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ANTIQUARIAN HOROLOGY

AHS | THE STORY OF TIME

NUMBER TWO   VOLUME THIRTY-EIGHT   JUNE 2017
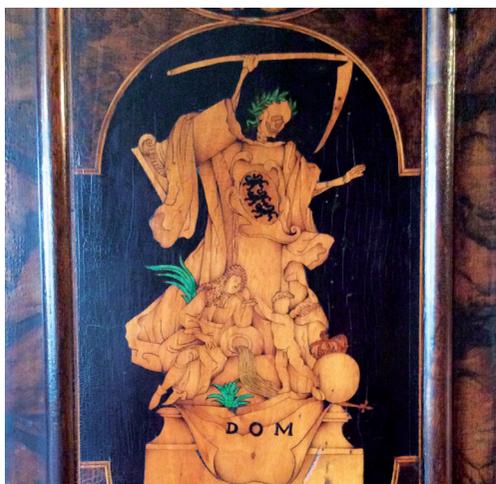
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Front cover: Detail of a William and Mary walnut and marquetry longcase clock case, *c.* 1690. The intriguing imagery is the subject of 'An interesting case'.

Early English horological terms

John A. Robey & William Linnard*

English terminology used for clocks and clock parts has developed and changed over many centuries. Regional and dialect differences and individual preferences are also evident, as well as some terminological confusion. Many terms have become obsolete and are no longer used, and the meaning of some old terms is now uncertain or quite obscure. Using a wide range of printed sources we have compiled the following vocabulary of old terms relating to turret clocks and domestic clocks. It must be stressed that no attempt has been made to cover terminology relating to astronomical clocks, regulators, chronometers or watches.

Turret clocks

Horological writings and publications exist in French, Italian and German that are generally earlier than comparable works in English. Apart from Richard of Wallingford's clock of about 1320 at St Albans, the only early descriptions of clocks and clock parts that now survive were written down not by the clockmakers themselves but by scribes and churchwardens unfamiliar with the workings of clocks. Many churchwardens' accounts contain contemporary mentions of the church clock and its repair or replacement, though only occasionally do they mention specific details. The earliest surviving accounts were often in Latin (in some places even up into the sixteenth century) but in the fifteenth century English became increasingly and then exclusively used.

Most church accounts mention the church clock and the frequent expenditures incurred for the chimes, wire, bells and hammers, and also for the construction of or repairs to the clock-house or clock-loft, but few give much detail on these old turret clocks themselves, their parts and repairs. The most informative sources are clockmaker's bills but they rarely survive. One exception is the detailed bill by the noted clockmaker Thomas Paris of Warwick, who in 1741 undertook an extensive overhaul of the clock originally installed in St John's College, Oxford, in 1691 by the even more noted John Knibb. Any accounts that do contain such details are particularly valuable sources for historical terminology, as emphasised half a century ago by Dr Beeson.[1] Since then many of these accounts have been published, either as complete transcripts or as extracts, and they provide a good and often the only source for the vocabulary of horological terms used in Britain from the fourteenth to the eighteenth century.

Bath, St Michael (J. K. Bellchambers, *Somerset Clockmakers*, 1968)

Battle, St Mary (E. J. Tyler, *AH* Autumn 1989, 287–295)

Bristol, Christ Church and other churches (J. K. Bellchambers, *Somerset Clockmakers*, 1968)

Charing, St Peter & St Paul (C. H. K. Williams, *AH* March 2006, 371–396)

Chester, St Peter (K. Appleby, *Clockmakers of Cheshire*, 1999)

Crosscombe, St Mary (J. K. Bellchambers, *Somerset Clockmakers*, 1968)

Exeter, cathedral (C. N. Ponsford, *Time in Exeter*, 1978; also C. N. Ponsford & J. G. M. Scott, *AH* Spring 1980, 52–69)

Gloucester, St Michael (G. Dowler, *Gloucestershire Clock and Watchmakers*, 1984)

*John Robey (john@mayfieldbooks.co.uk) has compiled the technical words used to describe the components of domestic clocks, while William Linnard (billlinnard@aol.com) has concentrated on the early records of turret clocks mentioned in churchwardens' and other accounts.

1. C. F. C. Beeson, 'Clocks in early churchwardens' accounts', *Antiquarian Horology*, Vol. 3, No. 11 (June 1962), 325–7.

Great Budworth, St Mary (K. Appleby, *Clockmakers of Cheshire*, 1999)

Hambleton, St Andrew (R. Ovens & S. Sleath, *Time in Rutland*, 2002)

Hornchurch, St Andrew (E. J. Tyler, *AH* Winter 1981, 617–9)

Horsham, St Mary (B. Slyfield, *Horsham Society Newsletter* December 2009, 83–5)

Kingston-upon-Thames, All Saints (E. J. Tyler, *AH* December 1973, 508–520)

Leicester, St Martin (J. Daniell, *Leicestershire Clockmakers*, 1975)

London, Allhallows Staining (Jeremy Evans, *AH* December 2001, 414–423)

London, St Andrew Hubbard, Eastcheap, Billingsgate (Jeremy Evans, *AH* June 2001, 179–183)

London, Salisbury House (B. Loomes, *Clockmakers of Britain 1286–1700*, 2014, 351)

Ludlow, St Laurence (Thomas Wright, *Churchwardens' Accounts of the Town of Ludlow, in Shropshire, from 1540 to the End of the Reign of Queen Elizabeth,* Camden Society Vol. 102, 1869; Wright also compiled a major dictionary of provincial dialect words); also M. Page, *AH* June 205, 744–53; December 2005, 227–34)

Lyddington, St Andrew (R. Ovens & S. Sleath, *Time in Rutland*, 2002)

Macclesfield, St Michael (K. Appleby, *Clockmakers of Cheshire*, 1999)

Metfield, St John the Baptist (L. H. Miller, *AH* June 1975, 320–3); also A. L. Hagger & L. F. Miller, *Suffolk clocks and clockmakers*, 1974)

