

Fig 1. Fourteenth Century Clock at Salisbury.

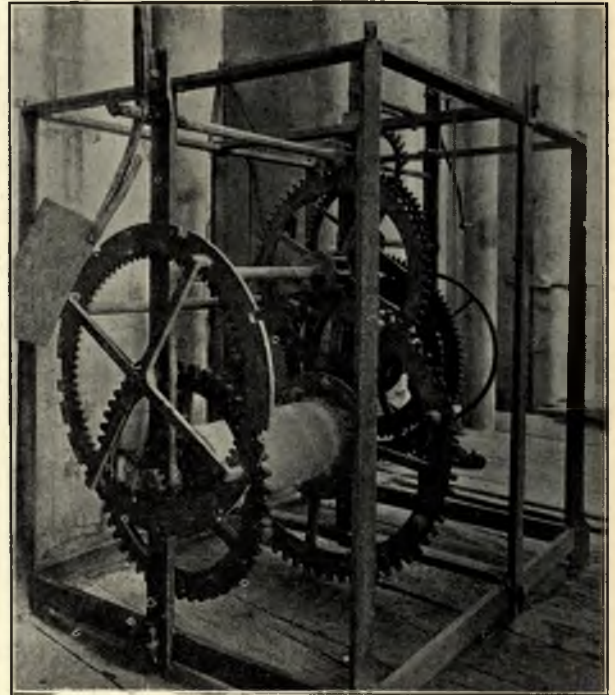


Fig. 2. It has two Movements, a Going and an Hour-Striking.

A GREAT CATHEDRAL CLOCK REDISCOVERED

By R. P. HOWGRAVE-GRAHAM, M.I.E.E., F.S.A.

Is it the Oldest Turret Clock in England?

TWO or three years ago the subject of ancient clocks received a new impulse through attempts to investigate the truth of numerous, but often gratuitous, assumptions now discredited, and while there is nothing new in the extraordinary interest that clockmakers and engineers have taken in the wonderful wrought iron movements of early times, the possibility of truer classification and more orderly analysis of development had undoubtedly increased suddenly the historical value and fascination of their study. Among those whose attention was attracted by such problems was Mr. T. R. Robinson, of Tooting, himself a clockmaker and a student of the subject.

Product of the "Iron Age."

Mr. Robinson, being also much interested in modern turret-clock movements, has been visiting numerous towers and public buildings in search of ancient or modern clocks worth notice and was astonished and excited to find in the

tower of Salisbury Cathedral a splendid example of what we might call the grand type of medieval clock belonging to what Mr. Percy Webster terms the "Iron Age." Examination of its details revealed extraordinary resemblances to the Wells movement in the Science Museum at South Kensington, and when Mr. Robinson brought me a photograph we immediately came to the conclusion that it was of the highest interest, that it might even prove a vital challenge or a powerful support to recent theories and that it must at least throw some light upon the whole problem.

When the facts were brought to the notice of Mr. Tremayne he characteristically requested me to investigate the matter at once, and afforded me every facility for doing so; I am accordingly able to place before readers of the PWCM a short account which is enough to show the great importance of this movement in the History of Horology, but the inferences seem likely to go beyond the scope of the immediate purpose, and the rela-

tions of this clock to others may extend beyond the sea into France and Belgium. Several clues are being followed up. I hope, therefore, to obtain valuable results from further documents, comparisons and data which can only be brought together somewhat gradually and it will be possible, when past and future conclusions have been corrected and harmonised and critical antiquaries have accepted them, to give to readers a clear and consecutive account of the whole matter as far as it goes.

In passing I may mention that Mr. Robinson has been interested in yet another West Country clock which, when certain comparisons had been made, afforded striking justification of the methods recently employed by me in attempting to estimate dates.

