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The 'true inventor' of the telescope. A survey of 400 years of debate.

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# The ‘true inventor’ of the telescope.

## A survey of 400 years of debate

Huib J. Zuidervaart

There is no nation which has not claimed for itself the remarkable invention of the telescope: indeed, the French, Spanish, English, Italians, and Hollanders have all maintained that they did this.

Pierre Borel, *De vero telescopii inventore* (1656)

### I. INTRODUCTION

#### *Cultural Nationalism and Historical Constructs*

Who invented the telescope? From the very moment the telescope emerged as a useful tool for extending man’s vision, this seemingly simple question led to a bewildering array of answers. The epigram above, written in the mid-seventeenth century, clearly illustrates this point. Indeed, over the years the ‘invention’ of the telescope has been attributed to at least a dozen ‘inventors,’ from various countries<sup>1</sup>. And the priority question has remained problematic for four centuries. Even in September 2008, the month in which the 400<sup>th</sup> anniversary of the ‘invention’ was celebrated in The Netherlands, a new claim was put forward, when the popular monthly *History Today* published a rather speculative article, in which the author, Nick Pelling, suggested that the honour of the invention should *not* go to the Netherlands, but rather to Catalonia on the Iberian Peninsula.<sup>2</sup> Pelling’s claim was picked up by the Manchester

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<sup>1</sup> Over the years the following candidates have been proposed as the ‘inventor of the telescope’: (1) from the Netherlands: Hans Lipperhey, Jacob Adriaensz Metius, Zacharias Jansen and Cornelis Drebbel, to which in this paper – just for the sake of argument – I will add the name ‘Lowys Lowyssen, geseyt Henricxen brilmakers’; (2) from Italy: Girolamo Fracastoro, Raffael Gualterotti, Giovanni Baptista Della Porta and Galileo Galilei; from (3) England: Roger Bacon, Leonard Digges and William Bourne (4) from Germany Jacobus Velsler and Simon Marius; (5) from Spain: Juan Roget, and (6) from the Arabian world: Abul Hasan, also known as Abu Ali al-Hasan ibn al-Haitham. Cf. Van Helden, ‘The Historical Problem of the Invention of the Telescope’ (1975) and idem, *The Invention of the Telescope* (1977).

<sup>2</sup> Pelling, ‘Who Invented the Telescope?’ (2008). Pelling’s paper was based on two Spanish articles, published earlier by De Guilleuma, ‘Juan Roget’ (1958) and idem, ‘Juan Roget, Optico Espanol Inventor del Telescopio’ (1960). See also: Settle, ‘The invention of the telescope. The studies of dr. Josep M. Simon de Guilleuma’ (2009).

*Guardian* and *El Mundo* of Madrid, was broadcast on British television, and was disseminated on a number of websites in various languages, including Spanish and Catalan.<sup>3</sup> The prominence and rapid dissemination and favourable reception through modern media of Pelling's rehash of a claim first published by Sirtori in 1618, shows that, to this day, national and regional pride have been important factors in the various answers to the simple question 'who invented this instrument'? As I will show in this paper 'cultural nationalism,' has indeed played a crucial role in the debate about the invention of the telescope in the past 400 years, together with another well-known phenomenon in historical writing, the so-called 'historical construct.'<sup>4</sup>

The first historical construct concerns the 'invention' itself, because what happened in 1608 was in fact not an invention at all, but merely a recognition of the great potential of a device, which must have been around for some decades, as a kind of toy or as a device whose purpose was to correct or improve vision. Indications of the awareness of the magnifying power of a combination of two lenses, long before the year 1608, are indeed abundant in the contemporary literature. For instance, in 1538 the Italian scholar Girolamo Fracastoro (c. 1478-1553) wrote: 'If someone looks through two eye-glasses, of which one is placed above the other, he shall see everything larger and more closely.'<sup>5</sup> Or to quote Albert Van Helden in 1977: 'The telescope was not invented *ex nihilo*.'<sup>6</sup> After seeing or hearing of Lipperhey's telescope, many scholars had a kind of *déjà vu*-feeling. Girolamo Sirtori, who in 1612, only four years after the emergence of the instrument, composed his well-known *Telescopium*, captured this feeling in the following phrase:

It appeared that this conception was in the minds of many men, so that once they heard about it, any ingenious person began trying to make one, without [the help of] a model.<sup>7</sup>

Then, why did we bother to celebrate in 2008 the 400-year anniversary of the telescope? The answer to this question was already stated in 1645 by

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<sup>3</sup> For instance: 'New focus shows Spaniard, not Dutchman, invented telescope,' *The Guardian* (Monday 15 September 2008).

<sup>4</sup> See about the phrase 'cultural nationalism': Bank, *Roemrijk vaderland* (1990); Van Berkel, 'Natuurwetenschap en cultureel nationalisme in negentiende-eeuws Nederland' (1991).

<sup>5</sup> Fracastoro, *Homocentrica* (1538), 18<sup>r</sup>, cited from the English translation by Van Helden, *Invention* (1977), 28.

<sup>6</sup> Van Helden, *Invention* (1977), 24.

<sup>7</sup> Sirtori, *Telescopium*, cited from the English translation by Van Helden, *Invention* (1977), 50. Although the book was published in 1618, the text was written in 1612. Cf. De Waard, *Uitvinding* (1906), 192.

Antonius Maria Schyrlaeus de Rheita, who commented on the events of 1608 that in that year ‘a joke was put into a serious thing.’<sup>8</sup> Indeed 400 years ago, in September 1608, the telescope was recognized as a useful device. As Rolf Willach has argued recently, and will outline again in this volume, most likely this breakthrough became possible after a small but crucial adaptation of the instrument, the addition of a diaphragm.<sup>9</sup>

Thus in September 2008 we commemorated, *not* the invention of the telescope, but rather the birth of this device as a functional scientific instrument: the first of its kind in Modern History! For from September 1608 onwards the general recognition of the existence and potential of the telescope and the rapid dissemination and circulation of this knowledge throughout Europe can be followed rather precisely, starting at the instrument’s demonstration in The Hague and culminating *inter alia* in Galileo Galilei’s spectacular astronomical discoveries with his ‘Belga Perspicillum’<sup>10</sup> or ‘Dutch telescope’ in the years 1609 and 1610. For modern history of science this well documented circulation of newly emerged knowledge is far more important, than any priority dispute.

## II. THE DUTCH STORY

### *September 1608 – Middelburg and The Hague*

What happened in The Hague at the end of September 1608? The history of the dissemination of the telescope starts in Middelburg, with a letter of recommendation, dated 25 September 1608, in which the authorities of the Dutch Province of Zeeland wrote as follows to the States General, then the sovereign body of the young ‘Republic of the Seven United Dutch Provinces’ in The Hague:

The bearer of this letter declares to have [found] a certain art with which one can see all things very far away as if they were nearby, by means of sights of glasses, which he pretends to be a new invention.<sup>11</sup> (See ill. 1)

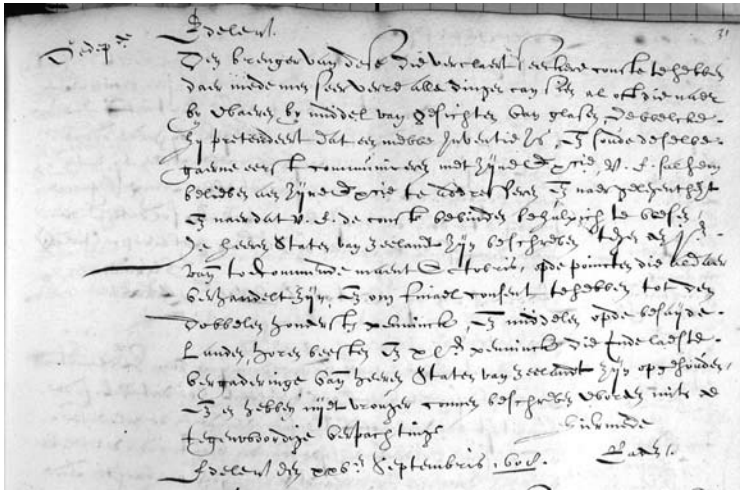
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<sup>8</sup> Schyrlaeus de Rheita, *Oculus Enoch et Eliae* (1645), I, 337-338; cited from the English translation by Van Helden, *Invention* (1977), 54.

<sup>9</sup> Willach, ‘Der lange Weg’ (2007); idem, *The Long Route* (2008).

<sup>10</sup> Van Helden, *Invention* (1977), 45.

<sup>11</sup> ‘Die verclaert seekere conste te hebben daer mede men seer verre alle dingen can sien al oft die naer bij waeren bij middel van gesichten van glasen, dewelke hij pretendeert een nieuwe inventie is.’ Van Helden, *Invention* (1977), 35-36.

