A Forgotten Genius.

By C. Van Noorden.

NICHOLAS GROLLIER DE SERVIERE was born at Lyons in 1596, and on reaching the age of fourteen, followed the example of his ancestors and took up the profession of arms. He was sent to serve in Italy, where, at the Siege of Verceil, his daring cost him an eye, which was carried away by a splinter from a gun. A first experience so dearly bought, far from daunting him, did not prevent his taking part in all the other engagements of this war. On its conclusion he went to serve for some time in Flanders, in the troops of the Dutch States, at that time the finest school of military discipline.

From here he entered into the service of the Emperor Ferdinand of Germany, where he acquired a great reputation, above all at the Battle of Prague. After this he was obliged to accompany Ferdinand's Ambassador to Constantinople, where he remained six months; but war having broken out again in France, he immediately returned to give to his King and country the tokens of his zeal, and to consecrate to them the happy talents with which he was gifted, and the experience he had gained in the service of foreign Princes. He did so with much distinction, especially at the sieges of Montauban, Tonnins, Briteste, St. Foy, Négrepelisse, Nîmes, and Privat, winning high praise from the King.

Among a great number of brilliant actions we will content ourselves with one, which will suffice to show both his genius and courage. He was at the time senior captain of the regiment of Infantry of Aigue-Bonne, and commanded on the banks of the Rhone on the Tarascon side, when the necessity arose of helping the town of Beaucaire, then besieged by Montmorency.

Great difficulties presented themselves to be surmounted: the town was blockaded on the land side, the bridges between Tarascon and Beaucaire had been broken down, the river had to be crossed in sight of the enemy, and, to crown all, the citadel was in the power of the besiegers.

So many obstacles seemed to make the enterprise impossible when M. de Servière, who had orders to essay the relief, profiting by a few boats which fell in his way, combined them very skilfully into a kind of flying bridge with protective parapets of thick beams. By means of this contrivance, which he invented on the spot, and constructed with great rapidity, he transferred the whole of his regiment to the further bank; and, in spite of a heavy fire and the strenuous efforts of the enemy, threw himself with but slight loss into the besieged town, and was the cause of the raising of the siege a few days later.

The renown of this feat having spread to the enemy's army, Montmorency spared no efforts to attach to himself so brilliant an officer, using as an argument "that he had been left without reward," and offering him employ and appointments much more considerable than those he held in the King's army—but all without effect. Some time afterwards, having been made Lieutenant-Colonel of his regiment of Aigue-Bonne, he assisted at the battles of Vellane and Tesin, at the retreat of Guiers, at the sieges of Turin, Casal, and Pignerol, and on many other occasions.

His superior genius for mathematics, especially for fortifications, and the great experience he had acquired were so universally recognised, that he was intrusted with the control of works in most of the later sieges just mentioned.

Finally, after so many labours, covered with glory and seamed with scars, he retired from service, to taste the sweets of repose, occupying the rest of his life in many ingenious inventions, comprising, amongst others, turnings, hydraulic machines, hand and wind-mills, boats with paddle-wheels, and especially clocks. M. de Servière died at Lyons, October, 1689, aged ninety-three.