It is very interesting when approaching research of this kind to draw up a list of conclusions based upon design, details, position and any other circumstantial evidence before seeking documentary records, and the following are notes made

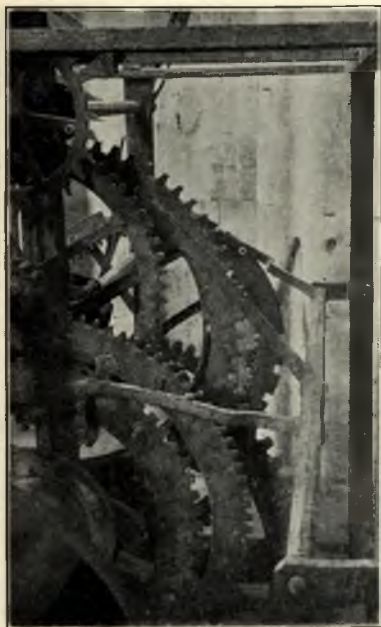


Fig. 3. Striking Levers in Lock Position.

after my first visit when there was nothing from which any deductions could be made except the movement itself.

1. The clock has a large rectangular frame divided into two compartments, one containing the principal or going movement and the other an hour-striking movement, each having separate weight-drive.

Likeness to Wells' Clock

2. If we removed the hour-striking part of the Wells clock, which is extraneous to the main frame, and put an hour-striking mechanism in its quarter-striking compartment we should have an arrangement almost identical with that of Salisbury.

3. In so far as memory carries me the design of the frame seems almost identical with that of the main frame of Wells, and though certain Gothic trefoils found in the Wells movement are absent here, there are numerous details in which the similarity is most striking.

4. The principal movement is wound in the primitive direct manner but differs from Dover and other examples in having a spoked wheel instead of mere capstan bars.

The rim of this rather slender wheel is of circular cross-section and may be for binding together and strengthening the arrangement but was more probably intended

to be gripped as one grips the steering wheel of a car, especially as there are only three spokes. Its appearance does not quite suggest antiquity equal to that of the clock, but if it is late it is probably a renewal following on the same lines of the original, for it is unlikely that a more primitive method would have been revived to replace some such winding arrangement as that of Wells.

The hour-movement was evidently wound by a pinion mounted in separate bearings now lost. This pinion lies by the clock and affords the only example of a leaf pinion, from which it is fair to argue that it is of later date than the rest; it adds a little strength to my growing feeling that the Dover Castle and Cassiobury clocks are comparatively late.

Primitive Striking Movement

5. The hour-striking movement is primitive, having only a single arbor carrying the lifting piece and the locking and stop levers, but there is no warning lever and the result must be a lack of precision in the striking.

This probably accounts for the subsequent addition of a plate which is attached to the great wheel of the principal movement and carried the lifting pin. It is provided with peripheral teeth and a mechanical click so that it can be rotated relatively to the great wheel in order to adjust by steps corresponding to one minute the indication on the dial and the moment at which the bell strikes, without disengaging the escapement.

It was probably introduced when the anchor escapement was substituted for the foliot as the new escapement would be more difficult to disengage. Arabic numerals painted round it seem to show that there was a 24 hour dial. The pivoted toe attached to the lifting piece is a later addition and is secured by a nut. This toe is not found, I think, in very early clocks.

This dropping toe was probably provided to enable the setting plate to be turned freely without fouling the lifting-piece; if so it is contemporary with the setting plate.

The lack of precision that would be serious with a simple single-lever strike such as we have



Fig. 4. Striking Levers Lifted to Show their Arrangement.

here is minimized by the very interesting contour of the portion of the stop or locking-lever that engages with the hoop.

It will be observed that in place of the usual rounded surface there is a definite angle between the radial surface that butts squarely against the end of the hoop and the sliding surface which rides over it. Such surfaces, however, are bound to lose their sharp meeting or to round off the edge of the hoop-end; consequently periodic filing would almost certainly be necessary as the force is great.

6. There is obvious proof of the previous existence of a foliot balance and the lantern pinions tell a clear tale of alteration to pendulum control.

7. There is reason to believe the clock to be earlier than that of Wells, but of Wells we only know at present that it is not later than 1392 and though we believe it to be not much earlier there is no absolute proof.

8. It is interesting to find the locking plate outside the frame, instead of inside as at Wells, Dover and Cassiobury.

Further Facts and Corroboration

Since photographing the clock and making these notes I have found remarkable corroboration of the estimated period.