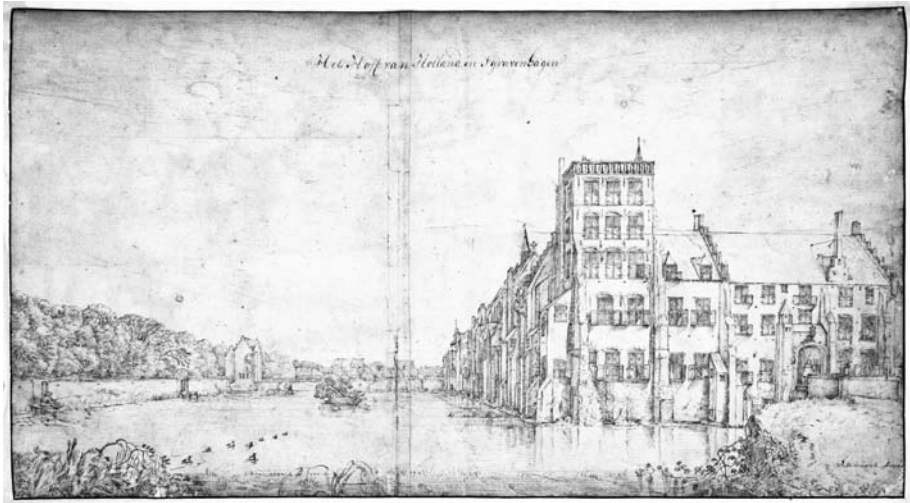


Ill. 1. Letter of recommendation for Hans Lipperhey, written by the ‘Gecommitteerde Raden’ of the province of Zeeland, dated 25 September 1608. [Zeeuws Archief, Middelburg].

The archives of the States General in The Hague reveal that ‘the bearer of this letter’ was in fact the Middelburg spectacle maker Hans Lipperhey, born in Wesel ca. 1570, married in Middelburg, the capital of Zeeland, in 1594 and, a citizen (‘poorter’) of that city since 1602.<sup>12</sup> It was Lipperhey’s intention to present his ‘art’ to the authorities of the young Dutch Republic in The Hague, and request a patent for this device.

At that very moment The Hague was a city crowded with diplomats from all over Europe. In February 1608 a peace conference had started in The Hague between the Dutch authorities and representatives of the former sovereign of the Netherlands, the King of Spain. In 1609 these negotiations would lead to a long cease-fire, a period which would become known in Dutch history as the ‘Twelve-Year Truce.’ The main negotiator for the Spanish sovereign was Ambrogio de Spinola, (later Marquis of Los Balbases), commander-in-chief of the Spanish army in the Low Countries. As the Spanish-Dutch negotiations were coming to an end, he was preparing to depart from The Hague on 30 September in order to report to his direct superior, Archduke Albertus of Austria in Brussels, viceroy of the part of the old Burgundian territory still ruled by Spain.

<sup>12</sup> De Waard, *Uitvinding* (1906), 109-110.



Ill. 2. The Maurits Tower in The Hague. Drawing in charcoal by Willem Pietersz. Buytewech (c. 1585-1627) [Municipal Archives, The Hague].

But shortly before Spinola's departure, his Dutch host and counterpart as commander-in-chief of the Dutch army, Count Maurits of Nassau, (Prince of Orange after 1618), Stadtholder of the rebelling Dutch Republic, invited him to witness a curious demonstration of a device brought to The Hague by 'a humble and God-fearing man' from Middelburg. The demonstration, which was attended by a few other officials, including Maurits' half-brother and successor Frederik Hendrik, took place on the nearby 'Maurits tower' (ill. 2), built a few years before in a corner of the 'Stadhouderlijk Kwartier,' the governmental palace. Today it is the seat of the both houses of parliament of the Netherlands (still called the 'States General'); in 1608 it contained not only the princely headquarters, but was also the site of the peace conference. A contemporary newsletter presents us with the following account of this event:

A few days before the departure of Spinola from The Hague a spectacle-maker from Middelburg, a humble and God-fearing man, presented to His Excellency [Count Maurits], certain glasses by means of which one can detect and see distinctly things three or four miles removed from us as if we were seeing them from a hundred paces. From the Tower in The Hague, one clearly sees, with the said glasses the Clock of

Delft<sup>13</sup> and the windows of the Church of Leiden<sup>14</sup>, despite the fact that these cities are distant from The Hague one-and-a-half, and three-and-a-half hours by road, respectively.

When the States-[General] heard about these glasses, they asked His Excellency [Count Maurits] to see them, and he did send them these, saying that with these glasses they would see the tricks of the enemy. Spinola too saw them with great astonishment and said to Prince [Frederick] Hendrik: *From now on I can no longer be safe, for you will see me from afar.* To which the prince replied: *We shall forbid our men to shoot at you.*

The master [spectacle-] maker of the said glasses was given three hundred guilders, and was promised more for making others, with the command not to teach the said art to anyone. This he promised willingly, not wishing that the enemies would be able to avail themselves of them against us.<sup>15</sup>

The last passage of the pamphlet probably is the most interesting, because this very first account of the telescope already revealed the full potential of the instrument:

The said glasses are very useful in sieges and similar occasions, for from a mile or more away one can detect all things as distinctly as if they were very close to us. And even the stars which ordinarily are invisible to our sight and our eyes, because of their smallness and the weakness of our sight, can be seen by means of this instrument.<sup>16</sup>

The archives of the States General confirm that Lipperhey received 300 guilders for his device. And although on 2 October, he had asked a thousand guilders for each telescope he made, on 5 October, after an examination of the instrument by a few deputies of the States General the day before, he settled for a much lower price. That day Lipperhey received a down payment of 300 guilders, with the promise to receive another 600 guilders when he delivered three more of these instruments. The conditions stipulated that he would not make such a device for other parties and he was requested to improve the

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<sup>13</sup> In fact there were (and still are) two church towers with large clock dials in Delft: one at the 'Oude Kerk' (Old Church), finished in 1240, and the other at the 'Nieuwe Kerk' (New Church), finished in 1496. Both churches are located in the centre of the city, at a distance of some 10 kilometres in a straight line from the Maurits Tower in The Hague.

<sup>14</sup> In fact there were (and still are) two churches with large windows in Leiden: one at the 'Hooglandse Kerk' and the other at the 'St Pieters Kerk.' Both Gothic churches are located in the centre of the city, at a distance of c. 23 km in a straight line from the Maurits Tower in The Hague.

<sup>15</sup> This pamphlet was first published by Drake, *The Unsung Journalist* (1976) and recently by Zoomers & Zuidervaart, *Embassies* (2008).

<sup>16</sup> *Ibidem.*

instrument by making it suitable for two eyes, and using rock crystal or glass of the very best quality for his lenses.<sup>17</sup> Lipperhey delivered the first binocular instrument in mid-December 1608, and the other two in February 1609. All three instruments were considered to be working satisfactorily by the deputies of the States General who had tested the instruments.<sup>18</sup> The amount of 900 guilders Lipperhey received for his three instruments was large enough for him to buy his neighbour's house in Middelburg, which he appropriately named 'The Three Telescopes' (the 'Dry Vare Gesichten').<sup>19</sup>

### *The refusal of Lipperhey's patent application*

However, Lipperhey did not obtain the desired patent in December 1608. The reason why is quite clear. Within a fortnight of his first demonstration, two other persons had stepped forward claiming that they, too, knew 'the art of seeing faraway things and places as if nearby.' The first one was an unnamed 'young man' of Middelburg, who had shown the Zeeland officials a similar instrument (ill. 3)<sup>20</sup>, and the other was Jacob Adriaensz [Metius] of Alkmaar, the son of one of the most prominent engineers of the Dutch Republic. Although the first person was never heard of again, and the latter acknowledged that his instrument was made of very bad material ('seer slechte stoffe') and did not perform as well as the one 'recently shown by the spectacle maker from Middelburg,' it seemed clear that 'the art' could not remain secret for long, 'especially after the shape of the tube has been seen.'<sup>21</sup>

And indeed this fear soon became true. Already in December 1608, Pierre Jeannin, the French ambassador in The Hague, had found a French speaking

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<sup>17</sup> Van Helden, *Invention* (1977), 36.

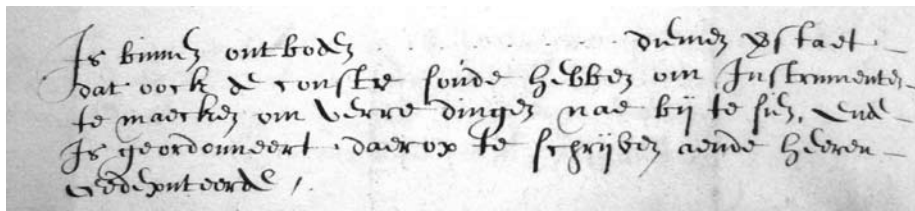
<sup>18</sup> Van Helden, *Invention* (1977), 42. Lipperhey's instrument was examined by the following deputies of the States General: (1) Johan van Dorth (1574-1624) from Zutphen, deputy of the province of Gelderland, (2) Jacob Simonsz. Magnus (1563-1625), from Middelburg, deputy of the province of Zeeland, (3) Gerard van Renesse van der Aa (d. 1610), from Utrecht, deputy of the province of Utrecht, (4) Tinco (van) Oenema (d. 1631) from Oudeschoot, deputy of the province of Friesland, and (5) Jacob Andriesz. Boelens (1554-1621), from Amsterdam, deputy of the province of Holland.

<sup>19</sup> For references, see also Zuidervaart, 'Uit Vaderlandsliefde' (2007).

<sup>20</sup> 'Is binnen ontboden... die men verstaet dat oock de conste soude hebben om instrumenten te maecten om verre dingen nae bij te sien, ende is geordonneerd daerop te schrijven aende heeren gedeputeerden.' ('Is invited inside ... [*the clerck has not filled in the name*] of whom it is said that he also has the art of making an instrument to see far away objects nearby'). Minutes of the Committee of Councillors of Zeeland, 14 October, 1608. Middelburg, Archive Staten van Zeeland, no. 480, fol. Lxxviii. See: Van Helden, *Invention* (1977), 38.

<sup>21</sup> Van Helden, *Invention* (1977), 39. See also Vermij, in this volume.





