TUDOR TOWN PLANS IN JOHN SPEED'S *THEATRE*

By R. A. SKELTON

In 1612[1] John Speed's *Theatre of the Empire of Great Britaine* was published. Inspired (as Speed tells us) by 'the zeale of my countries glory', he designed it, after the 16th-century pattern, as the chorographical prologue of his *History*. To the Englishman of his day a conspicuous part of his 'countries glory' was the growth of its towns under the Tudors ; and Speed accordingly presented, as insets of his larger maps, plans of over 70 'cities and shire townes' of the British Isles, that is, of the regional centres of ecclesiastical and civil administration.

As a comprehensive and homogeneous collection of English town plans Speed's had no predecessor, and it includes the earliest known plans of not a few towns. That it is commonly cited as evidence of the contemporary face of many English towns suggests the need for a critical examination of his sources and the use which he made of them.

Speed himself made little pretension to originality. 'I haue put my sickle into other mens corne', he wrote ; and the phrase 'Performed by John Speed', which appears on most of his county maps, is shown by its context to mean that Speed's contribution was that of a copyist or (at best) an interpreter. Sir Henry Spelman remarked of Stow that he had 'stich't us up a historie'.[2] Recalling that Speed (like Stow) was a tailor, we may take this as a fair description of the patchwork methods by which Speed assembled his historical and topographical material, both textual and graphic. We catch glimpses of him at work in his letters to Cotton and in the addresses to his readers ; and the late Dr. Eric Gardner's study of Speed's county maps[3] betrays still more plainly his dependence on documentary sources. In examining these sources we may learn something of the character, purpose, and technique of town plans made in the 16th century.

It must first be remarked that one of Speed's few claims to original survey is connected with his town plans. In the Summary Conclusion[4] of the *History* he wrote that 'the Chards for the most part traced by others . . . .were the foundations of my begun pains ; in supplying their wants with my many additions, and dimensions of the Shire-townes and Cities true platformes'. His contribution to the 'true platformes' is explained in his preface to the *Theatre* : 'some haue been performed by others, without Scale annexed, the rest by mine owne trauels, and unto them for distinction sake, the Scale of Paces . . . fiue foote to

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[1] The engraved title-page of the first edition is dated 1611 ; the letterpress title-pages of Books II–IV, 1612, when the printing may be supposed to have been completed.

[2] Quoted by Aubrey, *Brief Lives* (ed. Clark, 1898), ii 237.

[3] In an unpublished work which I have had the privilege of reading. It is fair to add that Dr. Gardner did not accept all the conclusions of the present paper.

[4] As expanded in the last edition (1627) published in Speed's lifetime.

a pace I have set . . .' This (let us note) is information which could hardly have been inserted on the plans by anyone but their surveyor.

Speed's Precursors

The sources from which Speed could derive his town plans were not extensive. English surveyors (as we shall see) were late in this field, for the social conditions of the Tudor land revolution in which the surveyor's craft and profession developed led to his employment principally in rural tasks. On the Continent printed representations of cities had enjoyed a growing vogue from the second half of the 15th century. Breydenbach[1] and Schedel[2] had many imitators, and the English topographer found no material to his hand like the bird's-eye views in the 1550 and later editions of Sebastian Münster's *Cosmographia* or in the Italian *isolarii*, although their intention was picturesque or symbolic rather than cartographic, and they are inferior to the con-temporary plans drawn in the Netherlands by Jacob van Deventer. The publication of Ortelius's *Theatrum Orbis Terrarum* in 1570 gave an impulse to the compilation of geographical ' Sammelwerke ', eclectic in their sources but uniform in their presentation. The city-atlas of Georg Braun, ' drawne [as Burton wrote] by a naturall love of Pictures and Mappes, Prospective and Chorographical delights ',[3] was designed as a companion to the *Theatrum*, compiled by similar methods, and engraved by the same craftsman, Frans Hogenberg. The first volume of Braun and Hogenberg's *Civitates Orbis Terrarum* was printed at Cologne in 1572, and soon after this we hear of the first—though abortive—plan for a similar English collection. In the *Description of Britaine* prefixed to Holinshed's *Chronicle* (1577) William Harrison enumerates the English and Welsh cathedral cities ' whose particular plots & models . . . shal insue, if it may be brought to passe, that y[e] cutters can make despach of thē before this hystory be published '.[4] These were doubtless among the ' Chartes ' referred to by Holinshed ' wherein Maister Wolfe (his publisher) spent a greate parte of his time ' but which ' were not founde so complete as wee wished '. As Wolfe's ' plots and models ' have disappeared, we cannot tell whether they were known to Speed. That he or his engraver knew and used the enchanting but often misleading panoramic views of Hogenberg[5] is beyond dispute, although in some cases the resemblance can be traced to a common source.

[1] Breydenbach's narrative of his pilgrimage, printed in 1486, contained seven large panoramic views of towns drawn by Erhard Reuwich, who accompanied him to Jerusalem.

