

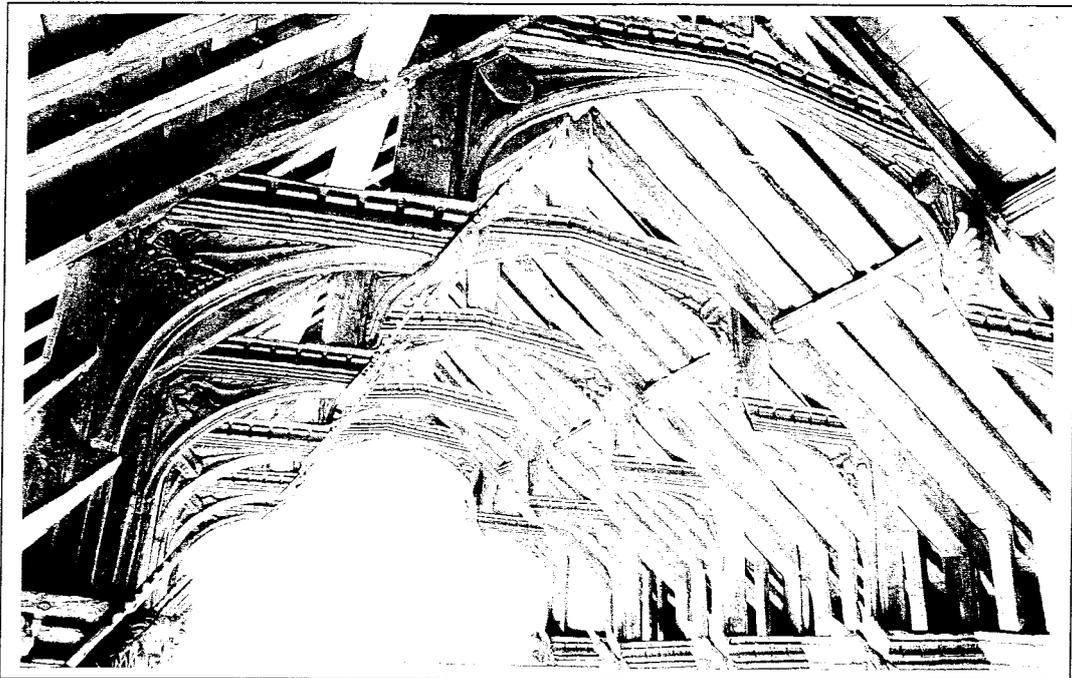
Church of St Mary

Gissing

Norfolk

Record and Analysis Report into the

Nave and Chancel Roofs



Prepared by:

**Wilson Compton Associates,
32 Trinity Street,
Norwich,
Norfolk,
NR2 2BQ.**

Tel: 01603 662901

Fax: 01603 614814

e-mail: eng@wilsoncompton.freemove.co.uk

June 2006

Contents

List of Illustrations in the Text	iii
List of Rectified Photographs	iii
Summary	iv
1 General History of the Church	1
2 The Restoration of 1876-77	5
Excavators', Bricklayers', Tilers' and Plasterers' Work	7
Stonemasons' Work	8
Carpenters', Joiners', Smiths', and Ironmongers' Work	9
Plumbers', Painters' and Glaziers' Work	10
3 Description of the Nave Roof	11
4 Development of the Hammerbeam Roof	15
5 Gissing and the Suffolk Connection	16
6 Description of the Chancel Roof	17
Chronology	19
Bibliography	20
Endnotes	20

List of Illustrations in the Text

- 1 View from the north-east
- 2 Nave roof, looking west
- 3 Ladbroke's drawing from the south-east
- 4 The same view in 2006
- 5 Anonymous early 19th century drawing from the north-east
- 6 R.M. Phipson's plan, 1876
- 7 R.M. Phipson's section of the nave roof, 1876
- 8 Detail of south side of the nave showing rebuilt wall
- 9 Detail of restored south door
- 10 Detail of north side of the nave roof
- 11 Nave roof, looking west
- 12 Detail of hammerbeams, south side
- 13 Detail of principal truss, south side
- 14 Upper 15th century angel at truss No. 6, north side
- 15 Section through wall plate, bay No. 6, north side
- 16 View looking west between ashlaring and hammerposts, north side
- 17 Detail of ashlar struts, north side, bay No. 6, showing laminate ply effect, and trench in the principal rafter No. 7 to take boarding
- 18 Boarding trench in truss No. 3, north side
- 19 Hammerpost of truss No. 6, north side
- 20 Cawston, Norfolk, nave roof
- 21 Woolpit, Suffolk, nave roof
- 22 Gislingham, Suffolk, nave roof
- 23 Coddtenham, Suffolk, nave roof
- 24 Chancel roof, looking east
- 25 Chancel roof, detail of hammerbeams on north side
- 26 R.M. Phipson's section of the chancel roof, 1876

List of Rectified Photographs

- 1 Nave roof, looking west
- 2 Nave roof, upper registers, looking west
- 3 Nave roof, north side, looking north-west to bays Nos. 1-5
- 4 Nave roof, south side, looking west along line of lower hammerbeams
- 5 Nave roof, south side, showing truss No. 5
- 6 Nave roof, north side, bays Nos. 1-3, detail
- 7 Nave roof, north side, view west between lower hammerposts and ashlar struts
- 8 Nave roof, north side, showing trench for former ashlar boarding at truss No. 3
- 9 Nave roof, north side, detail of base of truss No. 5
- 10 Nave roof, north side, detail of upper hammerpost angel at truss No. 6
- 11 Chancel roof, looking east
- 12 Chancel roof, north side, detail of hammerbeams

Summary

Little is known of the early history of the church apart from the fact that its foundation is post-Conquest, and it came in the early 13th century under the patronage of Butley Priory in Suffolk, and of donations to the fabric only that money was left in 1474 for the new north porch and six further donations of vague purpose from the Reformation to the early 17th century. Later primary documents are rare, scant and chronologically scattered, but all that have survived have been examined. The nave roof is one of the most celebrated double hammerbeam roofs of East Anglia and is of the first quality and importance in a region which specialised in the type, and it owes its unusual charm to the narrow width of the space it spans and so has all its elements confined to a compact space. In its decoration it is spare, which is usually one indicator of early date, but little may be gathered from that point as there was a great deal of variation. The earliest of all fully-formed hammerbeam roofs was erected over the great hall of Westminster Palace by Hugh Herland in 1395-99, and the first in Norfolk is that over the nave of St Peter Mancroft church in Norwich in 1431-2, although in many details the Gissing roof relates more to hammerbeam roofs over Suffolk church naves, particularly Coddensham. The comparisons made in this report and a brief consideration of moulding profiles and individual details allows a date range of c. 1450-75 to be made, but there is no evidence to narrow it down further. It may have been constructed shortly before the north porch was taken in hand. At some stage in the last quarter of the 15th century two new Perpendicular windows were inserted into the south side of the nave and one in the north side, which required trimming of the bases of the wall posts under the principal trusses.

Remedial work to the church in 1644 does not relate specifically to either the nave or chancel roofs, but the churchwardens' accounts of 1687 tell of a complete re-tiling of the nave roof with plaintiles, possibly replacing thatch, and extensive works to the north porch including blocking the parvis staircase. By 1737 and 1738 the timber of both nave and chancel roofs were giving concern and in those two years a renovation was undertaken, but those are the last available accounts until 1885, although Francis Blomefield's description of 1759 informs us that the nave tiles had been removed in favour of lead, a situation which was, to judge by two early 19th century drawings, in turn reversed before about 1800.

By the 1870s the condition of both nave and chancel roofs, and indeed the whole fabric of the church, was serious and a major restoration was undertaken in 1876-77 by R.M. Phipson, the then Diocesan Surveyor, with George Grimwood & Son as the contractor. The scope of the work was extensive, involving the complete removal of both roofs which were then reconditioned in Grimwood's yard, with all decayed timber cut out and replaced like-for-like. At the same time both the nave and chancel east walls were rebuilt (with an entirely new east window to a different design to that which previously existed), the tower and north porch were renovated, the parvis doorway reopened and much of the remainder of the fabric rebuilt. The nave roof fared well in this restoration, and although nearly half of the secondary rafters had to be replaced, and all of the boarding over them, the work was both competent and conscientious enough to allow easy identification of those parts which are original, which is the vast majority. The only material change was the removal of the ashlar boarding, probably to allow better ventilation to the bases of the rafters and wall plate, but that act has permitted an examination of the way such boarding was fitted in the 15th century. The chancel roof proved to be so decayed that it had to be completely rebuilt along the same lines as the old, although the original was a poor and weak interpretation of a hammerbeam structure and is of unknown date. Probably it was built new during an unrecorded 16th or 17th century campaign.

The old plaintiles had been reused during the 1876-77 restoration, but they were incorrectly laid and had to be stripped off and replaced with Brosely tiles in 1884, and other works intended to have been carried through in the 1870s, such as the

new seating, had to wait until 1898. No further works have been done to either roofs apart from the insertion of tie rods in 1903, and 20th century Faculties relate only to the usual installations of new heating apparatus, electric lighting and additional monuments, plus a new screen in 1957.