The machines which M. de Servière has invented for clocks are very curious; and

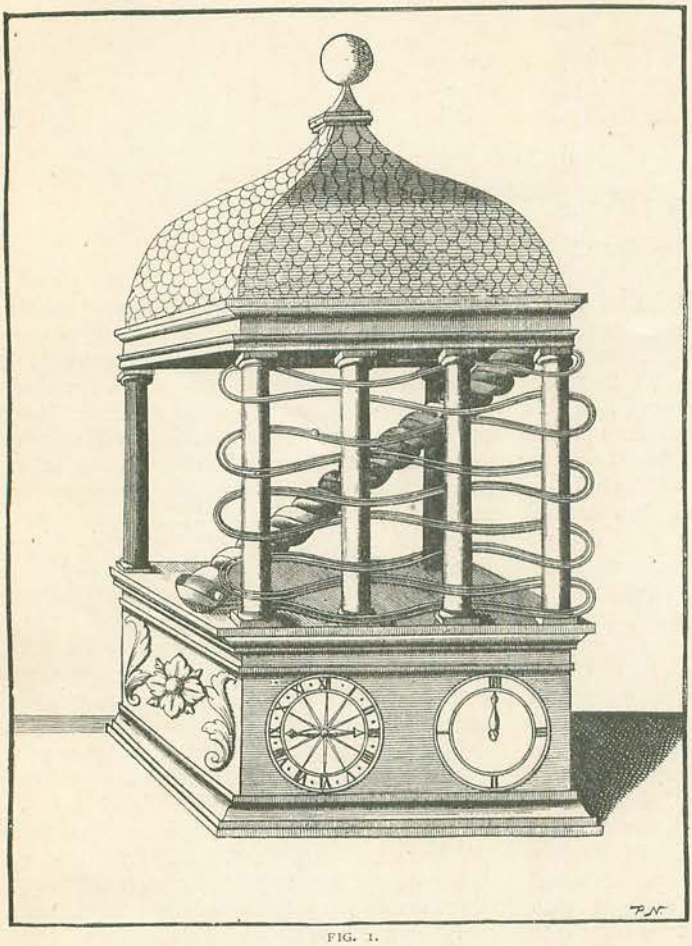


FIG. 1.

although the greater part have for their principle the elasticity of springs, the heaviness of weights, or the flowing of water or sand, they were, for their time, so different from any that existed of this kind, and they produced such surprising effects, that they were regarded as veritable prodigies of art, and, as will be seen from the following examples, not without justice.

Fig. 1 represents a clock with an oblong square dome, raised on six columns upon a base of the same shape. Around four columns forming one side there ran double wires of copper placed parallel to each other in a spiral coil from the dome to the base. These wires were fixed to the columns by little brackets, in such a way that they formed a canal to a ball of the same metal, which, by its own weight, descended all their length, arriving at the base, where it then enters on the thread of an archimedean screw placed between the six pillars, and which divides diagonally the space between the dome and the base. As soon as the screw has received the ball it turns, and by this means raises the ball to the dome, where it retakes the road traced by the copper wires. In this machine the ball is not lost to sight; you perceive it mount by the archimedean screw and descend by the canal, and by these continued movements it causes the wheels to revolve. The dials for hour and minute are on the faces of the base.

Another clock (Fig. 2) is a desk about 18in. long, the back being raised 12in. On the inclined plane is cut a canal, which

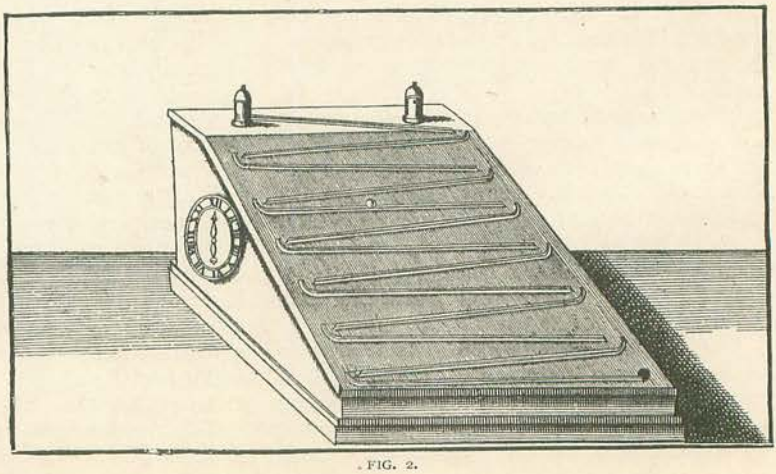


FIG. 2.

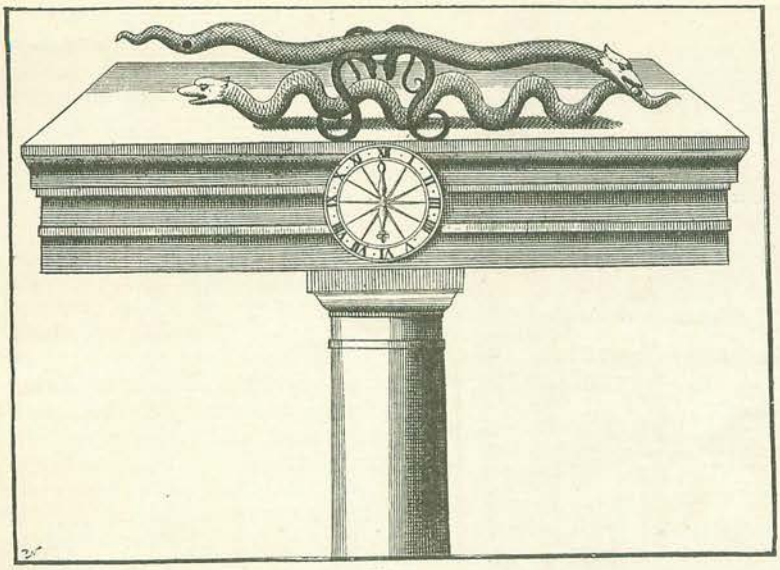


FIG. 3.

