



## THE LEGEND OF HEINRICH VON WIECK AND THE FIRST MECHANICAL CLOCKS

There is a legend abroad about a clockmaker named Henri de Vic that goes something like this.

‘Charles V of France in 1360 commissioned Henry Wieck, from Wurtemberg (sic) in Germany, to build a mechanical clock to be housed in the courtyard of the royal palace. He changed his name to Henri de Vic (in English this might be rendered Henry De Vick) perhaps by royal decree. He was housed in the tower of the Royal Palace and paid ‘six sous Parisis’ per day. The clock took him eight years to build. The building is now the Palais de Justice.’

“The clock is a ponderous but simple affair made of wood and iron. It was said to be very accurate and kept time to within 2 hours per day. This clock has been repaired and renovated several times, the last in 1852.”

“The De Vick clock was the first mechanical clock in recorded history. There is a full description of it by Julian Le Roy who examined it in about 1710 while it was still in its original condition.’

The legend comes with the proposition that clock-makers always use IIII to denote the fourth hour on the dial of a clock, but also that they do so because king Charles V of France told his clock-maker Henry de Vick to do so.

This blend of horological antiquaria, whimsy and the absurd gives me the perfect excuse to write on the subject and, along the way, have a small beef about the sources of information we use from time to time. Inferior sources, false authorities, and deficient logic propagate all sorts of nonsense.

## Roman Strike

It is not true to say that *all* clocks using Roman numerals have IIII instead of IV. First of all, the largest dial in Europe, that of the astronomical clock in the tower of Oslo's city hall uses IV. That alone is sufficient to prove the point.

But, there is a standard arrangement which almost always uses IV. In the mid 17<sup>th</sup> century, Joseph Knibb invented a system of striking the hours which reduce the number of strokes needed for the hours in one day from 156 to 60. This reduced the effort needed to wind the clock. The clock has two bells, the first with a high tone, the second a low tone. The high tone signifies I in Roman notation and the low tone signifies V. Two low tones signified X. The system also represented a reconciliation of the literate who read the numbers with the illiterate who listened to the bells. The chapters of clocks with this so called "Roman striking" have IV instead of IIII.<sup>1</sup>

## Henry de Vick in French History

However, it is true that most clock dials with Roman numerals use IIII and not IV, and it is true that there is a clock tower in Paris marked with IIII. But what of Henry Wieck?

If we were to look for other sources of information, we would find that modern horological books are strangely reticent about de Vic's clock. Eric Haswell, British Horological Institute bronze medalist, had this to say in 1928.

"Another important figure among the records of early horologists was Heinrich von Wieck, who, about the year 1364, received an order from Charles V of France to construct a turret clock for his palace in Paris. This clock ... still exists in the Palais de Justice, though having been restored and undergone changes from time to time."<sup>2</sup>

Brooks Palmer, one-time curator at the New York University Museum of Clocks and Watches and a Director of the National Association of Watch and Clock Collectors, in the 1950s, said:

"De Vick ( de Wiek, de Wyck) Hendrik, maker of the first recorded mechanical clock, was born either in Württemberg Germany or in Vic, Lorraine<sup>3</sup> in the fourteenth century. About 1360, or somewhat later King Charles V of France called him to Paris to make a tower clock for the Royal Palace, now the Palais de Justice. He was eight years making and installing it, during which time he lodged in the tower. The clock has been renovated and repaired, most recently in 1852. According to Julien Le Roy (clock maker 1686 - 1759) who examined the clock while it was running in its original form, the dial had but one hand, the hours were struck on a bell, and there were no automata. It was regulated by shifting the weights and kept time within a not very accurate range of two hours a day. A 500lb weight was used to power the time train, and one of 1500lb was used for the strike."<sup>4</sup>

Now these quotations, which might seem to come from more reliable sources, also give me a problem. If De Vick was the "maker of the first recorded mechanical clock", was it the clock he made for Henry V? I suggest not. The first weight driven clock with a verge escapement, that is what we might call a mechanical clock, was built around 1275 or earlier. If de Vick made it he would have been over one hundred years old when Charles V commissioned him in 1364.