[2] The many town views in the *Liber Chron-icarum*, or ' Nuremberg Chronicle ' (1493), are in Reuwich's manner.

[3] *Anatomy of Melancholy*.

[4] Harrison, *Description* (1577), 189.

[5] Speed's Windsor Castle and the first version of his Chester are copied directly from Hogen-berg. The debt was generously redeemed, for of the nine English or Irish plans in Vol. VI of the *Civitates* (1618), all but one are taken from the *Theatre*, which also supplied the Cologne engraver with the figures from its titlepage and the vignettes from Speed's maps of England and Ireland.

The first five volumes of the *Civitates* were published before the *Theatre*, the sixth only in 1618. A foreword by Braun printed in 1575 had invited anyone who considered his native place neglected ' to send us the portrait of it and we will have it engraved by the cunning hand of Hogenberg, making honourable mention of his name '. Among those who responded to this invitation was William Smith the herald, for of the nine English plans or views in Volumes II–V, the prototypes of three seem to have been furnished by him ; three others are from drawings made by Georg Hoefnagel during his visit to England in 1568.

Smith's *Particuler Description of England. With the Portratures of Certaine of the Cheiffest Citties & Townes*, compiled in 1588,[1] was apparently designed for publication. The seven plans and eight profiles of towns seem to be fair drawn for the engraver from earlier drafts by Smith. Only one of these can be positively assigned to his own survey. The legend on his plan of Bristol (Pl. IV) reads : ' Measured & laid in Platforme, By me, W. Smith, at my being at Bristow, the .30. & .31. July, An°. Dñi. 1568 '. The compass indicator showing the variation (which also appears in Smith's plans of Canterbury, Bath and Norwich, and in his view of Oxford) is, however, copied from the compass clock, or *organum viatorum*, of the instrument- and map-makers of Nuremberg, where Smith lived for nearly ten years after 1575 ; and it can scarcely have been added to his plans before this date. Two of Smith's other plans (those of Bath and Canterbury) are perhaps from surveys by him, and all the profile views in the *Description* (except that of Stonehenge[2]) may be considered original. His Norwich is derived from William Cuningham's plan in *The Cosmographical Glasse* (1559), although he omits ' the place where men are customablie burnt ', and his Cambridge from Richard Lyne's bird's-eye view of 1574, both of which were also copied by Hogenberg. That Smith supplied drawings and information to Braun and Hogenberg is certain. In Volume III (published in 1581) Hogenberg engraved (without acknowledgment) drawings by Smith of Chester[3] and Bristol ; and in Volume IV (published in 1588) that of Canterbury. Speed and his engraver Jodocus Hondius copied directly from Smith's Bristol and Norwich ; and so it comes about that on their plan of Norwich, published in 1612, we find a compass indicator giving the magnetic variation observed by Nuremberg astronomers in the 15th century. Speed or the engraver has, however, reversed the indicator, so that it marks a westerly (instead of the current easterly) deflection of the needle.

This does not exhaust Speed's debt to Smith, whose help he acknowledged ' for the matters of Herauldry ' though not for those of topography. But Smith's 'portratures' of towns do not seem to

[1] British Museum, Sloane MS. 2596.
[2] See E. H. Stone, *The Stones of Stonehenge* (1924), 147–8.
[3] In 1581 Smith was in Nuremberg and, as the draft of Chester is stated in Braun's text

to have been supplied by a correspondent in London, it seems that Hogenberg may have received the material several years earlier, before Smith's departure from England.

have wholly satisfied Speed. In the early proofs of the maps of the *Theatre* in the British Museum[1] Winchester is drawn in profile and Canterbury in plan (Pl. VA), both after Smith ; but in the final state of these plates they are redrawn in plan with the scale of paces added, therefore (by Speed's account) from his own survey. Chester is a curious study. Smith's *Treatise on the History and Antiquities of Cheshire*, the Harleian MS. of which is dated 1588,[2] is illustrated by his map of the shire, by a view of Chester, which was copied in his *Description of England*, and by a plan of the city. The plan, which oddly omits the Rood, is evidently derived from an earlier draft by Smith, and this, or a copy of it, must have been the source of Hogenberg's plan which has a good deal more detail, including the Rood, than that in the Harleian MS. Hogenberg's version was closely copied (even to the horses and the heraldry) by William Rogers who engraved the first plate of Speed's Cheshire[3] ; Hondius engraved a new plate on which the town plan has Speed's ' scale of paces '.