conducts a ball in the same way as the former clock to the lower end of the plane, where it enters the body of the machine. Immediately it enters, a second ball appears at the top of the canal, which takes the route of the first, and these two balls serve for movement to the clock, which has its dials on one of the faces of the desk. To show that the works of this machine occupy but little space, the plane can be raised like a desk-lid, and it will be found that part of the interior is empty, and the other part is filled with two rows of little drawers containing curious works of no connection with the clock.

Fig. 3 shows, on a platform upheld by a pillar, two serpents, one over the other. The uppermost is raised about 6in. above the lower. As it is pivoted by the middle of the body, it can see-saw the head and tail. When its tail is lowered, it ejects a ball which the lower serpent swallows, whereon the first, lowering its head, the ball enters its mouth, and is again ejected from its tail into the mouth of the lower serpent.

This movement is continuous, and actuates the clock whose dial is placed above the capital of the column.

The next machine (Fig. 4) consists of a cylindrical box, which, being posed with its curvilinear surface on an inclined plane, seems to rest there, against the nature of round bodies, which at once descend any incline. The box in question descends its plane slowly, and in time. It is made of copper, is about 5in. diameter, and the plane on which it is placed is 4ft. long. The hours are inscribed on the thickness of this inclined plane and on the circumference of the box, which has a hand with two points, which is always vertical and marks the hour on two different places, with the upper point on the edge of the box, and with the lower on the inclined plane. This clock has no spring or balance. The duration of time it works depends on the length of its inclined plane, and it only receives its movement from the effort the round body makes to keep on the plane against its natural course. A variation of

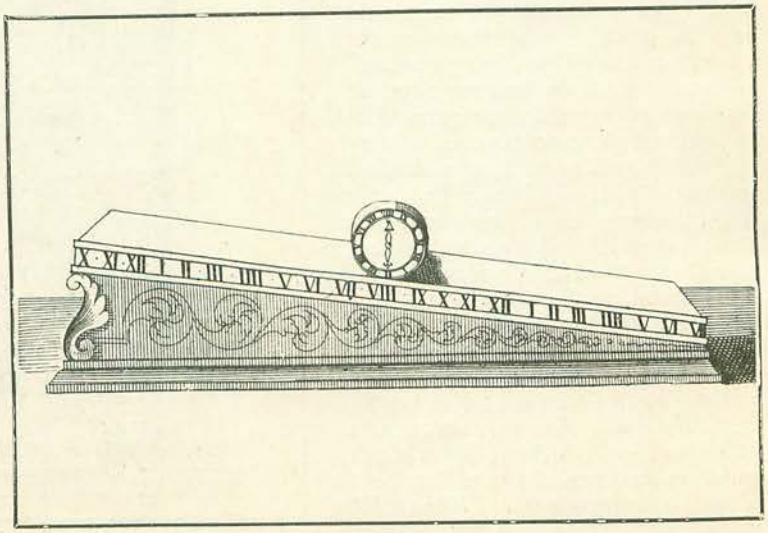


FIG. 4.