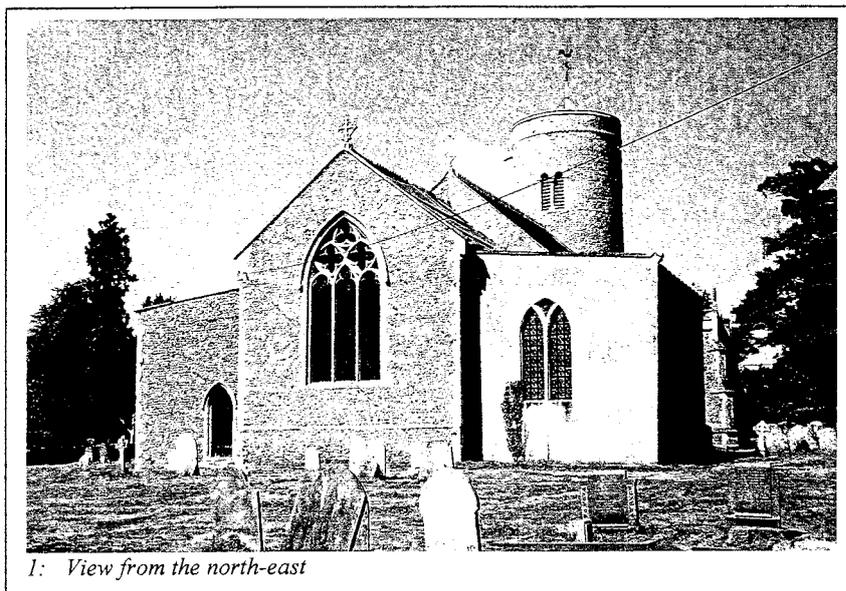
Church of St Mary, Gissing, Norfolk

Record and Analysis Report - Nave and Chancel Roofs

Note: all comments in square brackets within quotations are the author's

1 General History of the Church

There is no mention of a church at Gissing in the Domesday Book of 1086¹, and the first reference to it is in 1209 when the rectory was in the patronage of Butley Priory, Suffolk. In 1217 the church itself was also granted to Butley and it stayed in their possession until the Reformation when the holding passed to the crown. In 1563 Elizabeth I by Letters Patent granted the lands and privileges of Butley to Edward Dyer and Henry Cressinor but retained the rectory for the crown, until Charles II granted that too to the Kemp family². Little else is known, although there were various donations to the fabric, and in c. 1280 Sir Nicholas Hastyng founded a chapel in the churchyard and endowed it with a messuage³ and other lands, but, as Blomefield noted in 1759 'it is now quite gone and we do not know in which part of the churchyard it stood'⁴. In 1474 Robert Scale in his will left 40s to construct the porch and a further 40s to repair the benches, so that at least gives us a date for the north porch⁵, but the other donations are all post-Reformation: in 1537 John Tiler gave 20s 'tho the church', Barthylmew Kempe gave 3s and David Broome 35s 8d 'to the use of the crosse'⁶. In 1550 John Taylor donated 26s 8d to repair the causeway, in 1598 Joan Freeman provided 13s 4d 'to the church' and in 1621 Thomas Proctor left 40s for 'the town stock' in his will⁷. None of these donations, save that for the north porch, tells us anything of the fabric, and there is certainly nothing which relates to the nave or chancel roofs, which must have been built around in the third quarter of the 15th century.



1: View from the north-east

In 1644 the churchwardens' accounts note an expense of 2s 3d: 'Item for tiling the church', which must mean a partial re-flooring, perhaps of the central aisle between the pews, as the money would not have run to a complete job. The accounts for the year 1681, 1682 and 1683 each contain a single reference to glazing the church windows and glazing the porch, and in

1687 comes the first evidence of repairs to the nave roof (and work to the porch), which would then have been about 220 years old⁸:

Easter An^o Dni. 1686 & An^o Dni. 1687

Disbursements	
Imprimis four load of tiles	4 - 16 - 0
Item one load of brick & carriage	0 - 14 - 6
Item for Roof tile	0 - 1 - 0
Item for Nayles	0 - 3 - 8
Item Larth 9 bunches	1 - 2 - 6
More 6 bunches	0 - 15 - 0
Item for Tiling ye Church, workmans wages	3 - 4 - 6
Item tile pins	0 - 7 - 0
More to a workman	0 - 4 - 9
Item Paving Brick	0 - 1 - 0
Item lime & for ye porch	0 - 5 - 9
Item for making clean ye Church	0 - 6 - 6
Item ye Church Bible binding	0 - 15 - 0
Item sand & fetching of it	0 - 10 - 0
Item Lime a chaulder & halfe ⁹	0 - 18 - 0
Item Eves Board for ye Church	0 - 11 - 3
Item layd out at ye Bishops visitation as appeared by bill	1 - 18 - 1
Item layd to Stratton & other Expenses as appear by Bill	
Received & allowed	5 - 14 - 3

This is a substantial job, certainly meaning that the entire nave roof was retiled on new larch laths using 7s worth of oak tile pegs, 3s 8d of nails and complete replacement of the soffits and fascias ('Eves Board'). Before that moment the roof might have been thatched, and this begins a rather startling series of changes to the roof cladding. There was no need to replace any of the main roof structure, which was of very high quality and easily able to stand over 200 years without serious maintenance provided it was kept dry. At the same time the north porch was given new floor tiles and probably tidied up, but such was the quantity of lime, brick and sand ordered that the bulk of the work can only relate to sealing the parvis room and staircase, which was subsequently re-opened in 1876. It was paid for by raising the parish rate, and the motive would have been the necessity of making the building

weatherproof and neat in advance of the Bishop's visitation, which took place that year and cost the parishioners a hefty £1 18s, presumably mostly in food and drink for Bishop William Lloyd and his retinue.

If the roof timbers were still satisfactory in 1687 then by 1738 decay had set in and repairs were called for. The accounts read as follows (not all entries are repeated):

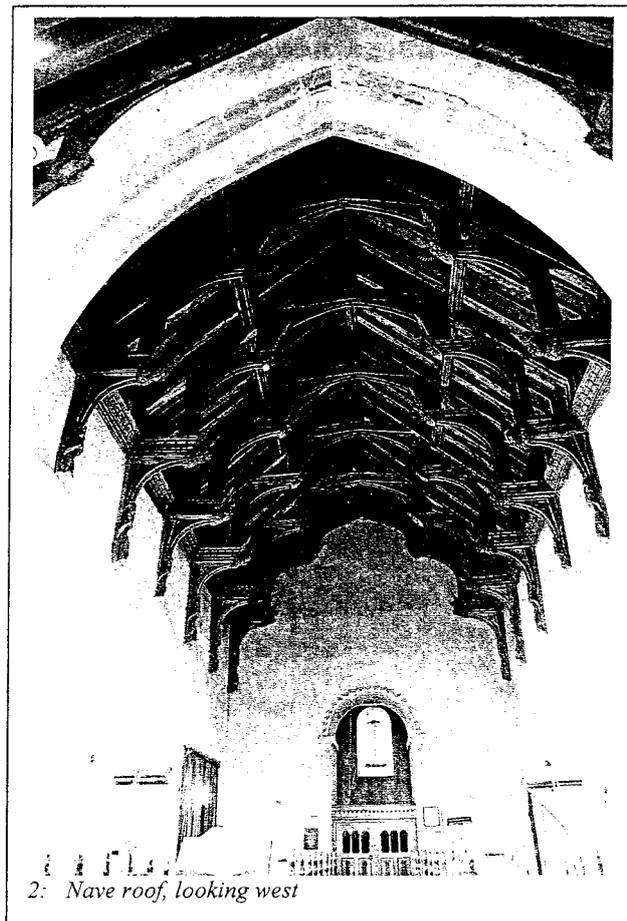
1737

October the 3 [illegible] a load of wood	0 - 6 - 6
October the 16 Collecting half a load of wood	0 - 6 - 6
October the 16 Ros Quelm had half a load of wood	0 - 6 - 6
October the 16 [illegible] half a load of wood	0 - 6 - 6
[November 13-15 four further half loads of wood paid for at 6s 6d per half load]	

1738

January the 5 Church roof had half a load of wood	0 - 6 - 6
February the 9 Paid for a load of wood for church roof	0 - 13 - 0
March the 19 for half a load of wood for church roof	0 - 6 - 6
March the 19 for half a load of wood for porch [illegible word]	0 - 6 - 6
April the 4 Paid for a load of wood for church roofs	0 - 13 - 0
For 2 [illegible word] for roof riges	0 - 4 - 0
More for 2 aprons and a pair of boots	0 - 2 - 9

The parish would of course have been buying firewood for distribution to the poor and for the church stove in the winter months, but the fact that the price per half load was the same for timber specifically for the church roof as for timber not so described certainly means it was all for the church, as firewood-grade material would hardly have been used. There is unusually no distinction in these accounts between buying, carting or labour, so these costs must be incorporated, for ease of accounting, into the various 6s 6d spent. One workmen however received two new aprons and a pair of boots in the last entry of all. Alternatively, the wood was stockpiled over months and the work of repair only carried out after the weather improved after Easter, so it is a pity that the churchwardens' accounts end with this entry. It would appear then that the nave roof (and in the entry for 4 April roofs

