

ÉTRENNES CHRONOMÉTRIQUES, Pierre le Roy, Paris, 1760, Pages 180-194.

Transcribed and then translated by Robert St-Louis, January 2023.

(Note : some of the original punctuation, e.g. colons, semi-colons, have been retained for originality.)

Eulogy of Mr. JULIEN LE ROY.

Some people may ascribe this discourse to a gesture of vanity. The fear of such a baseless reproach does not alarm me: on some occasions, I have publicly praised my father in public, and have noticed that such a conduct has brought upon indulgence, and often even approval, from the public. Besides, the true eulogy of an artist is the story of his discoveries: and, who can best know those with which Mr. Julien le Roy has enriched horology, but a son who has been raised in this art, under his very eyes.

Reassured by these considerations, and from the example of an illustrious academician, Mr. De Fouchy, whose first eulogy was that of his father, a eulogy which compelled the Académie des Sciences to reinstate its author in his role of secretary, which he occupies presently, I will not waver from fulfilling what I owe to the memory of a loving father and a commendable man. After having collected his last breath and fulfilled in his name the sad prescribed obligations, who could deny me the consolation of throwing a few flowers on his tomb? Who could be envious of the last pleasure left to me, to retrace his talents and his virtues, and to work at emulating them.

Julien le Roy, *Horloger du Roi* [watch-clockmaker to the King], previous director of the *Société des Arts* etc., was born in Tours on the eight of August, 1686. His extremely simple life offered none of those tumultuous events we read with a certain eagerness; but for those who think and regard the true value of things and men, that of a patriot, who brought forth citizens to the state, useful discoveries for his art, who in dying takes with him the esteem of the public, even that of his sovereign, is as interesting as any other.

At the age of barely twelve, he developed his taste for horology. His moments of recreation were devoted to executing small mechanical parts. He scoured avidly all the books that could enlighten him on this science and on physics. By the age of thirteen, he built small horological works: the daytime did not suffice for him to examine them: he would get up at night, to see how he could further perfect the movement.

With such a marked fondness for the art that his parents encouraged him to embrace, he could not but progress very rapidly. At seventeen, he came to Paris, and was

admitted in 1713 into the *Corps des Horlogers* of this city. Having associated himself to the most renowned of that time, he soon became noticed because of a singular skill of the hand, and by a swiftness of execution, which seemed almost unbelievable. I have often heard it said that he had made and finished an entire movement of a repeater watch with its frame, as they were made in his youth, between the two “Fêtes Dieu”¹.

After having distinguished himself by a very particular dexterity, he didn't take long to get better known by several ingenious inventions. Firstly, he imagined a *Pendule d'équation* [a clock showing the true place of the sun in the ecliptic], that the Académie honoured with its approval. Soon he left his masters far behind him, and as early as 1720, one of the greatest mechanics-geometers in the Académie, Mr. Saurin, who had assumed a role for horological descriptions, spoke of him thus: *Mr. le Roy, although well known, is not yet regarded as highly as he deserves to be. Aided by his knowledge of geometry, he has penetrated all reaches of his art, and to the most perfect and finest theory, he combines the most delicate skill of his hand.* We could cite a hundred such sayings of this nature; but to better convey the services that he rendered to his art, let us consider the state in which he found it, and that in which he now leaves it.

Horology, about which we could aptly say what the Maréchal de Saxe and the Chevalier Folard said of war, *it's a job for ignorants, but an art for clever individuals*, was flourishing in France around the fifteenth century. Many watches from that period are greatly admired by amateurs of today; however I couldn't say by what fatality, around the start of this present century, it was in a state of mediocrity among us that we can hardly imagine, having presently become a considerable branch of commerce, which occupies more than two thousand people in Paris alone. But then, one could hardly count forty masters, the majority of which were repairing English watches.

On the contrary the English, our rivals, enriched by our remains, had acquired such a reputation, after several discoveries, that they sent their watches to all parts of the known world, and that we were also forced to go there to obtain some.