Middlewich, St Michael (K. Appleby, *Clockmakers of Cheshire*, 1999)

Morcott, St Mary the Virgin (R. Ovens & S. Sleath, *Time in Rutland*, 2002)

Oxford, colleges and many churches (C. F. C. Beeson, *Clockmaking in Oxfordshire 1400–1850*, and *AH* June 1962, 325–7)

Peterborough, cathedral (C. F. C. Beeson, *AH* December 1965, 17–20)

Rye, St Mary the Virgin (E. J. Tyler, *AH* June 1962, 292–7)

St Albans Abbey (J. D. North, *God's Clockmaker: Richard of Wallingford and the Invention of Time*, 2005)

Salisbury, St Edmund, St Thomas (M. Snell, *Clocks & Clockmakers of Salisbury*, 1986)

Stirling, Holy Rude (C. Allan, *Old Stirling Clockmakers*, 1990)

Stockport, St Mary (E. Davies, *Greater Manchester Clocks & Clockmakers*, 2007)

Swansea, St Mary (W. Linnard, *Wales: Clocks & Clockmakers*, 2003)

Sydling, St Nicholas (A. H. Druery & C. F. C. Beeson, *AH* March 1967, 194–7)

Tenby, St Mary the Virgin (W. Linnard, *Wales: Clocks & Clockmakers*, 2003)

Ticehurst, St Mary the Virgin (E. J. Tyler, *AH* September 1983, 304–6)

Tintinhull, St Margaret (J. K. Bellchambers, *Somerset Clockmakers*, 1968)

Wimborne Minster, St Cuthburga (T. Tribe & P. Whatmoor, *Dorset Clocks and Clockmakers*, 1981)

In the following list of obscure or obsolete terms, those related to turret clocks have been culled mainly from churchwardens' accounts in various parts of the country from the secondary sources listed above. It covers accounts up to about 1720, i.e. not only the long period when turret clocks employed a verge and foliot escapement, but also the period after about 1670 when most of such clocks were either being converted to pendulum and anchor escapement or being scrapped and replaced by new clocks. The first recorded conversion to pendulum was by Joseph Knibb at St Mary the Virgin, Oxford, in 1670. Other early conversions noted were at Rye in 1674, Bethersden 1682, Yarnton 1682, Charing 1682/3, Gloucester (St Michael) 1685, Oxford (St Martin) 1686, and Peterborough Cathedral 1687. In the eighteenth and nineteenth centuries, with the publication of printed books on clockmaking in England and with churchwardens' accounts often containing more details of repairs, more terms and new terms appear.

It should be noted that *strob*, *semicirculus* and other words used by Richard of Wallingford are unique to the clock he built for St Albans Abbey and not found elsewhere. Nevertheless they are included here for completeness.

This list of terms does not include items such as bells, rope, wire, hammer and chimes, which occur very frequently in the accounts and are unambiguous, though as might be expected there is a wide variation in the spelling of both specialist horological terms and everyday words. Another regular small

expense was for various types of cord to suspend the foliot, e.g. *ballance strings* (Allhallows Staining, London 1660/1), *bow strings* (St Mary, Swansea 1707/8), *herr stryng*, *horse hare* (St Andrew Hubbard, London 1475/8), *lutestrings* (Allhallows Staining, London 1647–56), *pack threde*, *whipcord* (St Martin, Carfax tower, Oxford 1564), and *silk louping* ('for the balance wheel of the cloake', Holy Rude, Stirling 1683/4). A variety of lubricants was also purchased: *goose oil* was used in many places in the sixteenth century, *sallett oil* (salad or olive oil) was widely used in the seventeenth century (e.g. All Saints, Kingston 1604) or the lubricant might be simply called *liker/lycor* (St Laurence, Ludlow). In 1727 *sweet oyl* was used (St Mary, Great Budworth). At Wimborne Minster pints, even quarts, of oil were bought annually for the clock, chimes and bells, which must have been dripping with oil so that the clock and chimes had to be burned regularly to clean them.

Two terms merit special discussion:

Horologium. Beeson did not really discuss the term *horologium/horologe* but it is fairly clear that in England in the fourteenth and fifteenth centuries (when some churchwardens' accounts were still being written in Latin) the word *horologium* (*horologe, orologio, orloge, oriloge, oriscopii, orlache* and a myriad of other spellings) was commonly used as the word for clock. The following few examples will illustrate this: Exeter Cathedral (1376) 'pro horologio quod vocatur clokke'; St Lawrence, Reading (1433) 'factor orologii' i.e. clockmaker; St Margaret, Tintinhull (1436–49) 'oleo pro clocke', 'oriscopii ville', 'le payse oriscopii', 'karrillum oriscopii'; and St Michael, Bath (1434–1531) 'custodi oriligi', 'peyse orlagii', 'gubernacione orlogii', 'custodia orrologii', 'emendacione orologii', 'domus orologii', 'corda ad orelogium', 'le peyes orologii', 'reparacione orelogii', and 'wuyre occupato circa orologium'. The words *horologium* and *clock* were used concurrently as alternatives for a couple of centuries, but from about the middle of the sixteenth century the word *horologium* disappeared in most places, being superseded by *clock* (*cloke, clokk, clokke, clocke*, or *knock* in Scotland).