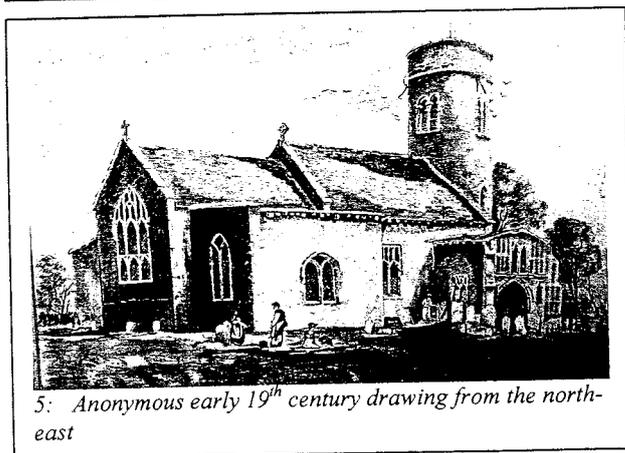
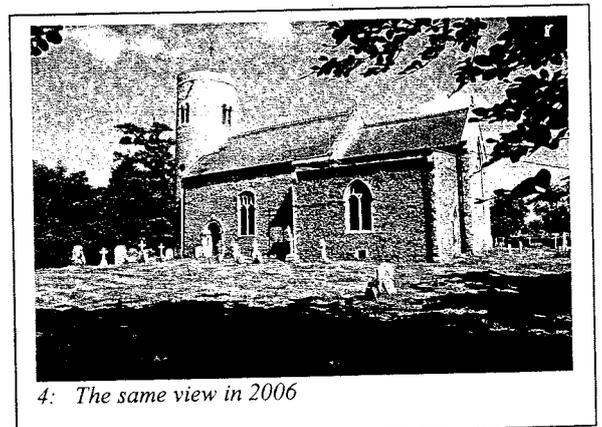
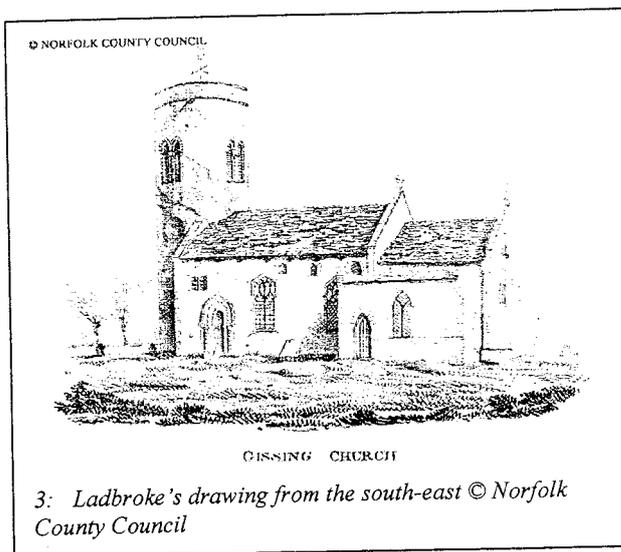


has a plural) was repaired immediately after Easter 1738.

The gap in the accounts spans a long period, from 1738 to 1885, so it is a surprise to learn in the first description of the church in 1759 that the tiles laid down in 1687 had been replaced with lead, demonstrated by Francis Blomefield's brief entry¹⁰:

'The nave is leaded, the chancel is tiled, and hath a chapel joined to each side of it, both which are leaded; that on the south side hath no memorials in it...'

Beyond these few fragments little is known of the construction of the church from documentary sources, although it is clear from the fabric that the building was built very soon after the Conquest, but not before the Domesday survey of 1086. The circular windows of the round west tower are therefore indeed Norman, not Anglo-Saxon, and must go with the two Norman doorways and the tower west window, and the same must relate to the long-and-short work of the nave west corners, done in Barnack stone. All this however has been so heavily restored in the 1870s that the details may be unreliable. The south chancel chapel is not a pure invention of Sir Kenneth Kemp in 1879 but rather a rebuild of one that existed in the 13th century, is mentioned by Blomefield and shown in John Ladbroke's 1823 drawing of the church from the south-east.



Ladbroke's drawing is augmented by an anonymous pencil drawing which hangs on the west wall of the nave of the church and is of a similar date. Both show that the nave plain tiles which had been reinstated since Blomefield's description of 1759 are in a state, with quite substantial missing areas on the south side, and also evident are various cracks and fractures all over the fabric, including the tower. Ladbroke's image shows that there were three small windows set high in the south nave wall, which

Phipson described as 'modern', and a further small two-light domestic window over the west jamb of the doorway. An oddity is that the south chancel chapel appears to be constructed of squared ashlar, not the present coursed flint. Given that the south chapel window has changed its design it is reasonable to assume that this too is Phipson's work. The anonymous drawing conveniently shows the church from the north-east, and gives a clear indication of the style of the Perpendicular east window, which is of a common pattern in East Anglia and datable no more precisely than c. 1420-70. Phipson has again been cavalier in his restoration of the north nave window, which has not just been restored but completely altered from a single square-headed Perpendicular window under a hood on label stops to two two-light windows with single reticulated vesicas. That the north porch was sorely in need of repair is confirmed by the large area of patching apparent in its east wall, but here at least Phipson has not judged that his interpretation of Perpendicular Gothic in the window tracery was superior to that of Gothic masons.

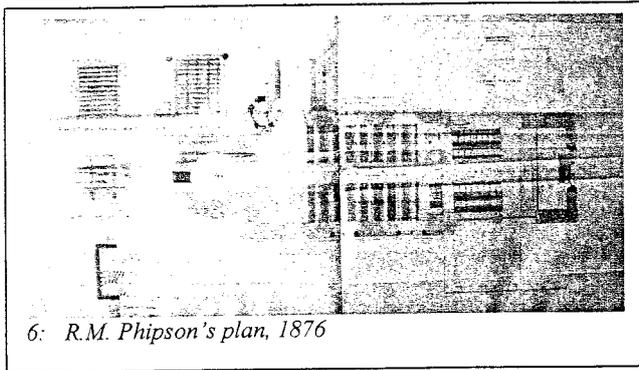
The later Faculties granted between 1948 and 1960 relate only to standard upgrading and reordering of the interior by provision of electric lighting, heating, and a new oak screen before the tower arch.

2 The Restoration of 1876-77

During the 1860s and 1870s it was becoming increasingly clear to the Rev. John Sharpe and the churchwardens that the building was not only in a desperate state of repair but was not really suitable for High Victorian needs. The west gallery, which must have been installed in the first half of the 18th century, was probably more-or-less redundant and every part of the roofs which could leak did so. The architect's specification for the works is so extensive that it forms a perfectly adequate testimony to the general condition, and since the entire cost of the restoration was borne by the rector personally it is highly unlikely that anything was done which was not absolutely necessary. The obvious architect was quickly chosen in the form of the then Diocesan Surveyor, R.M. Phipson of Surrey Street in Norwich.

Phipson went to work producing his plans and drawings and a Faculty was duly applied for, and received on 24 August 1876¹¹. The fact that the work to the church actually commenced more than two months previously is not uncommon, but in this case there was hardly going to be any risk of the architectural assessor throwing out his own proposals¹². Nobody objected to the disturbance of memorial slabs, which was just as well as the date for doing so was weeks after it had been completed. The Faculty summarises the works required:

Richard Makilwaine Phipson (1827-84) was the Norfolk County Surveyor in the 1860s and the Diocesan Surveyor from 1871 until 1881, when he retired in favour of Herbert Green. He had been a pupil of John Medland Clark and holds the record for the number of East Anglian churches he restored or built from scratch, nearly a hundred, twenty-six in Norfolk alone. Although he never aspired to the major league of Victorian architects he was extremely competent and meticulous even if he was less than historically accurate or sympathetic in his choice of building stones and styles and was not a fan of 18th century furnishings. He is buried in Kirby Bedon churchyard.

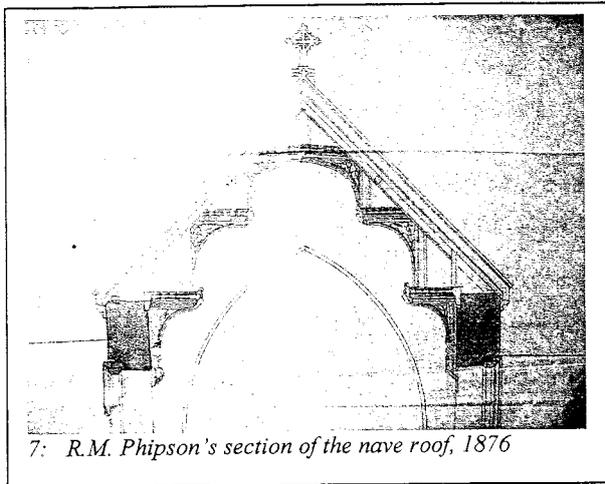


6: R.M. Phipson's plan, 1876

The 'church is greatly out of repair'...and it is proposed to take off the present roofs of the nave and chancel of the said church and to reconstruct repair and restore the same. To repair and restore the fabric generally and to repair and restore the north porch. To remove the west gallery and to re-floor and reseat the nave and chancel all memorial stones being relaid as nearly as possible in their present position'...And to 'execute other works in and to the said nave and chancel at a cost of £1,010 which will be provided by the said Rector...the whole of the said works to be done and executed according to certain plans and a specification which have been approved by a vestry

meeting of the said church and copies of which were then produced and were intended to be deposited in the Registry of our said Court'. Signed W.T. Bensly, notary public.

