

Cornelis Jacobszoon Drebbel
Alkmaar 1572 – 1633 London
'a Bold mind, a show-off to the World'
 www.drebbel.net



1573 October 8. The siege of Alkmaar by the Spanish army is terminated. Alkmaar, the first Dutch city to resist the Spaniards. At Alkmaar, Victory begins!

Cornelis Drebbel was born in October 1572, in the city of Alkmaar (Netherlands) at Dronckenoot in the second house from the corner of the Huigh-de-brouwer steegh.

Drebbel: influential natural philosopher!

Drebbel's natural philosophy, which he had written in his three Tracts, was studied by scientists from all over Europe. Hypothesis: René Descartes is influenced by Drebbel's philosophy through 'Drebbel-watcher', Descartes' mentor Isaac Beeckman (1588-1637) and his studies at the University of Franeker with Adriaen Metius from Alkmaar. In his book *'Discours de la Méthode'* (Discourse on the Method) Descartes emphasizes, just like Drebbel, to think rationally: *'Cogito, ergo sum'*, I think, therefore I exist. Baruch de Spinoza (1632-1677) states in his book *'Ethics'*, as Drebbel and Descartes, 'God and Nature are One'. As well Drebbel, Descartes and De Spinoza criticize and reject Aristotle's dominant teachings in universities. They believe in a 'super-natural, earthly god'. From that point of view, religion becomes superstition.

'The idea of Drebbel as a universal wonderworker was as widespread in the seventeenth century as the idea of Einstein as a genius is today', writes Dr. Vera Keller in her Ph.D. dissertation 'Cornelis Drebbel, Fame and the Making of Modernity.' (Princeton University, Nov. 2008)

Drebbel: great innovator! The Nicolas Tesla of his time.

Brilliant empiric researcher, inspired by the vision of Francis Bacon on the new approach of science with emphasis on fundamental research. Around 1600, Drebbel registers with Staten General several patents: writes interesting essays about his experiments with air pressure. Makes beautiful engravings like *The Seven Liberal Arts* on a map of the city of Alkmaar.

Drebbel's inventions and innovations concern:

Measurement- and control technology & pneumatics: Famous for his *Primo Mobile* with which he shows the way the universe works. He builds and navigates under water in the Thames - with his submarine from Whitehall to Greenwich. Builds an incubator for eggs and a portable stove/oven with an optimal use of fuel, able to keep the heat on a constant temperature by means of his invention, a regulator/thermostat. Designs a solar energy system for heating of the city of London (perpetual fire), demonstrates air-conditioning, let it rain, makes lightning and thunder 'on command', develops fountains, fresh water supply for the city of Middelburg. Involved in the draining of the moors around Cambridge (the Fens). Develops predecessors of the barometer and thermometer, the *'Drebbeliaensch instrument'*, and harpsichords that play on solar energy.

Ars Volandi: his last invention in pursuit of which Drebbel died. Drebbel developed a paper kite that could fly when there was no wind; a drone.

Optics: develops an automatic precision lens-grinding machine, builds improved telescopes, constructs the first microscope ('lunette de Dreubells'), camera obscura, *laterna magica*, smart mirrors and manufactures Dutch or Batavian tears, the predecessor of safety glass.

Chemistry: develops an innovative way to produce precious scarlet red dye, establishes a dye works in Stratford-at-Bow-on-Lea. Develops a methodology to regain silver ore. Makes oxygen for his submarine. Develops a method to change salt water into potable water. In 1609, inspired by Drebbel, the chair of Chymiatrics, world's first pharmaco-logical-medicine training course in chemistry starts at Marburg university in Hessen, Germany.

Hydraulics: makes theater props, moving statues. Is involved in plans to build a new theater in London. A weight-lifting engine for lifting sunken treasure-ship.

Pyrotechnics: produces torpedos and sea mines and a detonator with Batavian tears, uses fulminating mercury - *aurum fulminarum* - as an explosive.

Drebbel's Tracts

The Alckmaersche Philosoph Cornelis Drebbel writes the essays: *'Miracle of the eternal Movement/done / etc.* and *'a short Tract of the Nature of the Elements and how they cause the wind, rain, thunder and lightning, and why these are useful'*.

In 1621 *'A clear description of the Quinta Essentia, never printed before. Plus a dedication of the Primum Mobile'*. Drebbel's books and his ideas have a strong influence in his time. For over 200 years, reprints are published and read.

1577 Dutch Staten-General invite Matthias, brother of the, in 1576 appointed Emperor of the Holy Roman Empire, Rudolf II, to become Sovereign of the Netherlands.

1579 January 23. The Union of Utrecht. The Republic of the Seven United Provinces is born.

1585 A few years, Drebbel attends the Latin school of Rector Potter in Alkmaar.

1587-1590 Drebbel lives in Harlem, student at the Harlem Academy of painter/writer Carel van Mander, painter Cornelis van Haarlem and engraver, painter, publisher Hendrick Goltzius, who was a disciple of humanist and engraver Dirck Coornert (1522-1590).