In Wales the linguistic pattern was similar: in the fourteenth and fifteenth centuries Welsh poets used the words *orlais/orloes* to denote a *horologium*, but concurrently also used the word *cloc* (*klok, clokke, clocke, clock*); makers too were recorded: Thomas le Horloger (Ruthin, 1342–7) and John Clocmaker (Caernarfon 1394).[2]

Some accounts appear to make a distinction between *clock* and *horologium*, the latter possibly being an astronomical dial: St Peter, Bristol (1610) 'to keep the same clock and Orolodge in good repair'; Christ Church, Bristol (1557–83) 'mendinge the orlyege', 'the clock and orlynge', 'peynting the oriloge', 'under the orolodge'; 'the house where the orlache standeth', 'chymes and orlache', and 'payntinge of the orlache'. At Wimborne Minster (1593/4–1750) the words *oriell* (*oryall, oyal*, and later *horall* and *horal*) and *orlage* (*orledge, ouledge, horolodg, horolidge, horaledge*) seem to have been used rather indiscriminately as terms for the astronomical dial, the astronomical mechanism or the clock; for example 'mending the Orryal', 'removing the clock and Oryall', 'the Smythe for work about ye oryall' and 'making the Syfers [ciphers] about ye oryall'. In many cases the words refer to the clock's astronomical dial: 'paynting the orlage', 'setting up the Clocke and orlage', and later 'gilding and coloring the Horall' (1714/5), 'mending the Clock Chimes and Horall' (1734/5), and 'painting the Pulpit and Horal' (1750/1). Since the astronomical dial is high up on an internal wall it may have been originally called the *oriell* by comparison to an oriel window, with *orlage* used for its mechanism, but the words soon became intermingled by those not aware of the distinction. By 1831 it was called, incorrectly, an *orrery*. In view of all this terminological confusion, and bearing in mind Beeson's warning that churchwardens were changed every year, they depended on the smiths for technical words, and often dictated their accounts to a scrivener also unfamiliar with clockwork, it is tempting to think that these multiple variants of *oriell* and *orlage* all derive ultimately from *horologium*.

2. For details see W. Linnard 'Shaping the day in Wales', *Antiquarian Horology* Vol. 34, No. 4 (December 2013), 526–538, and *Welsh History Review* 27/3 2015, 479–502, especially pp. 484–6.

Dial. The term *dyal* was first used in a clockmaking context about 1380 in an Old French treatise[3] in the sense of a dial wheel, meaning a wheel that made one revolution in 24 hours (though it could also mean a zodiac wheel rotating once in a year). This dial wheel concept developed to mean a panel or board on which the hour numerals were displayed and the time was indicated by a pointer (finger, hand). In English various spellings of the word dial are found, e.g. *dyall, dyoll, dyowle, dyel, diall*). The hour numerals themselves were sometimes called *syfers* = ciphers, or chapters. Some accounts use the word *face/faces* for the dial, e.g. Christ Church, Bristol (1583) but in 1707 a salary was paid for 'looking after the Clock and Dyall'. An alternative was 'finger board' used at St Michael, Macclesfield (1695) and St Mary, Stockport (1682 and 1698).

Obscure or obsolete horological terms relating to turret clocks

Some of the turret-clock terms listed below are illustrated in Fig. 1.

Balance = foliot (Allhallows Staining 1649/50–1673/4; St Mary, Swansea 1702); 'mending the Ballance' (Peterborough cathedral 1668); 'mending the balance of the clock' (St Mary the Virgin, Morcott 1697); 'altering the clock from a Ballance to a Pendeleum' (St John, Metfield 1719)

Ballance weights = weights to regulate a foliot (Allhallows Staining 1673/4)

Ballances = foliot weights, 'casting two new ballances' (Allhallows Staining 1659–60)

Bars = movement bars (18th century)

Belch = ? '½ a belch for the clocke 1s.' (1661/2, St Mary the Virgin, Tenby)

Blick = error for click?, 'for a Blick for the Clock' (St Thomas, Salisbury 1672/3)

Burning = cleaning by burning off old oil, 'burninge and making cleane the Clocke & Chimes', 'new burning of the Klock & the Chimes' (Wimborne Minster 1626–68)

Cantard wheel = 'Made two New Barrells and Lanthorne pinion and cantard Wheel for to wind Up Easy'. Probably a contrate wheel driven by a winding pinion at the side. (St

John, Bristol 1752)

Caraidge = ? 'mending the caraidge of the clock' (St Mary, Swansea 1626/7)

Clykert = ? Possibly a click, 'a Clykert for the horilege' (Wimborne Minster 1421/2)

Cross iron = ? 'mending a cross iron belonging to the clock' (St Laurence, Ludlow 1671)

Detting = detent, 'a new Detting to lock into it [hoop on the second wheel]'; 'new pins to Lift up the Detting' (St John's College, Oxford 1741); also part of maintaining power 'a New Detting for to keep the Clock going for to Loose know [no] time while winding up' (St John's College, Oxford 1741)

Fflee = foliot, or fly of striking train (depending on context) (St Mary, Thame 1548)

Finger = hand (St Peter, Chester 1654; St Mary, Great Budworth 1727; St Mary, Stockport 1700)

Finger board = dial (St Michael, Macclesfield 1695; St Mary, Stockport 1682, 1698)

Ffyse see *vis, vys, vice*

Flyer = fly, 'flyer of the chymes' (Christ Church, Bristol 1736)

Fuest = barrel (All Saints, Kingston upon Thames 1507/8)

Gable/gabel/gabil/gabulle = cable, rope (many instances, e.g. St Laurence, Ludlow 1611)

Gulls = worn pits on anchor pallets (Thwaites & Reed daybooks, 19th century)

Hasta strob = strob shaft, i.e. verge (St Albans, Richard of Walllingford)

Horacudium/horecudium = hour-striking clock (Wimborne Minster 1442; St Mary, Henley-on-Thames 1494)

Horiendii/horitudii = hour-striking clock (Wimborne Minster 1448/50)

Horologium/horologe/orologio/orloge/oriloge/oriscopii/orlache = clock. See discussion in the text above

Hower-classe/hower glass = hourglass, sand-glass; often next to a pulpit to time sermons (in many churchwardens' accounts)

Jacke/jake = jack; terms used in many places, e.g. 'jack of the clock howse' (St Mary, Horsham 1622/3)

Karrillum oriscopii = chiming mechanism (St Margaret, Tintinhull 1449)

Lanthorne pinion = lantern pinion (St John, Bristol 1752)

