I

The Cooperage, 32–34 The Close: a timber-framed building in Newcastle upon Tyne

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"a noble town tho' in a bottom, it most resembles London of any place of England, its buildings lofty and large, of brick mostly or stone; the streets are very broad and handsome . . ."

CELIA FIENNES' description of Newcastle in 1689 strikes a recognizable and, in its evident enthusiasm for the town, a welcome chord with the members of this Society (Morris 1982, 176). The description of the buildings—"brick mostly or stone"—gives us one of the few eye-witness accounts of the now vanished generality of structures in the 17th century town; but it also tends to conceal the fact that on the majority of Newcastle's pre-18th century buildings, the use of brick was confined to the infill of wall panelling, and that the predominant constructional technique employed in the town was timber-framing. The most complete example of a timber-framed, brick-panelled building of the later Middle Ages, is the Cooperage public-house, 32–34, The Close, the subject of recent fabric recording in advance of renovation, funded by the owner, Mr. Michael Westwell, and undertaken by the Newcastle City Archaeology Unit. The authors would like to express their thanks to Mr. Westwell and his staff at the Cooperage, and to Mr. Grahame Snowdon of the Tyne and Wear Development Corporation, for their help with this work. Miss Barbara Harbottle, the Tyne and Wear County Archaeologist made many helpful corrections to the text. This note offers an account of the survey technique employed and an indication of how documentary sources combine with the results of structural analysis to illustrate the ways that social and economic activities can be expressed through building design and construction.

DOCUMENTARY RESEARCH

The location of the building in the angle of two prominent medieval throughfares has ensured that the records of its ownership and conveyance can be recognized amongst the numerous but largely imprecisely provenanced body of documents relating to property on the Close. An almost complete tenurial history can be described from the early 15th century to the present day, apart from short breaks in the 15th and the 18th centuries, which further search will doubtless fill.

The stretch of river front to the west of Long Stairs and Javel Group is described in the earliest known deeds (*c.* A.D. 1200) as part of the Barony of Balliol. The origins of this land holding are obscure; it may have been part of the Bywell Barony, gifted to Guy de Balliol by William II, or have been a separate unit, attached to the borough, as suggested by the fact that these possessions were not grouped into manors or vills, and seem to have been conveyed in the same way as all other land in the borough, by execution in the Town Court, under the jurisdiction of the sheriff (SS CXXXVII, xv). By 1230–40, the present Close had become established from land reclaimed from the Tyne, as the interesting recent excavations and research on the Closegate and Mansion House sites have shown (Fraser *et al.*, forthcoming).

The Long Stairs originally linked the Close to the east end of Bailiffgate, but they now emerge on the western side of the High Level Bridge. First mentioned as "Langestare" in

Roger Thornton's *Inquisition Post Mortem* of A.D. 1430 (*AA* 1, III, 21), this name replaced the generic *via hoga* (Heugh Path) and "venel leading to the Heugh" of several 13th century documents (SS CXXXVII, 172).

The Thornton *I P M* gives the earliest mention of this plot, as one of seven messuages in the street called "Le Close", on either side of the Long Stairs. It should be possible to reconstruct the descent of this parcel of tenements, but further published references are lacking until 1531–2, when a property in this location "a house in the Close between the tenement of William Carr, west; the Long Stare, east; and extending to the King's Way, south; and a tenement belonging to the chantry of St Mary in St Thomas's chapel, north" was granted by Christopher Thirkelde of Estethorpe, Yorkshire and his son, also Christopher, to Thomas Horsley, merchant, the founder of the Newcastle Grammar School (*AA* 2 XXIII, 249). It was in the tenure of Elizabeth Bartram, widow, and was probably her residence after the death of her husband Robert; previously, they seem to have lived in the next house up Long Stairs, which had extensive grounds, stretching up the slope to the castle moat (*AA* 2 XXIII, 249).

Thomas Horsley conveyed the messuage to Henry Anderson of Newcastle, merchant and