A second copy of the Faculty notes that of the £1,010 to be spent, £298 related specifically to the chancel¹³. On 6 May 1876 R.M. Phipson issued his specification for the work to be carried out at Gissing



7: R.M. Phipson's section of the nave roof, 1876

Church, divided into sections depending upon which groups of craftsmen were to be concerned¹⁴. It is a lengthy document and amounts to a virtual rebuild of the entire fabric short of reconstructing the masonry walls. While emphasis was placed on reusing what could be salvaged it is clear that the building was in a very poor state of repair and few areas were left

untouched. There is a considerable preamble, of which parts ten and eleven are standard for most mid to late 19th century specifications:

- X The Rector reserves to himself the power of making any additions to or deductions from or deviations in the several works
- XI [The works] are to commence on Monday 11 day of June 1876 to be completed and delivered up whole and sound to the Rector on or before Saturday 25 day of November 1876 or pay £10 per week penalty'

The lowest tender for the work was received from George Grimwood, a prominent builder based in Weybread near Harleston just a few miles to the south-east, although the tender document and the various contractors' quotes have not survived, assuming that the work even went out to general tender. Unfortunately for Grimwood,

George Grimwood & Son were a family firm of builders closely associated with the town of Sudbury. Founded in the 1830s by William Grimwood it expanded in the 1840s when his son George (the restorer of Gissing) was taken into partnership. By 1862 George's 17-year-old son G.H. Grimwood (subsequently twice mayor of Sudbury) joined the firm for the construction of the ill-fated spire of Foxearth in north Essex. They were a large firm capable of big commissions such as the Ipswich Union workhouse in 1898-9 and the new church at Harleston of 1872. The latter was designed by Phipson, and the architect often specified that Grimwood & Son were to be used, so there may not have been a formal tender for Gissing. By the 1870s George Sn. was based at Weybread and his son at Sudbury.

seven years later the work to the nave roof was found not in fact to be 'whole and sound', although the Rev. Sharpe seems not to have interfered and the contractor did not suffer immediate penalties for late completion. The following is a summary of the principal requirements:

'Excavators Bricklayers Tilers and Plasterers Work'

The whole floor of the church was taken up and the ground beneath excavated for the foundations of the new sleeper walls, while the ground level on both sides of the building was lowered and the spoil dumped at the south side of the churchyard. A new parvis staircase was built to the room over the north porch on concrete foundations and serious fractures in the chancel east wall were dealt with by underpinning on a subterranean concrete raft. All of the plaster with



8: Detail of south side of the nave showing rebuilt wall

which the exterior and interior walls were covered was chipped off and a new cement render finish applied, and once the roofs were removed (rather astonishingly this means all of them, even that over the porch) the tops of the walls were repaired and levelled to receive new plates on 9" sleeper walls and were 'beam fill[ed] throughout'. The east and west gables were taken down and rebuilt, the brick tower parapet and stringcourse below it were removed and rebuilt in flint, and four 'air drains' were provided round the church below the new floor level and fitted with 'No. 4 air gratings in same'. All the jambs and arches of the windows were taken out and replaced, and the 'modern clerestory' windows to the south side of the nave (shown in Ladbroke's 1823 drawing) were removed and the holes filled in. The north side of the chancel apparently had a gaping hole in it, so this was fixed and a brick plinth course which then existed under the east wall was taken out and renewed in flint once the underpinning had been done. The tower arch had been at least partially blocked for the west gallery, and this was opened up when the gallery was scrapped, and the font was apparently not even secured to the floor.

Corsham Down and Westwood Ground are both Bath stones from West Wiltshire, neither of which were ever used in medieval East Anglian churches. Phipson however specified them so often that one wonders if he owned shares. Corsham Down is a fine-grained cream or pale buff limestone which is not suitable for exposed parts of a building, and the only major structure in East Anglia to use it extensively is the RC church of Our Lady in Cambridge of 1887-90 by *Dunn & Hansom*. The quarry has closed. The Westwood Ground quarry is in Bradford-on-Avon and reopened in 1975 and there are plenty of reserves, but it too suffers from weathering where it is exposed. A coarse-grained limestone of buff colour. **Caen stone** is a very fine limestone from Normandy, now with very limited reserves. The French government releases it only for restoration projects

The tower had a west doorway in 1876, so this was abolished 'in rubble work', and the extensive brick repairs which had been done piecemeal to the north porch were cut away and the porch walls refaced with 'hammered square-faced flint'. At the same time the parvis doorway, which had been blocked at some stage when its staircase collapsed, was reinstated, and the ivy which grew upon the building was cut away.

The tilers jobs commenced with removing all of the plaintiles on the nave and chancel roofs, and once the roofs had been reinstated to 'reuse good ones and retile to 3½" gauge with 2 oak pegs to every tile on stout oak tile laths. New ornamental ridges set in cement'. At the foot of all rainwater downpipes they were to insert 4" siphon pipes [i.e. S-bends] and connect them to 260 ft of 4" buried 'plain common rocket pipe to the closest ditch'¹⁵. On the interior the lower 4 ft of the walls were to be hard cement rendered using Portland cement¹⁶, and above that it was to be a lime mortar render rough trowelled as stucco with a Caen stone tint¹⁷. Finally, the interior was to be repaved with Minton tiles laid on 3" of concrete screed.

'Stonemasons Work

'All new stone to be Corsham Down for the windows, doorways etc and West Wood Ground stone (Randall & Saunders Quarriers) for copings, sills, set-offs, crosses, parapets etc, and the chancel arch and piers to be restored in Caen stone. The east window is to be entirely new and all of Corsham Down stone'. No particular stone was specified for the repairs to the tower arch. The square-headed two-light north nave windows and both south nave windows were to be taken out completely 'and accurately



9: Detail of the restored south door

restore same in Corsham Down stone'. Both the north and south nave doorways were to be cleaned and restored and Portland stone steps fitted, 3" thick, and the north porch outer arch was to be restored and given a 4" Portland stone apron. The porch side windows were to be repaired in Westwood stone while the stone detailing of the walls was to be redone in Corsham Down and all the gargoyles and details were to be made new. The new staircase to the parvis was to be all of Westwood stone (a bad choice for stone receiving direct wear).

The corbels under the wall posts of the chancel roof were to be remade in Corsham Down stone, and all the other details (belfry louvres, nave and chancel copings, gables to corbels

etc) were to be thoroughly overhauled.

Those parts of the specification which relate specifically to the roofs of the nave and chancel are so directly relevant that they are quoted in full:

'Carpenters Joiners Smiths and Ironmongers Work

Take down the present west gallery
Remove the present pewing and flooring under same
Pulpit Reading Desk Hat pegs etc

Take off the present Chancel roof entirely and reconstruct same in English oak as shewn, reusing all old parts that are good and perfectly sound, putting new principals, wall pieces [plates], purlins, braces, ridges, rafters, hammer beams, etc. as required all molded to match exactly in size and form the old parts. All to be morticed and pinned together with oak pins and cleaned down and brought to one colour, clean off all paint and whitewash etc on any old timbers reused. The whole roof will be an open one and wrought. Restore and refix present angels at ends of Hammer beams and carve and fix new any deficient.

Take off the nave roof entirely and reframe and reconstruct making good in English oak any timbers cornices or other parts defective or rotting and remortice and tenon and put together the whole roof with oak pins. All new pieces to be exactly like the old in size moldings carving etc complete. Restore and refix present angels (9 at present) and provide 5 new to correspond.

Provide and fix the 14 new angels with wings at ends of lower hammer beams to be carved with emblems and shields and other devices and positions as shall be directed hereafter and to sketches.

Cover the nave and chancel roofs with 7/8" V-jointed pitch pine boarding iron tongued and wrought and not more than 6" wide all clean and seasoned dry stuff free from sap shares & all defects.

Over same lay deal splines 1 1/4" x 3/4" to receive pegs of

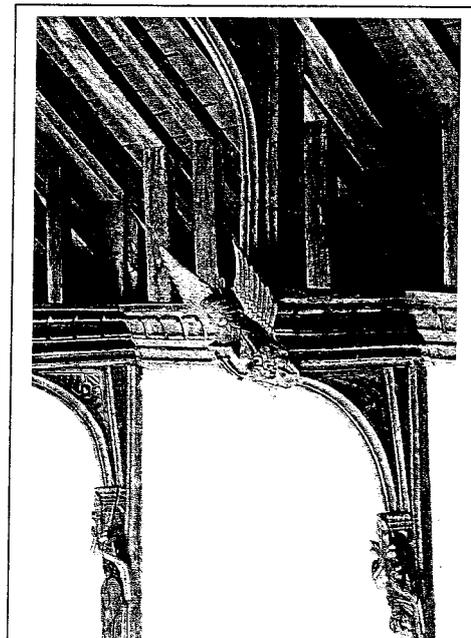
tiles.

The eaves throughout nave and chancel are to have Mac Farlanes's 5" beaded edged halfround houghing¹⁸ with iron stopped ends and all proper irons & screws for fixing same (no wood fascias) plain faucits [water hoppers] and No. 4 stacks of 3" round pipes and swans neck connections and plain ears No heads or shoes pipes carried down into drains (see Bricklayers work).'