The last of Speed's forerunners in projecting a series of town plans was John Norden. His ' chorographical descriptions ' of counties were designed to supply deficiencies which Norden had noted in Saxton's maps ; and in the dedicatory epistle to Burghley which accompanies the plan of Higham Ferrers in his MS. description of Northants (1591),[4] he urged that ' the most principall townes Cyties and castles within every shire shoulde be briefly and expertly plotted in their estate and forme as at this day they are '. Although Norden was scrupulous in recording antiquities, he speaks in this passage as a topographer, gently protesting perhaps at the omissions of antiquaries like Camden who said much about the ancient history of English towns but less of their contemporary appearance. Speed appears to have access to Norden's MSS. as well as his printed work ; and he drew on them freely for his county maps. From Norden's description of Middlesex, printed in 1593, he took Westminster and London ; and from Norden's map of Sussex, engraved in 1595, the beautifully drawn inset plan of Chichester.[5]

Speed's liberal use of the historical manuscripts and antiquities of the Cotton collection is known from his letters[6] ; and on completing
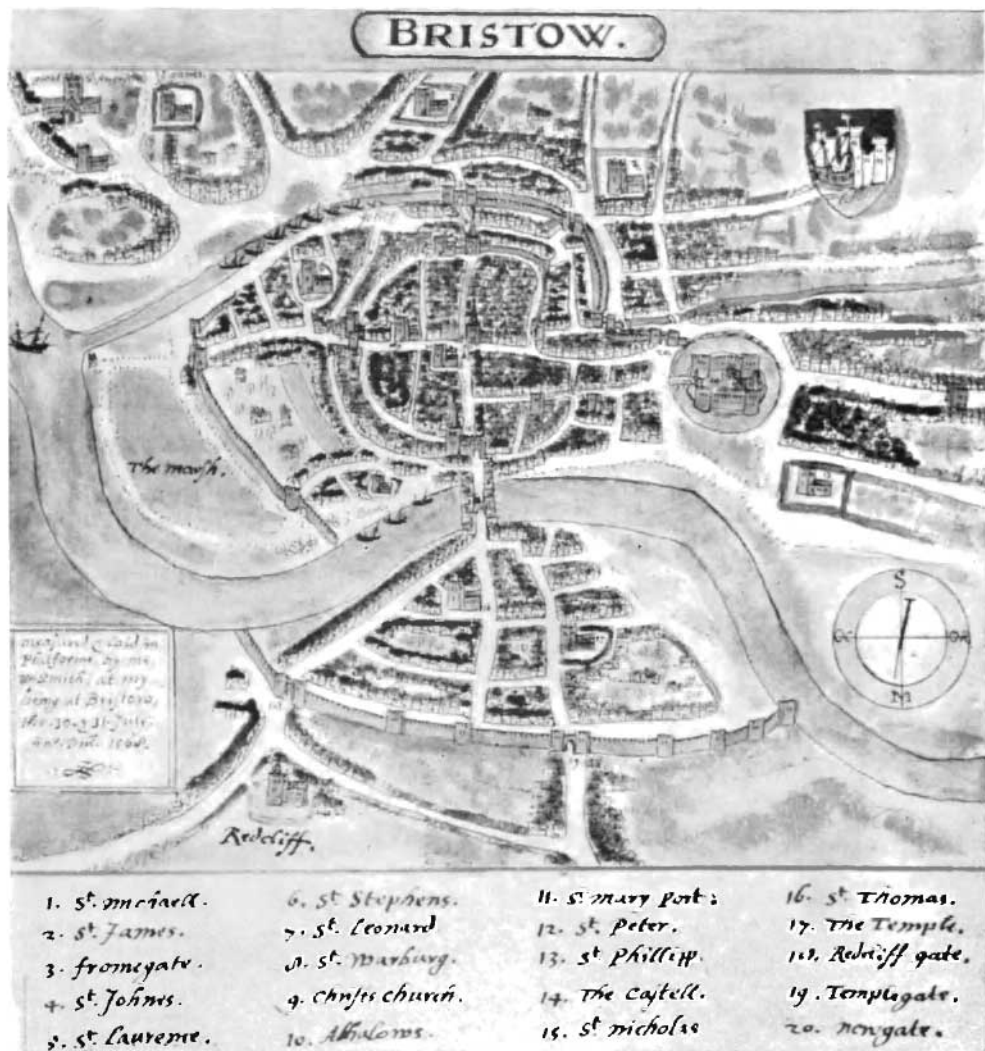
[1] Maps C. 7. c. 5.

[2] British Museum, Harl. MS., 1046, ff. 122–168. There are two earlier copies, dated 1585 and 1586, in the Bodleian, Rawlinson MSS., B. 283–4.

[3] Like Smith and Speed, Rogers was a native of Cheshire, and he had been associated with the printsellers, Sudbury and Humble, who published the *Theatre* and *History*. For Speed he engraved one county map (Cheshire), the only known impression of which is in Dr. Gardner's collection ; and it is a reasonable conjecture that, had his death not intervened, he would have been commissioned to engrave the whole series.

[4] Bibliothèque Nationale, MS. 706 Anglais, Acq. Nouv. 58.

[5] Whether Speed's Peterborough was derived from the plan in Norden's (now lost) MS. description of Northants. made for Sir Christopher Hatton in 1610, is uncertain. The list of streets and buildings in the 1720 edition of Norden's text, in which the plan was not printed, is (as E. Heawood pointed out) identical with that of Speed's plan, which, however, has the scale of paces denoting Speed's own work. Launceston or Dunhevet Castle, in the *Theatre*, is copied from Norden's MS. Cornwall (B.M., Harl. MS. 6255).