Ill. 3. Note made in the meeting of the board of the province of Zeeland, on 14 October 1608, stating that an unnamed person [*the clerck has not filled in his name*] also claimed to have ‘the art of making an instrument to see far away objects near by’. [Zeeuws Archief, Middelburg].

engineer coming from Count Maurits’ army, who was able to reproduce Lipperhey’s instrument. For, as Jeannin stated in his letter to the French king: ‘there is no great difficulty in imitating that first invention.’<sup>22</sup>

#### *The rapid dissemination of the instrument*

Following the September presentation in The Hague, the news about the telescope spread over Europe like wildfire. The newsletter cited above was composed in October 1608 (probably in The Hague) and had arrived in Paris by mid-November, where it was read by the chronicler Pierre de l’Estoile, who sent it to a publisher to be printed. The Paris-issue was reprinted in Lyon in the same month, and that very month a copy had even reached Paolo Sarpi, Galileo’s close friend, in Venice.<sup>23</sup>

Within half a year of the demonstration of the telescope in The Hague, copies of the actual instrument were in the hands of several European rulers and magistrates. Probably in February 1609 at least two telescopes were sent from The Hague to the French court,<sup>24</sup> and the same (or the next) month at least two instruments were assembled in Brussels. These clones of the original instrument had been made at the request of the Marquis de Spinola, who immediately after his return in Brussels had reported about the telescope to his superior, Archduke Albertus of Austria, the consort of the Infanta Isabella, daughter of the late Spanish king Philip II. It was probably one of these telescopes, having tubes made by the silversmith Robert Staes, which is depicted

<sup>22</sup> Van Helden, *Invention* (1977), 43: ‘aussi n’y a-il pas grande difficulté imiter cette premiere invention.’

<sup>23</sup> Cf. Pantin, ‘La lunette astronomique’ (1995), 162; Sluiter, ‘The Telescope before Galileo’ (1997).

<sup>24</sup> The French ambassador in The Hague, Pierre Jeannin, suggested in his letters that two of the Lipperhey telescopes ordered by the States General were actually meant as a gift for the French king. Cf. Van Helden, *Invention* (1977), 43.



Ill. 4. Archduke Albertus of Austria, governor of the Southern Netherlands, observing a bird with a telescope. Detail of a painting by Jan Brueghel the Elder, c. 1608-1611, representing the archduke in front of his castle Mariemont in Hanaut (Belgium). [Virginia Museum of Fine Arts, Richmond, USA. The Adolph D. and Wilkins C. Williams Fund. Photo Katherine Wetzel].

on a painting by Jan Brueghel the Elder, dated 1611, representing the archduke in front of his castle Mariemont, near Brussels (ill. 4).<sup>25</sup>

In March 1609, the papal nuncius in Brussels, Guido Bentivoglio attended a heron hunt organised for the archduke just outside the gates of that city, in which one of these Brussels-made telescopes was tested. It amazed him how ‘miraculously’ the instrument performed, revealing details of a tower more than ten miles away. Bentivoglio immediately ordered another copy to be made, not for himself but for Pope Paul V, which instrument arrived in Rome probably at the end of April 1609.<sup>26</sup> That very month similar telescopes were

<sup>25</sup> Hensen, ‘De verrekijkers van Prins Maurits en van Aartshertog Albertus’ (1923). In May 1609 a sum of money was paid to the silversmith Robert Staes in Brussels for making two ‘tuyaux artificiels pour veoir de loing.’ Cf. Houzeau, ‘Le telescope à Bruxelles’ (1885); De Waard, *Uitvinding*, 230. The Brueghel-painting was signalled by Inge Keil in her *Augustanus Opticus* (2000) 268. See about the painting, representing a view on the Mariemont Castle, now in the Virginia Museum of Fine Arts, USA, Inv. No. 53.10: Ertz & Nitze-Ertz (eds.), *Brueghel* (1997), 252-253.

<sup>26</sup> The instrument was sent to Cardinal Scipione Borghese, papal secretary and nephew of Pope Paul V. In August 1609 Borghese received from Galileo Galilei a telescope ‘similar to the one he had received from Flanders.’ Cf. Sluiter, ‘The Telescope before Galileo’ (1997) and Galilei, *Opere*, 10 (1900), letter 234: Lorenzo Pignoria [from Padua] to Paolo Gualdo [in Rome], 31 August 1609.

on sale in Paris, probably copied after examples brought from Holland, early in 1609, by an engineer from Sedan.<sup>27</sup> Another telescope was presented in May 1609 in Milan, also brought there by a Frenchman (*Gallus*), who claimed to be an associate of the inventor from Holland.<sup>28</sup> This person was possibly the same as the ‘foreigner’ who at the end of July 1609 demonstrated a telescope in Padua, where Galileo lived.<sup>29</sup> A month later a spyglass had reached Naples.<sup>30</sup> Finally, in the summer of 1609, Simon Marius in southern Germany received a pair of telescopic glasses from the Netherlands, remarking that such glasses ‘were becoming quite common’ over there.<sup>31</sup> In the fall he even received a set of better glasses ‘extremely well polished, one convex and one concave,’ which were sent to him from Venice by a certain ‘Iohanne Baptista Lenccio,’ a person ‘thoroughly acquainted with the instrument,’ who had returned from the Netherlands to Venice ‘after the peace was made,’ which means after April 1609, when an agreement had been signed in Antwerp.<sup>32</sup>

Thus, within a year of the demonstration in The Hague, the telescope was disseminated all over Europe, with the result that various European scholars had already used or at least examined the instrument.<sup>33</sup> Before the end of 1609, telescopes were in the hands of Thomas Harriot in London<sup>34</sup>, Galileo Galilei in Padua, Giovanbaptista della Porta in Naples, Simon Marius in Gunzenhausen (Bavaria)<sup>35</sup> and Rudolph Snellius in Leiden (Holland)<sup>36</sup>, to be followed the next year by Johannes Kepler in Prague), Christoph Scheiner in Ingolstadt (Bavaria), Nicolas Claude Fabri de Peiresc in Aix-en-Provence, Willebrord Snellius<sup>37</sup> and Johann Fabricius<sup>38</sup>, both in Leiden, and Sir William Lower in Carmarthenshire (Wales).<sup>39</sup>

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<sup>27</sup> Van Helden, *Invention* (1977), 43. Borel (1655) presents a certain Crepius from Sedan as one of the claimants for the invention.

<sup>28</sup> Van Helden, *Invention* (1977), 50, quoting Sirtori (1618).

<sup>29</sup> Cf. Galilei, *Opere*, 10 (1900), 226: Lorenzo Pignoria [from Padua] to Paolo Gualdo [in Rome], 1 August 1609. Cf. Biagioli, *Galileo's Instruments of Credit* (2006), 121. See also Biagioli's paper in this volume.

<sup>30</sup> Galilei, *Opere*, 10 (1900), 252: Giambaptista della Porta to Federico Cesi.

<sup>31</sup> Simon Marius, *Mundus Jovialis* (Nurnberg 1614) 6verso. Cf. A.O. Prickard, ‘The ‘Mundus Jovialis’ of Simon Marius,’ *The Observatory* 39 (1916) 371.

<sup>32</sup> *Ibidem*. Prickard in his translation erroneously wrote the name as ‘John Baptist Leucius.’

<sup>33</sup> See for most examples: Sluiter, ‘The Telescope before Galileo’ (1997).

<sup>34</sup> Chapman, ‘The Astronomical Work of Thomas Harriot’ (1995) 101.

<sup>35</sup> Cf. ref. 29.

<sup>36</sup> De Waard, *Journal tenu par Isaac Beeckman. Tome 1: 1604-1619*, 11 note.

<sup>37</sup> Cf. Vollgraff, ‘Brieven’ (1914); De Wreede, *Willebrord Snellius* (2007) 68-69. Concerning a telescope Snellius had ordered for his relative Amelis van Rosendael (1557-1620), or Aemilius Rosendalius in Latin. See also Zuidervaart, *Telescopes from Leiden Observatory* (2007), introduction.

<sup>38</sup> Keil, *Augustanus Opticus* (2000) 33; Wattenberg, *Fabricius* (1964), 21-24.

<sup>39</sup> Chapman, ‘The Astronomical Work of Thomas Harriot’ (1995) 102.

## II. THE PRIORITY QUESTION

### *Lipperhey, Metius or an unknown a genius*

With the rapid dissemination of the telescope the priority question about the inventor soon arose. As early as 1612, Girolamo Sirtori remarked:

Dutchmen, Frenchmen, Italians from everywhere rushed forward driven by the desire for gain, and there was no one who would not claim himself the inventor.<sup>40</sup>

Sirtori himself downplayed the achievement of the invention by presenting the story of ‘Johannes Lippersein’ [Lipperhey], who would have grasped the idea from ‘a genius or some other man, as yet unknown, of the race of Hollanders,’ who had visited this Middelburg spectacle maker. This visitor supposedly ordered ‘many lenses to be made, concave as well as convex.’ When he returned, the man selected and aligned two lenses, ‘a concave and a convex one,’ and in this way inadvertently revealed the secret of the telescope. Lipperhey ‘by no means devoid of ingenuity, and curious about the novelty’ would have imitated the visitor, and after having joined both lenses in a tube, rushed to The Hague, to the court of Count Maurits, to show him the invention.<sup>41</sup>

So, a few years after the demonstration in The Hague doubts were already being raised about the identity and location of the ‘inventor.’ In Tuscany Raffael Gualterotti asserted to have invented the telescope a decade earlier, and others in Italy were eager to claim the invention for their own region. As far as Gualterotti was concerned, the glory of the Florentines could not be praised enough.<sup>42</sup> However, most people were convinced of the Dutch origin of the telescope. One of those was George Fugger in Venice, a member of the famous banking family who worked as an ambassador for the Holy Roman Empire. On 16 April 1610 he wrote to his correspondent Johannes Kepler in Prague, commenting on Galilei’s eye catching demonstrations in Italy:

The man [Galilei] [...] intends to be considered the inventor of that ingenious spy-glass, despite the fact that some Dutchman, on a trip here through France, brought it here first. It was shown to me and others, and after Galilei saw it, he made others in imitation of it and, what is easy perhaps, made some improvements to what was already invented.<sup>43</sup>

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<sup>40</sup> Van Helden, *Invention* (1977), 50.