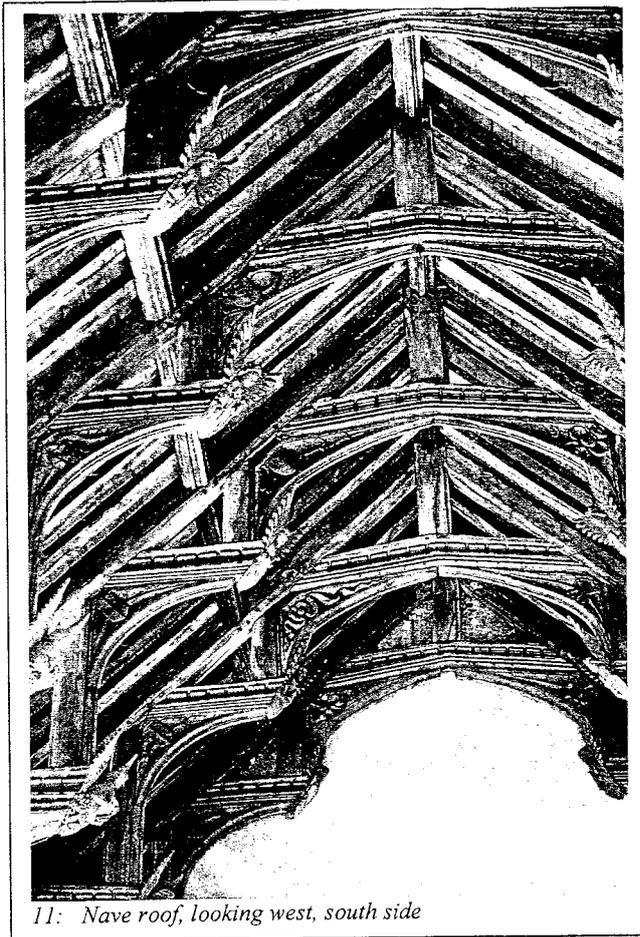
The specification goes on to itemise similarly thorough work of restoration, or replacement, to the porch roof and the tower roof, including new guttering to both. The stairs to the parvis were to be given a new flat roof, and the porch floor was to be entirely renewed with 1 1/4" tongued pitch pine boarding over the top.

The floors of the church were to be similarly remade, reusing 'old stuff as far as perfectly sound and good and made good with new Memel fir' [see text box]. The new nave seating was to have English oak curbs, but the 'benching throughout is to be as shewn out of the best cleaned well seasoned Memel oak

Memel fir is a white deal imported from the Baltic port of Memel, renamed Klaipeda in 1924 when it was recognised as a Lithuanian possession. With Memel oak or Memel deal the two types of wood are virtually indistinguishable from English oak but the Yellow Christiana deal variety is superior. The use of both was extremely common – indeed far exceeded the use of English oak in this country – from the Napoleonic Wars to the First World War. In 1810 the Admiralty's timber store (Board of Ordnance Depot at the Tower of London) contained no English oak, just Memel deals. Indigenous oak supplies had become exhausted.



10: Detail of north side of the nave roof



11: Nave roof, looking west, south side

planking and pipe staves or English oak provided it is mild and 4 years in plank... Hereafter No. 17 of the Bench ends in the nave and No. 4 in the chancel to be restored heightened and altered and refixed, those in nave being fixed against the walls only. The poppy heads pateras tracery etc to be made according to models to be given hereafter and all executed by a carver to be chosen by the architect.'

Both north and south doors were remade (English oak) and new hinges and locks fitted, and similarly a new door was provided at the bottom of the parvis staircase. The new pulpit was to be of English oak to the value of £35, a new reading desk (£12), communion rails and standards (£12), but the new ringing chamber floor was to be of pitch pine finished with 1½" pine boards. The seats of the benches in the

north porch were to be 13" wide and 1½" thick and of oak, and wrought-iron double gates provided. Finally the ironmongers were to allow £30 for Gidneys Heating Apparatus exclusive of all brickwork.'

Plumbers Painters and Glaziers Work

This much shorter specification concerns the weight of milled lead to be used for the new porch roof (7 pt milled), with 5 pt milled lead to the copings of the porch and the nave and chancel gables ('no cement filleting'), 5 Pt for the font lining and unspecified weight of lead for the tower roof. All of the windows of the church, including the porch and tower, were to be reglazed with Hartley's rough plate cathedral glass, and the iron rainwater goods were to be given five coats of paint. Finally all of the timberwork, including the restored roofs were to be oiled.

It is surprising that George Grimwood's attempt to fulfil such an extensive commission for such a low sum of money did not lead to more trouble than it did. As it is, the work dragged on beyond the official end date and items such as the new seating had to be postponed for a decade. Worse than that, by 1883 water was pouring

By the 1850s, patent rolled **cathedral glass**, either coloured or clear, was marketed for its 'rich and brilliant appearance in a Church Window, which cannot be arrived at with ordinary Coloured Glass'. (James Hartley & Co. of Sunderland, *Glass Tariff Newspaper*, 1 November, 1853, p 10). Cathedral glass was rolled either on a table or between two rollers, and by using a textured surface a pattern could be transferred to the glass.

through the new nave roof and Phipson had to deal with it. He had met Grimwood at Winfarthing on 1 May 1883, having missed him at a crisis meeting at Gissing a few days before, and wrote to Rev. Sharpe on the 2nd:

I went on to the roof – and I confess I hardly, if ever, saw such a state of things. At first I was perfectly at a loss to account for it, but upon careful investigations the cause was not difficult to arrive at. The old tiles were laid in far too great a bed of mortar. In fact there is as much mortar as tile. The rain and snow by capillary attraction (if I may so call it) ran back up these large mortar joints and either the first or the second winter, after the church was restored, a severe frost must (when the mortar was in this wet state) have frozen the whole and killed all its vital parts. The mortar is now no more than so much wet black sand and earth, and must have been so for some time.

I do not think that much of the woodwork of the roof is yet affected. A small portion at the top, near the ridge, has been touched. Mr Grimwood tells me that you think [illegible word] putting on Brosely tiles, which is the best thing which can be done, although of course it will be much more expensive than reusing the old tiles, many of which have now perished. I do not however think that they were very porous, but that the water was sucked up by the mortar.

Yours very truly,
(signed) R.M. Phipson¹⁹

Although Phipson is defending his own position, and his specification clearly says that the plaintiles were to be refixed using two oak pegs each, not a thick bed of mortar, he clearly did not inspect the work in progress and equally obviously did not trouble too much when signing it off. Mr Grimwood is in trouble. Negotiations opened but apparently were not proceeding very well and Sir Kenneth Kemp of Gissing Hall intervened. On 5 November 1883 Phipson wrote to him enclosing a copy of his earlier letter to Rev. Sharpe and further comments:

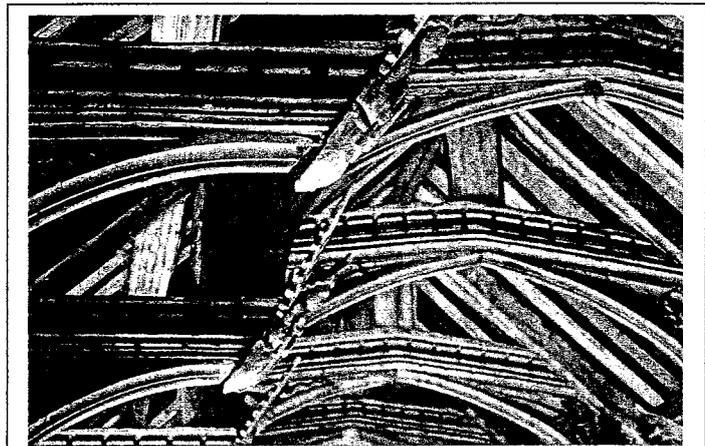
‘...Unfortunately Mr Sharpe did not act upon my suggestions. I gave Mr Grimwood the Contractor a lecture and I believe he offered to meet Mr Sharpe in the expense. I don’t think the main timbers of the roof have suffered as yet but they will certainly do so, if left much longer. The boarding over the timbers has begun to decay in places. The work has drifted so far in to the autumn that to strip the roof now and retile it with Brosely tiles, make good the boarding and timbers – if the latter are affected – will be rather a hazardous matter – in case of rain setting in – and perhaps on the whole it had best be left over until next spring...I will not go so far as to say it was a wilful mistake of his – but he has admitted to me that he has made a great mistake and the intense frost which soon after set in crowned the mischief.’²⁰

Grimwood had no further option and in a letter to Phipson dated 1 December 1883 admitted his fault, with a passing plea that the old tiles were also too porous, and agreed to repairing the whole nave roof and retiling with ‘the best brown Brosely tiles laid dry’, all at his own expense. He calculated that at £45 less £5 for the sale of the old plaintiles.²¹