[6] British Museum, MS. Cotton Julius C. III, art. 65, 68 ; printed by Sir Henry Ellis for the Camden Society, 1843.

BRISTOW.

1. St. mchaell.	6. St. Stephens.	11. St. mary port:	16. St. Thomas.
2. St. James.	7. St. Leonard	12. St. Peter.	17. The Temple.
3. fromegate.	8. St. Warburg.	13. St. Phillipp.	18. Redcliff gate.
4. St. Johns.	9. chnstchurch.	14. The Castell.	19. Templegate.
5. St. Laurence.	10. Allhalows.	15. St. nicholas	20. nongate.

PLAN OF BRISTOL, IN WILLIAM SMITH'S *PARTICULER DESCRIPTION OF ENGLAND,*
B.M., MS. SLOANE 2596, FOL. 77 $\left(\frac{5}{6}\right)$

PLATE V

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A. JOHN SPEED'S PLAN OF CANTERBURY, FROM HIS MAP OF KENT.
PROOF BEFORE PUBLICATION $\left(\frac{5}{6}\right)$
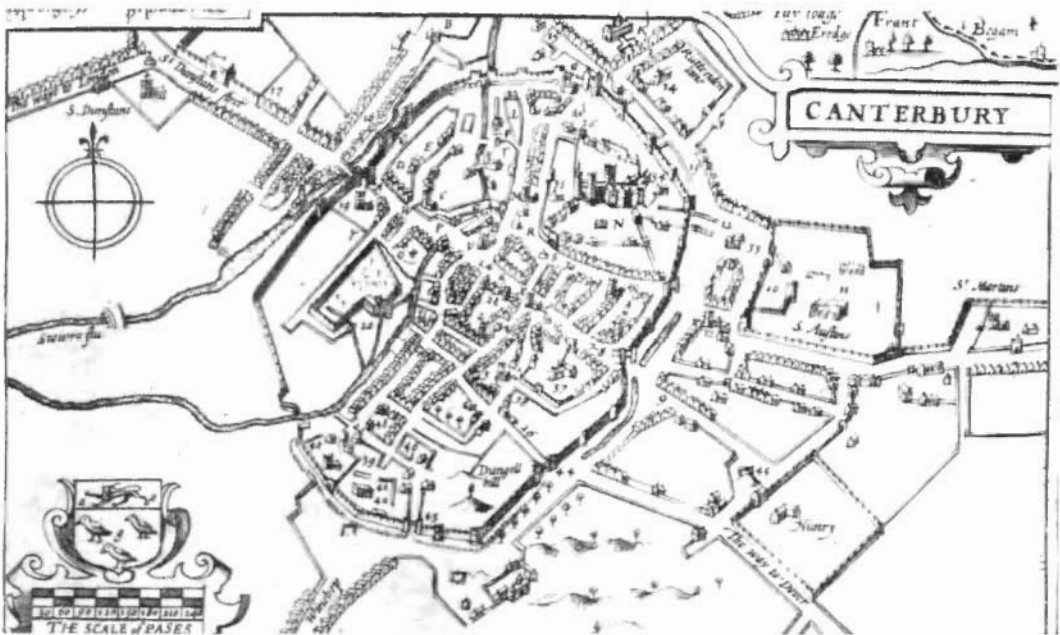
B. SPEED'S PLAN OF CANTERBURY.
FINAL STATE, AS PUBLISHED IN THE *THEATRE* $\left(\frac{2}{6}\right)$

the *History* he acknowledged his debt to ' the worthy repairer of eating times ruines, the learned Sir Robert Cottē . . . whose Cabinets were vnlocked, & Library . . . set open to my free accesse '. Among the Cotton MSS. we find the drawings on which Speed based his plans of Carlisle and Berwick and views of Edinburgh and ' Enis Kelling Fort '. That no other borrowings from Cotton's rich topographical collections are to be found among the town plans of the *Theatre* lends colour to the belief that perspective views were not to Speed's taste.

Before Speed's time there is little indication of a vigorous demand for English town plans, either among patrons or public. Apart from Hogenberg's work we have fewer than a dozen printed before 1600, and these are almost all extremely scarce.[1] We know that Norden's failure to find continued support or patronage brought his *Speculum Britanniae* to a premature end, and that other town plans were engraved many years after they were drawn. Of the earlier plans, Cuningham's Norwich (1559) was a woodcut, as was the bird's-eye view of London supposed by Vertue to have been made by Ralph Agas in 1560, but certainly later. The first town plan on copper by an English engraver was Lyne's Cambridge (1574), in which the manner of his Flemish masters is apparent.[2] Thirteen years elapsed before another English town plan was printed (again excepting those of Hogenberg). In 1587 John Hooker's plan of Exeter was engraved by Remigius Hogenberg ; and a year later the large plan of Oxford, drawn by Agas in 1578, was engraved by Augustine Ryther.[3] The tide now began to flow more strongly, perhaps impelled by the success of the third volume (1581) of the *Civitates*, which had included four English towns. In 1592 we find John Hamond's fine plan of Cambridge, engraved by Ryther and Peter Muser ; in 1593 Norden's London and Westminster, engraved by Pieter van den Keere ; in 1595 the inset plan of Chichester on Norden's map of Sussex and Matthew Patteson's perspective view of Durham, both engraved by Christopher Schwytzer.[4]

Speed's Originality

Among these printed plans, and in the MS. collections of his friends, we find the originals of about a quarter of the total number of Speed's town plans. This leaves over fifty for which no source has been identified.