<sup>41</sup> *Ibidem*. See the citation in the introduction, elsewhere in this volume.

<sup>42</sup> Van Helden, *Invention* (1977), 46.

<sup>43</sup> Sluiter, ‘The Telescope before Galileo’ (1997) 211, citing Kepler, *Gesammelte Werke* (1937) xvi, 302. See about the question about Galilei’s attributed claim: Rosen, ‘Did Galilei Claim he Invented the Telescope?’ (1954).

But although Galilei was certainly eager to be seen as an ingenious inventor, in this case Fugger was too hard on him. As a matter of fact, in his *Sidereus Nuncius*, published in March 1610, Galilei admitted that the telescope had originated in the Netherlands.<sup>44</sup> From his correspondence we also know that Galilei was aware of the fact that the first demonstration had been at the court of Count Maurits.<sup>45</sup> However, in all these reports the name of the demonstrator – Lipperhey – was never mentioned. And, as time went by, Lipperhey was forgotten.

*1614-1637: The canonisation of Jacob Adriaensz Metius as the inventor*

In the Netherlands this development was stimulated by the printed works of Adriaen Adriaensz Metius, professor of mathematics at the University of Franeker, the second institution of higher learning in the Netherlands. Adriaen was the learned brother of the Alkmaar ‘inventor’ Jacob Adriaensz Metius, and in all his astronomical works, starting with the 1614 edition of his *Institutiones astronomicae et geographicae*, he claimed that around 1608 his brother Jacob had invented the ‘far sights’ (‘verre ghesichten’), with which one could observe several planets unknown to the ancient astronomers, among which were also some ‘planets’ moving around Jupiter. And although Adriaen Metius claimed that his brother Jacob had kept his telescopes secret, other sources suggest that at least some of Jacob’s telescopes were disseminated among relatives and close friends. It is known for certain that at least in 1613 Adriaen himself used a telescope for astronomical observations. That year he showed the instrument to his Groningen colleague and friend Nicolaas Mulerius, who used another one for the observation of sunspots. A few years later Mulerius used such a ‘newly invented spectacle’ for the investigation of the great comet of 1618.<sup>46</sup> Another ‘mathematical glass’ was used by Pierius Winsemius, a close friend of the Metius family, this time for the observation of ships some 30 miles away.<sup>47</sup> And probably in 1614 even Nicolas-Claude Fabri de Peiresc, in Aix-en-Provence, possessed one of the first telescopes made by Jacob Adriaensz Metius, ‘the true first inventor’ of the ‘new Galilean telescopes,’ bestowed on

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<sup>44</sup> Van Helden, *Invention* (1977), 45.

<sup>45</sup> Galilei, *Opere*, 10 (1900), letter 231: Galileo [from Venice] to Benedetto Landucci [in Florence], 29 August 1609.

<sup>46</sup> Waterbolk, ‘Van scherp zien en blind zijn’ (1995) Cf. Mulerius, *Hemelsche trompet* (1618): ‘Want wyluyden connen se anders qualic sien, dan met behulp van de nieu gevonden bril.’ (‘Because we could only see them properly with our newly invented spectacles’).

<sup>47</sup> Winsemius, *Chronique* (1622).

him by the same Winsemius, together with Jacobs portrait (since lost).<sup>48</sup> Thus already around 1625, several Dutch officials believed that Jacob Adriaensz Metius was the inventor of the telescope, including the Dutch lawyer Hugo de Groot (Grotius) and the poet-diplomat Constantijn Huygens.<sup>49</sup>

So when, in 1634, professor Adriaen Metius died, no one in the Netherlands protested when Jacob Adriaensz was praised in Adriaen's funeral eulogy at the University of Franeker as the sole inventor of this famous '*tubulus ille opticus*.'<sup>50</sup> For the rest of Europe, Metius' fame as *the* inventor of the telescope was established in 1637 by René Descartes in *La Dioptrique*, an appendix to his famous *Discours de la Methode*, in which Descartes gave the following account of Metius' invention, a story he had probably heard from Adriaen Metius himself, when, in 1629 as a student at Franeker University, he had attended Metius' lectures on optics:

It was about thirty years ago that a man named Jacob Metius, of the city of Alkmaar in Holland, a man who had never studied, although he had a father and a brother who made a profession of mathematics, but who took particular pleasure in making burning mirrors and glasses, even making them out of ice in the winter, as experience has shown they can be made, having on that occasion several glasses of different shapes, decided through luck to look through two of them, of which one was a little narrower in the middle than at the edges, and the other, on the contrary, much thinner at the edges than in the middle. And he put them so fortunately in two ends of a tube, that the first of the telescopes, of which we are speaking, was put together. And it is entirely based on this model that all the others which have been seen since have been made without anyone yet, as far as I know, having sufficiently determined the shapes that those glasses ought to have.<sup>51</sup>

#### *1655-1656: Inventors reshuffled in Borel's 'De Vero Telescopii Inventore'*

In the Netherlands Metius fame as *the* inventor of the telescope remained virtually unchallenged until 1655. That year Sir Willem Boreel gave his judgment.

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<sup>48</sup> Galilei, *Opere*, 16 (1906), letter 2858: Niccolò Fabri Di Peiresc to Galileo Galilei, 24 January 1634 and Gassendi, *The Mirrour of True Nobility & Gentility* (1657/2007). See also: Peiresc to Dupuy, 8 November 1626, in: De Larroque, *Lettres de Peiresc*, 1 (1888) 79-80, in which 'Jaques Methius' [= Jacob Metius] is called 'Le vray inventeur primitif' of the 'nouvelles lunettes de Galilee.'

<sup>49</sup> Hugo de Groot to his brother Willem de Groot, 10 June 1622, cited by Tierie, *Cornelis Drebbel* (1932) 19, 97; Worp, *Briefwisseling Constantijn Huygens* (1911-1917), letter no. 1270 (29 October 1635).

<sup>50</sup> Waterbolk (1995) 198, citing from: Winsemius, *Oratio fnebris* (1634).

<sup>51</sup> Descartes, *La Dioptrique* (1637), translated from the Dutch edition by J.H. Glazemaker of 1659.

He was a Middelburg-born diplomat, knighted in 1618 by the English king. At the time, Boreel was ambassador of the Dutch Republic at the French court. In France Boreel had been acquainted with Pierre Borel, a court physician with a keen interest in optics.<sup>52</sup> Because in his influential *Oculus Enoch et Eliae* of 1645 Schyrl de Rheita had paraphrased the story published by Sirtori in 1618, the name of 'Ioannes Lippensum of Zeeland' had reappeared on the scene. In discussions about the invention of the telescope with Borel and others, Boreel had been annoyed about the fact that it seemed that 'everyone seeks to claim the honour of that invention for himself.'<sup>53</sup> For instance 'Galilei, Welser, and Metius of Alkmaar had assumed that honour, or it has been ascribed to them, especially to the last.'<sup>54</sup> But according to Boreel, in his youth, he personally had known the 'man who is said to have been the first inventor of the said telescopes.'<sup>55</sup> As Boreel was 'always eager to contribute anything that can add to the honour and renown of my fatherland,' he persuaded Borel to compose a documented account about this 'true inventor of the telescope.'<sup>56</sup> To assist Borel in this noble enterprise, Boreel addressed the Middelburg magistrates with an official request. According to Boreel, the honour of the invention belonged to Middelburg, and he desired to establish this fact once and for all by means of a properly documented investigation. In his request Boreel presented the following description of the person, he remembered to be the inventor of the telescope:

This man lived in Middelburg in the Capoen Street, on the left side coming from the Green Market, in about the middle of the block, in the little houses against the New Church. He was a man of small means, had a modest shop, and many children, whom I still saw afterwards when I came back to Middelburg when I was older.<sup>57</sup>

A request from such an esteemed person had to be taken very seriously, so the Middelburg magistrates appointed Jacob Blondel, one of their senior members, as official investigator to search for witnesses who could testify about what had happened half a century earlier. Blondel's task did not appear to be very difficult, for Boreel's description of the inventor and his modest

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<sup>52</sup> Cf. Chabbert, 'Pierre Borel' (1968).

<sup>53</sup> Van Helden, *Invention* (1977), 55.

<sup>54</sup> *Ibidem*.

<sup>55</sup> *Ibidem*.

<sup>56</sup> Borel, *De vero telescopii inventore* (1656). See also Nellissen, 'De echte uitvinder van de telescoop' (2007).

<sup>57</sup> Van Helden, *Invention* (1977), 55.

shop, fitted exactly with that of the late Hans Lipperhey and the location of his former spectacle workshop in the Middelburg ‘Capoenstraat.’ Lipperhey had indeed been a modest man, and had had at least seven children.<sup>58</sup> So Blondel rather quickly succeeded in finding three witnesses, a former son-in-law and two former neighbours, all of whom confirmed that Hans Lipperhey (or Laprey<sup>59</sup>) had indeed constructed ‘verresierende brillen oft verrekijckers’ in his shop at the Capoen Street, having a sign representing some telescopes. So everything seemed to confirm Boreel’s initial memory.

