

John A. Robey

‘The English usage of foliot and balance’

Antiquarian Horology, Volume 36, No. 2 (June 2015), pp. 239–243

The AHS (Antiquarian Horological Society) is a charity and learned society formed in 1953. It exists to encourage the study of all matters relating to the art and history of time measurement, to foster and disseminate original research, and to encourage the preservation of examples of the horological and allied arts.

To achieve its aims the AHS holds meetings and publishes books as well as its quarterly peer-reviewed journal *Antiquarian Horology*. The journal, printed to the highest standards with many colour pages, contains a variety of articles, the society’s programme, news, letters and high-quality advertising (both trade and private). A complete collection of the journals is an invaluable store of horological information, the articles covering diverse subjects including many makers from the famous to the obscure. The entire back catalogue of *Antiquarian Horology*, every single page published since 1953, is available on-line, fully searchable. It is accessible for AHS members only.

For more information visit www.ahsoc.org

ANTIQUARIAN HOROLOGY

AHS THE
ANTIQUE
HISTORY
SOCIETY

NUMBER TWO VOLUME THIRTY-SIX JUNE 2015



Volume 36, No. 2 (June 2015) contains, apart from the regular sections such as Book Reviews, Picture Gallery and AHS News, the following articles and notes:

A watch by Peter Henlein in London?

by *Dietrich Matthes*

Gustave Loup – his life and his horological collection
– Part 2, by *Ian White*

The painted & engraved pewter longcase clock dials
of Thomas Pyke Sr and Jr - Part 1, by *Nial Woodford*

The long and expensive pursuit of an accurate
timekeeper in Blackburn, Lancashire,
by *Steve and Darlah Thomas*

The English usage of foliot and balance,
by *John A. Robey*

Remembering the first battery-operated clock,
by *Beverley F. Ronalds*

From Burgundy to Castile. Retracing and
reconstructing a fifteenth-century golden clock,
by *Víctor Pérez Álvarez*

The secrets of John Arnold, watch and chronometer
maker, by *Martyn Perrin*

The English usage of foliot and balance

John A. Robey*

The word foliot for an oscillating horizontal bar was used in France from the fourteenth century, but it does not appear in English until the turn of the twentieth century, largely influenced by Britten's Old Clocks and Watches and their Makers. Before then both the bar and circular form was simply called a balance, which is now reserved for an oscillating ring.

The recent articles by Howard Bradley and William Linnard on the earliest use of the French word *foliot* for an oscillating bar to regulate a clock have suggested alternative origins.¹ But what of its use by English clockmakers and horologists, and why was the term balance used for its alternative circular form?

It should be noted that large clocks such as turret clocks would, for purely practical reasons, generally use an oscillating bar with a regulating weight hung at each end, while for smaller clocks, such as Gothic and lantern clocks it was normally a circular ring. The foliot was used on the so-called 'monastic alarms' and it appears in fifteenth-century illustrations of wall clocks, but it was only rarely used on Gothic clocks. Though original ones do exist, primarily on French/Flemish Gothic clocks, there are many clocks with incorrectly restored escapements, including examples in national museums. The only British clocks that survive with their original foliots are the Cotehele clock (1493–1521) and the Dover Castle clock (1633–40), while a broken foliot from Llanthony Priory, Monmouthshire, (pre-1538, possibly 1370–1400?) survives as an archaeological artefact.

As might be expected the word foliot was regularly used in French horological publications. Thiout (1741) says that the foliot is the 'former name of the piece that is now called a balance'.² In a French dictionary of mathematics and physics of 1753, it is simply said to be part of an escapement and suspended horizontally.³ In 1802 Berthoud uses foliot several times with respect to earlier publications, but in his main text refers to it as '*le régulateur ou balancier*'.⁴ Saunier in 1861 calls it both a folliot and a foliot, with the comment: 'The first balance employed was termed a folliot.'⁵

In Britain the word foliot does not appear until relatively recent times, before which it was generally just called a balance. In 1579 the church clock at Newington South in Oxfordshire was repaired, 5 shillings being paid 'for themendinge of the Swaipe of ye clocke'.⁶ This has been interpreted as the foliot, and while sweep is an excellent and expressive technical term, it does not appear to have been in general usage. In 1662 Thomas Mills repaired the turret clock at Salisbury House in the Strand, London, including 7 shillings: 'for putting peaces to the balance

*John A. Robey (john@mayfieldbooks.co.uk) has written about a wide range of horological topics ranging from early mechanical clocks to the makers of painted dials.