Next, the Palais de Justice was built 400 years later than the clock, between 1857 and 1868. Then, are they really saying the clock has not been repaired since 1852? And if the clock was built for the courtyard, does that mean it has since been moved? Are they saying the clock remained in its original condition for 340 years, from 1370 until 1710 when Le Roy inspected it?

Clocks like these were not for municipal decoration. They were used to regulate peoples' lives. Can you

imagine anyone, for 300+ years, putting up with a clock that was out by two hours a day? You'd have *Matin* running into *Vespers* before you knew it.

Maybe the history of the clock-tower would help. I could not find any reference to the *Tour de l'Horloge* in books on the architecture of Paris or on architecture in general. Even books on the *Île de la Cité*, where the tower stands, failed to provide relevant information. So, what do the Parisians themselves have to say?

“The oldest working clock in Paris is on the *Tour de l'Horloge* of the *Conciergerie*, just adjacent to the courts (*Palais de Justice*). Built in 1370 it received its frame in 1585. The left figure holding the decalogue and sceptre signifies divine justice: the right, with the scales and sword, personifies human justice. The shield ...”<sup>5</sup>

The *Conciergerie* is an “important vestige of the Capetian palace” and “is a remarkable example of XIV century civil architecture.”<sup>6</sup> (The Capetian palace was begun in about 980AD) “This fortress like building was built by Phillippe the Fair (1284-1314) during the first quarter of the 14<sup>th</sup> century.”<sup>7</sup> “The *Conciergerie* became the first Paris prison in 1391”<sup>8</sup>

Other reading leads me to believe that what came to be called the *Conciergerie* in the sixteenth century when the *Parlement* took it over was, in 1391, a prison in the lower battlements of the royal palace. It rather sounds like there was a major restoration job on the building, including the clock tower, in about 1585 when the rest of Paris was also being renovated. Quite a few buildings on the Eastern side of the *Île de la Cité* were knocked down in the 19<sup>th</sup> century to give a better view. Interestingly, the illustrations I found of the Royal Palace on *Île de la Cité*, drawn in 1400 to 1410, did not show a clock..

A little general history wouldn't go astray at this point. France was continually at war with England for about 100 years before and after the construction of this clock. Things were tough. They'd only just had the Black Death fall upon them. Then Phillippe the Fair's successor, King John of France and an unfortunate fellow, was captured by the English in 1356. The English, under Edward III were attacking Paris in 1360. Charles V was acting King while his father John was in English custody and was made up to substantive King after his Dad died in 1364. There was a brief truce with the English between 1360 and 1369, and then they were at it again. Charles V died in 1380. The English actually occupied Paris and half of France in 1419, and in 1431 Henry VI of England was crowned King of France. They stayed in Paris until 1436. But then, unable to sustain operations with such extended lines of communication, they were gradually pushed right out by Charles VII. So there wasn't an awful lot of incentive to be fooling about with clocks or, in particular, for the English to be copying dials from the French, at the beginning of the fourteenth century.

But there's more. After King John was captured by the English, government by royalty looked a bit shaky in France. The people of Paris began to challenge royal authority. The merchants revolted. The chief merchant, Marcel, took over prince Charles' mansion for a headquarters. Marcel was murdered in 1357 and Charles regained control of Paris. But things got worse when they tried to impose a tax on the peasantry to pay the ransom of the nobles captured by the English. There was a major insurrection centred just north of Paris in 1358. Some 20,000 people are said to have been killed.. In 1364 or 65, Charles moved the royal residence from the old palace on *Île de la Cité*, where Phillippe had built the *Conciergerie*, to the more secure fortress of the *Louvre*. So why on earth did he have a clock built for a courtyard in the old palace on *Île de la Cité*? Did he order it before he moved. And, if so, where was it actually erected in 1370 - the new palace or the old palace? Why does it matter? Well, you see, as is common with tower clocks, the dial which started all this discussion is part of the clock-tower not part of the clock.