However, at the end of January 1655, just before the investigation ended, two new witnesses suddenly stepped forward, presenting a completely different account of what had happened some fifty years before. The main witness was Johannes Sachariassen,<sup>60</sup> a skilled lens grinder living in Middelburg, who

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<sup>58</sup> The exact location of the houses of Lipperhey and Jansen was found by C.J. Serlé in 1816. He also found that only four of Lipperhey’s children (Susanna, Claes, Hans junior and Abraham) were still alive at the time of his death. See about the eldest daughter also: Zeeuws Archief, Middelburg, Rechterlijk Archief Zeeuwse Eilanden, no. 115a, folio 69<sup>verso</sup>. (Deed of the Middelburg Orphans Chamber, concerning Susanna Lipperhey, dated 4 January 1636).

<sup>59</sup> Over the years the family name ‘Lipperhey’ appears to have changed into ‘Laprij’ or ‘Lapree.’ In the early eighteenth century several members of this family were living in Vlissingen (Flushing).

<sup>60</sup> Johannes Sachariassen (1611- before 1659) was the son of Zacharias Jansen and Catharina de Haene. Already at the age of 19, in April 1630, he is mentioned as a ‘brilmaker.’ At that time he bought some ‘Neurenburgeryen,’ most probably referring to toys. In 1632 he married with Sara du Pril (overl. 1659) from Veere, widow of Marten Goverts. At this occasion his aunt Sara Boussé [= Bouché] testified that both his parents were dead. In 1634 Beeckman received from Sachariassen some lessons in the grinding of lenses, in his Middelburg glass grinding workshop. This shop was probably in the ‘Sint Janstraat,’ where his widow in 1659 died. Cf. De Waard, *Uitvinding* (1906), 153 and 333; De Waard, *Journal Beeckman*, 4 (1953), passim. Zeeuws Archief, Middelburg, Archief Rekenkamer van Zeeland D (list receivers of the ‘collaterale successie’), 8 March 1659.



claimed that his father, the late Zacharias Jansen,<sup>61</sup> was the true inventor. His aunt Sara Goedaerts,<sup>62</sup> Zacharias' only sister, supported his claim. According to Sachariassen's account his father had invented the telescope, not in 1608, but already in the year 1590.<sup>63</sup> Of these first telescopes, having a length of about 16 inches, one had been presented to Count Maurits and another one to Archduke Albertus. In the year 1618 he and his father had invented the longer telescopes, which were used for observing the stars and the moon at night. Shortly thereafter, in 1620, (Adriaen) Metius and Cornelis Drebbel<sup>64</sup> had come to their shop to buy such a telescope, which both of them had later tried to copy. According to Sachariassen, it was very regrettable that 'Reynier

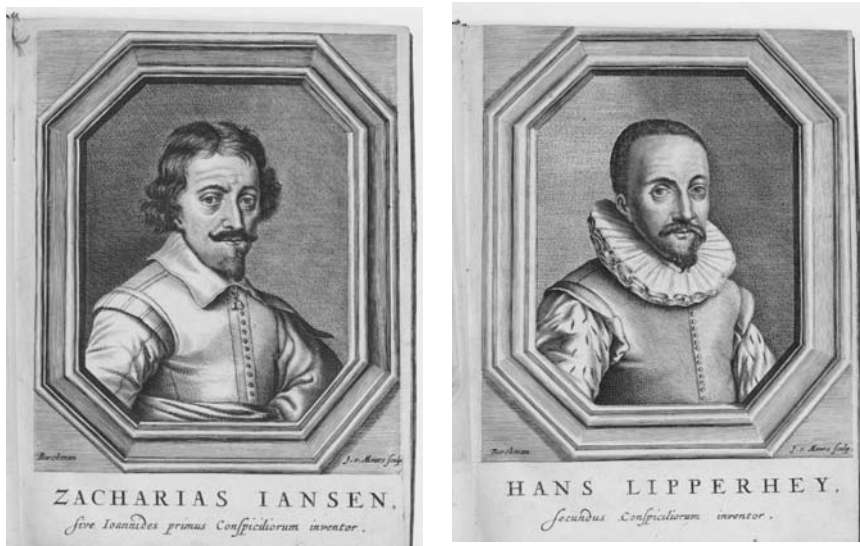
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<sup>61</sup> Zacharias (or Sacharias) Jansen (or Janssen) [various spellings were used at the time] was born in 1585 in The Hague. His parents were Hans Martens and Maeyken Meertens, both probably coming from Antwerp. In 1610 he married in Middelburg with Catharina (or Catelijntjen) de Haene from this same city. In 1611 their only son Johannes Sachariassen was born. In 1616 Zacharias was mentioned for the first time as a 'brilmaker.' He had probably inherited the tools of the late Lowys Lowysen, 'geseyt Henricxen brilmakers,' for in 1615 he was appointed guardian of the two children of this spectacle maker. In 1618 the couple Jansen-De Haene moved to nearby Arnemuiden, after Zacharias has been exposed as a counterfeiter. In 1619, in Arnemuiden, he was again accused for the same offence, together with the local 'schout' (the head of the justice department). After being on the run for a while, Zacharias Jansen returned to Middelburg in 1621, where he bought a house. In 1626 he was engaged in legal proceedings, being accused of not paying his mortgage. In 1624 his wife died, after which he remarried in August 1625 with Anna Couget from Antwerp, the widow of Willem Jansen (perhaps a relative). With her, Zacharias 'den brillenmaker' moved to Amsterdam, where in November 1626 he rented part of the 'Huis onder 't Zeil' at the Dam Square. But in May 1628 he was declared bankrupt. Jansen must have died before 1632, for in that year his sister testified that he was dead. Cf. De Waard, *Uitwinding* (1906); Breen, 'Topographische geschiedenis' (1909), 183, 188 and Wijnman, 'Sacharias Jansen te Amsterdam' (1933) and idem, 'Nogmaals Sacharias Jansen' (1934).

<sup>62</sup> Sara Goedaert (born Sara Jansz), was the only sister of Zacharias Jansen. With her brother she is mentioned in 1622 as the owner of the small house, built against the wall of the 'Nieuwe Kerk' at the 'Groenmarkt' in Middelburg. Her late husband, Jacob Goedaert, 'of Embden' had worked at the Mint, which was located in a neighbouring abbey. In August 1625 Sara Goedaert was a witness at the second marriage of her brother Zacharias Jansen and Anna Couget of Antwerp. In October of the same year she herself remarried with Abraham Bouché, also from Antwerp. In July 1632 she was mentioned again as a widow, after when she returned to bear the former name of her first husband, Jacob Goedaert. Cf. De Waard, *Uitwinding* (1906), 322; 327; 328; 330-331.

<sup>63</sup> Van Helden, *Invention* (1977), 55.

<sup>64</sup> Cornelis Drebbel (Alkmaar, 1572-1633) was a natural philosopher and technician, who invented several devices, including a proto-type submarine. Drebbel is often viewed as the inventor of the compound microscope (c. 1620), which according to others had been developed from the telescope by Galilei in the 1610s. Cf. Van Helden, 'The Birth of the Modern Scientific Instrument' (1983) 71. See also: Turner, 'Animadversions' (1985).



Ill. 5. Jansen and Lipperhey, as depicted in Borel's *De Vero Telescopii Inventore* (1656).

Ducartes,' Cornelis Drebbel and the former medal maker Johannes Looff<sup>65</sup> were not alive anymore, for they would surely have confirmed his testimony.<sup>66</sup>

In March 1655, these testimonies were sent to ambassador Willem Boreel in Paris. What then happened next is remarkable. In July 1655, in a letter to Boreel, Boreel rephrased his earlier statement about the invention of the telescope. He now followed the testimony of Sachariassen almost to the letter, and added some other particulars. Briefly, Boreel's statement was as follows: in 1591 (the year he was born), near his birthplace in Middelburg, a spectacle maker lived in a house built against the New Church. His name was Hans and he had a wife called Maria. They had three children: two daughters and a son. As a child, Boreel had often played with this boy, called Zacharias. In those days he also frequented their workshop. At one of those occasions he had heard that Hans and Zacharias had first invented the microscope, and after that, the telescope. This lucky event had to be dated around 1610. In 1619, when Boreel visited London, he had seen a microscope at Cornelis Drebbel's house, which according to his memory was made by the two Jansens. As far as

<sup>65</sup> Johannes Looff (d. 1651) was a silversmith, working in Middelburg at least from 1629. In 1634 he became the official die cutter of the Middelburg Mint, which was located near Jansen's house. Cf. De Man, 'Johannes Looff' (1925) 8-9.

<sup>66</sup> Van Helden, *Invention* (1977), 55.

Lipperhey was concerned, Boreel now rather closely followed Sirtori's earlier account about the unknown visitor, who by a twist of fate had called upon Lipperhey, although he actually been looking for the Jansens. Lipperhey, being a keen spectacle maker, had listened closely to the visitor, and after his departure he had reconstructed the device, solely by the sharpness of his mind. So, according to Boreel, although Jansen had been the first, surely Lipperhey deserved to be called the second inventor.