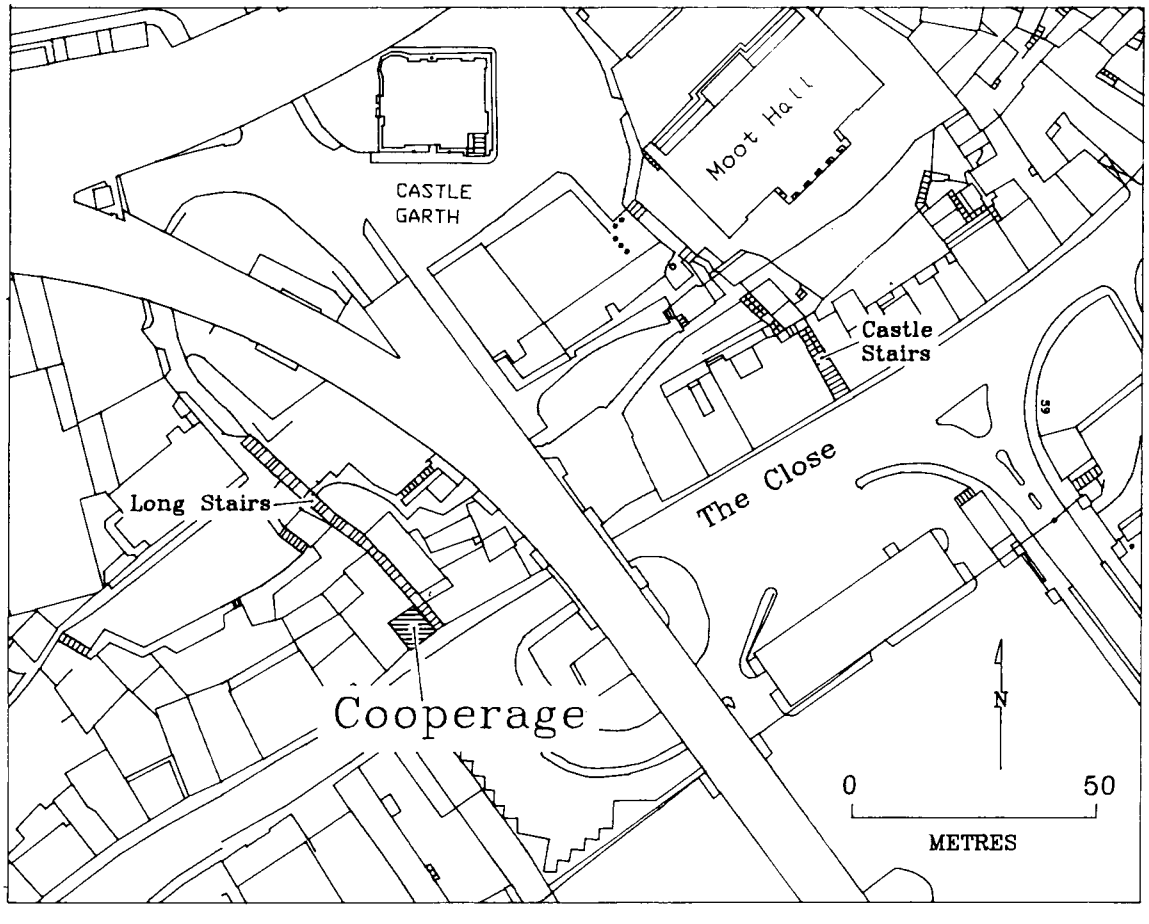

Fig. 1 Location Map: the Cooperage, Newcastle upon Tyne.

founder of the dynasty of that name, in 1543, but the "house" of the earlier document had now decayed into "waste stone walls" [*AA* 2 XXIII, 249]. This reference is of great interest in the interpretation of the surviving structure.

In A.D. 1550, the Andersons acquired further Thornton land in the Close, when Henry purchased land by deed poll (op. cit., 250) from Roger Thornton *sup. aquam.* esq., and Cuthbert Musgrave of Barwick upon Tweed (sic). This is described as waste in his will of 1559 (SS II, 165) and was presumably further up or along the slope from the land acquired from Horsley. It was divided between his younger sons, Henry junior and Francis, but the residue went to his principal heir, Bertram. A difficulty now arises in assimilating the next references to the property—"a tenement in the Close, abutting between the vennel called the Long Stairs, east, and a tenement formerly belonging to Bertram Anderson, west, in the tenure of Andrew Dyxson, and extending from the Close in front, south . . ."—clearly the Cooperage plot. It was conveyed by feoffment with livery of seisin in 1562 from Robert Halleyman of Lumley, yeoman, to Oswald Mytford of Newcastle, merchant (*AA* 3 XIII, 53). Perhaps the Anderson plot was subdivided, with Bertram keeping the western half while selling the eastern half to Halleyman. All subsequent topographical references in deeds relating to the descent of this property clearly show that this eastern plot is the present Cooperage.

Mitford sold the property to another merchant, Robert Hunter, in 1581 for 40 marks (£13 13s 4d) [op cit.]. A deed of 1591 shows that Elianor Mytford, Oswald's widow, was Hunter's sister, and the property reverted to her on Hunter's death in 1587 (Welford 1985, 423). She sold it with her other interests to Cuthbert Bewick, merchant of Newcastle, after a period of joint tenure (*AA* 3 XIII, 54).

Bewick conveyed the property to Ralph Grey of Newcastle in 1618–9, and he sold it immediately to Thomas and Hellinor Bowes [op. cit., 55]. After Thomas's death, around 1649, the tenement (in the occupation of John Lodge, merchant), and a cellar (occupied by Jonathan Drake), are assigned to Hellinor's son, Ralph, as part of his marriage settlement with Barbara Blaxton. Ralph was letting the property to Thomas Davison, merchant, by October 1650, to whom he sold the freehold ("three lofts and a cellar") for £120 five years later. The property then descended through the Davison family of Beamish, Co. Durham; in 1714, William Davison conveyed the lease of 5s. a year to Thomas Davison ("lofts and cellars at the foot of Long Stairs in the occupation of Mr. Alderman Ridley") [op. cit., 55], until in 1742–3, the lease was sold by Morton Davison, son and heir of William, to Thomas Henzall of Gray's Inn, London, when the property was described as a "messuage with a cellar and lofts, here-to-fore in the possession of Richard Ridley, esq. deceased, and now in the tenure of Ralph Carr, merchant . . ." [op. cit., 58].