1. Howard Bradley, 'Foliot revisited — the origins of the word', *Antiquarian Horology*, 36/1 (March 2015), 91–6; William Linnard, 'The word foliot', *Antiquarian Horology*, 36/1 (March 2015), 100–1.

2. Antoine Thiout, *Traité d'Horlogerie, Mécanique et Pratique* (Paris, 1741, reprinted 1972), pp. 11, 90.

3. *Dictionnaire universel de mathématique et de physique ... par Mr Savérien* (1753), p. 303.

4. Ferdinand Berthoud, *Histoire de la mesure du temps par les horloges* (1802), Vol 1, p. 61, Vol. 2, pp. 41, 377.

5. Claudius Saunier, *Treatise on Modern Horology in Theory and Practice* (1861, English edition, reprinted 1975), pp. 55, 712.

6. C. F. C. Beeson, *Clockmaking in Oxfordshire* (Oxford, 3rd edition, 1989), p. 48.

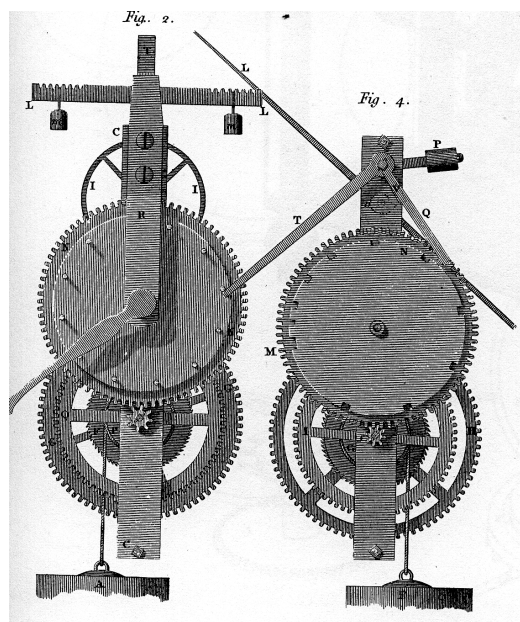


Fig. 1. The De Wick clock, from Rees's *The Cyclopaedia*, 1807.

varge and brasinge it and new plomets [regulating weights].⁷ This clock had been originally made in 1607 by Leonard Tennant, to whom Mills had been apprenticed in December 1637.

Most printed books were more concerned with the latest innovations rather than what, after the application of the pendulum to timekeeping, was regarded as obsolete technology. If mentioned at all it was mainly as a historical curiosity. Derham in 1696 merely describes how to 'convert old Balance Clocks into Pendulums', these being domestic lantern clocks, not turret clocks.⁸ Elliott describes a similar procedure in 1726, referring several times to lantern clocks as 'Balance-Clocks'.⁹

The clock of Henry de Wick/Wyck/Vick/Vic, made for the Palais de Justice in Paris, supposedly in about 1364–70, was the main historical focus of attention for horological writers in the nineteenth century. At that time it was thought to be the earliest clock of which there was a description, written in the eighteenth century by the eminent clockmaker Julien Le Roy.¹⁰ However, the clock that Le Roy saw and illustrated had been repaired, altered and rebuilt so many times in the preceding three centuries that it bore scant resemblance to the original and little significance is now placed on his description. Nevertheless, despite not referring to a clock as ancient as was once believed, these nineteenth-century accounts are useful in the present context as they indicate the terms then in vogue for what is now called the foliot.

An early description and illustration (Fig. 1) is to be found in Rees's *Cyclopaedia*¹¹ and this appears to be the source of many of the more general and popular accounts that appeared in Victorian self-improvement books and magazines. Rees says that 'the regulator or balance was fixed to this [vertical] arbor', with several subsequent references to the balance. General references to the foliot include: 'a horizontal bar turning on a central pivot, and carrying an equal weight at each end';¹² 'according to the description of the [de Wick] clock, it differed in nothing except in having a horizontal balance instead of a pendulum';¹³ 'The clock of Henry de Wyck ... was regulated by an alternating balance, which was formed by suspending two heavy weights from a horizontal bar fixed at right angles to an upright arbor'.¹⁴

7. Brian Loomes, *Clockmakers of Britain 1286–1700* (Mayfield, 2014), p. 351.

8. W. D. [William Derham], *The Artificial Clock-maker* (1696, reprinted 1962), pp. 62–3, 86–7.

9. Henry Elliott, *The Clock-Maker's Assistant* (1726, reprinted 2011), pp. 7, 10, 11.

10. Henry Sully & Julien Le Roy, *Règle Artificielle du Temps* (Paris, 1737).

11. Rees's *Clocks Watches and Chronometers, 1819–20* (Newton Abbot, 1970), pp. 64–5, 125. This is a reprint of the horological parts of *The Cyclopaedia*, the section of concern here being written by the Rev. William Pearson (1767–1847) and first published in 1807.