Pierre Boreel, now being presented with two Middelburg candidates for the invention, did not hesitate in drawing his own conclusions. Boreel's high social status did not allow for any objections to be made, so in his book *De Vero Telescopii Inventore*, published in The Hague in 1656, Boreel presented the hitherto unknown Zacharias Jansen as the first inventor and Hans Lipperhey as the second (ill. 5).<sup>67</sup> Thus Jansen's claim for the invention remained the favoured one for many decades to come.<sup>68</sup>

#### *1816-1824: Preparations for a memorial for Jansen*<sup>69</sup>

A century and a half after the publication, Boreel's account generated a lot of activity and excitement in Zeeland. This episode started on 4 January 1816 when Johannes de Kanter Phillippuszoom, the secretary of the *Zeeuwsch Genootschap der Wetenschappen* (the Zeeland Scientific Society) in Middelburg, gave a lecture on the invention of the telescope. His narrative closely followed Boreel's account of what had happened, and in his conclusion De Kanter pleaded for the erection of a monument for Zacharias Jansen, to commemorate the wonderful accomplishments of this 'native son of Zeeland.'<sup>70</sup> De Kanter's plea was in harmony with the spirit of the time and fell on fertile soil. In 1816 the 'Kingdom

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<sup>67</sup> In his *De Vero Telescopii Inventore*, Boreel honoured both 'inventors' with a portrait engraving. Both portraits were made by the painter Hendrick Berckman[s] (1629-1679), living in Middelburg since 1654. They were engraved by Jacob van Meurs, an engraver (and later publisher) active in Leiden and Amsterdam from 1651 until 1680. Whether these portraits were made after older originals, we probably will never know.

<sup>68</sup> See however the Frisian writer Wiaerda, *Naauwkeurige verhandeling van de eerste uytvindingen en uytvindere* (1733), who favours Metius, in spite of reading Boreel's *De Vero Telescopii Inventore* (1656).

<sup>69</sup> This section is a shortened English adaptation of my paper: 'Uit vaderlandsliefde' (2007). It is based on documents which have survived the Second World War. See: Zeeuwse Bibliotheek, manuscripts of the *Zeeuwsch Genootschap der Wetenschappen*, nos. 211, 249, 257, 1110, 2862, 2863, 3675, 3676, 3688, 3953 en 3977. Courtesy Mrs. Katie Heyning, Middelburg, who brought these documents to my attention.

<sup>70</sup> This was not true. Ironically in 1906 it was found that Jansen actually was born in The Hague (Holland). Cf. De Waard, *Uitvinding* (1906), 323.



Ill. 6. Concept for a memorial for Jansen (1816). [Zelandia Illustrata, Zeeuws Archief, Middelburg].

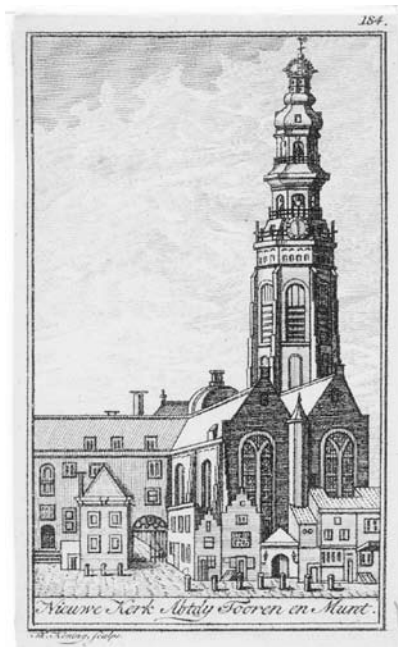
of the Netherlands' had just been newly formed, and after the Napoleonic era, during which the country had been annexed by France, national heroes were badly needed as icons, to help in the creation of a national feeling (a so-called 'Vaderlandsch Gevoel') for the new centralized state. This cultural nationalism used real and alleged heroes to establish the desired national identity.<sup>71</sup>

Nicolaas Cornelis Lambrechtsen van Ritthem, the president of the *Zeeuwsch Genootschap*, immediately lent his support to this idea for a memorial for this famous Zeelander, who with the invention of the telescope and the microscope had changed the world. However, Lambrechtsen, a gentleman-historian, not only arranged for a design for this memorial (ill. 6), but he also formed a committee with the task of searching the archives, in order to build a stronger case. In June 1816 he approached several persons with the request to check the old records in their possession for any particulars concerning Jansen and the invention of both the microscope and the telescope. Among them were Cornelis Johannes Serlé, director of the Middelburg mortgage registry office; Meinard van Visvliet, secretary of the city council of Middelburg, Paulus Benoit, sexton of the Middelburg churches; Cornelis de Fouw, archivist in The Hague; and finally the (unnamed) librarian of Leiden University.

The harvest of these archival investigations was full of surprises. The most unexpected was that almost nothing could be found on Jansen, whereas all

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<sup>71</sup> Cf. Van Sas, 'Vaderlandsliefde, nationalisme en Vaderlands Gevoel in Nederland' (1989); Bank, *Roemrijk Vaderland*. See also: Van Berkel, 'Natuurwetenschap en cultureel nationalisme' (1991).



Ill. 7. The 'Nieuwe Kerk' in Middelburg. In 1608 the spectacle maker Hans Lipperhey lived in the house depicted at the far right on this engraving. Around the corner – built against the left side wall of the church, near the 'Mint Gate' – the house can be seen which at that time was occupied by the young Zacharias Jansen. Engraving by Th. Koning from *Zeelands Chronyk Almanach* (1779). [*Zelandia Illustrata*, Zeeuws Archief, Middelburg].

sorts of new details had emerged concerning Hans Lipperhey. Also, only the 1608-patent applications by Lipperhey and Metius were found, a very inconvenient result for the Zeelanders, as everyone knew that Lipperhey was born in Wesel, at that time considered to be a German city. The facts about Metius of Alkmaar were equally displeasing because Middelburg, the capital of the province of Zeeland, could not be the location of a statue erected for 'foreigners,' born in Wesel or Alkmaar.

Even worse were the findings of Serlé. He discovered that Zacharias Jansen was born in 1585, a fact which made it virtually impossible that Jansen could have made a major invention at the age of five! Besides, whereas Lipperhey was mentioned as a spectacle maker in various documents beginning in 1602, Jansen was mentioned only in 1615 as the guardian of the two children of the Middelburg spectacle maker 'Lowys Lowyssen, geseyt Henricxen brilmakers.' The only comforting discovery was the fact that Jansen and Lipperhey had been close neighbours (ill. 7).

In August 1818 Lambrechtsen presented his conclusions to the *Zeeuwsch Genootschap*. The most painful result was the fact that no document could be found in which Jansen, or his father, was mentioned as a spectacle maker. These disappointing archival results had kept Lambrechtsen busy for a quite some time, but in the end he had concluded that ambassador Willem Boreel's authority had to be regarded as decisive. His high aristocratic background was a guarantee for his trustworthiness.<sup>72</sup> So Boreel's judgment that Jansen was the first inventor had to be accepted, in spite of Jansen's securely documented birth date, 1585. Jansen had probably found the two-lens-arrangement, when as a youngster he played in his father's workshop. First he must have invented the microscope – as De Kanter had assured Lambrechtsen – and after that the telescopic arrangement had followed easily. Moreover, Lambrechtsen reasoned, this hypothesis was in harmony with the tradition mentioned by several popular authors, that the invention had been done by children, during their play with some convex and concave spectacle glasses.<sup>73</sup>

Regarding the question as to when prince Maurits had learned about these inventions, Lambrechtsen guessed that these instruments had been presented to him in May 1605, when the prince had visited Middelburg. The telescope's strategic importance must have been the reason why the instrument had been kept a secret. Nevertheless, at some moment, Lipperhey must have heard about Jansen's invention, which stimulated him to produce his own version. It must have been this instrument that in 1608 had been presented in The Hague. It was clear, Lambrechtsen continued, that the invention had been a lucky coincidence. It was amazing that it was achieved by two simple spectacle makers, without any theoretical physical or mathematical knowledge. Nevertheless, such an important invention should be commemorated, and therefore the board of the *Zeeuwsch Genootschap* should now decide which steps were to be taken to honour the remarkable Zacharias Jansen.

However, after the disappointing archival search, the plans for the erection of a memorial for Jansen were tabled. In 1819 De Kanter tried again to revive the initiative by writing a memoir, in which he summarized the known

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<sup>72</sup> On the importance of social status on the reliability of witnesses, see for instance: Shapin, *A Social History of Truth* (1994).