This represents a transferance of the deeds of the building both outside the town and out of merchant hands, in terms of ownership, if not of tenancy. For over 200 years from 1531–2, the building was owned by prominent merchant families, changing hands roughly every generation. Closer inspection reveals that these families stood in the second rank of "merchant lords" of the town, (the Claverings, Blacketts, Carrs and Ellisons formed the premier caste) and this building was usually owned by lesser representatives of those families. The legal terminology of the conveyancing documents obscures the family links between these families, the Andersons were related to the Mytfords and Bewicks (Welford 1885, 179), Cuthbert Bewick's wife was Robert Hunter's sister, while William Bewick (brother or cousin of Cuthbert) married the sister of Ralph Grey (Howell 1967, 88) and Ralph became Cuthbert's apprentice in the Hostman's Company in 1605 (SS CV, 229). An additional observation of relevance is the association of this extended group of inter-related families with the clique of prosperous and educated families professing the Puritan sympathies that became increasingly prevalent in the political scene in Newcastle from the 1620s (Howell 1967, 214) and culminated with the election of Robert

Bewick, the first Puritan mayor, in 1639, on the eve of the Scottish occupation. Originally a house, the property was downgraded or converted to commercial use for storage (cellar and three lofts), and seems to have been passed around as a minor asset for junior members of these mercantile families.

An indication of the use of this kind of vertical warehouse is given in an anecdote of around A.D. 1684, quoted in the Memoir of Ambrose Barnes, referring to another building elsewhere on the Close, where a thoughtless apprentice stood a candle into a lidless barrel of gunpowder!: ". . . the lofts were three stories high, very large and stowed full with whatever is combustible, as brandy, oil, pitch, tar, rosin (resin), alum, hops, and many barrels of gunpowder." The day (and much of the lower town) was saved by a stout-hearted workman, who lifted the candle out with his cupped hands, so that no sparks or hot wax fell on the powder (SS L, 237).

The documentary evidence for the later 18th century onwards takes the form of Trade Directories, Census returns and newspaper cuttings. The building is number 20 The Close until 1855, and number 32 thereafter. First mentioned by number in White's Directory of 1838, it was occupied by a silk dyer, James Pollock. That family first occurs in Whitehead's 1778 directory as "John Pollock, middle of Close, Dyer", and again in Whitehead's 1790 directory as "John Pollock, near Longstairs, the Close, Dyer". By 1841 (Census Return), a J. Robson, family and servant, are resident in the building, occupation also dyer. The property was empty in 1851, but in 1853 was occupied by a grocer, J. Bootham (Ward's 1853). A cooper, John Arthur, had premises on the other side of Long Stairs, at No. 18 The Close, No. 20 (present Cooperage) was empty again in 1855 (Ward's), and occupied by another grocer/provision merchant between 1859 and 1876 (Ward's 1859, 1861, 1864 and 1876). John Arthur acquired No. 34 in 1863 and No. 32 (present Cooperage) between 1876 and 1880, the premises becoming a landmark in the street for nearly a century, until the family business moved, after six generations on the Close, to new premises at Throckley Industrial Estate, Ponteland, in 1974 (*Northern Businessman*, 22/8/1973). The building was converted to its present use shortly afterwards, with bars and staircases added, but with surprisingly little alteration to the structural frame or the brick-filled wall panels.

THE SURVEY

Introduction

Detailed recording of the fabric of the building was restricted to areas directly affected by the planned alterations, principally the third floor with its roof-space. It was a requirement of the survey that as well as recording the fabric of the building, drawings would be produced at a scale of 1:20 which could be used by the architect, Mr. J. C. Coulson of Newcastle. In addition to the survey work, a three dimensional reconstruction of the building was produced, from a series of plans and elevations produced when the building was last renovated in 1975.

To avoid labour-intensive hand drawing, the recording was undertaken using the following procedure; black and white rectified photographs were taken of the relevant parts of the building (the brick-panelled side walls and gables of the top floor and the stone walling of the ground floor), using a large format camera set up on measured baselines parallel to the subject. This process was facilitated by the unpartitioned cruck construction of the roof which provided a large area of uncluttered floor space. The angle of slope of each wall was measured using a clinometer and the backplate of the camera tilted to the same angle. Small markers positioned at known distances apart provided a scale and indicated a true horizontal plane. Once this initial setting up procedure was complete it was possible to photograph a considerable area in a relatively short space of time. The photographs were enlarged to $15'' \times 12''$, which was an adequate size to show the necessary level of detail, and were digitized using a computer-aided design system (AutoCAD) which is employed by the Unit for a