One of the universally accepted authorities is Britten's “*Old Clocks and Watches and Their Makers*”.<sup>9</sup> This book simply does not mention *Vic*, *Wieck*, or *Wik*, but does say that, in the records of the *Louvre* for 1365, there is an entry concerning “*un estuy de bois d'illande pour herbergier l'orloge de M. le Dauphin qui sonne les heures audit Louvre*” Now my medieval French is not exactly fluent, but that tells me that in 1365 the Dauphin, (Charles V) was in some way interested in a clock that would sound the hours to be heard in

the Louvre palace.

P.N. Hasluck, a usually reliable author, further confuses the situation. In his *Clock Jobber's Handybook*<sup>10</sup> of 1928, Hasluck uses the description of the Henry de Wyck clock provided by Reid's *Treatise on Clock and Watch-making* published in about 1875. The illustration of the de Vick clock above is taken from Hasluck who took it from Reid. Hasluck says that the vertical verge shown was afterwards placed horizontally so that it might carry a weighted bob or pendulum<sup>11</sup> to replace the foliot balance. To effect this alteration the escape wheel had to be set horizontal, and provision made for a vertical arbor.

According to Hasluck, Reid says that Julien Leroy made a mistake in his description of the clock by saying that it had an escape wheel of thirty teeth. "It is well known that the verge escapement necessitates the use of an escape wheel with an odd number of teeth." Clearly, Reid did not inspect the clock himself, otherwise he would have known exactly how many teeth the escape wheel had. So is Reid relying on the report by Le Roy? Can we assume Reid's diagram is based on Le Roy's description of 1710? Reid was an horologist of some stature.

In the drawing, some licence seems to have been justifiably taken in showing the position of the hand relative to the frame. The great wheel rotates once per hour, and the escape wheel once per minute implying a foliot with 60 vibrations per minute, or 58 if the escape wheel really had 29 teeth.. That is fairly fast for a foliot of the size for a turret clock. (The foliot on the Salisbury Cathedral clock has a period of oscillation of about four seconds.) There is provision for striking. Pins for releasing the strike work can be seen in a plate attached to the hour wheel.

So, what have we really got. Experts have accepted an opinion to the effect that, in about 1364, one Heinrich von Wieck received an order from Charles V of France to construct a clock for one of his palaces in Paris, during a brief truce in 100 years of war and civil unrest. The clock perhaps still exists, though it has been restored and changed and perhaps moved over the years. According to popular belief, it is now in a tower built at least 50 years before the clock was made, and possibly rebuilt in the sixteenth and nineteenth centuries. The tower is now called the Tour de l'Horolge and is part of what is now called the Conciergerie on the Île de la Cité in Paris. At some time or other, the tower acquired a dial on which IIII is used rather than IV, and the clock acquired a moving hand.

Not a lot seems to be known about the original configuration of this clock. Perhaps it did have IIII on the dial. Perhaps it didn't even have a dial. No dial? No hand? That's right.

## **Dividing Time**

"Our present system of dividing time is closely related to that adopted by the Sumerians at the very dawn of civilisation. They appear to have had two systems. In one, the day commenced at midnight and had six main divisions, each subdivided into sixty parts. In the other system, the day began at sunset and had twelve divisions each subdivided into thirty parts. The day that commences at a fixed moment, such as midnight, is logical where mechanical time keepers are available. But when none is available, the moment of sunset is more readily observed. It is not surprising that the latter system prevailed - to become the bane of early clockmakers.

"We accordingly find it adopted in ancient Greece, Rome and in Italy throughout the Middle Ages and even into the 19<sup>th</sup> century. Other localities had their own arrangements. The Persians, for example used 24 hours starting at sunrise, while in medieval Nuremberg the day consisted of 24 hours but it was divided into two unequal parts, conforming to day and night. The number of hours in each part was announced monthly by proclamation, and clocks frequently had dials painted in dark and light blue, with movable shutters, indicating the proportions of official light and darkness. This system was not abandoned until the 17<sup>th</sup> century. In south Germany, the day comprised two cycles of twelve hours each, starting at midnight. As

soon as clocks became fairly common (about 1400) this system was generally adopted for the ordering of civil affairs.