[1] It is, of course, true that before 1600 copper-plate engraving was practised by few English craftsmen and the selling of prints and maps was not established as a separate trade in London. Speed's *Theatre* was the earliest large commercial enterprise in map publication in this country, for Saxton was supported by patronage.

[2] Lyne was in the service of Archbishop Parker who at this time employed, among other ' drawers and cutters '. Frans Hogenberg's brother Remigius. The first map known to be engraved by an Englishman, that of the Holy Land by Humphry Cole (1572), appeared as an illustration to the Bishops' Bible published at Parker's instance.

[3] Agas's plan of Cambridge, recorded by Hearne, has been lost, unless it be that of 1592 known by John Hamond's name.

[4] Speed acknowledged the help of ' Christ. Swisher ' who engraved on wood the coins for the *History*, although he once, in the grip of his ' old enemy the stone ', wrote peevishly of him to Cotton as ' detracting Swisser '.

It might be supposed that Speed sought material in the archives of municipalities. He tells us that his information on the boundaries and names of hundreds came from the 'Parlament Rowles', and that for counties whose divisions did not appear in the rolls he resorted to 'the Nomina Villarum, in their Sheriffes bookes'. This information was in fact omitted only for three Welsh counties, where (as he complains) access to the documents was denied to him, and for the four northern counties which were not divided into hundreds because ' the Inhabitants . . . are not charged with service as other Counties are '. Whether he failed to extend his search to borough muniments, or whether the graphic material which he found there did not satisfy him, we cannot say. Certainly the few MS. town plans of this period which have been found in the archives of English boroughs[1] are so jejune that he may well have rejected them. For the lists of streets, gates, churches and other principal buildings, which are supplied as keys to 56 of his plans, Speed no doubt depended on local information. This may explain the high proportion (1 : 2) of Welsh towns unaccompanied by any such list, the corresponding ratio for English towns being under 1 : 30. Perhaps, here again, Speed found Welsh officials unco-operative, or perhaps he had difficulty with the language.[2] The detail also of the Welsh plans is much more scanty.

Of the residue of over 50 plans not traced to any documentary source, 45 have the scale of paces by which, as Speed writes, his own drafts are to be identified ; and two of these[3] are stated explicitly to be ' shewed in due form as they were taken [i.e. surveyed] by John Speed '. We have also his statement that the ' beautie and benefits [of our native land] not a farre off . . . but by my owne trauels through euery prouince of England and Wales mine eyes have beheld '. The value of his claim to this mass of original work is a question that cannot be evaded. Good judges have affirmed that Speed himself neither drew, nor was capable of drawing, a map or plan. Outside the *Theatre* there is no direct evidence to support this view and very little to refute it. There are few recorded products of Speed's activity as a draughtsman[4] ; but the modesty with which he commonly acknowledges his debts to others forbids us to set aside his explicit claim to have drawn the majority of the town plans. The general uniformity of style, convention, and selection of detail which they display, and which cannot be attributed to the engraver, certainly points to the work of one hand. I believe that this hand was Speed's ; that he drew them, no doubt with

[1] E.g. in those of Exeter, Leicester, Southampton, Canterbury, Norwich.

[2] It will be recalled that the Privy Council's letter to justices (10 July, 1576), in furtherance of Saxton's survey of Wales, had required them to ' set forth a horseman that can speke both Welche and englishe to safe conduct him'.

[3] Pembroke and St. David's.

[4] ' Divers maps ' presented by Speed to the Queen in 1598 (*C.S.P.Dom.*, 15 June, 1598) and to the Merchant Taylors' Company in 1600 ; a heraldic title-page ' done by Iohn Spede ' in Speght's edition of Chaucer, 1598 ; and the plates of coins engraved by William Rogers, ' Iohannes Speed excud.', in the 1600 edition of Camden's *Britannia*. (I am indebted to Dr. A. M. Hind for the reference to Speght.)

local assistance, on journeys which took him to every part of England and Wales and perhaps as far afield as Dublin (but not to Scotland) ; and that he used no documentary source for these plans simply because he had found none, or none worthy to follow. Whether he engaged the help of a more experienced surveyor must be an open question, in the absence of evidence.