3 Description of the Nave Roof

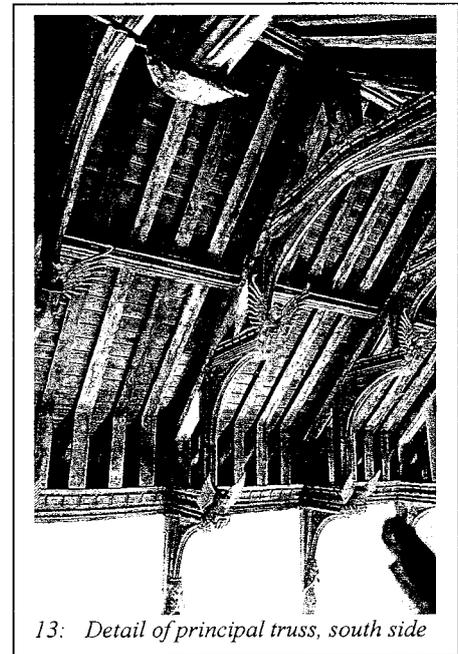
The nave roof is constructed of seven double-hammerbeam English oak trusses forming six bays and is a double-framed type wholly typical of north Suffolk and south Norfolk of the middle decades of the 15th century (that is, there is a structural distinction between the heavy principal rafters which carry the weight and the smaller secondary rafters supporting the boarding). For the purpose of this report the

trusses are numbered 1-7 from west to east, those on the north side being further designated A and on the south B. All of the moulded wall posts on both sides have been cut down, with Nos. 4A and 6A and 4B and 6B cut down to a greater extent than the others to allow the insertion of the two windows on either side, which are therefore of a later date than the roof. There is no evidence of the alternative – that the roof has been reused from elsewhere.



12: Detail of hammerbeams, south side

The moulded wall posts have carved figures of saints against them under nodding ogee arches terminating in crockets. Solid arched braces, roll and hollow moulded and with carved fleuron or angel-wing decoration, rise to the lower of the two tiers of hammerbeams, which are also moulded under a brattished cornice and end with angels bearing shields with emblems and initials. All of these fourteen angels are of 1876-77. From the beams simple hammerposts with hollow-moulded edges rise to meet the principal rafters and carry a second tier of solid arched braces similarly decorated. The upper register of hammerbeams are decorated in the same manner as the lower ones and also end with



13: Detail of principal truss, south side



14: Upper 15th century angel at truss No. 6, north side

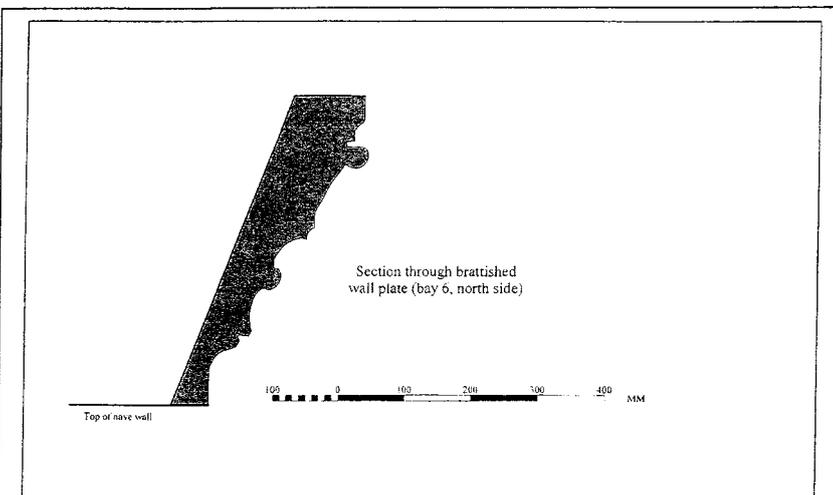
winged angels bearing shields with initials. These are smaller than the lower angels and nine of the fourteen are original apart

from minor repair work. Moulded arched braces rise in turn from the upper hammerbeams to the moulded and brattished collars, from the centre of which are short plain king posts. Moulded ridge piece and one tier of moulded butt purlins. The principal and secondary rafters are each connected to the brattished wall plates by plain ashlar pieces, which visually appear (from the floor) to be all from the 1876-77 restoration but in fact are not. Pitch pine boarding is laid over the rafters, and these are all of 1876-77.

Each bay has four secondary rafters between the principals, most of which are original 15th century work as follows:

Bay	C15 secondaries	1876-77 secondaries
1A	Nos. 1 & 3	Nos. 2 & 4
2A	Nos. 1 & 3	Nos. 2 & 4
3A	Nos. 1, 2 & 4	No. 3
4A	Nos. 1, 2 & 4	No. 3
5A	Nos. 1 & 3	Nos. 2 & 4
6A	Nos. 2 & 4	Nos. 1 & 3
1B	Nos. 1 & 3	Nos. 2 & 4
2B	Nos. 1, 3 & 4	No. 2
3B	Nos. 1, 2 & 4	No. 3
4B	Nos. 1, 2 & 4	No. 3
5B	Nos. 1 & 3	Nos. 2 & 4
6B	Nos. 2 & 4	Nos. 1 & 3

The moulding profiles of the principal roof timbers are based on a sequence of hollow chamfers, rolls and casement mouldings, so common in the 15th century that they do not afford meaningful comparison with other churches, as the type is virtually ubiquitous. The only striking thing about them is the lack of double ogee



15: Section through wall plate, north side, bay No. 6

mouldings, which appear to have gone out of fashion in the middle of the 15th century, but similar formulae may be found all over southern England. Examples include the arch mouldings of the west doorway of Steventon church in Berkshire, or the bressumers of elaborate timber-framed houses in Gloucester and Ledbury in the West Country, and no recorded examples have any direct relevance apart from the uniformity of the mid 15th century

date.²²

The tall brattished wall plate splays inwards from the plane of the nave walls and takes the form of a narrow wedge of carved oak, not of a solid rectangular baulk of timber, so that in most bays it has begun to bow and provides a rather narrow platform for the ashlar struts which rise from it and are tenoned into it with plain mortised joints²³. These ashlar struts are themselves of some interest, as most have thin sheets of wood nailed to their inner surfaces (that is, facing



16: View looking west between ashlaring and hammerposts, north side

into the nave) in 1876-77 so that they appear all of the 19th century. In fact the roof was originally provided with vertical boarding covering the ashlaring, and this was trenched into the principal and secondary rafters. The

trenches remain visible in the 15th century rafters and almost all of the original ashlar posts were dealt with by Grimwood by the expedient of sawing off the boards flush with the ashlar posts and attaching thin sheets of wood over the remaining pieces. Most of the ashlar posts therefore consist of three layers like a laminate ply: to the outside the 15th century posts, which are surprisingly narrow, then the 1 cm. thick oak boarding and finally Grimwood's facing sheets.



17: Detail of ashlar struts, north side, bay No. 6, showing laminate ply effect, and trench in the principal rafter No. 7 to take boarding



18: Boarding trench in truss No. 3, north side

Boarding of ashlaring was fairly common in the middle ages, being rather elaborate at Knapton church nave in Norfolk, but the drawback was the lack of ventilation at the base of the rafters and consequent rot, so this is almost certainly the reason why the feature was abolished.



19: Hammerpost of truss No. 6, north side

The ashlar posts which rise to meet the principal rafters are considerably shorter but wider than those to the secondaries because of the heavier or lighter respective rafter sections, and this again is the norm where ashlaring was provided at all, in churches as well as secular halls. They rest on hollow-chamfered boards on top of the wall plates, and those of bays 1, 2 and 6 on the north side have been replaced in 1877, so that the bowing effect of the brattished plates is today more pronounced to bays 3, 4 and 5. On the south side in bay 6 all of the brattished wall plate, or cornice, was replaced by Grimwood's carpenter. The hammerbeams in both tiers replicate the moulding profiles of the wall plates, and all have their inner ends cut back at an angle to allow the carved angels (those to the lower posts being all of 1877, and nine of the upper tier all of c. 1450-75) attached to them to cant in the correct plane for viewing from the floor of the church. The vertical hammerposts rely on plain hollow

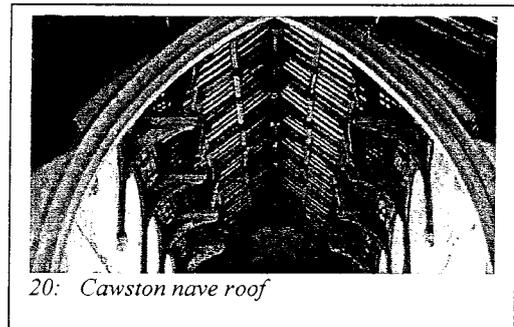
chamfers for their decoration, but have an unusual feature: the hollow-chamfered posts on which the carved arched braces rest are not separate pieces, but are carved as part of the hammerposts themselves. The solid

braces however are separate and have mortise and tenon joints pegged into the posts (two pegs) in the normal manner.