## **Monastic Time Keeping**

In monasteries, where medieval Christian monastic orders were utterly obsessed by punctuality. the inmates were primarily interested in irregularly spaced canonical hours<sup>12</sup> dependent upon sunset and sunrise. Day was started with matins at the third quarter of the night, followed by tertia, sexta, nona, vespers and compline.”<sup>13</sup> - unequally spaced between sunrise and sunset. Later, tertia and sexta were merged and nona thus moved back to midday - whence the term “noon”.

A 12<sup>th</sup> century Cistercian Rule states that the sacristan is to set the clock so that it will sound before lauds, and the clock being heard, the brethren shall be ready to go into the cloister. This was well before the invention of fully mechanical clocks. To determine the actual time, the sacristan would have, by day, consulted a sundial; and by night, or in cloudy weather, a clepsydra, that is, a water clock. Although it is an ancient instrument, development of the clepsydra continued through the Middle Ages and Ibn Mu’adh, writing in Cordoba in the 11<sup>th</sup> century, describes complex water clocks that include gear trains and automata<sup>14</sup> and were quite capable of sounding a bell. An alarum bell would alert the sexton to ring the bell which summoned the monks to the appropriate duty or chapter. The numerals and strokes on a clock face denoting the hours are thus known today as “chapters” and the dial ring which carries them is the “chapter-ring.

This is not the place for an history of clepsydrae, but their dials are of interest to us. Ctesibius of Alexandria, in about 300BC, invented a large and elaborate clepsydra. It had a rotating cylindrical dial marked with the hours. The time was marked by a stationary pointer. In the 1<sup>st</sup> century BC, Vitruvius, a Roman architect, designed a clepsydra with two dials. Zodiacal information was shown on a rotating dial, and time was shown on a dial divided into twenty four parts numbered from I to XII and I to XII again. Bruton<sup>15</sup> says this clepsydra had a moving hand, but the more recent description by Smith<sup>16</sup> suggests otherwise.

We can imagine that these canonical alarums, and their later derivative the passing strike clocks, may well have had interchangeable dial rings to account for the variation in the length of the day throughout the seasons. This option was open to de Vick .

## **The Regulation of Work**

It was not only monks who needed to know the time. In the towns and cities which had grown to be centres of production and commerce, life was regulated by bells. Bells sounded when the pubs were opening, when the town gates were shutting, and so on. Workers in the textile dye factories and their associated out-workers started and stopped work according to the bell. Naturally enough this was a source of some discontent if the bell was owned and rung by the boss. The time was ripe for a device which indicated the time of day truly and perhaps rang the bells automatically.<sup>17</sup>

## **Early Mechanical Clocks**<sup>18</sup>

We do not know who made the first clock with a mechanical escapement, nor when it was made. The mechanical clock was probably evolved by different experimenters working independently of each other. Some horologists suggest that the verge and foliot which was used as an escapement in the first mechanical clocks, was previously in use to repeatedly ring the bell in the canonical alarum.

It seems likely that the earliest continuously running clocks made were domestic alarums of the type

required in a monastery as an advance on the timer approach. They probably rang a bell, had no dial, or perhaps had a rotating dial indicating against a fixed pointer, as do the domestic and monastic alarms from the 14<sup>th</sup> century now in museums

Many such clocks could have existed. Domestic clocks were certainly available for the rich. Indeed we only really hear about those belonging to the nobility. An inventory of the belongings of Philippe le Bel, King of France, who died in 1314, refers to a clock completely of silver with two counterweights of silver. Were this true it would be the earliest known domestic clock. But, the inventory was compiled 66 years after the King's death. There is a record which says that John of Engelbert, the chamberlain at the Papal palace at Avignon purchased a timepiece for the Pope for eleven gulden. The accounts of the Vatican refer to a clock in the Pope's garderobe in 1343., and in 1346 twenty six florins were paid for a clock in his 'arriere Chambre'. In 1359, King John of France, while a prisoner in England, paid seven nobles for a clock.