To free the state from this type of dependance, and to restore to the French horlogers the status they had let slip away, Mr. the Duc d'Orléans, Regent, in vain brought at great cost London workers, to work in a factory at Versailles; in vain to succeed this one, which dissipated after only two years, a second factory of this type was established at

1 Fête du Saint Sauveur, et fête de la Trinité, separated by a period of only 4 days.

Saint Germain : such care and expenses only served to show how difficult it is to establish or even restore an art in a country, once it has been left abandoned.

Meanwhile, Julien le Roy applied himself to perfecting French watches : upon reading in the great Newton's book Optics of experiments demonstrating laws governing attraction and cohesion; he had this idea of using this property of fluids to retain oil to wheel pivots and the balance, in this way greatly reducing wear and friction of these parts. To this end, he imagined many small parts, and in this he has been generally imitated.

I will not dwell on less important inventions of his, by which he ensured the exactness of wheel meshing, nor to the more advantageous arrangement he made of the different parts of a watch, nor finally to the means by which he made the escapement as fine as it could be, which is to say, to the potences that still bear his name; however I will come presently to the construction of his repeating watches.

English watches of this type have, in essence, four cases, namely the calotte [dust cap], the timbre or chime, the boëte vidée [pierced case], and the outer case which encapsulates everything. From this stems that in spite of the [repeating mechanism's] large size, the actual movement is so small and the motor so weak, that the slightest variation in oil thickness produces considerable errors, not to mention that the parts are essentially stacked together and become very difficult to produce.

Through his *répétitions sans timbre* [repeaters without chime] that he in essence forced the public to adopt, my father did away with all those cases, which had so many inconveniences, and only retained the last one. Through this expedient and the one we will soon discuss, he increased the size of the repeating movement by over half, or to state more exactly, the size of such a movement is to that of an English repeater by the ratio of 64 to 27. He also saw that by increasing the size of the *cadration* [motion work area under the dial], one was able to make the parts much larger, easier to fabricate, and producing a more certain effect : it is by this that he arrived at the construction in use at the present time, called *répétition à bête levée*².

I will not dwell on many other improvements he introduced in these kinds of works, for example an almost complete change in the arrangement and effects of parts in the *cadration* [motion work], as well as numerous attention to details, both new and useful, to the wheel works. To convey all the resulting advantages, and how much they assure the repeater function, would require a great number of figures, and more a book than a

2 The *bête levée* (for *enlevée*, or removed) is where Julien le Roy placed the repeating mechanism - Chapiro

simple eulogy. I cannot however omit a method which he had recently imagined, and which makes his repeaters even more precious. It is common to see some that, either after having worked a certain time, or in cold weather, strike quite slowly, or sometimes even refuse to strike at all. The oil of the striking mechanism being thus coagulated, the spring is not strong enough to turn the wheels and raise the hammer. The repeaters of Mr. Julien le Roy prevent this inconvenience, by a small escapement which replaces the last wheels, resulting in an advantageous construction which makes this part simpler and easier to execute, and also renders the functions more reliable.

Not satisfied to just perfect his own works, Julien le Roy remained attentive to what could be useful or interesting in the work of foreigners. Having heard of the watches of the famous Mr. Graham, illustrious member of the Royal Society of London, he had brought over in 1728, the first one with cylinder [escapement] that had been seen in Paris, which he provided to Mr. de Maupertuis after having it tested it.

Conversely, Mr. Graham did not hide the fuss he made about his counterpart and emulator; one day when Mylord Hamilton showed one of [Julien's] repeaters to many people, [Graham] said, after examining it : *I wish I were not as old, and be able to make one in this way.*

In this way do vastly superior men interact with each other. Dare I use the comparison from an illustrious poet : *Like fir trees, their summits rising above other trees, that let vile serpents tear themselves apart at their feet, covering them with their venom.*

This praise, rendered by Mr. le Roy to the most celebrated English horologist, was given back to him by almost all European horologists : from this resulted a rush to copy his inventions, engrave his name on most of the watches from Geneva, instead of those of Tompions and Grahams, with which they had previously been decorated; finally, the absolute abandonment of watches from England.