3. W. Linnard, J. A. Robey & M. J. Wright 'Ung petit traictie pour faire horoleiges: A little treatise for making clocks in the fourteenth century', *Antiquarian Horology*, Vol 37, No 2 (June 2016), 182–198.
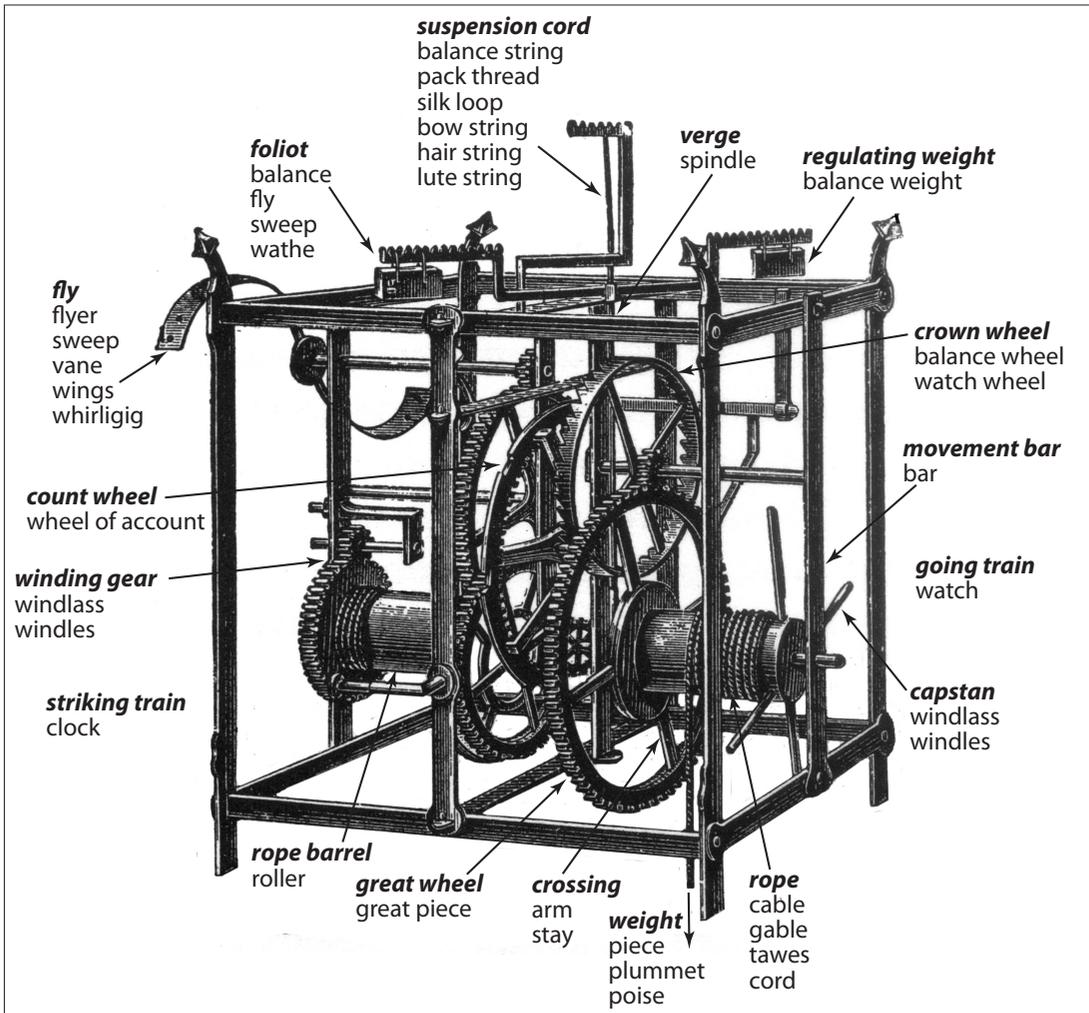
Fig. 1. An illustration of the Dover Castle clock, made by Robert Ludlam of London about 1633-40. It has only two wheels in each train, a foliot escapement and an external fly. The going or watch train is wound with a capstan, while the striking or clock train is wound using a removable handle (not shown) to turn the great wheel via a pinion and wheel. The central count wheel is a feature of some early English (and French) turret clocks. Parts are identified with their modern and contemporary terms, but some of the latter have modern spellings. (*The Illustrated London News*, 16 September 1876, p. 289).

Latten = brass, 'latten for the Clocke' (Wimborne Minster 1616/17)

Makyng = can often mean mending (e.g. St Mary, Thame, 1442, 1445)

Nootes = notes (pins on the chime barrel; e.g. St Laurence, Ludlow). See also *stempps.*

Nut = removable pinion-of-report, 'mendynge ye nutt of ye clocke' (St Martin, Leicester 1568/9); 'a new nutt and sockett for ye clock' (St Andrew, Lyddington, 1719); also a rating nut, 'new pendulum and nutt' (St Thomas, Salisbury 1704)

Oriell/oryall/orryall/oyal/orlage/orledge/ *ouledge/horlodg/horolidge/horaledge* = astronomical dial and/or astronomical mechanism (Wimborne Minster 1593/4–1750/1). See discussion in the text above

Payse/peise/peyce/peyse/pece/peace/pease/ *peast/peyze/pace* = weight(s), e.g. 'for led and casting of a peyse for the chime' (St Michael, Bath 1564); 'rope for the payse of the Clock', 'makinge handells to wynde vppe the peast of the cloke', 'rope for the pease of the chyme' (St Thomas, Salisbury1567/8, 1568–74); 'a Rynge for the peace of the Clocke', 'Rope for a peyze

of the clocke' (Wimborne Minster 1571–2); 'towes [ropes] to the knoke paces' (Holy Rude, Stirling 1652); in a few cases it denoted the great wheel: 'making ye armys to ye grete pece of the clokke' (St Mary, Thame 1488)

Pendilam/pendulay/pendeleum/pendil = pendulum, 'makeing the Church Clocke into a Pendilam' (St Peter and St Paul, Charing, 1682/3); 'a Pendulay' (St Michael, Gloucester 1685)

Pieces/pices = pallets, 'putting pices on the balance [foliot] varge' (London, Salisbury House 1662)