It was not long before true public clocks made their appearance. These at first took the form of bells in towers under the control of a bell ringer who responded to an alarm clock as in the monasteries. These alarm clocks are called tower warden's alarms or belfry alarms. The bell ringer would have rung curfew each night, for example, and other warnings on demand. Such towers were erected throughout Italy around 1300, by the guild-based city councils. There was similar activity in France, Germany and Switzerland. Soon it became possible to substitute a machine for the man ringing the bell. These early clocks striking on a large bell were probably on the ground rather than high in a tower.

The public clock served the need for fair dealing between workers and employers. It also greatly facilitated people making appointments to meet one another. People relied on the sounding of the bell. Thus at York, the ordinances regulating the hours of work of masons in 1352 required them to take their time from the bell of the Minster. The millers of Paris stopped work on Sunday from the announcement of the Holy Water in the chapel of Saint Leufroy until the ringing of vespers. Carpenters stopped on Saturday when the bell of Notre Dame rang nona.

The general populace of Europe at this time was illiterate. They could not have understood a numbered dial. Where public dials existed they used analogies such as sun pointers.

For example, the notes of the mid 13<sup>th</sup> century, much travelled, architect Wilard de Honnecourt show a mechanism for rotating a figurine on the top of a church to indicate the time of day. The mechanism is crude and unreliable and the notes serve to confirm that a true mechanical escapement was not known in 1250. Important 13<sup>th</sup> century works, the Computus Major written for Pope Urbane IV between 1261 and 1264, the notes of Robertas Anglicus and the Liber del Saber Astronomico<sup>19</sup>, a set of astronomical tables and encyclopaedic account of inventions for time keeping produced for Alfonso X of Castille in 1277, show that the mechanical clock had not arrived in 1277. But, it would seem that by the middle of the 14<sup>th</sup> century most of the great monasteries, abbey churches and cathedrals in Europe had begun to install a clock operating a large bell.

There is a tradition that a "tower of stone" was erected in the courtyard of the Old Palace of Westminster in about 1288, and that the tower "contained a clock which striketh every hour on a great bell... for the same clock in a calm will be heard in the City of London." . A record exists of payment, in 1286, to Bartholomo Orologiaro the clock keeper at St Paul's cathedral in London. And in 1292 a "new large clock" was installed. One might infer that Bartholomo became redundant at that point There is also a record that a big clock was set up in Canterbury cathedral in 1292.

Records from before 1300 at Exeter and Ely cathedrals and Dunstable priory in England point fairly strongly to mechanical clocks. A document from Ely of 1302 makes it clear that the monks were to assemble for prayer at the correct times during the day and night with the assistance of a clock. The cathedral at Cambrai in northern France had a large clock installed in 1300 or earlier.

By 1325, Norwich cathedral had a complicated astronomical clock, probably with automata<sup>20</sup> and alarum, built by Laurence and Roger de Stoke. The dials for this clock were made in London and carried some 120 miles, by ox cart one presumes. In Italy, references which appear to relate to mechanical clocks are found from 1300. In the Chronicle of Galvano Fiamma for 1306 there is a reference to an iron clock in Milan.

In 1335 Fiamma was greatly impressed by the clock of the Beata Vergine, the chapel of the Ducal palace, also in Milan. This clock, said Galvano, strikes a bell 24 times according to the 24 hours of the day and night, and thus at the first hour gives one sound, at the second hour two and so on. It is interesting that in 1306 an iron clock gained only a passing mention, whereas in 1335 a clock striking the hours was a marvellous novelty.