1595 Feijtge Jansdochter (Sophia) Goltz, the younger sister of Hendrick Goltzius, living in Alkmaar and Cornelis Drebbel marry. They live at the cornerhouse Doelenstraat-Koningsweg in Alkmaar, get 2 daughters, Anna and Catharina, and in London, 2 sons, Jan and Jacob.

1596 René Descartes is born in La Haye en Touraine, France, lives many years in the Republic, dies 1651 in Stockholm.

1597 Drebbel engraves the map of Alkmaar, measured by Adriaen Thönnissen, 'Stercktebouwmeester der Vereenighde Nederlanden', designer of the reinforcements of Alkmaar and many other cities in the Republic, f.e. fort Bourtange. Some of Adriaen's sons take the family name Metius.

1598 Staten-General, sovereign ruling the Republic of the Seven United Provinces of The Netherlands grant two patents: 'Octroy for Cornelius Jacobsz. Drebbel: the first, an instrument which enables to raise great quantities of fresh water, by means of a fountain from 'low' till XXX, XL or L or more feet, floating through leaden pipes. The other, a time piece or clockwork which is able to show the time for over fifty, LX, yes even more than a hundred years, without winding a spring or other action, at least as long as the wheels or clockwork is not worn out'.

1600-1601 Drebbel designs and builds a fountain - fresh-water-supply- at the Noorderpoort in Middelburg. Meets with many intellectuals in the city as well as spectacle maker Hans Lipperhey, who receives a patent for his *'verre gesicht'*, a telescope.

1602 Another patent for Drebbel: *'invention of a chimney system, as never constructed before, that draws and dispatches the smoke in a convenient way'*.

1603 Queen Elizabeth I (1533–24 March 1603) dies. Is succeeded by James Stuart, king of Scotland and England, James VI-I, in particular lover of hunting and men.

1604 Publication of Drebbel's: *'A short Tract of the Nature of the Elements*. July: the Drebbel family sails to Ipswich in England, is in 1605 housed at Eltham Palace. Francis Bacon (1561-1626), philosopher and statesman, is one of the quartermasters.

1607 *Gerrit Pietersz. (Schagen), Bookseller/ living at the corner of the Meent / op de Waegh/tot Alckmaer*, publishes -The Miracle invention of the Perpetual motion . The essay is dedicated to King James VI-I of England / Scotland. Printed in Alkmaar by Jacob de Meester. In it a description of how he made, by breaking salpeter by fire, the air of life.

1608 Drebbel, one of the tutors of crown prince Henry (1594-1612). Writes from London to his friend Van Rietwijck in Alkmaar about his performances with a Camera obscura. Creator of special effects - thunder, lightning, storm and the projection of ghosts - for the masques of Ben Jonson and William Shakespeare