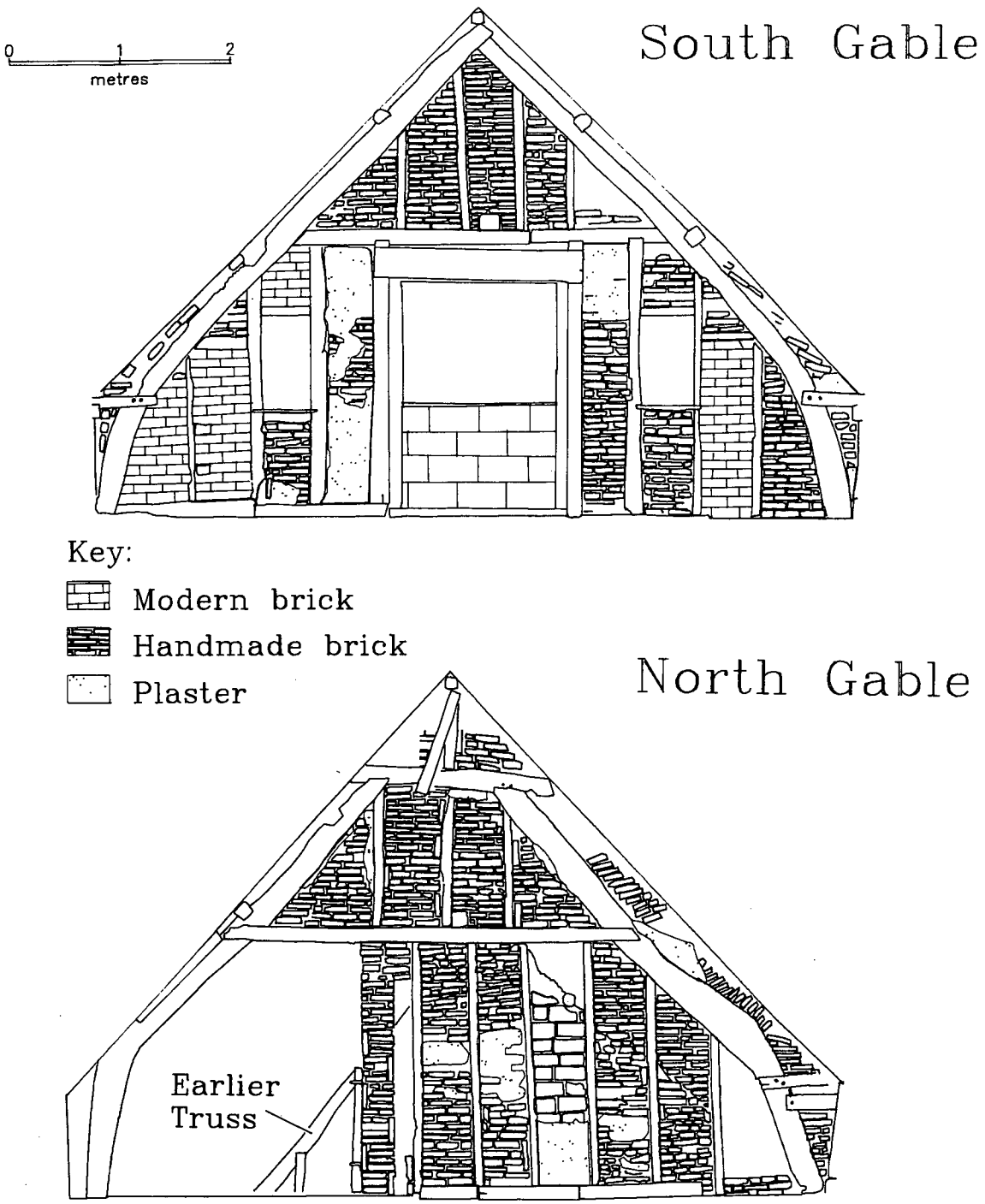

Fig. 2 The Cooperage: Third floor gables, north and south.

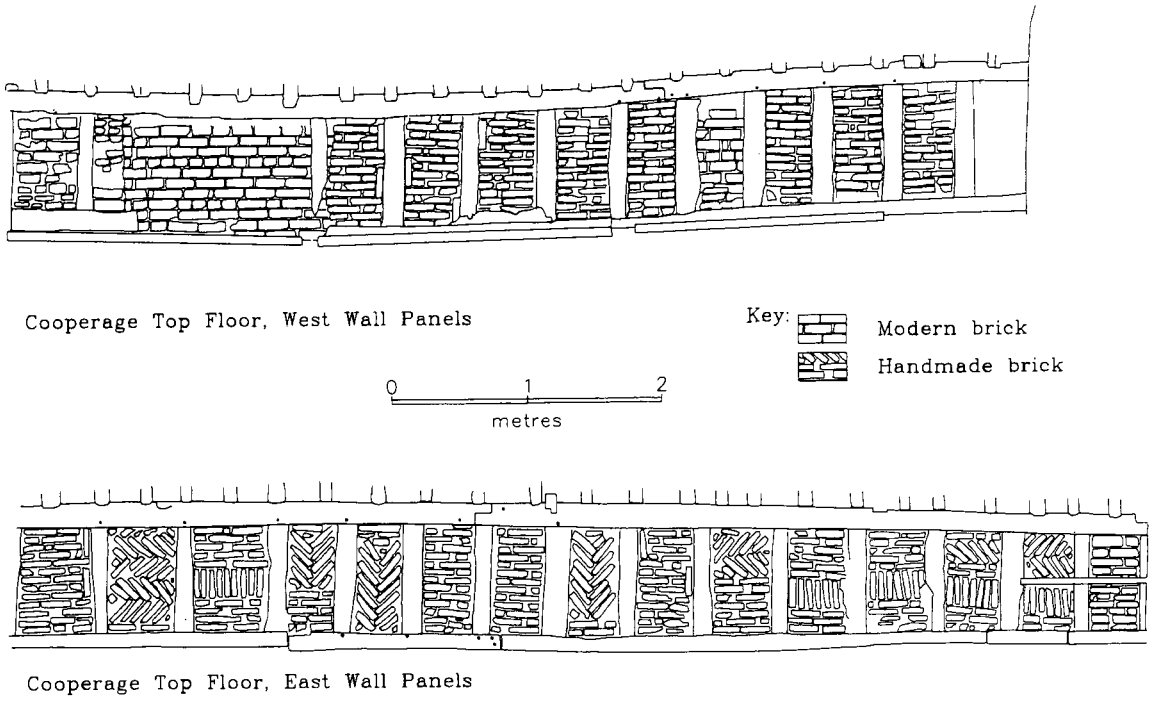

Fig. 3 The Cooperage: Third floor wall panels, east and west.

variety of archaeological applications. Digitizing involves a process similar to tracing but once the drawings have been input they may be manipulated in a variety of ways before production of the final image. For example, where it had been necessary to photograph a given wall in sections these could be reassembled easily before plotting. The drawings in Fig. 3 show the brick panels on the top floor of the building which were recorded in this way, requiring four photographs for each side. This is the first such application of the technique.