Between 1327 and 1336, Richard of Wallingford, the abbot of St Albans made a most remarkable tower clock. It struck the hours and had dials for the astrolabe, motion of the sun, phases of the moon, the motion of the planets, and lunar eclipses. This is the first mechanical clock about which detailed and precise information has survived. The description is in the Bodleian Library in Oxford. This description may be the first recorded use of the word "clock". This Middle English word is said to be derived from the Latin *clocca* meaning bell. Richard of Wallingford has subsequently been recognised as the most famous mathematician and astronomer of medieval England. His gear train for showing phases of the moon was correct to 1.8 parts in a million. The clock has not been seen since the reign of Henry VIII.

The accounts of King Edward III of England include a payment to three Italians for helping set up the striking clock in the great tower of Windsor Castle, in the spring of 1352. There are contemporary accounts of payments for a hammer, a pulley, a bell, from Aldgate, and the clock itself was transported from London.. There is a medieval Latin manuscript record of a works account of 1375-7 for a new bell for Edward's castle at Windsor. The wording is important, because it is also an early and most explicit use of the word "clokke" to denote a particular form of time keeper - one that rings a bell.

There are reliable records of striking clocks at Genoa in 1353 and Bologna in 1356. The first of the now celebrated clocks of Strasburg cathedral was completed in 1354. This had calendar work showing the moveable feasts, an astrolabe, cymbals, a mechanical diorama and a crowing cock. King Peter II of Aragon ordered the construction of a striking clock for his palace in Perpignan in 1356.<sup>21</sup>

In 1365, Edward III caused a clock tower to be erected at Westminster. Its clock was constructed in perhaps 1368/69. The records say that it 'contained a clock which struck every hour on a great bell, to be heard into the hall in the sitting time of the Courts and the same clock on a clear night might be heard in the city of London.' This story bears a striking resemblance to the tradition of 1288. Between 1366 and 1370, two more clocks were set up by Edward III at royal palaces. These clocks each had bells weighing more than 4,000lb.

A most remarkable achievement was that of Giovanni De'Dondi, at one time professor of astronomy at the university of Padua. In 1364 he completed a clock which he had begun to make sixteen years earlier. The clock seems to have been destroyed by fire in the 16<sup>th</sup> century, but De'Dondi left a detailed and lucid 85 page description of it. De'Dondi reproduced the movements of the five known planets, the sun and the moon using the earth-centred Ptolemeic system. For the motion of Mercury alone this demanded a mechanical nightmare of gearing including elliptically shaped gears and epicyclic gears. De'Dondi actually apologises for having got his gearing wrong by one part in 1,600 and explains how to correct the error when it becomes noticeable. As was *universal before about 1400*, in De'Dondis clock *the dials rotate and the time is shown by a fixed pointer*.<sup>22</sup>

The records of Salisbury cathedral show that a clock was purchased in 1386. This clock has going and striking trains but no trace of a dial and it is likely that none ever existed. The clock was housed in a detached bell tower where it struck the hours on one of the bells. At Wells cathedral, the expenses accounts begin to show the wages of a clock keeper in 1392. The Wells clock seems to have been built by the same

craftsmen who built the Salisbury clock. The Wells clock originally had an astronomical dial. The tower dials were not added to the clock until one hundred years after the clock was built. At the hour, knights jousted and a puppet<sup>23</sup> “Jack Blandifer” struck a bell. To this day, striking puppets are known as jacks. Both these clocks are still in existence.

So we see that, towards the end of the 13<sup>th</sup> century, there are references to horologia which clearly enough refer to mechanical timekeepers. It is not until 1330 that conclusive evidence is available. Then between 1330 and 1350 there are described clocks of such advanced design and complexity that at least fifty years of previous development must be assumed. Thus the weight of evidence is that the mechanical clock arrived in about 1280. Bells were used to tell the time until late in the 14<sup>th</sup> century, and the moving hand did not supplant the moving dial until after 1400. Smith<sup>24</sup> goes so far as to say that, apart from astronomical dials, tower clocks did not use dials to tell the time until the 17<sup>th</sup> century. However, 15<sup>th</sup> century illuminated manuscripts show that, in Flanders and Italy at least, a twelve hour dial and a single hand was sometimes fixed to the exterior of a building or tower. The dials were then mainly made from wood or stone, and very few if any have survived.