Reliability of Speed's Survey

If Speed's plans are to be admitted (with due caution) as original documents, there remains the question how far they can be trusted. Obvious reservations must be made. The scale, ranging from about 5″ to about 10″ to a mile, necessarily involves generalisation and suppression of detail. The drawing is somewhat coarse, as we can see by comparing Speed's Chichester with its original by Norden, which is about the same size; the width of streets in particular is exaggerated. Speed is sometimes guilty of preferring antiquarian rhetoric to topographical fact, as when he reconstructs, in his plan of Southampton, a castle which was already a ruin in his day. The survey upon which his plans were constructed must have been of the most simple and cursory type. Smith spent two days on his survey of Bristol in 1568, and it may be supposed that Speed could not afford to devote much longer to the planning of any one of over 50 towns. The basic process was no doubt direct measurement on the ground by pacing (as Speed's linear scale suggests), or with rods or the ' wyer line ', a forerunner of the chain. This may have been supplemented by the use of a plane-table for plotting horizontal angles. By expert surveyors of his time this was considered ' an Instrument onelye for the ignorant and unlearned, that have no Knowledge of Noumbers'. Cyprian Lucar,[1] it is true, described a method of drawing ' by angles of position and distances, the ground plat of any vnclosed fielde, walled cittie, towne, castell, or fort ', involving the use of a plane-table, sticks for sighting, and the ' wyer line ' ; but this was designed primarily for measuring the area within the walls. Agas in 1596[2] referred in contemptuous terms to the use of the plane-table by unskilled surveyors. He saw no point ' in setting out a Citie, Borough, and Towne, except you so lay out the streets, waies, and allies, as may serue for a iust measure for pauing thereof, distance betweene place and place, and such other things of vse ' ; and he instances a theodolite survey of Oxford[3] on which ' a skilfull person . . . was lately imployed (as I heare) in bounding the libertie for the Vniuersitie of Oxford'. It is improbable, however, that Speed, even if he were versed in them, chose to employ more exact instruments for the measurement of horizontal and vertical angles, or

[1] *Lucarsolace* (1590), 46.
[2] *A Preparative to Platting* (1596), 18.
[3] Not now known.

the precise methods of sighting and survey devised by Thomas Digges[1] and others for the needs of military engineers and gunners.

To test the reliability of Speed's plans in detail is a task for the local antiquary using a variety of material (documentary, archaeological and topographical) to reconstruct the individual towns in Speed's day. This is beyond the scope of this paper ; but three samples will illustrate the character of Speed's survey and the degree of accuracy to be expected in it. All are plans which may be assumed to have been ' taken ' by Speed.

Canterbury (Pl. Vʙ) is the first specimen. This is the plan which was substituted on the plate of Kent for the original proof version (Pl. Vᴀ) copied from Smith. We notice first that Speed provides the basic information required for the use of a map, that is, indications of its orientation and scale. The compass indicator is in fact omitted from only eighteen of the town plans in the *Theatre*, and of these seven were copies from other sources. The orientation of the plans, observed with the compass, is of course magnetic. Most of them, like Speed's county maps, are drawn with north at the top (another aid to the modern map-reader). In this respect a draughtsman enjoyed greater freedom in making a measured ground plot than a perspective view. The perspective artist had to make his sketches from elevated points of vantage, which did not necessarily present the street plan and frontages from the most convenient aspect. Where Speed copied, he did not always re-orient his plan ; that of Oxford, for instance, like Agas's, has north at the bottom.

The ' Scale of Paces ' is the hall-mark of plans which I suppose to have been drawn by Speed.[2] The scales of 16th-century plans seldom give the pace as their unit, although it is found on two of the town plans of Deventer. Like Deventer, Speed uses the double pace of five feet, ' accounted [as he writes] according to the Geometricall measure ', that is, the measure adopted by contemporary surveyors, as we learn from their text-books. When distances were stepped, this ' pace ' would conveniently make two of a man's normal strides. The scale of the Canterbury plan is about $4\frac{1}{2}''$ to the mile, or 1 : 13,000. This is rather smaller than the average scale of Speed's plans. Of those with linear scales, thirty are drawn on scales from $5''$ to $7\frac{1}{2}''$ to the mile, eleven from $7\frac{1}{4}''$ to $10''$ to the mile, and a few Welsh towns are on larger scales. (These figures can only be approximate, for they are subject to a variable error arising from shrinkage of the paper.)

An accurate plan of Canterbury gives the town an outline notice-ably different from Speed's, having a NW.–SE. axis greater in propor-

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[1] *A Geometrical Practise, named Pantometria,* edited by Leonard Digges (1571).

[2] The only printed English town plans to be provided with a linear scale before Speed were Agas's Oxford (40 in. = 1 mile) and Hamond's Cambridge (5 ft. = 1 mile). These are isometric plans, with equal horizontal and vertical scales. Perspective views usually, and properly, had none, although R. Hogenberg engraved on his Exeter a linear scale which was deleted from the plate for later impressions and replaced by a compass indicator.