▶ Cornelis Jacobszoon Drebbel

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- 1610 October. the Drebbel family arrive at the court of Emperor Rudolf II von Habsburg-Österreich in Prague, lover of women, alchemy and art. Drebbel demonstrates and sells his Primum Mobile, does chemical experiments with the emperor, meets astronomer Johann Kepler, is involved in mining projects.
- 1612 January. Emperor Rudolf II, Drebbels sponsor dies. November 6, Crown Prince Henry Frederick Stuart, *'the Renaissance prince'*, Drebbels' major sponsor in England, suddenly passes away, 18 years old.
- 1613 Spring: Drebbel travels back from Prague to London. Has no income, no patron: In a letter to King James VI-I he proposes to develop diverse interesting fountains, apparatus and instruments. Offers to optimize the exploitation of a silver mine, asks for permission to organize a lottery.
- 1618-1648 Devastating war in the Holy Roman Empire, in particular in Germany. Many cities in ashes, around 5 mln people killed, most of them by the army of the catholic emperor Von Habsburg.
- 1620 Drebbel demonstrates his submarine in the Thames. *'March 15 anno 1620 stilo novo. I received a few days ago, a letter from my father in which he wrote that Drebbel in Engelandt developed a ship with which he is able to navigate between two waters as he likes.'* (Citation from the diary of Isaac Beeckman (1588-1637) . Drebbel gets involved in a plan to build a theater in London, with musician William Byrd (ca. 1543-1623)
- Constantijn Huygens (1596-1687) regularly meets Drebbel in England. In his autobiography, Huygens writes: *'when I placed this moon (Drebbel) next to this sun (Bacon), I was in particular interested in physics. This modest man, a citizen from Alkmaar, had an amazing experience in this area, as I have noticed with my own eyes.'* Huygens about Drebbels microscope: *'Not only from his hands but also from his miraculous brain comes, what I call the standing telescope. Had Drebbel during his life done nothing else than this miraculous tube, he had acquired immortal fame forever.'* Drebbel works several years for the George Villiers, duke of Buckingham (1592-1628), involved in garden design.
- 1622 Nicolas-Claude Fabri de Peiresc (1580-1637) scientist and senior officer in Paris, Drebbels' first biographer, describes a mite in his cheese, which he noticed by looking through a microscope of Drebbel (lunette de Dreubells). He never eats cheese again. De Peiresc corresponds a.o. with Peter Paul Rubens, Galileo Galilei and Marin Mersenne about Drebbels innovations.
- 1623 In Stratford-Langton, July 20, Drebbel writes in the Album Amicorum of Daniel Stolcius: *'Oefent u gaven regt - Try thy gifts rightly'*. With his portrait and signature.
- 1625 King James VI-I dies, his son Charles I succeeds him. Drebbel works on designs for fountains at York House in London and New Hall in Chelmsford. Palaces owned by George Villiers, king James' lover.
- 1626 Francis Bacon dies in London. *'For all knowledge and wonder (which is the seed of knowledge) is an impression of pleasure in itself'*. Bacon's last book Nova Atlantis describes an 'ideal' utopic society, enlightening, peaceful, technological far ahead. With scientists cooperating in Salomons House, a modern university with emphasis on empirical research and applied technology. Many inventions, innovations and constructions, described in *'Nova Atlantis'* were build by Cornelis Drebbel.
- 1626-27 At the request of king Charles and the mandate of the English marine, the initiative of Buckingham, Drebbel constructs special weapons such as a torpedo launch installation mounted on a ship, manufactures torpedo's, firebombs to be used to liberate the Huguenots, sieged en entrenched in La Rochelle, defending themselves against the army of the catholic king of France. Drebbels warmachines have no result. According to the English, because they did not work, according to Drebbel because the cowardly English didn't dare to get close enough to the French.
- 1628 China: in the book *'Explanations of the Wonders of the West'*, published in Chinese in Beijing, Drebbel and several of his inventions - furnaces, feedback control system - are mentioned. Some of *'Koruneriusu Doreberu'* inventions are also known in Japan.
- 1629 Drebbel *'the engineere'* is involved in a plan for the drainage of the fens around Cambridge.
- 1632 Anthony van Dyck paints Drebbels portrait at Eltham Palace where he and Drebbel have a studio. His portrait is in the Hermitage, St. Petersburg. Famous philosopher Baruch de Spinoza, born in Amsterdam (1677†). In his book *'Ethica'*, he merges god and nature as One, just as Drebbel and Descartes did.
- 1633 In his final years, Drebbel is Chief Engineer at the court. He and his family run an Alehouse at the quay of the Thames near The Tower. November 7/17 1633, Cornelis Drebbel passes away. Leaves behind four children and 25 grand-children. He is buried at the Trinity Minorities at the eastern borders of the City of London; within the Liberties of the Tower of London.
- 1635-1660 The Hartlib Circle, almost 100 scientists from all over Europe exchange knowledge. In Samuel Hartlib's network a.o. Robert Boyle, Thomas Hobbes, René Descartes, Marin Mersenne and Jan Amos Komenský (Comenius).
- 1660 November Foundation of the *'Royal Society of London for the Improvement of Natural Knowledge'*. The members, in particular Robert Boyle, reconstruct the experiments of *'that Famous Mechanician and Chymist Cornelius Drebbel'*.
- 1853 De Koninklijke Nederlandse Akademie van Wetenschappen (KNAW-Dutch Royal Academy of Sciences), in 1808 founded by the first king of the Netherlands, Louis Bonaparte, judges the Dutch scientists, distinguishes 'real scientists from charlatans'. Judgement over Cornelis Drebbel: *'it would go to far to prove our negative judgement about Drebbel with facts but, his achievements are far behind those of Galilei and Kepler'*.
- 1905 Dr. Henri Naber tries to rehabilitate Drebbel with lectures and his book *'de Ster van 1572'*, starts the Drebbel-Society in Hoorn in 1924. Ruthlessly Naber's book and Drebbels scientific contributions are devastated by Prof. Dr. Frans Jaeger his book: *'Cornelis Drebbel en zijne Tijdgenooten (1922)'*. He wipes the floor with Naber's method and conclusions, states that he wants to 'paint a clear picture' on the basis of new and existing material.
- 1994 Cornelis Drebbel, the first Alkmaar citizen on the moon. In the Clemen-tine galaxy, a crater with a section of 30 km, named after Drebbel.
- 2011 Thomas Chase: *'Drebbel, a very good inventor who produced oxygen in his submarine'* in Foundations of Physics, International Journal devoted to the Conceptual Bases and Fundamental Theories of Modern Physics Biophysics and Cosmology emphasizes the logical method-logical and philosophical premises of modern physical theories and procedures. ISSN (printed): 0015-9018.
- 2013 Drebbel chosen by Alkmaars citizens as the 'Greatest Alkmaar Citizen' ever. Juli 2013 Drebbels' bust revealed at Doelenveld in Alkmaar. The BBC dedicates a one hour broadcast to Drebbel. In the books of Harry Potter, Drebbel/Droebel, Minister for Magic. Star Wars: *'His name is Captain Drebbel. He travels the galaxy in his ship.'*
- 2022 Publication of the book: Cornelis Jacobszoon Drebbel - Alkmaar 1572-London 1633, Voorloper van de Wetenschappelijke Revolutie of Charlatan? - *'Interloper of the Scientific Revolution or Charlatan?'* by Hubert van Onna; 550 pages, Dutch language, available free of charge at www.drebbel.net

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