12. *The Magazine of Popular Science and Journal of the Useful Arts*, Vol 4 (1837), 390.

13. 'A gossip about clocks', *The Working Man's Friend and Family Instructor*, Vol III, No 57 (30 October 1845), 71.

14. W. T. Brande, *A Dictionary of Science, Literature & Art* (1842), p. 564 (under 'Horology').

Descriptions of the de Wick clock in more specialist horological works include references to a 'balance clock' and the 'regulator or balance',¹⁵ 'instead of a balance or pendulum, the axis ... carried a cross bar loaded with weights',¹⁶ 'a vibrating balance',¹⁷ or just to the 'balance'.¹⁸ A longer description in 1897 still only refers to it as a 'vertical or verge escapement with a vibrating balance, but no spring; the balance instead of being shaped like a fly wheel was in the form of a T, upon the two thin projecting arms of which concentric notches were cut. Two small regulating weights were suspended from the arms'.¹⁹

What is immediately obvious is that the French word widely used today does not appear in any of these printed sources. After giving the French origin of the word foliot the *Oxford English Dictionary* quotes the 1899 edition of F. J. Britten's *Old Clocks and Watches and their Makers* as being its first occurrence in the English language.²⁰ Britten states: 'In this [Froissart's poem] the controlling medium is referred to as a "foliot", which was doubtless the straight armed balance with weights.' From this date the French word gradually took over from the English word balance. This occurred at a time when the Victorians loved the conceit of taking French and Continental terms to make things sound more cultured and esoteric. To have a foreign, ideally a Classical, word was much to be preferred to the vulgarity of the language of the 'mechanic'. It also coincided with a period when there was a tendency for German clockmakers to use French terms.²¹

In the early twentieth century there was a dearth of horological books that considered the very early history of

clockmaking, most being either technical works or they only considered English domestic clocks. One of the few exceptions is H. H. Cunynghame's *Time and Clocks* (1906), which describes this type of escapement as a 'rod ... fitted with a ball at each end' without giving it any specific name. Two and a half decades later J. Drummond Robertson's *The Evolution of Clockwork* (1931) described 'a bar or balance, or "foliot" as it is called, with its two long arms'. This implies that the word was by then in common usage, no doubt largely due to its inclusion in the various editions of Britten's influential book, which reached its sixth edition in 1933 to be followed by a further four. After World War II more horological histories with a wider remit appeared and by then foliot was firmly established as the accepted term for the oscillating bar and balance for its circular form.

But why was the circular oscillator called a balance, to which it bears little resemblance? The oscillator in the shape of a horizontal bar with adjustable weights at the ends and swinging about a vertical axis was termed a balance, no doubt due to its superficial resemblance to a weighing balance with pans suspended at the extremities, despite it pivoting about a horizontal axis. Or it could have been regarded as something that moved about a position of equilibrium. When the oscillator was in the form of a circular ring the word balance was simply transferred to it, despite there being little visual resemblance to a weighing balance.

It is also of interest to consider the terms used in Italy in the seventeenth century, as illustrated by Giuseppe Da Capriglia.²² He

15. Thomas Reid, *Treatise on Clock and Watch Making* (Edinburgh, 1826).

16. William B. Carpenter, *Mechanical Philosophy, Horology, and Astronomy* (1857), p. 328.

17. Edmund Beckett, Lord Grimthorpe, *A Rudimentary Treatise on Clocks, Watches, & Bells* (8th edition, 1903), p. 14.

18. [Edmund Beckett Denison], *Clock and Watch Work* (1855, reprinted from the 4th edition of *The Encyclopaedia Britannica*), p. 2.