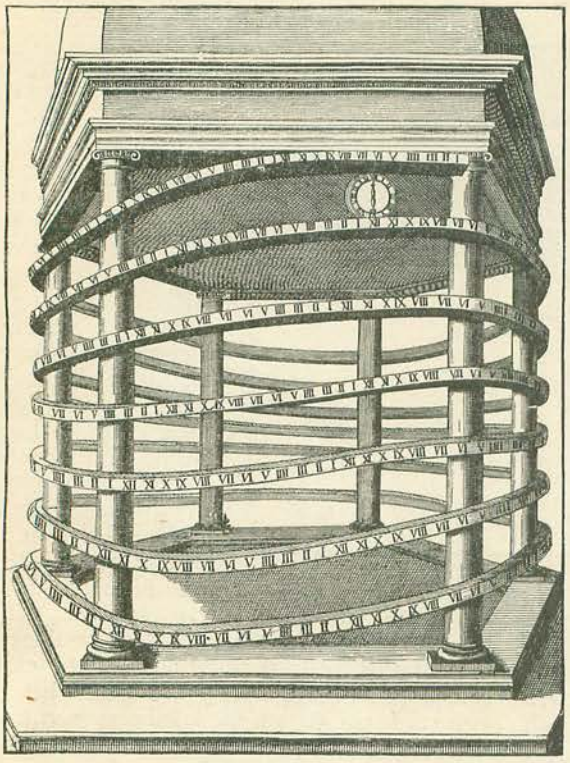


FIG. 5.

this has added to the lower end of the plane several other such planes, which rise as soon as the cylindrical box arrives on them, and incline to the same degree as the former. By this means, multiplying this kind of inclined plane along the wall of a large room or a gallery, one would have a clock which would go for several months without being touched.

Fig. 5 is made on the same principle as the one preceding, excepting that its inclined plane is disposed spirally around six pillars forming a kind of rotunda. This clock will go for a week, and would go longer were its plane extended. To reset these last two clocks it is only necessary to replace them at the beginning of the first plane, taking care that they mark the correct hour.

Fig. 6 marks the hours by means of a sand-glass. The sand takes exactly an hour to fall; the cage has an axle which causes it to turn like a clock hand, on the front of a case like those of our ordinary clocks. The bulbs have each a false moving bottom, which can rise and fall a little by means of a thin piece of leather folded underneath. When the sand has all fallen into the lower bulb, the double bottom (on which the sand rests) falls, and as it then presses on a base connected with a counterpoise inside the case, less weighty than the whole of the sand, this base swings upward the moment the last grains of sand fall, and loosening a catch at the same time, the springs inside the case turn the hour-glass. Thus the empty bulb, which was at the top, is now at the bottom, and the full half is above; in this way the running of the sand is recommenced, and continues without interruption. Every time the glass reverses, it turns a dial hidden inside the case a twelfth of a circle, and the twelve hours, one after the other, appear at a little opening over the hour-glass.

The next machine (Fig. 7) is a celestial globe on the circumference of which the hours are inscribed, which turns on the head of an Atlas who bears it, to mark the time at a

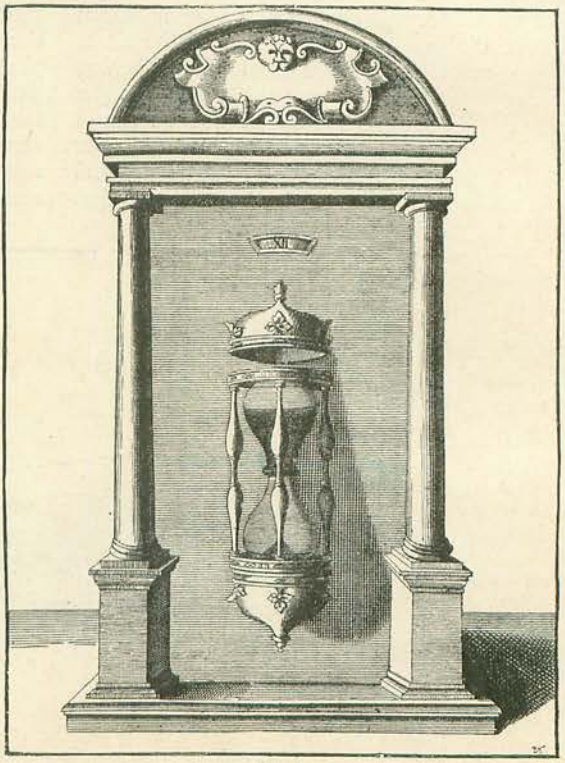


FIG. 6.