Pivets/pivits/pevots = pivots (records in many churches)

Plommet/plomet/plummet/plumet/plome/ plum = weight (Allhallows Staining 1505–8; All Saints Kingston 1569; St Martin i.e. Carfax tower, Oxford 1589; St Mary, Battle 1632); 'a gret rope for the plome of the cloke' (St Martin, Leicester 1546/7); 'making new plums to the knock' (Holy Rude, Stirling 1652); see also payse

Poly/poolly/powlle/pullis = pulley (All Hallows Staining; St Andrew Hubbard; Christ Church, Bristol 1558; St Laurence, Ludlow)

Poyse/poysse/pvise = weight, 'to the plumer for casting of the poyses for the chime & clok' (St Thomas, Salisbury 1561/2); see also *payse*

Quadratura plumborum = foliot bar (St Albans, Richard of Wallingford)

Quarter clock = ? 'the grate clock and the quarter clock' (St Michael, Gloucester 1685)

Quarter = 'the quarter parts of ye Clocke' (Christ Church, Bristol 1671)

Rash pinion = ratchet on the fly arbor to prevent damage when it stops, 'a New fan [and] a new Rash Pinion' (St John's College, Oxford 1741)

Rash wheel = ratchet/winding wheel (St John's College, Oxford 1741)

Rolls/rollers/rowles/roulos/roulors = weight pulleys (St Mary, Ticehurst 1686–90; St Peter & St Paul, Charing 1629/30; St Mary, Stockport 1698); 'mending of two rollers of the Chimes' (Wimborne Minster 1649–52); possibly sometimes barrels

Sayll = fly (St Mary, Thame c. 1455)

Sayllor = ? jack in the form of a sailor (St Margaret, Tintinhull 1449)

Scouring = thorough scraping and cleaning; term used in many places

Scope = 'scape? possibly escapement, 'Mending ye scope of ye clok' (St Lawrence, Reading 1586)

Semicirculus = semi-circular double pallet (St Albans, Richard of Wallingford)

Shooting/shuttynge = joining, fixing or strengthening the hammer spring, welding (St Peter and St Paul, Charing 1629/30; St Laurence, Ludlow 1632)

Spindle = verge of foliot escapement, 'mendinge of the spindle of the clocke' (St Thomas, Salisbury 1625–6); also the leading-off rod for a single hand, 'a new spindle for ye Clock' (St Andrew, Hambleton 1748)

Spring catch = winding click, 'mending a Spring Catch for the Chimes Barrell' (Wimborne Minster 1717/18)

Staff = ? 'chime staffs and a pulley' (Wimborne Minster 1575–7)

Staye/stey = wheel spoke or crossing 'mending the staye of the wache while' (St Laurence, Ludlow); 'a stey for the pece of the clok' (Christ Church, Bristol 1566)

Stempps = stumps or pegs for lifting hammers, 'sixtie Stempps of the chime barrel' (Wimborne Minster 1618/19)

Strob = escapement, also bell-ringing mechanism (St Albans, Richard of Wallingford)

Swaipe/sweep/swepe/swipe = foliot (St Mary, Rye 1564; St Peter, South Newington 1579, 1580); 'mending the sweep' (St Andrew, Hornchurch 1592); also fly 'naylls and lenen cloth for the sweppe to Chyme' (Peterborough Cathedral)

Swing/swang wheel = escape wheel of an anchor escapement (Christ Church, Bristol 1741)

Thimble = metal tube for bell pull wires to pass through 'making the thimble for the clock and wyres' (St Michael, Middlewich 1635)

Towes = ropes '22 fodome [fathoms] of towes to the knoke paces [great wheels]', 'towes to the strecking pace of the clock' (Holy Rude, Stirling 1652, 1687/8)

Tumbler = winding click 'spindall of the tumbler that winds up the wheel' (Christ Church, Bristol 1737 and 1741)

Vane = fly (Hythe 1412; St Michael, Bath 1572); 'new plat [plate] for the Vane of the Chimes' (Wimborne Minster 1632)

Varge wheel = escape wheel of verge escapement (St John's College, Oxford 1741)

Vice/ffyse/vys = ? screw or spiral; 'vice whele' (St Mary, Thame 1551) may be the crown wheel turning the foliot

Wach/wache/wacche/weche/woch = watch, the going part of the clock; also means a jack (St Mary, Rye; All Saints, Kingston; Christ Church, Bristol)

Wate/waite/wayt = weight; see also *payse*

Warner/watcher = jack (several places, including Christ Church, Bristol 1562)

Watch = dial, 'a hand and rod for the watch', 'painting the watch' (St Mary, Ticehurst 1686–90); perhaps the outside dial (St Mary, Battle 1686); an internal dial (St Peter & St Paul, Charing 1629–30); 'a watch dial on the tower' (Exeter cathedral 1615)

Watch wheel/wache while = balance wheel of a foliot clock (OED), i.e. the escape wheel, *not* the balance itself (St Laurence, Ludlow; St Martin – Carfax tower, Oxford 1611; St Edmunds, Salisbury 1562)

Wathe = foliot (St Andrew Hubbard, London 1475–7).