19. David Glasgow, *Watch and Clock Making* (1897), p. 10.

20. Foliot is not used in this book's predecessor *Former clock and watchmakers and their work* (1894).

21. Information from the late Douglas Stevenson.

22. Giuseppe Da Capriglia, *Misura Del Tempo* (Padua, 1665, reprinted 2015), pp. 11–12, 29ff, 48ff.

shows details of all the components of two domestic clocks both with three-wheel trains, one with a foliot, the other with a balance. There are also views of the complete movements of the balance clock and of a foliot turret clock with two-wheel trains, but only the components of the first clock. On the first domestic clock (Fig. 2) the foliot is called the '*Bilancia del tempo*' or 'balance of time'. On the second domestic clock (Figs 3 and 4) the balance is called the '*Cerchio, & Asso del tempo*' or 'circle and arbor of time' and '*Cerchio del Tempo*' or 'circle of time'. The foliot on the turret clock (Figs 5 and 6) is called '*Bilancia dello spirito, & contra pesi*' or 'balance of the spirit, & counterweights'. On all three clocks the crown wheel is quaintly called the '*Ruota Catterina*' or 'Catherine wheel'. Evidently at that period the Italian practice was to use the word balance instead of the French foliot and, quite logically, to call the alternative form a circle or ring.

Di tutta la macchina dell'una, e l'altra parte, cioè dalla parte del tempo, & del Suono. Figura Duodecima.

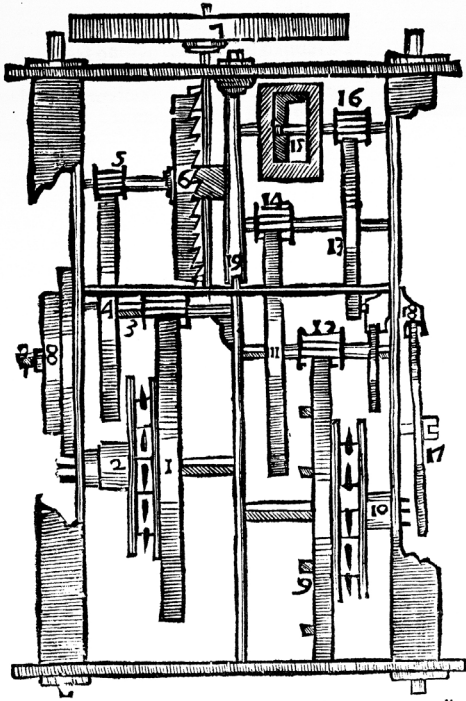


Fig. 3. A clock with a balance escapement, from Capriglia's *Misura Del Tempo*, 1665.

Figura quinta d'alcuni pezzi per la parte del tempo, e delle Colonne, & Asse necessarie per componer Orologi in questo primo Ordine

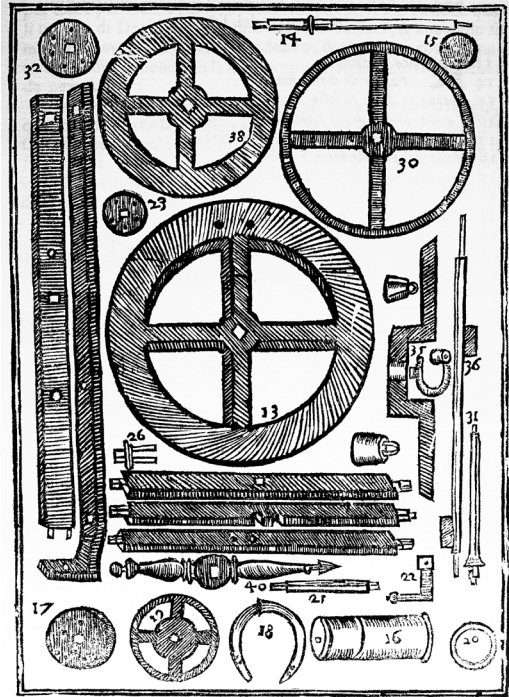


Fig. 2. Components of a domestic foliot clock from Capriglia's *Misura Del Tempo*, 1665.

Di tutti i pezzi spessi dalla parte del tempo del presente Horologio. Figura Undecima.

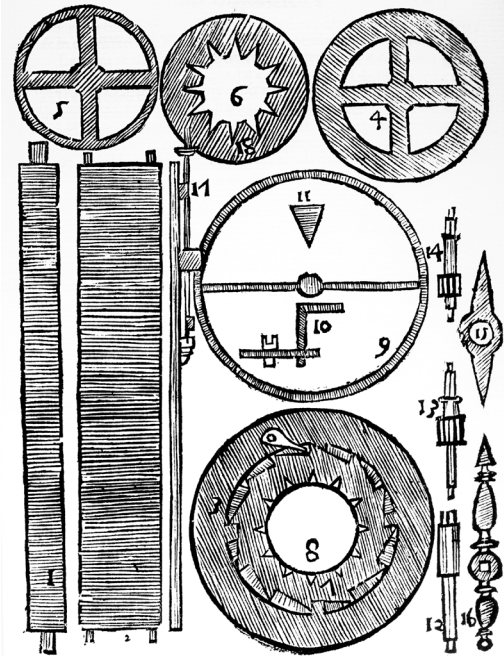


Fig. 4. Components of the balance clock, from Capriglia's *Misura Del Tempo*, 1665.