<sup>73</sup> See for instance: 'Bericht van een Engelschen Schryver rakende verscheide nuttige Uitvindingen in de Neederlanden,' in: *Hollandsche Historische Courant*, no. 97 (14 August 1749). Cf. *Time's Telescope* (1818), 169-170: 'The discovery is traced to an incident of the simplest kind. The children of a Dutch spectacle maker, being at play with some spectacle glasses, made use of two of them together, the one convex and the other concave, and looking at the weathercock of a church, observed that it appeared much nearer and larger than usual.'

facts and combined them with what he had learned on the development of the telescope in general. But his efforts were in vain and after Lambrechtsen's death in 1823, De Kanter could do little more than publish his own account in favour of Jansen, without giving credit to Serlé and others for their thorough researches in the archives of Middelburg.<sup>74</sup>

*1822-1831: Van Swinden's researches, published by Moll*

Without knowing about the investigation by the *Zeeuwisch Genootschap*, the Amsterdam professor Jan Hendrik van Swinden, at that time probably the most renowned Dutch physicist, had at the same time also embarked on a study of the telescope's invention. In 1822 and 1823, in a series of lectures for the Amsterdam intellectual society 'Felix Meritis,' Van Swinden presented the results of his own research. It was the 'swan song of a great scholar,' as his pupil, the Utrecht professor of physics Gerrit Moll, would later write, because Van Swinden passed away before he had time to write up his lecture notes and publish them.<sup>75</sup> Moll completed Van Swinden's mission, which was aimed at enhancing the honour and glory of the Dutch nation. Van Swinden's account was published in 1831 by Moll, in a Dutch and also in a – somewhat shortened – English version.<sup>76</sup>

Van Swinden reached a diametrically opposite conclusion to the one formulated only shortly before by Lambrechtsen and De Kanter. Van Swinden, too, had found the 1608-patent applications of Lipperhey and Metius, and after a very thorough investigation of all sorts of seventeenth-century books and documents, he – and his interpreter Moll – had come to the conclusion that Lipperhey had been the first inventor, followed shortly afterwards by Jacob Adriaensz Metius. Only these two men deserved to be honoured for this invention. So, since then in most English publications, Lipperhey, and not his near neighbour Jansen, was put forward as the telescope's first inventor.<sup>77</sup>

One of the most curious things concerning the Van Swinden-Moll investigation is the fact that they appeared to be completely unaware of the extensive researches that had been conducted only shortly before in the Zeeland archives. It is evident that the rather large harvest of archival information that

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<sup>74</sup> De Kanter, 'Over de uitvinding der verrekijkers' (1824).

<sup>75</sup> Moll [& Van Swinden], 'Geschiedkundig onderzoek' (1831): offprint, page 2.

<sup>76</sup> Moll, 'On the first Invention of Telescopes' (1831).

<sup>77</sup> Moll [& Van Swinden], 'Geschiedkundig onderzoek' (1831), offprint, page 69-71. In both the Dutch and the English version, Moll used the wrong spelling 'Lippershey' – with a 's' – thus introducing the erroneous form under which his name has been spelled in English literature.

had been dug up in the Middelburg archives had been deliberately concealed from the two researchers. As Moll reported the following:

Mr Van Swinden has called for in investigation into the city archive of Middelburg, in order to verify whether there could be found anything more about Lipper(s)hey or Jansen. However, although a very diligent search was made for such documents, nothing was found. Also the original testimonies [from 1655], given by Boreel to Borel, were not preserved among the papers of the city. [...] Also the houses, where Lipperhey and Jansen used to live, have since been taken down, [and an open space now occupies the place where the telescope was invented].<sup>78</sup>

But Van Swinden had been wrongly informed. The original testimonies of 1655 had probably been discovered in the city archives of Middelburg as a direct result of Van Swinden's request. It was most likely De Kanter himself, who at that time was writing his own nationalistic history of the Province of Zeeland, who withheld these documents. De Kanter published them in 1835, in an explicitly pro-Jansen pamphlet, not long after the publication of the Van Swinden-Moll pro-Lipperhey version of the events. De Kanter even reproduced a facsimile of Sachariassen's testimony, in which he declared that his father, Zacharias Jansen, had invented the telescope in 1590.<sup>79</sup> Remarkably, De Kanter did not make any reference to Moll's publication in the official proceedings of the Royal Institute (Koninklijk Instituut), a periodical De Kanter surely was familiar with.<sup>80</sup>

Van Swinden had also been wrongly informed about the demolition of the houses of both 'inventors.' In the 1830s all houses concerned were still extant: the one once occupied by Jansen, and the two other houses which once had belonged to Lipperhey. The exact locations of these houses had been established in 1816 by Serlé. It was only during the refurbishment of the *Nieuwe Kerk* (The New Church) in 1848-1851, that two of these houses, built against the wall of the church, were taken down. One of them, called *De Amandel Bale*, the house which Lipperhey occupied at the time of his 1608-patent-application, was painted in watercolour in 1848, only shortly before it was demolished (ill. 8-A). After the mid-1850s only the neighbouring house,

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<sup>78</sup> Moll [& Van Swinden], 'Geschiedkundig onderzoek' (1831): offprint, 70. In the citation the addition between brackets comes from the English version.

<sup>79</sup> De Kanter & Ab Utrecht Dresselhuis, *Oorspronkelijke stukken* (1835). In 1854, De Kanters son-in-law and co-author Johannes Ab Utrecht Dresselhuis (1789-1861) later summarized De Kanters pro-Jansen arguments in the periodical *De Navorscher* 4 (1854), 90-92.

<sup>80</sup> Conversely, Moll did not mention De Kanter's 1824-publication, as Elsevier observed in *De Navorscher* 4 (1854) 92.



which Lipperhey had bought in January 1609 with the money he had received for his three telescopes, remained. In about 1835, at De Kanter's request, the old name *De Drie Vare Gesichten* was painted again on its façade. This house was eventually destroyed in May 1940, during the German bombardment of Middelburg (ill. 8-B & 8-C).

*1841: The discovery of an alleged Jansen telescope*

In 1841, shortly after his inauguration, the Dutch King William II was scheduled to visit Middelburg. In preparation for this event, the antiquarian Pieter Johannes Rethaan Macaré, organized the first exhibition ever to honour the glorious past of Zeeland. On that occasion, out of the blue, a certain Zacharias Snijder stepped forward, claiming that he possessed the oldest examples of a telescope made by Zacharias Jansen as a family heirloom. These objects – four iron tubes with lenses – were put on display and shown to the king, who praised them as the ‘first examples of an invention so priceless for the sciences.’ From that time onwards these tubes ‘which according to tradition were made by Jansen in 1590’ were shown on several other occasions, thus establishing a verisimilitude of its own. With the result that in 1850, when Rethaan Macaré’s son was an alderman in the Middelburg government, following the demolition of the old houses at the ‘Nieuwe Kerk,’ a memorial stone was placed on the spot where Jansen’s house had once stood. The text on this ‘very humble monument’ reads as follows: *Against this wall stood the house of ZACHARIAS JANSE, Inventor of the telescopes, in the year MDXC*’ (ill. 9).<sup>81</sup>

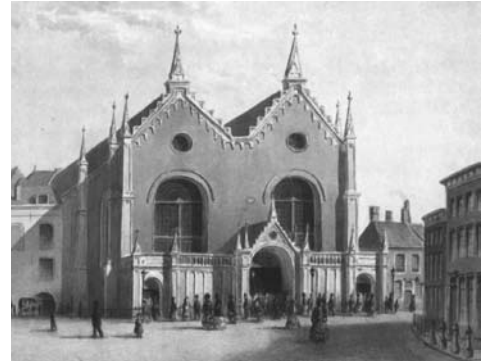
This simple token of honour was not enough in the eyes of the Utrecht professor Pieter Harting, at that time the leading authority on optics in the Netherlands. In 1858, in a widely-read popular journal, he pleaded vigorously for the erection of a large monument in Gothic style for the two Middelburg inventors, thus uniting the conclusions of Moll and De Kanter.<sup>82</sup> And although Harting’s appeal went unheeded, he remained very interested in the invention. A few years earlier, in 1853, in an assembly of the Royal Netherlands Academy of Arts and Sciences, Harting had defended Jansen’s case as the inventor of the microscope, rebutting an Italian paper by the Abt Redi, in which Cornelis Drebbel of Alkmaar was put forward as the inventor.<sup>83</sup> And so, when in 1866,

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<sup>81</sup> Cf. *Kroniek van het Historisch Genootschap te Utrecht*, 2e serie, 7 (1851), 194-198; *De Navorscher* 1 (Bijblad 1853) 12, 450.

<sup>82</sup> Harting, ‘De twee gewigtigste Nederlandsche uitvindingen’ (1859).

<sup>83</sup> Harting and Matthes, ‘Verslag over den vermoedelijken uitvinder van het microscoop’ (1853). Harting was in fact the author of this article, see page 118.



Ill. 8. Façade of the *Nieuwe Kerk* at the Kapoenstraat in Middelburg. *Upper left*: Situation in 1848, the year in which these houses were demolished. The house at the right, was called *De Amandel Bale*. It was here that in September 1608 Hans Lipperhey made his first telescope. In the next year he bought the neighbouring house (not drawn) which he called the *De Drie Vare Gesichten*, after the three telescopes he made for the States General. *Right*: Situation in 1851, representing the refurbished Neo-Gothic façade of the church. The house *De Drie Vare Gesichten* is depicted at the far right. *Bottom*: The ruins of *De Drie Vare Gesichten*, after the bombardment of Middelburg in May 1940. The façade of the church had been re-reconstructed earlier in the 20<sup>th</sup> century. [Zelandia Illustrata, Zeeuws Archief, Middelburg].

the *Zeeuwsch Genootschap* obtained the 'Jansen-tubes' as a legacy of the late Zacharias Snijder, Harting was the obvious man to investigate them.

Harting's findings on the four tubes were that they were made in the same workshop, at a time when the art of making optical instruments had still been very crude. They certainly had to be dated around the turn of the sixteenth and seventeenth century. As Harting did not know any other opticians working in that period, these tubes were probably made by father and son Jansen. And as the shortest tube functioned as a crude microscope, with only a small magnification, this most likely had to be the oldest extant Jansen-microscope (ill. 10-A



Ill. 9. Memorial stone for the alleged invention of the telescope by Zacharias Janse(n), placed in 1851 in the wall of the 'Nieuwe Kerk' in Middelburg, the church against which Jansen's house once stood. [Photo: Peter Louwman]

and ill. 10-B).<sup>84</sup> As a result, in 1869, in the printed catalogue of the collections of the *Zeeuwsch Genootschap*, the Snijder-tubes were presented as almost certainly made by Zacharias Jansen.<sup>85</sup> And as Harting had 'identified' the smallest tube as a microscope, this tube was sent to the 1876-Exhibition of Scientific instruments in South Kensington, to be placed in the gallery of 'Historical Treasures' (ill. 11).<sup>86</sup> Subsequently, copies of this alleged 'Jansen-microscope' were ordered by a number of museums all over the world (ill. 12).<sup>87</sup> No wonder that in 1890-1891 this 'item of evidence' of Jansen's invention became the centre piece of an exhibition held in Antwerp, commemorating the presumed 300-year anniversary of the invention of the microscope by 'Hans et Zacharias Janssen de Middelbourg, inventeurs du microscope composé.'<sup>88</sup> And even today, in 2009, images of this tube can be found on the internet claiming it to be the oldest extant microscope, of which 'most scholars agree that the invention [...] can be credited to Zacharias Janssen in the late sixteenth century.'<sup>89</sup>

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<sup>84</sup> Harting, 'Oude optische werktuigen' (1867).