The three dimensional reconstruction was produced by digitizing existing plans and elevations, creating a 3-D model of the timber frame. The surveyed elements were then incorporated to add detail where available, e.g. to the gable elevations (fig. 2). Using AutoCAD the building could be viewed from any angle, including inside, and from positions which would be impossible in reality, for example from behind. Such a reconstruction is clearly valuable for illustrating and understanding the construction of the building and interpreting its phasing.

The Evidence

The well-preserved fabric of the structure offers sufficient evidence to produce a basic construction history, split into five phases, and illustrated in Figs 4 and 5. This is backed up by an analysis of the carpenter's assembly marks which survive on the front (south) and side (east) elevations, and on the faces of some of the crucks. The jointing is uninformative throughout, consisting of simple square lapped scarf joints on all floors, but the final phases (4 and 5) are distinguished by the use of steel nails and hand-made bolts.

Phase 1 (fig. 4, 1)

Stone walls stand to a height of 5·57 m (18′ 5″) on three sides of the building, with the front wall now dominated by a 19th century façade, with door and windows at ground level and timber-framing at first floor level. The full

height of the stone walls is only seen on the Close frontage, as the steep slope of the Long Stairs obscures the side wall. That these walls may predate the timber-framing is suggested by two observations. Firstly, the stone side walls originally returned across the front, but were broken off before the first floor timber panels of Phase 2 were added, leaving very uneven ends, as can be seen from the old print of the front elevation (fig. 6). Secondly, the tops of the walls were not fashioned to house the frame of the next storey, so that the eastern jetty beam of the second floor perches on top of the stone wall instead of being rebated into it, as would be expected if they were contemporary. Similarly, the eastern ends of the third phase floor joists to the rear of the jetty beam sit on the wall, rather than on a timber wall plate set into the top of the wall, or into sockets protected from the weather in the inner face of the stone wall. This aspect may only reflect poor building technique, but with the evidence of the uneven stubbs of the stone wall ends, the balance of probability suggests that the timber frame is a later addition to a two storey stone structure, with door(s) and windows on the gable frontage, as speculatively shown in Fig. 4, 1. The documentary evidence of 1543 relates that the house became ruinous and is described as "waste stone walls"; it is possible that the stone door surround, window jambs, mullions and lintels were robbed and reused elsewhere, causing the collapse of the front wall of the unoccupied house, while the side walls were left substantially intact.

Other internal detail is almost totally absent, although the plaster-covered west and north (rear) walls may yet contain evidence of the fire-place and the stair-case. Without such detail it is almost impossible to date the construction of the structure, or to speculate as to whether this was one of Roger Thornton's houses either side of the Long Stairs. By the 1530s, widow Bartram was living here, and it was ruinous by 1543.

Phase 2 (fig. 4, 2)

The renovation of the stone, Phase 1, building was undertaken in timber, with the gable façade emphasized by jettying. The framing pattern employed is not typical of a jettied elevation, which would usually have employed the jetty beams as floor beams across the building, so that the load of the jetty wall, pivoting over the supporting cross beam (bressumer), would act as a lever to put spring in to the floor and create a dynamic frame section. Here, the floor joists are transverse, except for 2·55 m at the front, where a row of 13 beams project out as the jetty beams. That the jetty was added to a flat-faced structure is unlikely, as the transverse floor beams would then have been spaced to place the first beam (from the front) at the southern end of the stone wall, which is not the case.

The timber-framed panelling of the first floor frontage has tall, narrow studs, and straight, short and narrow bracing. A central panel of much larger width is framed by a pair of more closely spaced studs, to provide a door opening, but this must be a later alteration as the timbers on either side of the door lack dowel pegs, there being a single empty peg hole for a now missing stud mid-way between the later door jambs.

A sequence of carpenter's assembly marks can be seen on the jetty beam, studs and wind bracing, cut with a knife across about half the width of the timbers. They count from the western corner, I, II, III corner brace, IIII, V, VI, VII, next two studs are later door jambs—marks absent, ?IIII, weathered, ditto, ?X, ?VI, corner brace, weathered. The ?IIII next to the later door is probably VIIII; the missing number is evidenced by the empty dowel socket, as mentioned above.

This is the structure mentioned in the Anderson/Lumley/Mitford deeds. These give no indication of function, and the building itself could have been used for residential or commercial purposes. The door onto Long Stairs may well date to this phase, in having a timber lintel, although it could be later. Its presence suggests that the building may have been partitioned, with a ground floor frontage used as shop premises, and the upper floor used for storage or as living rooms. The evidence for internal partitioning may survive, but