PLATE VI

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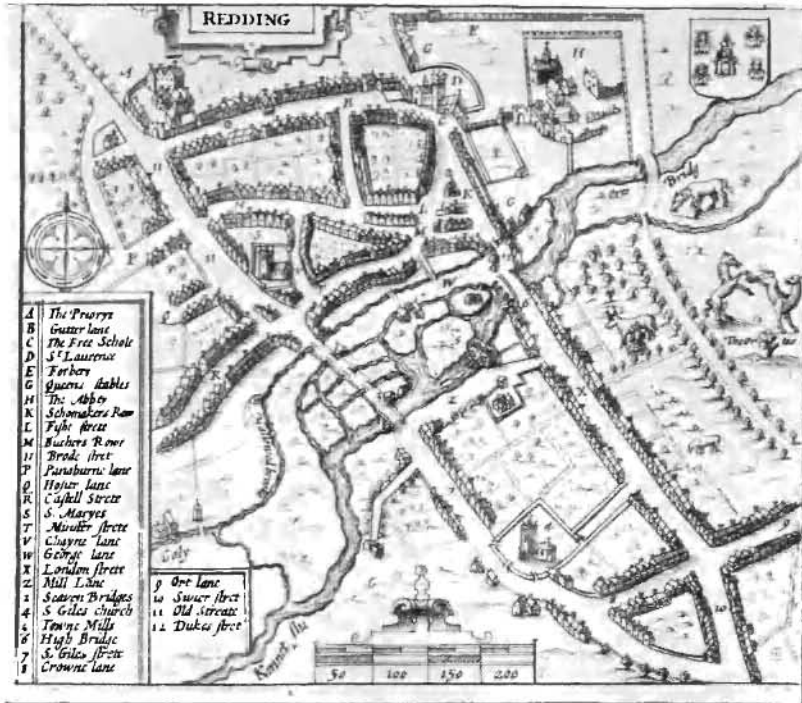
A. SPEED'S PLAN OF READING, FROM HIS MAP OF BUCKINGHAMSHIRE
IN THE *THEATRE* $\left(\frac{3}{5}\right)$

B. SPEED'S PLAN OF YORK, FROM HIS MAP OF THE WEST RIDING
IN THE *THEATRE* $\left(\frac{3}{5}\right)$

tion to the NE.–SW. axis than on his plan. If we test this discrepancy by a series of measurements (in different directions) on Speed's plan, we find that his distances from NW. to SE. (measured by his scale) are roughly correct, whereas those along other bearings are exaggerated by margins varying from 10% to 30% ; the distortion is greatest along the NE.–SW. axis. This type of error, which is found in some of the other plans in the *Theatre*, suggests that Speed's first draft may in these cases have been a perspective sketch. At Canterbury he would no doubt have made this from the rising ground to the SE., on the Dover road, and we may imagine him descending the hill and measuring the distance between conspicuous points along his course and the axis of his line of vision. If he was working hastily, he could save the labour of measuring lateral distances by laying them down by proportion from his perspective draft. This would produce the error noted.

The reference list to this plan contains no fewer than **74** names of streets and buildings. The expansion of the town beyond the walls, associated with the drift of surplus population from the countryside and with foreign immigration, is noticeable here as in many other plans of the *Theatre*.

Reading (Pl. VIA), although engagingly illustrated by figures of a milkmaid and a pair of ' nappy ' horses, is not one of the most accurate of Speed's plans. Its scale is about $7\frac{1}{2}''$ to the mile. The NW.–SE. axis is roughly true, but measurements along divergent bearings give errors up to 30%, and features to east and west of the town (e.g. the courses of the Kennet and Holybourne) are much displaced. Here also we may suspect the use of a perspective sketch, drawn from higher ground to the SE. Reading, developing round its religious foundations, was unfortified ; as Leland noted, ' there is no maner of token that ever the town of Reading was waullid '. This contrast between the aspect of English and continental towns was often remarked by travellers, and it was of Reading that a German visitor[1] wrote in 1592 : ' [It] is a pleasant and rather pretty town ; nevertheless it is like a market town, without gates or walls, as in fact are all other English towns, which although they have walls in some parts, are neither fortified nor defensible '. Speed's drawing distinguishes the bridges of wood and of timber.

York (Pl. VIB), as befitted the ' second city of England ', was presented on the largest of Speed's town plans. Drawn on a scale of $6''$ to the mile, it was evidently surveyed throughout, for the measurements are remarkably accurate, with the exception of a very slight EW. extension in the southern part of the city. Ribbon development to the NW. and SW. represents Tudor expansion, but we can still see on Fosse Bridge one row of the medieval houses which impressed Camden, ' so close ranged one by another, that any man would judge it, to bee not a bridge, but

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[1] Frederick, Duke of Wurtemberg ; in W. B. Rye, *England as seen by Foreigners* (1865), 13.

a continued streete '. The reference list gives the relatively meagre total of 45 names and omits three numbers which appear on the plan.

Speed and the Technique of Topographical Drawing

If Speed's claims are accepted, the town plans must be considered his most important contribution to British topography, if only because he approached his task primarily as a topographer. His intention may be discerned from the technique of representation adopted, almost uniformly, in the plans attributable to him. They are true ' ground plots ' and, as such, provide the essential basis for a reconstruction of the Tudor towns. Here Speed's achievement must be seen in historical perspective.