Development of the Hammerbeam Roof

The most celebrated early example of a hammerbeam roof in England is that over Westminster Hall in London, erected in 1395-99 by Hugh Herland, the king's chief master carpenter. There are other roofs which may be seen as precursors of the type, especially at St. Giles' church in Norwich of the late 14th century, but in effect the roof type emerged fully-formed in one year and designed by a named master. Apart from the early 14th century mason William Ramsey (the king's chief master mason) no other craftsman in the middle ages can claim as much. This is an important point because unlike any other roof type the hammerbeam did not gradually evolve out of decades of development, and during the remainder of the middle ages appears in only two major variants – the double and the single hammerbeam, and in two themes – the true and the false. False hammerbeam roofs are built for show, as the hammerbeams actually perform no function, and examples in Norfolk may be seen at Tilney All Saints (early 15th century) and Swaffham (early 16th century), and the earliest true hammerbeam roof in Norfolk is that over the nave roof of St Peter Mancroft in Norwich in c. 1431-2, although ribbed coving makes this difficult to see. At Great Cressingham (before 1451) the hammerbeams alternate with arched braces, which is a logical extension of the formula defined at St Giles, Norwich. St Peter Mancroft opened the door for other carpenters to make use of the type and in quick succession we have those at Blakeney, Aslacton and Cawston.

The Cawston roof of c. 1460 is particularly fine: shields in cresting to the hammerbeams, open tracery behind the posts, figures in front of them, braces to the principals, two tiers of purlins and at the junction of the principals and ridge piece dropped braces to figured bosses. Other notable roofs are at Wymondham, Worstead ('new' in 1480), Trunch ('new' in 1486), Fincham (1488 with alternating hammerbeams in two sizes), Necton (c. 1490), Poringland (1495) and St Stephen

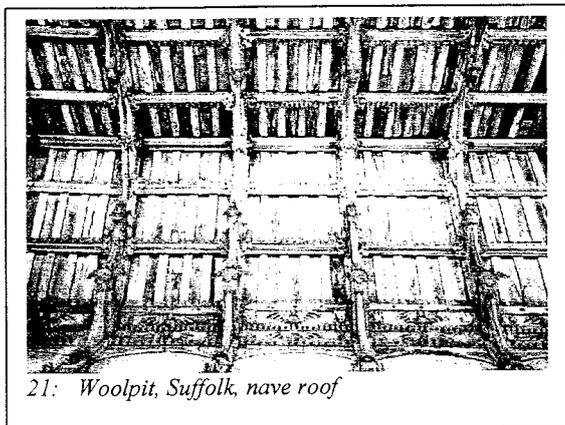


20: *Cawston nave roof*

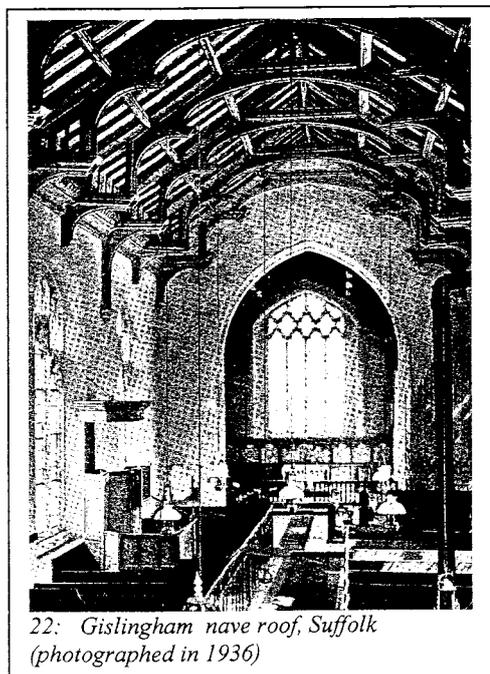
Norwich finished only after 1540. Of true double hammerbeam roofs the most famous is in fact Gissing but the best is at Knapton, made in 1504. It has a total of 160 angels as decoration as opposed to Gissing's fourteen, but the angels carved on the boarded ashlar are counted in this total as well. Such corresponding carved angels can never have been proposed for the Gissing roof because their provision required a flat or gently convex surface behind them, not a fully-moulded cornice, and it is a general feature in the very limited development of the roof type is that more than one carved angel to each hammerpost is an indicator of late date. Hand-in-hand with that is that elaboration of ancillary decoration gets more elaborate towards the third quarter of the 15th century, only to die back again in the 16th. Another indicator which divides early and later Norfolk hammerbeam roofs (that is those built before or after c. 1460) is that later carpenters usually omitted collars, for example at Trunch and St Stephens in Norwich, but this is not a universal rule. The St Peter Mancroft roof, for example, has none and that is the earliest of them all, and neither does the nave roof at Cawston of c.

1460. More significant is perhaps the difference between Norfolk and Suffolk, which Cautley was the first to notice: 'Generally speaking the absence of a collar is a frequent feature in Norfolk roofs rarely found in Suffolk'.²⁴

Gissing and the Suffolk Connection



21: Woolpit, Suffolk, nave roof



22: Gislingham nave roof, Suffolk (photographed in 1936)

There are certainly similarities between the roof at Gissing and that at Cawston, but more meaningful comparisons are to be found in five Suffolk churches: Kersey (45 Km. SSW of Gissing), Woolpit (30 Km. SW), Gislingham (15 Km. SW), Grundisburgh (30 Km. SE) and above all Coddensham (30 Km. S). The trouble with all of these roofs is that for none of them is there a known date, and the sequence has to rely on purely stylistic grounds along the lines outlined above²⁵. All of them however display one or more of the characteristics of Gissing:

deep moulded wall plates, vertical ashlar posts, reliance on brattishing as the principal decoration of hammerbeams and collars, the use of collars, no angels on the wall plates but only at the ends of the hammerbeams (excepting Woolpit, which has one carved angel to each bay of the wall plate and may be dated only as closely as c. 1440-70), they are all true hammerbeam roofs and, apart from Gislingham, have short king posts between the collars and the ridge piece.

With the exception of Kersey all of them are wider or taller than Gissing, and it is the compactness of Gissing which is one of the factors which gives it its great charm. Kersey may have been constructed with the west tower, which had had money left for its bells in 1446 suggesting it was in its final stages of construction, although the tower was not finally complete until 1481²⁶. Gislingham,

which is the closest to Gissing, is very similar in its details even if its far greater width required the use of two tiers of butt purlins, and just as at Gissing the wall posts had to be truncated to allow for the new side windows to be inserted although the greater size of the nave allowed for the new windows to be spaced in a more satisfactory manner so that only alternate posts were affected. The date probably falls in the range 1440-70. Grundisburgh has drop pendants like the roof over Eltham Palace at Greenwich (1475-80), Earl Stonham and Needham Market (early 1470s), and clearly belongs to a tradition more influenced by national figures such as Edmund Graveley who made the Eltham roof for Edward IV. Coddensham however is virtually a replica of Gissing, apart from its greater width and use of two tiers of purlins, the lower of which is decorated in the style of Grundisburgh and Woolpit. In this case at least we know that it and the clerestory was paid for by John and

Margaret Finche during their lifetime. John Finche died in 1500, but it is equally clear that the mason of the Coddendam clerestory took his ideas from the nave clerestory of Stonham Aspal church, Suffolk, for which the date may only be narrowed to 1440-60²⁷. That would rank Finche in the category of rich merchants who inherited comparatively early in life and put the Coddendam roof at *c.* 1460-70.

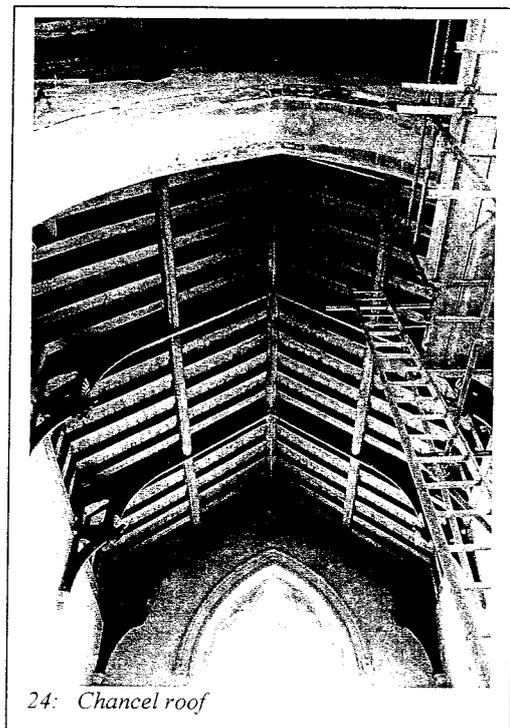
These few comparisons would suggest that the best date for Gissing's nave roof is in the range 1450-75, and we do know that a new porch and benches were being actively considered if not constructed in 1474, the date of Robert Scale's donation. His gift may have been prompted by the completion of the nave roof by an unknown benefactor, and such a date would make the roof rather later than established views would suggest.



