.<sup>36</sup> They might have been busy either on the detached bastion covering the bridge to the Water Walks (see de Gomme drawing), or the small redoubt variously called Dover's Speare, Peare or Pear. This was an advanced observation post against the likely direction of an enemy approach, as is implied by the version of the name on the *Ichnographia*—Dorobernensis Specula. De Gomme shows several other small redoubts outside the main line of fortifications.

We come now to the main problem. Examination of the de Gomme drawing shows that it was originally dated 13 November 1645. The problem is that the year has been roughly altered to 1644, for no apparent reason. De Gomme was a competent cartographer, and if he had made a mistake of a whole year, he would surely have made an immediate and neat alteration in the same ink. We know that de Gomme was with Rupert in the summer of 1644 as he was present at Marston Moor on the 2 July. He was also present at the relief of Donnington Castle and the subsequent battle of Newbury in October. Rupert did not reenter Oxford until the 23 November, ten days after the altered date on the drawing, although he did winter in the city. De Gomme would probably have gone off again on the 1645 campaign. He was present at Naseby, and after the defeat retired with his master to Bristol where he wrote a report on the state of the fortifications there.<sup>37</sup> Bristol surrendered to Fairfax on 10 September, who allowed Rupert and his men to withdraw to Oxford, where the Prince, together with his friend Governor Legge, was disgraced. This would have meant that de Gomme was out of work, but a specialist engineer would not have been idle for long. I assume that he was co-opted by the new governor, Glemham, but whether he designed the works that he

<sup>34</sup> Cal. St. P. Dom. 1644. 363.

<sup>35</sup> *The Journal of Sir Samuel Luke*. Scoutmaster-General to the Earl of Essex. Oxford Historic Records Society (1947), 34-5.

<sup>36</sup> *The papers of Capt. Henry Stevens*. Waggon-Master General to Charles I. Oxford Historic Records Society (1962), 31.

<sup>37</sup> Warburton, *op. cit.* note 16, III, 170.

drew or not, we do not know. It can safely be assumed, however, that the original date on his drawing was the correct one.

After Naseby, it would have been obvious to the garrison that the city would soon be besieged in earnest. The Royalist field army had been destroyed and it would only be a question of time before the outlying garrisons fell. There was certainly a speed-up of work on the fortifications during the summer of 1645.<sup>38</sup>

The engineers were faced with the problem of strengthening the fortifications as quickly as possible. Looking at the de Gomme drawing, we see that the west side of the city had two regular bastions plus two further ones that were only dotted in and probably only proposed—in view of the inundations there was no need for complicated works. To the south, in the Meadows were two simple lines, the forward one of which is rather odd. It was built in front of an arm of the river instead of behind it, thus failing to make good use of the natural obstacle and making it difficult for the defenders to withdraw in good order. In front of Magdalen Bridge was the large work at St. Clements, which was basically a hornwork. This was to guard against a surprise rush across the bridge, and it is interesting to note that the trace is the same as in the *Ichnographia*.

During the short siege of 1645, Fairfax had established his camp on Headington Hill, astride the main London road, and had bridged the Cherwell at Marston in order to advance against the north front. It was here that a completely new line of works was constructed outside the 1642–4 line. The new trace was based on the *tenaille* system—a zig-zag pattern of alternate salients and reentrants—that was used in the Dutch system at the time, for the covered-way. De Gomme used almost exactly the same design in one of his early proposals for Tilbury Fort<sup>39</sup> and again at Portsmouth. Being pressed for time, and bearing in mind that they already had the earlier line, the designers at Oxford simply did the logical thing and added a traditional outer envelope. The *Ichnographia* shows what Oxford might have become, had the garrison had twenty years and unlimited funds at their disposal.