Wecche/weyche = 'the wecche of a clokke' (*Promptorium Parvulorum*, the first English-Latin dictionary, *c*.1440 — no explanation given). It may mean the watch (see above), but sometimes it clearly means the watchers, warners or jacks (e.g. St Laurence, Ludlow 1542)

Wheel of account = count wheel, 'fileing the Wheel of Account and making a a New Steel Pinion instead of the Brass one that was Broke' (St John's College, Oxford 1741)

Whopp = ? 'mending the whopp for the barrell of the chymes', possibly hoop (St Laurence, Ludlow 1629)

Winke = wings, fly, 'mending the winke of the Chimes', 'setting up a post for ye winke of ye Chimes' (Wimborne Minster 1634, 1646/7)

Worellgogg/whyrelgok; after 1534 = whirligig, fly? (St Edmund, Salisbury 1534; St Mary, Crosscombe 1558/9)

Wyndeles = windlass (St Martin, Carfax tower, Oxford 1629)

Domestic clocks

Contemporary terms used for domestic clocks (excluding astronomical and equation clocks, regulators, chronometers and those with complex escapements), where they differ from modern usage, have been compiled mainly from the published sources listed below:

Edmund Beckett, *Clock and Watch Work* (1855)

C. & Y. Bird, *Norfolk & Norwich Clocks & Clockmakers* (1996)

Samuel Deacon, patterns for clock brass castings (1832), see John Robey, *The Longcase Clock Reference Book* (2nd edn, 2013)

W. D. [William Derham], *The Artificial Clock-maker* (1696)

Ernest L. Edwardes, *The Grandfather Clock* (1st edn, 1949; 4th edn, 1980)

Henry Elliott, *The Clock-Maker's Assistant* (1726)

Samuel Harlow, *The Clock Makers' Guide to Practical Clock Work* (1813)

Penrose R. Hooper, *Shop Records of Daniel Burnap Clockmaker* (1958)

W. T. R. Pryce & T. Alun Davies, *Samuel Roberts Clock Maker* (1985)

Abraham Rees (editor), *The Cyclopaedia* (1807–18)

Thomas Reid, *Treatise on Clock & Watch Making* (1826)

J. S. [John Smith], *Horological Dialogues* (1675)

John Vernon, *The Grandfather Clock Maintenance Manual* (1983)

H. F. Watson, *Keeping Time* [in Grantham] (2008)

The meaning of some words is fairly obvious from their context, while others, e.g. nut, have several meanings, again usually obvious from the context. Some terms are the same as those used today and these are not included here. For instance Daniel Burnap in America in 1779 used the words that are still used today for the components of rack striking, e.g. rack, hook, snail and rack tail, though Samuel Harlow in 1813 referred to the grappler (gathering pallet), which, though quite descriptive of its function, is a term no longer

used. Other terms, such as locking plate and cannon pinion, are still used today, though alternatives (count wheel and minute wheel respectively) are preferred. Samuel Roberts used body wheel until mid-1759 when he started to use main wheel for the first wheel of a longcase clock. More recently Edwardes asserted that the first wheel of the going train should be called the main wheel since it was more important than that of the striking train, which he called the great wheel. However, his preference has been largely ignored and great or main wheel now often refers to either the going or striking train.

The traditional terminology for the motion work is illogical, contradictory and confusing and alternatives have been suggested. The minute wheel (also called the cannon wheel) is so called because it carries the minute hand, but Edmund Beckett in 1855, and more recently Ernest Edwardes, argue that it is better called the hour wheel as it rotates once an hour. Reid calls it the minute pipe wheel. Both Rees and Beckett call the wheel carrying the hour hand the twelve-hour wheel and this is also supported by Edwardes, though to avoid confusion he follows the modern usage of hour wheel. The minute wheel meshes with an identical wheel, which is often also called the minute wheel, but since it rotates in the opposite direction, it is best called the reverse minute wheel, which perversely Beckett calls the reverse hour wheel. More recently Vernon calls it the motion wheel, which is a reasonable alternative. Rees adds to the confusion by calling the reverse minute wheel both the hour wheel and the pinion-of-report, the latter being normally reserved for the pinion (especially an open lantern pinion filed into the end of the great-wheel arbor) driving the dial wheel on a thirty-hour clock. Despite this multiplicity of terms for some clock parts, there seems to be no word for the wheel accompanying the pinion-of-report that drives the minute wheel on a two-handed thirty-hour clock. The Deacon list of castings (1832) includes both a minute pinion and a minute wheel for a thirty-hour clock. The former may be the one carrying the minute hand, while the latter may be the wheel that drives it.

Some parts, especially for rack striking, appear to have had no single accepted contemporary term, for instance the modern term gathering pallet was used by Rees in 1807–18 and Beckett in 1855, but earlier it was called just a pallet by Burnap in 1779, a grappler or stop (presumably referring to the pallet tail) by Harlow in 1813, and a tumbler by Reid in 1826. Burnap and Harlow use hook for the rack hook, while Rees calls it the hawk's bill or catch, Reid a rack catch and Bennett a click. Some of the alternative terms for parts of an 8-day rack-striking longcase clock movement are shown in Fig. 2.

In the following list of horological terms, the year(s) of usage is indicated wherever possible.

Early horological terms mainly relating to domestic clocks

Back plate = false plate for a painted dial (Harlow, 1813)

Balance = also foliot, a word which was not used in English until 1899 (Reid, 1826)

Balance clock = lantern clock (Derham, 1696; Elliott, 1726)

Balance wheel = escape/crown wheel of a balance escapement, **not** the balance itself (Elliott, 1726; Rees,1807–18; Reid, 1826)

Ball = bob of a long pendulum (Derham, 1696; Roberts, 1761–5; Burnap, 1799)

Barrel wheel = great wheel of an 8-day clock (Burnap, 1779)

Bill, see hawk's bill

Bob = refers to a short verge pendulum (Derham, 1696)

Body = trunk of longcase clock (Glasgow cabinetmakers' prices, 1806, see Watson, 2008)

Body of the quarters = quarter-striking train (Roberts, 1758)

Body wheel = great wheel of going or striking trains (Roberts, 1755–9)

Bottom wheel = great wheel (Deacon, 1832)

Bowell lines = gut lines (Roberts, 1761)

Calibre/caliper/calliper = diagram showing the pivot and wheel positions, also *calliper plate* and *callipering* (Burnap, 1799; Rees, 1807–18; Harlow, 1813)

Cannon/cannon pinion/cannon wheel = minute wheel, also *canon*, still in use (Rees, 1807–18; Reid, 1832; Deacon, 1832; Edwardes, 1949)