Not only have I found that this horological movement existed in 1386, six years earlier than the earliest record of Wells, but there is an indirect clue to a probable connection between the two and it is just possible that Mr. Robinson's enthusiasm and Mr. Tremayne's enterprising interest followed up by researches already well in hand may throw a sudden flood of light where there has only been groping.

The Salisbury clock was erected in a detached campanile or belfry in the cathedral close and was removed to its present position in the Cathedral tower on the vile and vandalistic destruction of the campanile in 1790.

There, in what is probably the most wonderful and exquisite spired tower existing, it ticked away, obedient to its new fangled pendulum and, deprived of its dial, struck the hours until 1882 when, being replaced by a fine gravity escapement movement, it was pushed aside to sleep the sleep of the just.

The weights of lead were sold long ago; the pendulum has gone and one pallet of the anchor has been lost, but though I was told that the clock is a mere wreck, I wish to say with all possible emphasis that only a little work at a trifling cost would be required to make it go for many hundreds of years.

Can it be Preserved ?

I believe that it could be made to do useful work at somewhat greater cost, but above all I should wish to see it made available as an exhibit to the public.

It may be that the Dean and Chapter will give the matter some consideration when they realise the importance of so noble and ancient a machine.

Ottery St. Mary is proud enough of its clock and Exeter Cathedral has the ancient mechanism carefully preserved and going as a medieval relic in a chantry; although it is poorly exhibited and can only be seen by peeping through tracery, it is a very great attraction both to students and to ordinary visitors.

These iron movements were real wrecks and were preserved in going order to the high honour of those concerned, especially of Mr. J. J. Hall, F.R.A.S., their restorer, who did the work as a labour of love.

Yet though ancient astronomical dials remain in both instances, one of these movements is probably Post-Reformation and the other is an extraordinary assembly from various periods and probably has no fragment earlier than a date a century and a half after Salisbury.

Salisbury's clock would outshine any except that of Wells—its younger brother, and if it could have its old iron heart set beating once again down below in the transept it might be made to strike a bell that could be silenced during service. Otherwise it would be a noble acquisition for the Victoria and Albert Museum where it would fill a place in the exhibition of iron-work as an art corresponding with that of the Wells clock, which, in the Science Museum, illustrates the history of time measurement.

I think the first necessity is the removal, under expert supervision, of the worst of the lamentable rust and probably of the green paint; then the whole should be treated with the iron preservative used at South Kensington. There might not be lacking an antiquarian interested in clocks who would at least look after this minor task as a labour of love.

The reader may be interested to find a reference in the present or the next following Strasbourg article to a device in Schwilgue's 19th century clock, namely a setting arrangement of the same type as the primitive one mentioned in 5.

Strange Oblivion

The Wilts Archeological and Natural History Society knew of the existence of the old clock in the Cathedral tower in 1895; they knew also that it had come from the ancient belfry, and that it was doing its work in the Cathedral tower until 1884.

What is really strange is that they knew it dated from at least 1386, in which year was executed a deed referring to it, and yet they apparently had no idea of its importance and in all the mass of literature and controversy on clocks in general and on English clocks in particular there is as far as I know no hint of its existence, or, if I am convicted of error in this, I shall still be very surprised to learn that any adequate

justice has been done to it in a publication known to the majority of horological students.

The Earliest Clock in England ?

It seems likely that we have here not only a splendid example, well preserved and little altered, but the earliest turret-clock in this country, though fresh discoveries may yet bring surprises.

Is it the earliest remaining clock in the world which had a dial?

The clock of Jehan de Felains at Rouen, made in 1379 had no dial nor, apparently, had the famous and romantic clock brought to Dijon from Courtrai in 1382.

When looking at the Cathedral it will be noticed that the tower has two stages above the roof-level. The ancient and modern clocks are in the lower stage.

The well-like opening leads to the great opening in the crown of the tower vault and through it the clock must have been lifted when it was removed from the belfry.

The amazing structure of steel girders, bands and ties is to give strength to the tower which was erected in the 14th century in a daring spirit. The immense weight caused subsidence that brought the top of the spire 23 inches out of the vertical, and this has caused anxiety through all the centuries since, though the settlement seems to have ceased long ago.

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