V3464 Pendulum clock
1756
h 186, w 47, d 28
Signed on dial 'Jacobüs Vander Kloese Leÿde'
By Jacob van der Cloese, Leiden

Johan Lulofs concluded that the timepieces in the Leiden Observatory were no longer sufficient to meet modern standards. He needed a precise timepiece for his length standard measurements. He therefore asked the board of the university for a new regulator, which they granted him. Lulofs contracted Van der Cloese to make the clock after the description on Graham pendulum clock by J.J. von Marioni. When it was finished it was placed in a room at the south side of the top floor of the Academy building. In the new Observatory the regulator was no longer used for astronomical purposes and was put in the library.

As we have said, Lulofs used this pendulum clock for precise length measurements. The idea that the length of a seconds pendulum could serve as a natural and unchanging standard of length was put forward around the 1670's by, amongst others, Jean Picard and Christiaan Huygens. Soon afterwards it was realised that the length of a seconds pendulum would not be constant around the world, because the earth is not a perfect sphere. The idea of setting a local standard for length with a pendulum clock was taken up again in the mid-18th century. Lulofs used a simple pendulum of known length, fixed to a wooden pole. After this was set in motion, the times at which it was in step with the pendulum of the pendulum of the Van der Cloese clock were noted. The true rate of the van der Cloese clock, which was known from transit observations, was then used to calculate the exact period of Lulofs' pendulum. Using this method Lulofs eventually calculated the length of a seconds pendulum for the latitude of Leiden to be 3.166 Rhenish feet.

The clock case is not the original one, but a later replacement . The gilded brass dial has a central hour hand(I-XII) and minute hand (5-60, divided in 60 parts). At the bottom are two corner pieces: a farmer with goat on the left and a sea-monster on the right. All cahpter rings are silvered. There are three secondary dials: one for the maintaining power on the left, one for the seconds (5-60, divided in 60 parts) in the middle and one for the regulation of the pendulum length (5-60, divided in 60 parts) on the right.

The movement is weight-driven and the maintaining power is operated by a bolt-and-shutter mechanism, in which a small steel spring takes over during rewinding. The bolt engages the third wheel, and is operated by pulling down the cord on the downside left. At the same time, the shutter moves aside and opens the winder aperture. The duration is one month.

The pendulum is a brass rod with a lead-filled brass bob and is suspended by a spring. It is driven by the recoil anchor type escapement with a steel anchor and brass escape wheel. The pendulum can be lengthened or shortened by the pointer in the right corner of the clock. The hand of the dial alters the length by slightly raising or lowering the suspension spring by way of a lever mechanism. This could be done while the movement was running.

Cloese, Jacob van der (Cloesen)
Jacob van der Cloese (1692-1767) was born as the son of the Hague clockmaker Bernard van der Cloese. From 1718 Jacob lived in Leiden where he went on to study at the university a year later. In 1721 he became the city's clockmaker. He also made and repaired clocks for the university.

Hans Hooijmaijers, July 2005