One part of the improvements I have just been discussing made its way immediately into clocks; it would be useless to try to explain this in detail. I will only say about *Tirages* or repeating clocks, that to make the parts of their motion work larger and more solid, in order to better see their faults, if there were any, and be in a position to repair them; he transposed them, from under the dial where they were constrained and hidden, onto the plate where the name appears³ and where they can be seen and have space to work well : from this construction which all *horlogers* adopted resulted a

3 i.e. the back plate of the clock, facing the rear

considerable improvement in clocks which have numerous effects to produce. Part of the motion work is placed under the dial, the rest onto the signed plate; in this way all the parts can be larger, easier to make, and their operation is infinitely better. The first of these types of works was made for His Majesty, to whom its author had the honour to explain its mechanical aspects.⁴

Regarding long pendulum clocks [pendules à secondes], here is the testimony that the late Mr. de Maupertuis provided following his operations in the North. « We had », said the academician in his book *La figure de la terre*, « an excellent instrument; it was a pendulum clock from Mr. Julien le Roy, whose precision seemed marvelous to us in all the observations that we made using it. »

Regarding equation clocks of all types, it would difficult to explain without figures what they owe to him. Moreover, the portable sundials [cadrans mobiles] he imagined to mark the equation, and of which Mr. Dufay said (*Mémoires de l'Académie*, year 1725), *that he believes it would be impossible to design anything that would be simpler, more exact, and more handy to use*; those dials, I would add, are in the hands of people around the world.

We note also from the *Mémoires de l'Académie*, year 1741, that horology is indebted to him for the compensation of the effects of heat and cold on regulators, by means of unequal lengthening of different metals.

Finally, his knowledge and ideas were also directed to *Horloges de Château* [turret clocks] : as we know, he is the inventor of what we call « horizontal clocks », that led to the abandonment of others. The frame of these works were usually consisted of eleven pieces, but he only retained the lower rectangle : in this way the clock, which was much easier to build and less costly, was infinitely more perfect.

On this subject, allow me to make a reflection which naturally presents itself. As we survey the various works that have made our horology superior to that of England; those inventions copied so hastily by people working in this art, we see that they often consist of a considerable simplification of the effect, and of the parts of watches or clocks. It seems that in our work, of whatever type it may be, we are condemned to proceed initially by overly complicated, and for this reason, imperfect means. In this, the human mind follows the path that it has taken when it tried to explain the system of the universe : it initially imagined mobiles, skies of crystal, concentric circles, whirlpools, etc.

4 This is explained by Julien le Roy in *Règle artificielle du temps*, 1737 edition, page 373

We have since tamed all those monsters of the imagination; we have extremely simplified the machine, and according to all appearances, have approached the truth.

To the fortunate inventions we have just seen, we could add the discoveries with which their author has enriched gnomonic instruments : his universal sundial with compass and *pinule* [sight-vane], good for tracing a meridian line, to determine the declination of the magnet : two of these sundials were made for his Majesty. I could also mention his universal horizontal sundial, useful to trace meridian lines using its axis, pierced with many holes and corresponding height scales engraved on its surface : the London Royal Society judged this sundial to be so well designed that it charged Doctor Desaguillers to give it to an English worker to build similar ones : but I will not dwell on this any more than on a method found by him to mark solar time on ordinary or ancient horizontal sundials, in any location on Earth. For these items, one can consult his memoirs i (1737 edition). I will also not speak about the advantages of his two equinoxial sundials, with compass and micrometer, only six inches long, one made for the King of Poland, Duke of Lorraine and of Bar, the other for his Majesty, and approved by the *Académie Royale des Sciences*. This last one marks each minute, as distinctly as a sundial of this type that would have a diameter of nine feet.

I will not speak about his watches and his three-part pendulums, the different escapements that he invented or perfected, the alarm clocks of which he gives a description in the book *Règle artificielle*, of his repeating mechanisms without wheel train, or of alarm type, etc. Finally, I will not include here the quantity of interesting questions elucidated by him; such as, for example, the one he gives a solution to in the *Journal de Trévoux*, march 1742, namely « that cold or heat equally speeds up or slows down two clocks whose pendulums are of different length, regardless of quantity, etc. »

These numerous discoveries afforded him the high reputation he enjoyed; in giving to him his lodging in the galleries of the Louvre which he obtained in 1739, and his patent of *Horloger du Roi*, Mr. the Cardinal of Fleury told him that his Majesty, content of his services, could well later add to this favour a pension, but the most deserving of graces of their Prince, are not often the most ardent to solicit them. Mr. le Roy thought that a Sovereign, like a father of a family, could not favour one of his children, without altering something in the inheritance of the others; thus were satisfied the desires of a gallant man, a true patriot, once he had received from his King a sign of esteem and benevolence.