The oldest existing mechanical clock, if it has been dated correctly, is a mid German wall clock from about 1380, in the Mainfränkisches Museum, Würzburg - a domestic alarum with rotating dial marked I to XII clockwise.

Present day France can claim only two clocks from the 14<sup>th</sup> century - that at Dijon (1383) and that at Rouen. (1389) “Only the one at Rouen is reasonably complete . . . .

Apart from these two, *no known continental clock possess any considerable part of its mechanism dating back to the 14<sup>th</sup> century.*”<sup>25</sup>

David Landes<sup>26</sup> tells us that as more and more clocks were built in each town or city, “their discrepant time signals gave rise to new issues of discord”. “Perhaps it was with this in mind that Charles V of France decreed in 1370 that all clocks in the city should be regulated on the one he was installing in his palace on the Ile de la Cité” Given the want of accuracy in the clocks of the day that was a forlorn hope.

## **Clock Wise**

By 13<sup>th</sup> century, most scientific instruments were using primarily arabic numerals. But clocks didn't follow this trend. They used Roman numerals. Why? Probably because one didn't have to do arithmetic with the reading from a clock, and the clocks were nothing more than a modification or adaptation of previously existing instruments, such as the clepsydra and the sun dial, which had been around since the Romans spread Christianity.

Is that why clocks go clockwise. Well yes, but not exactly.

The shadow of the gnomon on sundials moves clockwise around the dial<sup>27</sup>. Consequently the dial is marked with numbers in ascending order clockwise. For consistency, the dials of clepsydra would have been marked in the same sequence and the practice was continued into mechanical clocks. However, if a rotating dial is so marked, the dial must rotate in an anticlockwise direction, and that is indeed the way they were made. Clocks “went” anticlockwise.

Now if a rotating dial clock were to be converted into a moving hand stationary dial clock, either the dial would have to be changed to anticlockwise numbering, or additional gearing would be required, or it would have to be run backwards.. So conversion was not straight forward. Was this problem experienced when clocks that had previously only sounded a bell were given hands and dials on a tower? Who knows. If the clock had only sounded a bell it might not have had any dial and could have rotated in either direction. There

are pictures of Italian alarm clocks with dials numbered anticlockwise.

It is just possible to speculate that de Vick made a clock that stood upon the ground and sounded a single bell in a tower once at the hour - a passing strike clock. The clock was perhaps later moved and installed in a tower with a dial and at that time acquired a hand. If that were so, it is also possible that, in addition to all the other modifications over the years, the direction of rotation has been reversed.

### **von Wieck's Legacy**

When we test the evidence presented on behalf of von Wieck, it seems, at best, that we may have an example of one of the recognised fallacies in logic - so well known that it has a Latin name *post hoc, ergo propter hoc*. Just because *this* happened after *that*, it doesn't mean *that* caused *this*. But, I suggest the association of von Wieck with IIII is probably a misunderstanding of possibly his true significance.

If you examine photographs of Medieval and Renaissance scientific instruments other than clocks, you will find that, where they do use Roman numerals they too use IIII and not IV. It would be drawing much too long a bow to suggest the instrument makers also followed von Wieck.

The suggestion, that von Wieck or Charles V were men of such influence that every clockmaker and instrument maker throughout Europe would use IIII instead of IV so as to conform with them, is difficult to swallow.

On the contrary, it is very likely that all clock-makers used IIII on their dials for the same reason Charles V wanted IIII - it was numerically correct. Historians tell us that the Egyptians, some of the Greeks, the Chinese and the Romans all used IIII. The notation IV is called a subtractive notation, IX instead of VIII is another example. The Romans frequently used subtractive notation but they did not use IV. That usage began much later. Historians speculate that the Romans did not use IV because those were, in Latin, the first two letters of the name of the god Jupiter.

If von Wieck made the first tower clock to have a dial there might then have been quite some incentive to copy the mechanism and the general dial layout, except that we know that clock dials existed before von Wieck. Could it be that von Wieck made the first public clock to have a fixed dial and a moving hand?