Cantrate wheel = contrate wheel (Smith, 1675)
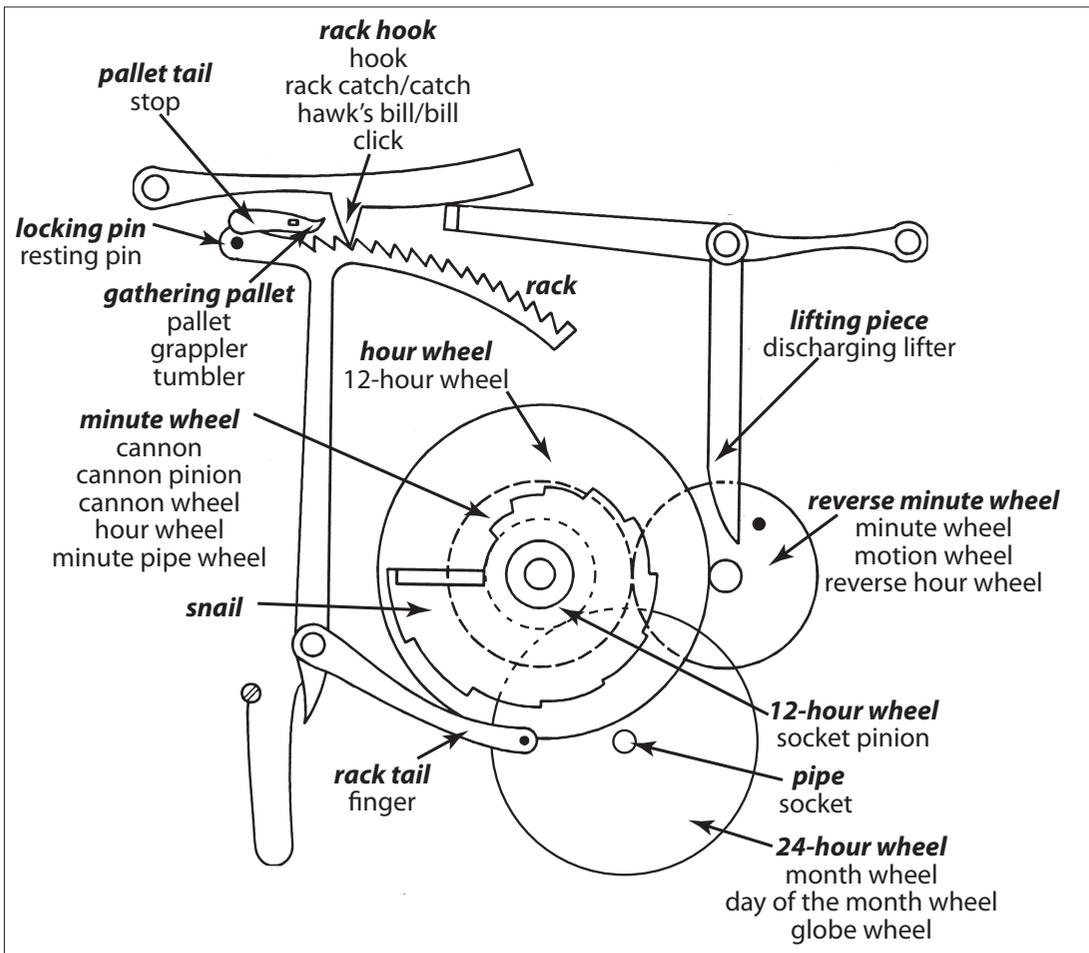
Fig. 2. The front plate of a rack-striking longcase clock with the parts identified with their present day and earlier terms.

Catch = rack hook (Rees, 1807–18)

Centre pinion movement = 30-hour clock with a four-wheel going train (Harlow, 1813)

Claw = count-wheel detent (Rees, 1807–18); also fusee poke (Rees, 1807–18)

Click = rack hook (Beckett, 1855)

Cross = crossing or spoke (Derham, 1696; Burnap, 1799; Rees, 1807–18; Deacon, 1832)

Day of the month = calendar ring or disc (Elliott, 1726; Roberts, 1758)

Detent wheel = hoop/locking wheel of a count-wheel striking clock (Derham, 1696; Rees, 1807–18)

Dial wheel = hour wheel (Smith, 1675; Derham, 1696; Roberts, 1755–65; Burnap, 1799; Rees,1807–18)

Dial wheels/work = motion work (Rees, 1807–18; Reid, 1826; Edwardes, 1949)

Discharging lifter = lifting piece (Reid, 1826)

Endless screw = set up screw for watches (Derham, 1695)

Engine/clock engine/wheel engine = wheel-cutting engine (Burnap, 1779; Rees, 1807–18)

Fan = fly (Derham, 1695)

Fanner = fly (Rees,1807–18)

Fang = ratchet-shaped tooth of a crown wheel, star wheel or calendar ring (Derham, 1696; Elliott, 1726)

Finger = hand (Roberts, 1758); rack tail (Reid, 1826)

Flyer = fly (Roberts, 1759)

Flying pinion = fly arbor (Derham, 1696)

Fly wheel = warn wheel, which drives the fly pinion (Reid, 1826)

Fore-frame plate = front plate of a clock (Reid, 1826)

Fork = crutch (Derham, 1696)

Fuzey/fusy = fusee (Smith 1675; Derham, 1696)

Garde-cant/guard-c[l]ick/garde-du-cord/gard-du-gut = fusee stop (Derham, 1696); see also *guard gut*

Globe wheel = moon wheel (Deacon, 1832)

Going barrel = Huygens loop winding with maintaining power (Beckett, 1855)

Going ratchet = Harrison's maintaining power (Beckett, 1855)

Grappler or *stop* = gathering pallet with locking tail (Harlow, 1813)

Guard gut = fusee stop or stop iron (Rees, 1807–18)

Hatchet piece = axe-shaped lifting piece of count-wheel clock (Burnap, 1799)

Hawk's bill = rack hook (Rees, 1807–18)

Head = hood of longcase clock (Norwich cabinetmakers' prices, 19C, see Bird 1996; Glasgow cabinetmakers' prices, 1806, see Watson 2008)