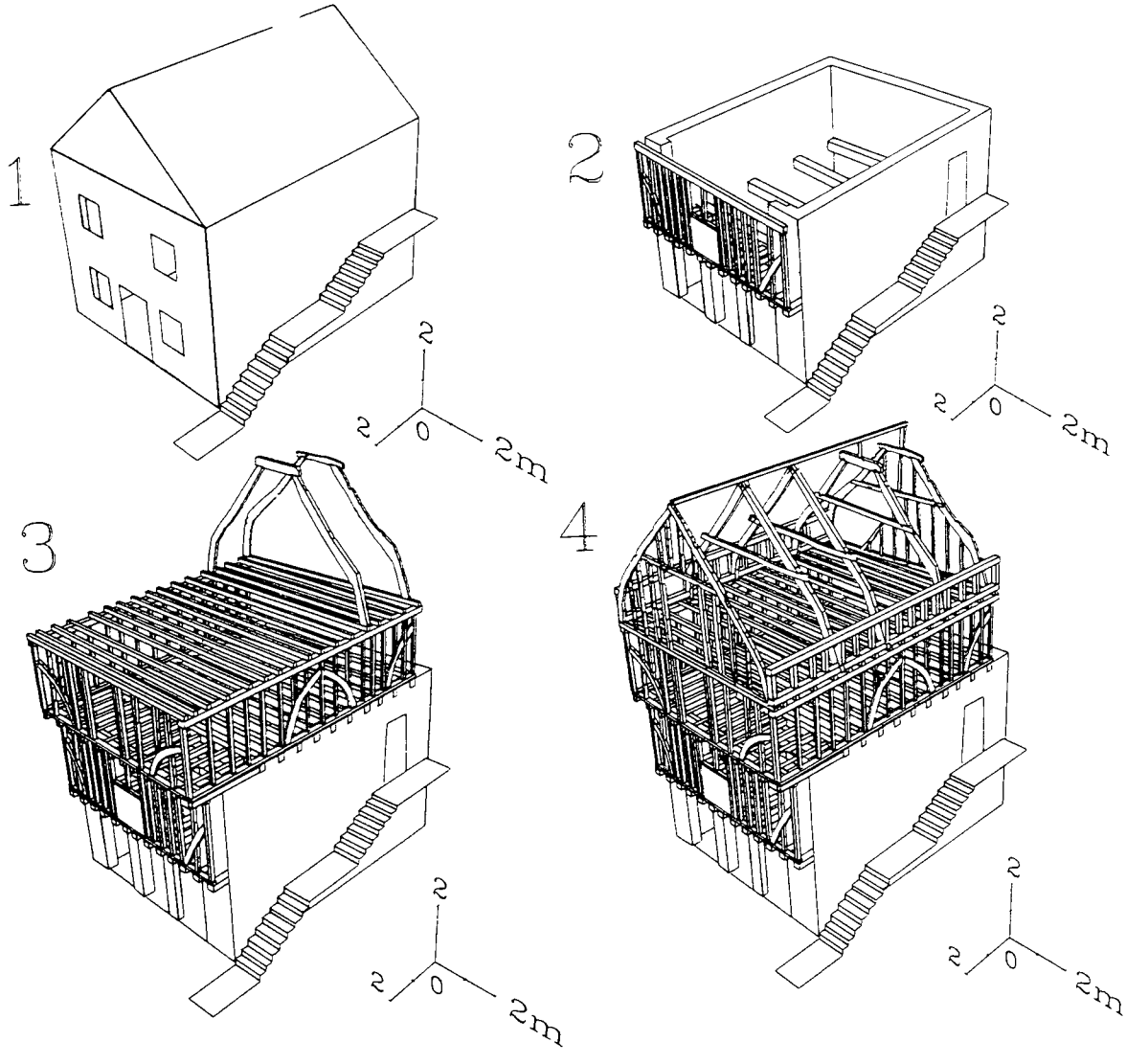

Fig. 4 The Cooperage: Phases 1–4.

would only be exposed by a major renovation of the public house interior.

Phase 3 (fig. 4, 3)
This phase saw the heightening of the building by adding a further jettied floor. The basic frontage design was followed, but using slightly more substantial studs, and stronger, more curved bracing. The frame is 0·30 m taller. The side elevation has tall panels of similar proportion, with bracing on each side of the central stud, and at the rear, but not, for some reason, at the front corner. The floor is supported by 10 small, sawn, transverse beams as flooring joists, contrasting with the four full, waney timbers of Phase 2. This would give a more

even spread of internal load, suggesting that warehouse storage was intended as the function for this floor. A similar arrangement is used for the ceiling at this level (i.e. the floor of the storey above), possibly for the same reason.

Two pairs of cruck blades in the existing roof may belong to this phase. These are the two northern-most pairs, shown on Fig. 4, 3; although they are now part of the Phase 4 roof, and one bears a carpenter's mark which hints that they may have come from another building altogether (see below): they will be described here for convenience, and to separate them from the other three cruck pairs, which they appear to predate in design and construction. The paired blades support tenoned collars fixed by two dowel pegs on each side. The ridge purlin, 1·1 m above the collar, was carried by a central post (king post) which has probably been replaced in its present position, as the rest of the truss is of oak and the present king-posts are of soft wood.

The carpenter's marks for this phase are most evident on the eastern exterior elevation, counting from south to north. They are knife-cut, but employ different characters from the Phase 2 marks, having elaborate Vs which often resemble Ys, Xs that run into or incorporate strokes from adjacent numbers, and the numbers cover the full width of the timber. There is a mistake in the counting after the centre post, and the X has been replaced by WV, which also occurs on the reverse of one of the cruck blades of Phase 4 (see below); the first four are weathered, V, weathered, VII corner brace, VIII, VIIII centre post, WV, XI corner brace, XIII, XII, XIII, XIIII corner brace, XV, XVI.

The gable face marks are too faint to be legible; only one, on the eastern corner brace is vaguely clear, VIIII, which agrees with the normal counting from the eastern corner.

The southern collared cruck has a carpenter's mark of similar appearance. This is a number VII, suggesting that it originally came from a roof larger than the present five truss roof, either from another building altogether, or a phase in the present structure when a rear extension shared a common roof (see below, p. 14). The more southern of this pair has a further mark resembling the WV of the tenth stud of the eastern elevation (see above).