Figura della parte del tempo in faccia con la disposizione delle Ruote, & altri pezzi. Figura Settima.

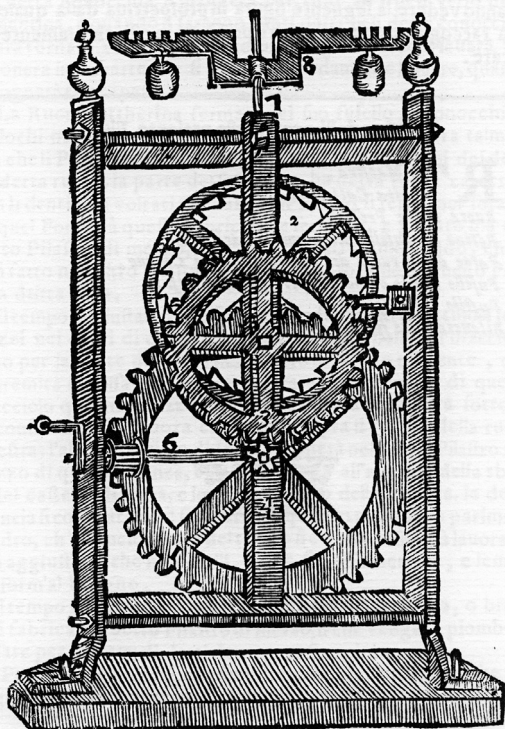


Fig. 5. Front of a turret clock with a foliot, from Capriglia's *Misura Del Tempo*, 1665.

Finally, it should be noted that the term balance wheel should be reserved for the wheel that drives the balance (i.e. the escapewheel). This has been the convention from the earliest horological texts and even in a late fourteenth-century French manuscript the escapewheel is called the 'foliot wheel'. Britten defines balance wheel as 'The escape wheel of the verge escapement. This term is often applied by amateurs to the "balance" proper'.²³

Conclusions

Although the word foliot has been used in France since the fourteenth century for an oscillating horizontal bar with regulating weights, it was not used in English until the turn of the twentieth century. Before then

*Figura Nona.
Di tutta la Macchina dell'Orologio da Campanille
in profilo, & suoi moti.*

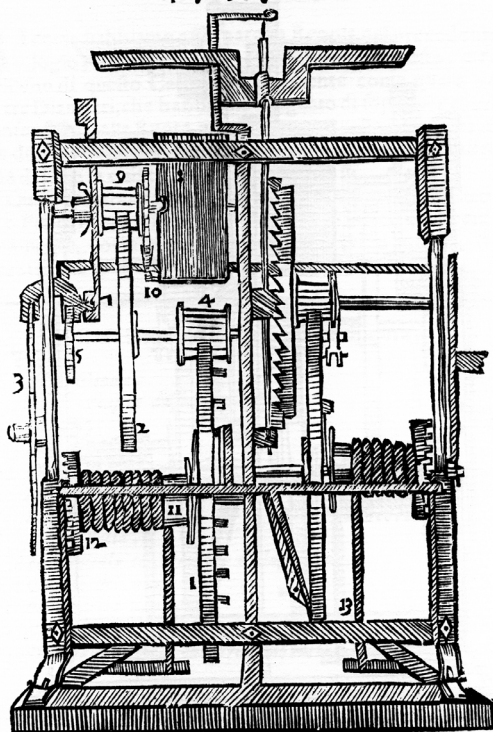


Fig. 6. Side view of a turret clock with a foliot, from Capriglia's *Misura Del Tempo*, 1665.

it was simply called a balance, sometimes a bar balance, referring to its similarity in appearance, though not its function, to a weighing balance. The circular form, as used on lantern clocks and watches, was also called a balance, a practice that continues to this day. The word foliot is now firmly established in the English language, and while being a relatively recent introduction, it is a convenient means of distinguishing between the two forms and avoids the ambiguities of the earlier usage.

Acknowledgements

Grateful thanks are to William Linnard, Howard Bradley and Malcolm Bell for useful discussions on this topic.

23. F. J. Britten, *The Watch & Clock Makers Handbook, Dictionary and Guide* (14th edition, 1938), p. 54.