Hook = locking detent of a count-wheel clock (Burnap, 1799); rack hook of a rack-striking clock (Burnap, 1799; Harlow, 1813)

Horizontal escapement/watch = cylinder escapement/watch (Beckett, 1855)

Hour wheel = minute wheel, see text above (Rees, 1807–18; Beckett, 1855)

Key spring = retaining washer for great wheel (Deacon, 1832)

Larum/larrum = alarm (Smith 1675; Rees, 1807–18)

Latch = locking detent (Derham, 1696); rack hook (Harlow, 1813)

Locking plate/wheel = count wheel, still in use (Derham, 1695; Reid, 1826; Beckett, 1855; Edwardes, 1949)

Main wheel = great wheel of going or striking trains (Roberts, 1759; Harlow, 1813; Reid, 1826; Edwardes, 1949)

Minute pipe wheel = minute wheel (Reid, 1826)

Minute wheel = reverse minute wheel (Reid, 1826)

Month ring = calendar ring (Reid, 1826)

Month wheel/day of the month wheel = wheel rotating once a day to drive a calendar (Elliott, 1726; Harlow, 1813; Reid, 1826)

Motion wheel = reverse minute wheel (Vernon, 1968)

Nut = pallet of a balance escapement (Derham, 1696); pin on a chime barrel (Derham, 1696); pinion (Roberts, 1759); also a removable pinion-of-report on a turret clock (Burnap, 1779)

Pad = pallet of a 'Royal' pendulum (Derham, 1696)

Pallet wheel = crown wheel of an alarm (Rees,1807–18); escape wheel of a dead-beat escapement (Rees,1807–18); also the locking wheel of a rack-striking clock (Edwardes, 1949)

Pendulum spring = watch balance spring (Reid, 1826)

Pendulum watch = watch with a balance spring (Derham, 1696)

Pendulum wheel = escape wheel (Deacon, 1832)

Pendulum wire = pendulum rod (Roberts, 1755)

Pevett/pevet/pevit = pivot (Derham, 1696; Elliott, 1726)

Pillar plate = rear plate of a clock, or top plate beneath the dial of a watch (Rees, 1807–18; Reid, 1826)

Pinion = arbor with its pinion as well as the pinion itself (Harlow, 1813; Reid, 1826)

Pinion of report = pinion that drives the dial/hour wheel or count wheel (Derham, 1696); reverse minute wheel (Rees, 1807–18)

Pitching = depthing of wheels and pinions (Reid, 1826)

Plate wheel = moon disc (Reid, 1826)

Pottans = potence (Derham, 1696)

Race = scribed circles on wheels (Burnap, 1779)

Rack catch = rack hook (Reid, 1826)

Ratch/rash = star wheel for letting off the strike on single-handed clocks (Derham, 1696)

Regulator = balance spring of a watch (Derham, 1696)

Remontoir wheel = winding wheel of a turret clock (Rees, 1807–18)

Repeating part/work/clock = rack striking (Burnap, 1799; Roberts, 1758; Harlow, 1813)

Resting pin = locking pin on rack (Rees, 1807–18)

Round month = calendar ring (Harlow, 1813)

Royal pendulum = 1-second pendulum (Derham, 1696; Elliott, 1726)

Runnings = wheels and pinions of pull-repeat work, also runners (Reid, 1826)

'Scape wheel = escape wheel (Beckett, 1855)

'Scapement = escapement (Rees, 1807–18; Reid, 1826)

Shaft = trunk of longcase clock (Norwich cabinetmakers' prices, 19C, see Bird 1996)

Shake minute clock = 30-hour clock with three wheels in the going train and the minute wheel driven by a pinion on the arbor of the great wheel (Harlow, 1813)

Socket = pipe, e.g. on an hour wheel or 24-hour wheel, or for minute and seconds hands or a moon wheel (Burnap, 1799; Harlow, 1813; Reid, 1826)

Socket pinion = wheel on the hour-wheel pipe rotating twice a day driving a 24-hour wheel (Elliott, 1726)

Spindle = wheel arbor, also pallet arbor (Derham, 1696)

Spring box = spring barrel (Derham, 1696; Rees, 1807–18)

Spring going ratchet = Harrison's maintaining power (Edwardes, 1949)

Stop = locking tail on a gathering pallet (Harlow, 1813)

Stop wheel = locking wheel (Deacon, 1832)

Striking wheel = pin wheel (Derham, 1696; Rees, 1807–18; Beckett, 1855)

Studs to rise the hammers = hammer pins (Roberts, 1758)

Swing wheel = escape wheel of an anchor escapement (Derham, 1696; Burnap, 1799; Rees, 1807–18; Harlow, 1813; Reid, 1826)

Three part clock = quarter-striking clock (Reid, 1826)

Tumbler = gathering pallet (Reid, 1826)

Tumbler wheel = locking wheel of rack striking clock (Reid, 1826)

Twelve-hour wheel = hour wheel carrying the hour hand (Rees, 1807–18; Beckett, 1855)

Verge = pendulum and pallet arbor; used in the context of the length of an idealised simple pendulum, not just the arbor itself (Smith 1675)

Verge pinion = pallet arbor of an anchor escapement (Harlow, 1813)

Vertical escapement/watch = verge or crown wheel escapement/watch (Beckett, 1855)

Watch/watch part = going train (Derham, 1696; Roberts, 1757–62; Burnap, 1799; Rees, 1807–18)

Wheel of rencounter = crown wheel (Reid, 1826)

Wire = pendulum rod (Derham, 1696; Roberts, 1760–5)

Postscript

The vocabulary presented and discussed in this paper does not claim to be complete, but it is hoped that it will assist horologists who may from time to time encounter old terms that are unusual or obscure. It is also hoped that readers will inform the authors of any more old terms that are discovered. This applies especially to the earlier period, before the publication of clockmaking manuals in England started to have a standardizing influence on horological vocabulary. In particular, the geographical coverage of the old churchwardens' accounts examined is rather patchy, and more evidence from churches in northern England would be desirable.

Acknowledgements