Although land survey is treated in 16th-century text-books principally as a branch of estate-management, they admit towns as a subject for accurate survey. The earliest printed manual in English, that of Fitzherbert[1] (1523), is explicit in its advice ' howe a surueyour shulde ouersee or suruey a towne or a lordeshyp ' : 'As if the citie of London shulde be surueyed, the surueyour may not stande at Hygate, nor at Shotershylle, nor yet at the Blackheth, nor suche other places, and overlooke the citie on euery syde. For if he do, he shall not see the goodly stretes, the fayre buyldinges, nor the great substance of rychesse conteyned in them . . . And in lykewyse if a man shall viewe a close or a pasture, he may not loke ouer the hedge and go his waye, but he muste other ryde or goo ouer, and see euery parcell thereof . . .' Here a clear distinction is made between the perspective or ' long view ' and the measured ground plot. Leland's careful descriptions of towns, with measurements and indications of orientation, provide a literary parallel for this doctrine ; but cartographers were slow to follow. The impulse to distil the character of a town expressed itself naturally in the profile or perspective view, in which conspicuous buildings and antiquities were emphasised and the horizontal scale varied widely in different parts of the drawing. ' Chorographie [as Cuningham put it] consisteth rather in describing the qualitie and figure, then the bigness and quantitie of any thinge.'[2] This, although a necessary, is an uncertain guide to the topography of 16th-century towns.

The principal difficulty was, however, that of representation. Not only was the Tudor draughtsman inspired by a variety of motives—not all topographical—in making the ' portrature ' of a town ; he was also by no means certain how much of his subject's features should be represented, and by what convention. If we look at 16th-century plans with eyes accustomed to the decorous geometry of the modern map, we are struck by the hybrid language of form into which his preoccupation

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[1] Sir Anthony Fitzherbert, *Boke of surveyenge* (1523), cap. xix.

[2] *Cosmographical Glasse* (1559), 7.

with a third dimension led the cartographer, striving to combine in one draft accurate ' geometrical ' planning with the plastic or stereoscopic effect required for subjects whose relief or vertical character had to be distinguished.[1] In no class of representation is the fusion of styles more tempting than in the town plan, and in none is the resulting dilemma sharper.

Theoretical writers of the 16th and 17th centuries were aware of the difficulty. Thomas Digges[2] divided the practical application of geometry to survey into three branches, which he called Longimetra, Planimetra and Stereometra and defined as ' Mensuration of all Lines, Superficies and Solides '. In the 17th century, when the distinction between the ground plot and the perspective view was more distinctly observed in practice, writers on optics extended Digges's classification, by analogy, to the mode of representation. This was broken down into *ichnographia* (the ground plan), *orthographia* (the profile or elevation), and *scenographia,* in which the first two elements were combined. In John Ogilby's *Britannia* (1675) ' *Capital Towns* are describ'd *Ichnographically*, according to their Form and Extent ; but the *Lesser Towns* and *Villages . . . Scenographically,* or in *Prospect* '.

But the technique of representation used in 16th-century town plans displays a robust variety. William Smith, perhaps influenced by German topographers, seems to have preferred the profile or elevation. The perspective view, drawn from a slightly higher angle of vision, was better adapted to large subjects, as the great series of views of London, from Wyngaerde to Visscher, suggests. Most popular of all was perhaps the bird's-eye view, as practised in the work of Frans Hogenberg, his English imitators like Lyne and Patteson, and a host of obscure or anonymous draughtsmen. This type of view, drawn from various angles but usually between 30° and 60°, enabled the artist to treat a town as an element in a landscape composition. The plain linear ground plan, visualised from a point immediately above the subject, was used for architectural drawings and for fortifications, but seldom for towns. Such plans more commonly have selected features drawn in perspective ; and to this important group, which are none the less true ground plans, belongs the work of Deventer, of Norden, of the anonymous draughtsmen of the splendid Newcastle and Berwick in the Cotton collection, and of John Speed.

Speed is generous in the perspective representations which he sprinkles over his town plans. These include walls and gates, the tiny houses which line the streets, churches and public buildings, and many other structures which had a function in the social and economic life of the townspeople : crosses, gallows, wind- and watermills, drying-frames for fishing nets, limekilns, pounds and pinfolds, cockpits, shambles, maypoles and stocks. But the framework to which these are added

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[1] This is a difficulty still unresolved, as the history of conventional signs demonstrates.

[2] *Pantometria* (1571).

is the street-pattern, drawn no doubt by crude methods of survey but unconfused and plain.

Speed's preference for the ground plan is in fact evident : not for him were the ' Prospective and Chorographicall delights ' of Hogenberg. That this choice was deliberate is suggested by his rejection of material unsuited to his purpose among the Cotton MSS. and those of William Smith, to which we know he had access.   He may be credited with the conclusion that, of all forms of representation, the ground plan best served his—and Norden's—topographical purpose of plotting ' the most principall townes Cyties and castles . . . in such estate and forme as at this day they are '.