More likely he introduced into France the division system of southern Germany, two cycles of twelve hours starting at midnight. That would be a good enough reason for an argument with King Charles who wanted to use his clock as the master to which all other clocks in the city would be synchronized. Perhaps that is why it was said to be accurate only to two hours per day. This system was one which *was* used by all clock-makers from about 1400 onwards. Perhaps that could be von Wieck's real claim to fame in France. Who knows.

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- <sup>1</sup> Perversely, one J.I. Missen has recently built a free pendulum clock with Roman striking but using IIII not IV.
- <sup>2</sup> Haswell EJ, *Horology*, Chapman and Hall, London 2<sup>nd</sup> ed 1937
- <sup>3</sup> Lorraine and Württemberg were the southernmost kingdoms of Germany.
- <sup>4</sup> Palmer B, De Vick, in *Colliers Encyclopaedia*, Crowell Collier Educational Corporation 1971
- <sup>5</sup> The University of Paris Law Faculty <http://www.acusd.edu/lawabroad/99paris.htm>
- <sup>6</sup> [www.inside-paris.com](http://www.inside-paris.com)
- <sup>7</sup> Paris Pages [www.paris.org/monuments](http://www.paris.org/monuments)
- <sup>8</sup> [www.parisdigest.com](http://www.parisdigest.com)
- <sup>9</sup> Clutton, Baillie & Ilbert ed, *Britten's Old Clocks and Watches and Their Makers*, ninth edition, Methuen London 1982, reprint by Bloomsbury Books 1989.
- <sup>10</sup> Hasluck P.N. *The Clock Jobber's Handybook*, Crosby Lockwood and Son London 1928 pp47 52
- <sup>11</sup> This modification would not have been made before 1656, the year Huygen showed how it could be done.
- <sup>12</sup> The seven stated daily periods fixed by ecclesiastical law for prayer and devotion.
- <sup>13</sup> Clutton et al op cit.
- <sup>14</sup> Figurines actuated by the clock
- <sup>15</sup> Bruton E, *Clocks and Watches*, Hamlyn Publishing, London, 1968
- <sup>16</sup> Smith A, ed *The International Dictionary of Clocks*, Chancellor Press, London, 1996
- <sup>17</sup> If you wish to read further on this matter you could do no better than Landes D.S, *Revolution in Time*, 2<sup>nd</sup> ed, Penguin Books Ltd, London, 2000 pp48-86
- <sup>18</sup> The following material is drawn variously from:
- Clutton et al op cit  
Tait H, *Clocks and Watches*, British Museum Publications, London, 1983  
Jagger C, *The World's Great Clocks and Watches*, Hamlyn Publishing, Leicester, 1977, 2<sup>nd</sup> ed 1986  
Bruton E. op cit
- <sup>19</sup> Also rendered as *Libros del Saber de Astronomia*, Book of the Wisdom of Astronomy of 1272
- <sup>20</sup> moving figurines
- <sup>21</sup> **Landes** D.S. *Revolution in Time, Clocks and the Making of the Modern World*. 2<sup>nd</sup> ed, Penguin Books Ltd London 2000 Landes cites as the most important works on Medieval technology:
- Beeson** C.F.C. *Perpignan 1356 and the Earliest Clocks*, *Antiquarian Horology* 7, June 1970 pp408-414
- and **Beeson** C.F.C. *Perpignan 1356: The making of a Tower Clock and Bell for the King's Castle*, *Antiquarian Horological Society* London 1983

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<sup>22</sup> The surviving descriptions of the clocks of Richard of Wallingford and Giovanni De'Dondi are sufficient to have permitted replicas to be made of the clocks. I believe that, respectively, they are in The British Museum and Smithsonian Institution Washington DC

<sup>23</sup> A "*jaquemart*"

<sup>24</sup> Smith A. op cit

<sup>25</sup> Clutton op cit

<sup>26</sup> Landes DS op cit

<sup>27</sup> With the exception of the south declining dials.