The course of the siege in 1646 and the capitulation is covered by Varley.<sup>40</sup> Again the camp was established at Headington Hill, and the Parliamentary army sapped downwards. It is clear that Fairfax was impressed with the strength of the works, as the report to his Council of War on 3 May shows<sup>41</sup>—‘There are many material alterations and additions of advantage since we were last before it, and although it was always justly accounted a place of great strength yet now was made incomparably more strong than ever’. He was last before it during the summer of 1645, which seems to dispose of the possibility that the new defences were under way in 1644. The report goes on to say that ‘on the north side there were two lines and works, against every part of the second line were Colleges’. This would seem to be sound evidence for the two lines in the de Gomme drawing, and this is backed up by Sprigge,<sup>42</sup> who was Fairfax’s chaplain. Referring to the

<sup>38</sup> J. Madan, *A catalogue of Oxford Books* (1912), II, item 1807.

<sup>39</sup> BL, Add. MS. 16370.

<sup>40</sup> Varley, *op. cit.* note 27.

<sup>41</sup> Madan, *op. cit.* note 38, II, item 1892.

<sup>42</sup> J. Sprigge, *Anglia Rediviva* (1647), 278.



Council of War and the decision to attack the north face, he says 'and yet this way there were two lines and works'.

I regard the Wyke painting as the best evidence that the fortifications were built more or less as in the de Gomme drawing, but not for the obvious reasons. We know that Wyke was not there at the time, but when commissioned to do the work, he would have had to seek advice—such painters were fascinated by detail. As I have already said, it is almost certain that he ended up at the door of de Gomme, an eyewitness of the siege and a participant in the final design process. He shows the Royalist batteries sited in the salients, which would have been the logical place to put them, as well as troops skirmishing around St. Clements—where there was some cavalry action.

In addition to this, however, there is further evidence to be gained from old maps. The Loggan map of 1675 clearly shows three of the *tenaille* salients exactly as drawn by de Gomme, as well as the old line to the rear. It also confirms that the outer line on the meadows was to the south of the river arm. By 1733 when the Williams and Toms map was published, time and nature had been at work on the fortifications. One can still see, however, the outline of a salient and two re-entrants. Both of the foregoing show the remains of some sort of earthwork beyond St. Clements. In the Longmate map of 1773, the trace is no longer discernible, as is also the case with the 'entrenchments' marked on the early O.S. maps.

Little or nothing of the works remains today, although there are one or two odd mounds that might have formed part of the defences. The 1936 article goes into this in some detail.<sup>1</sup> In the Bodleian Library there are some sections sketched on graph paper, of a ditch excavated during construction of the University Museum, and dated 1890.<sup>43</sup> An archaeological excavation would hardly be profitable, as to do the job properly, one would have to undermine most of the Science Area, and all that would be discovered would probably be a few cannon balls and musket shot.

To sum up then, it is evident that initially there was a line of works of indeterminate trace running between Worcester College and Holywell, built mainly during the course of 1643. In addition, the bridgeheads were covered and there was some sort of construction in the Meadows and the Water Walks. Probably during the summer of 1645, after Naseby, work was started on a new outer line to the north.

Although it is possible that de Gomme was the designer, it is more likely that he was simply the draughtsman and one of the engineers employed on the project. The works were more or less complete at the time of the siege, and from the available evidence, it seems that the de Gomme drawing was the basis for the actual defences that were finally built.

#### GLOSSARY OF TERMS USED

*Angle Bastion* An angular projection from the body of a work, from which the defenders can bring flanking fire to bear on the area in front of the ramparts and the floor of the ditch.  
*Counter-Guard* An outwork in the ditch, consisting of two faces, to protect the salient of a bastion.

<sup>43</sup> Bodleian, MS. GA. Oxon a47, p. 43. See also *Oxoniensia*, III (1938), 177; XXIII (1958), 136; XXIV (1959), 101; and XXXVII (1972), 38.

*Covered-way* An infantry position on the outside of the ditch. Covered in the sense of being hidden from the view of an enemy.

*Enceinte* The main line of ramparts and bastions around a place.

*Hornwork* An outwork, the face of which is formed by two half bastions with a length of rampart between.

*Redoubt* A small self-contained work that cannot be defended by flanking fire from its own parapet.

*Trace* The plan of a fortified place.

*Tenaille Trace* A line of alternating salients and re-entrants to form a zig-zag enceinte.