23: *Coddendam nave roof, Suffolk*

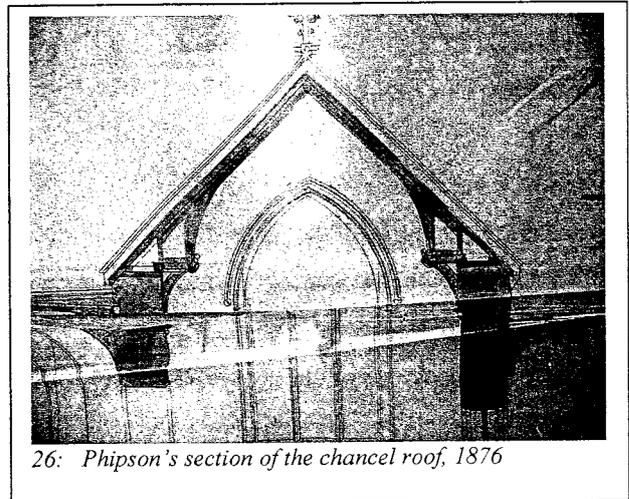
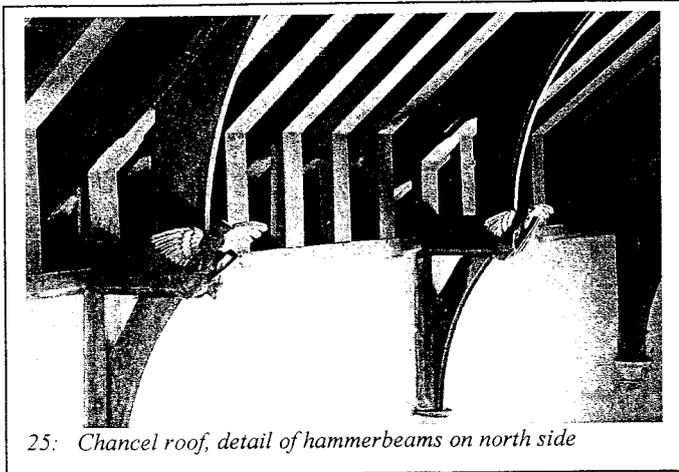
6 Description of the Chancel Roof

The chancel roof is of English oak in four principal trusses forming three bays, and is a false hammerbeam type of the most obvious character, in that the four short plain hammerposts carried on arched braces on wall posts have no structural purpose. They terminate in angels playing musical instruments, and from the posts are flat arched braces to the principal rafters. Ashlar posts, one tier of butt purlins and a ridge piece. The boarding is of Baltic pitch pine. The only description of the roof that we have is contained in Phipson's own specification which explains that in the same manner as the nave roof it was to be entirely removed and thoroughly renovated and new wood provided where necessary. The carpenters were to: 'Restore and refix present angels at ends of Hammer beams and carve and fix new any deficient'. They must all have been deficient, just as all the remaining timbers must have been, because we are left with a very thin imitation of a hammerbeam roof that any medieval master



24: *Chancel roof*

carpenter would have laughed at, and is all of 1876-7 and has little architectural value. It may be that in taking down both the nave and the chancel gable walls and providing a new east window it was far easier to refashion a new roof to fit with the restoration works, than make the new walls fit a restored 15th century roof. Phipson drew a section of the roof he found in 1876, and this is the same as the roof we now see, leaving just one solution: that the roof he restored was a post-Reformation replacement from some major campaign that has gone unrecorded.



Church of St Mary, Gissing, Norfolk

Chronology of all known work to the fabric of the church
and other relevant events

Date	Details	Source
1209	Rectory and patronage of the church passes to Butley Priory	Blomefield (1808)
1217	The church also given to Butley	Blomefield (1808)
1280	Sir Nicholas Hastyng founded a chapel in the churchyard	Blomefield (1808)
1474	In his will Robert Scale left money for the new north porch and to repair the seating	Catermole & Cotton (1983), p. 249
1537	John Tiler leaves 20s for the church in his will and two other benefactors further sums	Blomefield (1808)
1598	Joan Freeman gave 13s 4d for the church	Blomefield (1808)
1644	The church floor partially re-tiled	PD50/37
1681-3	Church and porch windows re-glazed	PD 50/37
1687	Nave roof completely reclad with tiles; porch repaired, re-floored and the parvis staircase blocked	PD50/37
1700-50	West gallery probably installed (removed in 1876)	
1738	Major repairs to the structure of the nave roof, minor works to the porch and possibly minor repairs to the chancel or chapel roofs	PD50/35
1738-59	Between these dates the nave roof was reclad with lead sheet, and probably both chancel chapels as well	Blomefield (1808)
1759-c. 1800	Between these dates the nave was clad with plaintiles	Ladbroke's Drawing of 1823 and an early C19 drawing in the church
1876	6 May. The architect R.M. Phipson issues his specification for the restoration of the church. The nave roof was restored, but the chancel roof was completely replaced	PD50/20
1879	South chancel chapel rebuilt for Sir Kenneth Kemp	White (1883)
1881	2 February. William Wells, mason, issues his bill for partly rebuilding the north porch including raising the outer arch from 6 ft to 8 ft in height. £81 18s 0d	PD50/20
1883	14 February. Redenhall Bell Foundry of Harleston reports to the Rev. Sharpe on the state of the bells. Restoration estimate £95	PD50/20
1883	1 December. The contractor of the church restoration, George Grimwood, admits faults in laying the nave tiles	PD50/20
1898	24 August. Letter from the Steam Joinery Works, Duke's Palace, Norwich asking where the new seating is to be placed	PD50/20
1903	April. George Denny, general smith of Gissing, issues his bill for tie rods and plates fitted to the church	PD50/20

Bibliography

Primary Sources in Norfolk Record Office

NRO DN/CON 144	Court papers, specification, plans and elevations for the re-roofing and general restoration, 1876 (the Gissing churchwardens' copy of the specification is at PD50/20)
NRO PD50/20	Gissing Church Records, 1876-1903
NRO PD50/35	Churchwardens' Accounts, 1537-1738
NRO PD50/36	Churchwardens' Accounts, early 17 th century
NRO PD50/37	Churchwardens' Accounts, 1640-1688
NRO PD50/38	Churchwardens' Accounts, 1885-1920
NRO PD/153/1	Faculty to restore the church, 1876
NRO PD/153/3	Faculty to alter the Lady Chapel, 1948
NRO PD/153/4	Faculty to install electric heating, 1949
NRO PD/153/5	Faculty to install electric lighting, 1954
NRO PD/153/6	Faculty to erect an oak screen, 1957
NRO PD/153/7	Faculty to introduce a mural tablet, 1960

Secondary Sources

- Blomefield, F.B., *An Essay towards the Topographical History of Norfolk*, 11 vols., 1808. Gissing is in Vol. 1, p. 162-181
- Brown, P., *The Domesday Book: Norfolk*, 2 Vols., Chichester, 1984
- Cattermole, P. & Cotton, S., *Medieval Parish Church Building in Norfolk*, *Norfolk Archaeology*, Vol. XXXVII, Part III, 1983
- Cautley, H. Munro, *Suffolk Churches and their Treasures*, London, 2nd. Ed., 1938
- Forrester, Harry, *Medieval Gothic Mouldings*, Chichester, 1972
- Harrod's *Directory of Norfolk*, London, 1868
- Harvey, John, *English Medieval Architects down to 1550*, 2nd Ed., Gloucester, 1987
- Kelly's *Directory of Norfolk*, London, 1883
- Ladbroke, R., *Views of the Churches of Norfolk*, 7 Vols., Norwich 1841
- Pevsner, N. & Radcliffe, E., *Suffolk*, Penguin Books, 2nd. Ed., 1974
- Pevsner, N. & Wilson, B., *Norfolk 2: North-west and South*, Penguin Books, 1999
- Salzmann, L.F., *Building in England down to 1540*, London, 1953
- White's *Directory of Norfolk*, London, 1883

Endnotes

-
- ¹ Brown (1984)
- ² Blomefield (1808), p. 162-164
- ³ A messuage is a house with land which was rented out, a demesne is the same but occupied by its owner
- ⁴ Blomefield (1808), p. 162-81
- ⁵ Cattermole & Cotton (1983), p. 249
- ⁶ Blomefield (1808), p. 165
- ⁷ Ibid.
- ⁸ NRO PD50/37
- ⁹ Chalder is a unit of dry measurement equal to 2,000 pounds, so 1½ chalders was nearly 1¼ tons
- ¹⁰ The first volume of his Essay is the only one he actually completed himself so his description of Gissing church is from 1759, not 1805-8
- ¹¹ NRO PD50/153/1
- ¹² On the cover of the Faculty papers is written in Phipson's handwriting, 'not shown to the Archdeacon; there is nothing to object to in these proposals'
- ¹³ NRO PD50/153/2
- ¹⁴ NRO PD50/20
- ¹⁵ The S-bends never were installed
- ¹⁶ Presumably the 1865 formula, which superseded the original 1824 mix, and is still the standard OPC used today

¹⁷ So that the interior had the same wall colour as, say, Norwich Cathedral

¹⁸ Cast-iron gutters from MacFarlane's foundry in Dunbarton, Scotland

¹⁹ NRO PD50/20

²⁰ NRO PD50/20. The handwriting of this letter compared with that sent in May is that of a sick man; Phipson died a year later

²¹ NRO PD50/20. Brosely tiles were made between 1850 and 1967 by Maw & Co. of the Bethnall Works, Brosely, Shropshire. They give such a uniform mechanical appearance to a roof that their alternative name is 'machine tiles'

²² Forrester (1972), p. 38

²³ 'Wall plate' is an inadequate word for the feature as it is elaborated to such a degree that 'cornice' might be more appropriate

²⁴ Cautley (1938), p. 89

²⁵ Hammerbeam roofs in Norfolk and Suffolk would make an excellent subject for a thematic dendrochronological dating program, as a careful selection of about a dozen would be enough to establish a definitive chronology

²⁶ Pevsner & Radcliffe (1974), p. 314

²⁷ Wilson Compton Associates, *Report into the clerestory of Stonham Aspal Church*, 2005