Phase 4 (fig. 4, 4)

The third floor consists of a loft within the open roof space. The roof has five pairs of cruck blades supporting a single purlin on each side, a ridge purlin, and rafters. Most of the secondary roof timbers were replaced last century, when the present pantile roof was put on.

The walls are of half height, and consist of brick-filled panelling of similar character to that of the panels of the floor below (fig. 2). Various episodes of repair have left the brickwork in a variety of patterns, including herring-bone, which is often associated with early brick construction. The wall panelling sits directly on the floor boards, and is not jointed into the second floor frame, which, together with the evidence of the carpenter's marks, reinforces the idea that this is a later addition.

The end gables (fig. 2) are of crude rectangular framing within the cruck, with panels filled with brick nogging. The northern gable has seen much repair, but neither gable has herring-bone nogging.

Immediately to the rear of the north gable, and a little lower in height, is the gable of another roof, similar in appearance, but with a frame of rafter size timbers instead of the oak cruck blades of the main roof. It is now sandwiched tightly between the north gable of the main building and the south gable of the modern rear extension, and as such it was not possible to survey in detail, but it can be seen in the north gable frame in the gaps for the door and where filling has fallen out in the fourth panel from the east (fig. 2, north gable). Here, the rear frame has been fastened to the main gable by a stout purlin, supported by a series of bricks stood on edge, suggesting that the rear gable is later in date, and represents the end gable of a now lost timber-framed rear extension. The suggestion that this shared a common roof in Phase 3 has been made above, to explain the number VII on the southern collared cruck (see above). An alternative pos-

sibility that this was an earlier, possibly temporary, frame predating the final roof raising of the frontage building is less likely.

The carpenter's marks found on the Phase 4 timbers are deeply chiselled rather than knife-cut, using a blade about an inch wide. The X has been rotated 45 degrees to become +. On the western wall, they count consistently from south to north, I–+VI. The south gable frame appears to lack marks both inside and out, probably because the timbers are nailed rather than jointed with dowel pegs. A further series of marks of identical type are chiselled into the southern face of the crucks, counting from north, I–IIII, with none visible on the southern gable (seen from outside).

The building at its fullest extent must represent the "tenement ... and cellar ..." of Ralph Bowes marriage settlement, 1649, more explicitly "three lofts and cellar" of the 1650 Thomas Davison lease. We know that the building does not have an underground cellar—the proximity of the Tyne precludes such a possibility—the term probably reflects the fact that the ground floor extended into the hillside to the rear.

Phase 5 (fig. 5)
This is an arbitrary grouping of the later insertions of supporting posts to strengthen the original frame in the first three floors. The ground floor saw two episodes of adding support, an initial attempt at bracing the main ceiling beams by bolting new timbers along each side was found inadequate and new beams had to be put in at right angles, held up by new posts in aisles across the room and also along the walls. The second and third floor supports are of different periods. The workmanship of these later alterations is predictably poor, but if more plentiful resources were available to the later owners it is almost certain that the building would have been completely demolished and replaced by a new, more suitable structure, as seen for example to the rear of No 35, The Close (present Quayside public house).

DISCUSSION

There is no evidence that any part of the present building dates back to the establishment of the Close in the early 13th century. The sandstone walls of the first phase lack diagnostic features, but they may well represent the renovated remains of the ruined walls of the 1543 document (*AA* 1, III, 21), which would suggest that the building in its present form dates from the mid-16th century. This would be compatible with the character of the carpentry and the method of construction, which is of simple post-and-rail type, with the narrow scantling (timber panel rails) and curved corner bracing typical of the latest generation of timber-framed buildings in northern England (RCHM(E) York V, 14). Post-and-rail built timber houses of later date are found to the east, on Sandhill, where the form was taken to its structural limit on the glass-fronted tower block residences of the merchant families trading from the Quayside (Pevsner 1957, 243). This building method is suitable for small, intimate apartments, but cannot provide the large halls or open house bodies of the more complex frame types.

The use of stone walls for the ground and first floor is a feature of the Newcastle vernacular tradition, enforced by Order of the Common Council in the form of a Building Assize. This was compiled during the later 16th century by the Corporation's Clerk at Law in a manuscript called The Black Book, but internal evidence shows that it must pre-date A.D. 1535 and may well be considerably older (North 1985, 41). This assize consists of a set of regulations used as a reference to settle disputes between the burgesses over such things as party walls, common gutters and the proximity of privies. This rare survival gives a minimum specification for stone walls used in building construction: 3 feet wide and 16 feet tall—roughly the dimensions of the Cooperage walls. This explains the uniform use of stone for the lower storeys of timber-framed buildings in Newcastle, e.g. Bessie Surtees House and Milbank House share exactly such a party wall, while the substantial stone, two storey