If the famous artist whom we now regret has enriched horology by his works and his knowledge, his generosity toward those who under his direction cultivated this field, has contributed just as much to its perfection. I call upon all those who knew him : never was a man more accessible, more communicative, more lavish in sharing his knowledge. Did he not work as hard to make his mechanisms available to the eyes of those working in this art, as the English used to hide them. Where is the artist who ignored the pains he suffered to train skillful workers, when they were as rare, as they are now commonly found? Who doesn't know that he sacrificed in this way a part of his fortune; that he not only encouraged them through his advice and his examples; that he also bestowed rewards, whenever his means would allow?

Indeed, far was he from these mercenary men, whose sole goal is to appropriate the fruit of the talent and work of others, and to fatten themselves, so to speak, from their substance; a hundred workers in Paris will attest that Mr. Julien le Roy was the first to increase the price of their works, when they had succeeded, and that very often, he would set that price much beyond their expectations.

After such a conduct, should we be surprised at the sight of workers in tears that followed his funeral procession? Should we be astonished to have heard them say, in whispers, that they had lost their support, their comfort, their father.

We have just seen the qualities that made Julien le Roy admired and cherished as an artist; let us remember some aspects of his life, which will allow judging those that distinguished him as a man and as a citizen.

He was deeply linked with Henri Sully [sic Henry Sully]. The joy which these two famous men found in discussing their art together, had formed between them the strongest bonds of friendship. When the manufactures of Versailles and Saint Germain were dissolved, Sully tried to convince his friend to accept a pension from the government in London, and to go live there : this was in vain, never could he have accepted to bring his knowledge outside his homeland.

In October of the year 1728, the same Sully being deceased, Mr. Julien le Roy was urged to solicit the pension that [Sully] received; but he constantly refused, because Madame Sully sought it.⁵

5 Sully left his family quite destitute in death, so his pension helped his widow and children to live.

This same zeal urged him to undertake everything to honour the memory of his friend. It is from him that we hold the little that we know of his life. In spite of being considerably occupied, he took charge of the reprinting of one of his books, and enriched it with all that could make it commendable. He could have blended his input into the book; but he preferred that his name followed after the one of his friend, and arranged for some of his memoirs to be printed following the text of *la Regle artificielle du temps*.

Such was this famous man, of whom, to use the words of an illustrious journalist, *it seems to have been given to us in these days to enslave time and to force matter to represent to its utmost precision the all-too-rapid path of our years*. The end of his years came on September 20th, 1757 [sic, 1759]. Even his Majesty decided to speak publicly of the regret of his loss.

He had always had a delicate health, and was subject to colds which, since the age of thirty, would regularly indispose him three or four times a year : his health seemed to have improved for some years, but three colds he contracted during his last year, and that would not end as the others did, in an abundant expectoration, severely affected his constitution. Around the month of August, he was subjected to a continuous fever, his legs swelled and not long after his abdomen. When he died his age was seventy-three years, one month and twelve days.

In 1714, he had married Jeanne de Lafons : during the forty-five he lived with her, he never ceased to provide her with all the satisfaction a dear wife can expect from a gentleman. He had four sons through this marriage : Jean [Baptiste] le Roy, of the *Académie Royale des Sciences* : Julien David le Roy, of the *Académie Royale d'Architecture* and the *Institut de Boulogne*, author of the book *des Ruines de la Grece* [the ruins of Greece]. Charles le Roy, of the *Académie Royale de Montpellier*, correspondent in the one of Sciences of Paris, and professor of Medecine at the University of Montpellier; and I who, as the oldest, was destined from the most tender age to follow an art he had become famous in. Thanks to the kindness of the King, and the benevolence of Mr. the Marquis of Marigny, I am honoured to succeed him in his rôle of Horloger to his Majesty; and I would be happy if I could also replace him in the heart and the esteem of so many commendable and illustrious persons, who honoured him with their regrets, and even with their tears.