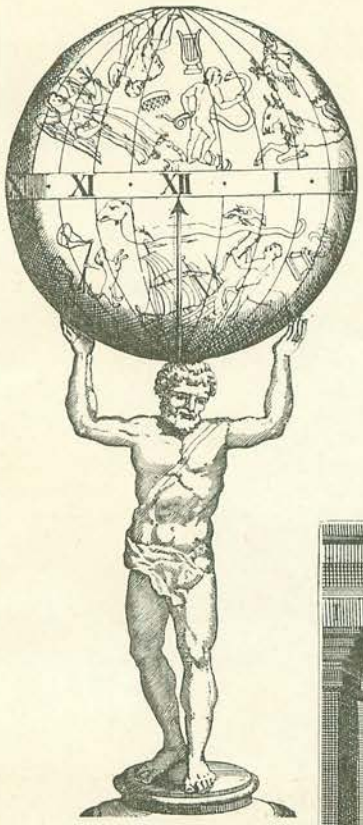


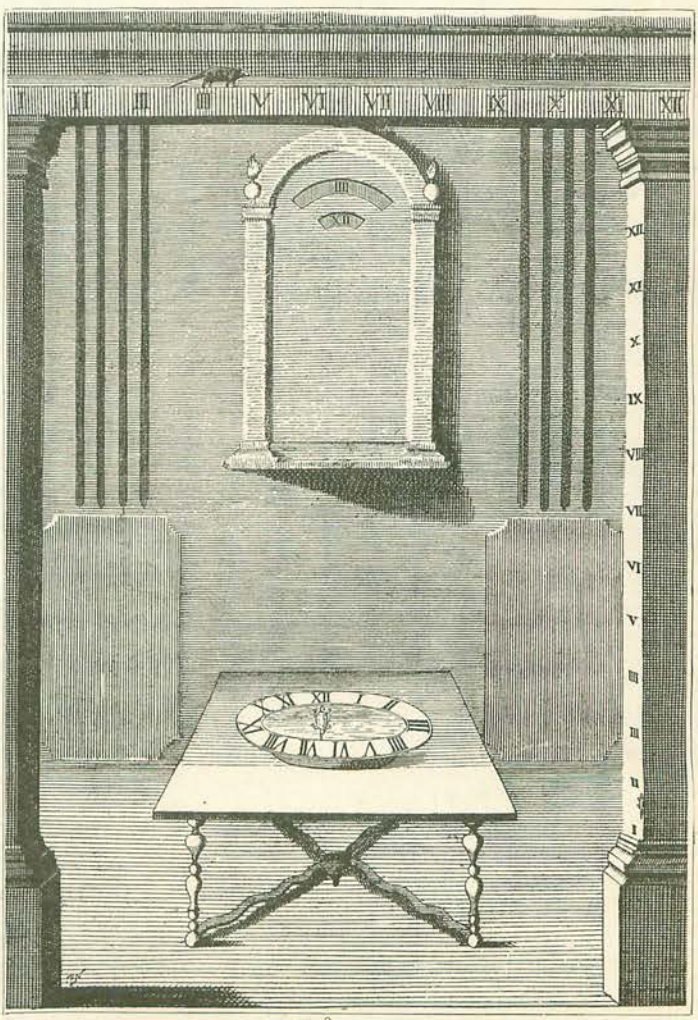
FIG. 7.

fixed pointer. The works of this clock are concealed in the interior of the globe, and cause it to turn in such manner that it is not the hand which comes to the hours, but the hours themselves which come successively to seek the hand.

Figs. 8 and 9 show two clocks of which the hours are inscribed along a cornice and down the length of a pillar. A little figure of a mouse marks the hours by running along the cornice, whilst a lizard performs the same office, and may be perceived at the right hand of the illustration marking half-past one o'clock, by mounting the pillar. These clocks are worked by a counterbalance.

Fig. 10 has the movement of an ordinary clock of the time, but has a different dial. It has no hands, but in their place has two unequal circles, of which the larger marks the hours and the smaller the quarters. These circles are hidden inside the machine, and only show the current hour through two openings in the face.

The last specimen of M. de Servière's ingenuity we describe (Fig. 11) is what must have been, for his time, a great puzzle. A pewter plate, on the rim of which are engraved the hours, is filled with water; a little figure of a tortoise in cork being thrown in immediately seeks the correct hour and points it out with its head. If one move it away it returns at once, and if left alone follows slowly the border of the plate, marking the time. This movement is, of course, effected by a moving magnet, and a small rod of metal in the tortoise's head, but no sign is visible of any mechanism, which is concealed in the false bottom of the plate.



FIGS. 8, 9, 10, 11.