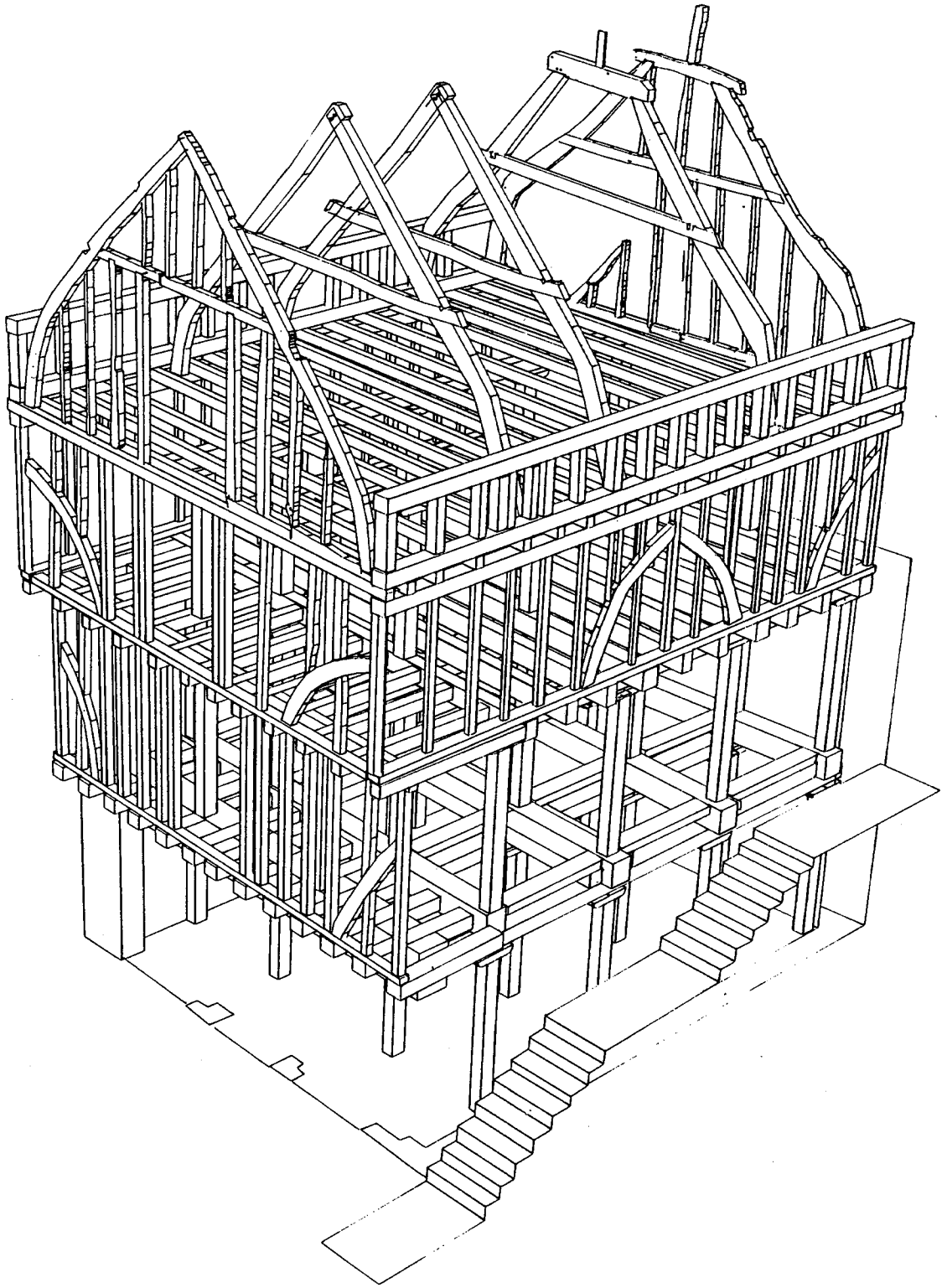

Fig. 5 The Cooperage: Phase 5.

Fig. 6 The Cooperage: Front elevation: 1879–80 (By courtesy of Newcastle City Libraries).

walls of the Madison House at the back of that plot were proof even against Lord Gort's alterations. The evidence at the Cooperage suggests that these early building regulations encouraged the reuse of stone walls of an earlier structure.

The absence of such unifying features at Durham reflects a different organization of the construction industry; here the overlord (bishop or prior) dictated the construction technique and provided the principal building material, sometimes stone for foundation work, as with the tenement of Robert de Merington in A.D. 1392 (Bonney 1990, 87) or alternatively, just timber, as seen at 32 Silver Street (Roberts 1985, 53). In Newcastle, the tenant appears to have been responsible for all aspects of building erection, hence the need for some form of corporate control to prevent nuisance or danger to neighbours. Intervention by the overlord (often one of the hospitals or the bridge chapel) appears to have been restricted to the occasional use of a clause in the tenure to ensure that the tenant maintained the buildings on the messuage so that the farm could be levied (e.g. SS 137, 172).

The general design of the Cooperage appears to be typical of Newcastle structures of this period. Illustrations of the long demolished Chapman House at the foot of the Tuthill Stairs show a very similar design (Welford 1889, 319–321), and a surviving timber-framed building at 32, Silver Street, Durham, shows that certain aspects of the tradition seen at the Cooperage are not restricted to Newcastle (fig. 7). The framing pattern is very similar, as is the use of very basic scarf-jointing. The lack of diagonal braces in the Silver Street earlier phase was crudely altered at a later date (fig. 7, 3). Similar gable frames can be seen in Newcastle on the rear wing of the Milbank House, Sandhill (which predates the 1930s Lord Gort renovation) and, in a later variant lacking the cruck frame, across the road from the Cooperage on the east gable of the river frontage of the present Quayside public house. This last mentioned example has a single (king) post above the collar rather than two, three or four posts resting on the collar of the larger Millbank, Cooperage north and Cooperage south, gables, respectively.

The later phases of the building date to the final period of timber-framed construction in the town; the use of the chisel to cut the

Fig. 7 Front elevations; The Cooperage and 32, Silver Street, Durham.

carpenters' marks of the Phase 4 panels is one indication of a late date as this was a relatively late introduction into the carpenter's tool kit, as is the use of 17th century brick for the panelling. The final change from timber-framing to all-brick construction probably took place in the final quarter of the 17th century, although this needs to be confirmed by further research.

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