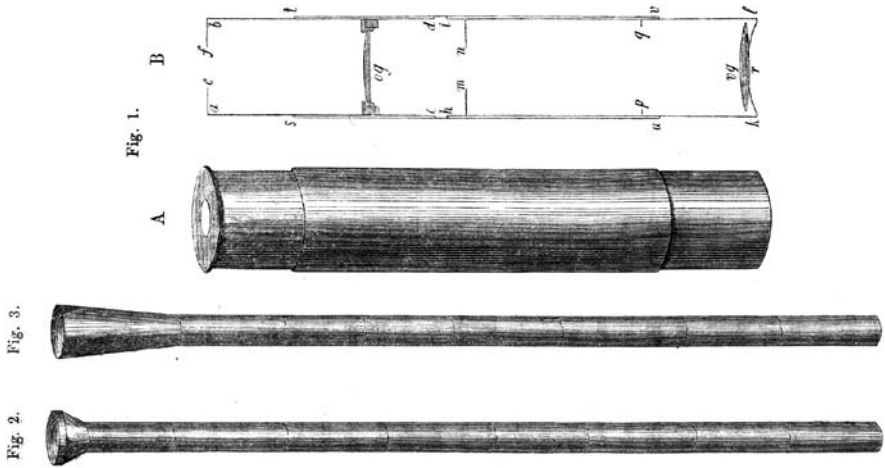
<sup>85</sup> Nagtglas, *Catalogus van Oud- en Zeldzaamheden* (1869), no. 46.

<sup>86</sup> De Clercq, 'The Special Loan Collection' (2002) 11-19; Part 4: Photographs and copies, in: *ibidem*, no. 76 (March 2003) 10-15.

<sup>87</sup> De Clercq, 'The Special Loan Collection' (2002), 13-15. See in more detail about the tubes: Harting, 'Oude optische werktuigen' (1867) and Zuidervaart, 'Uit Vaderlandsliefde' (2007).

<sup>88</sup> On this commemoration, organised by Henri van Heurck, see Becker, 'Eene Nederlandsche uitvinding waardig herdacht' (1892); *Rapport du jury de l'exposition de microscopie générale & retrospective* (1891); Miquel, *Exposition générale et rétrospective de microscopie de la ville d'Anvers* (1892).

<sup>89</sup> Cf. <http://micro.magnet.fsu.edu/primer/museum/janssen.html> (consulted on January 2009).



Ill. 10. Zacharias Snijder's tubes, alleged to be from the Jansen workshop. The short tube was [wrongly] 'identified' in 1867 by Harting as a 'microscope'. The two long tubes were destroyed in 1940. Steel engravings taken from Harting (1859).

*1885: Johannes Sachariassen exposed as a fraud*

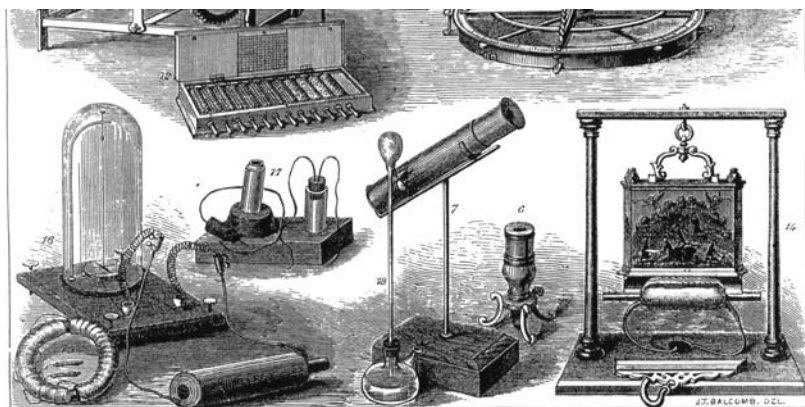
In the 1880s Jansen's fame as an inventor (of at least the microscope) was, therefore, again firmly established. Yet, the Zeeland historian Frederik Nagtglas wondered why. In 1887, in his biographical work *Levensberichten van Zeeuwen* he wrote:

In fact, without any special reason the [Jansen]-tradition gradually increased in strength, and was confirmed especially when [...] in the side wall of the New Church a Belgian bluestone was placed, in order to indicate the place where once stood the house of Jansen, a man who was probably held in low esteem.<sup>90</sup>

Nagtglas, who had found in the Middelburg archives the earliest known entry of Lipperhey as a spectacle maker (in 1602), pleaded for a more well-balanced approach. As secretary of the 'Commission for the tracing and conservation of notable antiquities of Zeeland' he proposed the installation of a second free-stone plaque, this time in the wall of the remaining house once occupied by Lipperhey. And indeed in 1875 this was done.<sup>91</sup>

<sup>90</sup> Nagtglas, *Levensberichten*, 1 (1888), 475.

<sup>91</sup> Zuidervaart, 'Uit Vaderlandsliefde' (2007), 32.



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|--|---|--|---|
| <p>1. Tycho Brahe's quadrant.<br/>2. Sir Francis Drake's sextant.<br/>3. Galileo's telescope.<br/>4. Galileo's second telescope.<br/>5. Newton's telescope.<br/>6. Jansen's compound microscope, 1608.</p> | <p>7. Galileo's microscope (medicinal).<br/>8. Sir Humphrey Davy's first safety-lamp.<br/>9. Third safety-lamp.<br/>10. Davy's improved safety-lamp.<br/>11. Pons's sifting and separating machine, 1812.</p> | <p>12. The "Napier Broom," for division and multiplication, about 1710.<br/>13. Sturgeon's electric telegraph, 1808.<br/>14. Faraday's magnetic-elastic induction apparatus, and 15. Faraday's later apparatus.<br/>16. Faraday's apparatus.</p> | <p>17. Galileo's air thermometer.<br/>18. Galileo's automatic barometer.<br/>19. Galileo's apparatus for testing the tension of ether vapour.<br/>20. Anomalous clock, from Devon Castle.</p> |
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HISTORICAL TREASURES IN THE LOAN COLLECTION OF SCIENTIFIC APPARATUS, SOUTH KENSINGTON.

Ill. 11. The Jansen 'microscope' (or Snijder's short tube), as exhibited in 1876 at the South Kensington Exposition. From: De Clercq (2003).



Ill. 12. *Left*: The Jansen 'microscope' (or Snijder's short tube), in its present state of preservation (Collection Koninklijk Zeeuwsch Genootschap der Wetenschappen, Zeeuws Museum, Middelburg). *Right*: Copy made in the 1890s by John Mayall. (National Museum of Health and Medicine, Washington, D.C., USA). Other copies are in the British Museum, London and the Deutsches Museum, Munich.

But the most profound contribution to Lipperhey's rehabilitation was made in 1885 by the antiquarian Johannes Godefridus Frederiks. In the Middelburg archives he had found the birth registration of Johannes Sachariassen, Jansen's son, whose testimony in 1655 had established his father's fame as an optical inventor. Now it became evident that Sachariassen had lied about his own age. As he was born in 1611, rather than in 1602 as he had claimed, Sachariassen could therefore not have made any contribution to the claimed invention of the long tubes in 1618. This falsification made his whole testimony extremely dubious and Frederiks was merciless in his final judgement about Jansen, whose fame he labelled as a 'scientific swindle':

Zacharias Jansse, the new celebrity in the history of civilisation, is – except in the testimony of his own son, and in the protection of his ostensible playmate [Boreel] – an unknown bigwig. It's just that he is mentioned in the book of Borellus, which is written in the [Latin] language of the learned, and thus was spread everywhere. That is why his name was adopted by later writers, and protected by those who should have known better.<sup>92</sup>

According to Frederiks one of the worst things was that the ugly 'Escausian Stone, which was so hurriedly attached to the church wall, was seen as a testimony in its own right of this reprehensible kind of historical belief.' But luckily the inscription was of a 'praiseworthy shortness.'<sup>93</sup>

*1906: Cornelis de Waard and his monumental study 'De Uitvinding der verrekijkers'*

In spite of Frederiks' severe criticism, an opinion which had been strongly supported in a Dutch national newspaper by the Groningen teacher of astronomy Willem Gleuns<sup>94</sup>, the Jansen-priority was still vigorously defended, first in 1890 in a small pamphlet by Herman Japikse, physicist and director of a Middelburg secondary school<sup>95</sup>, and almost two decades later, with much more vigour and arguments by the mathematician and historian Cornelis de Waard (1879-1963), in his very well documented study *De uitvinding der verrekijkers*.<sup>96</sup>

In this study De Waard left no stone unturned. Not only had he read all the relevant contemporary literature on the subject, but, being the son of an archivist, he was also a very skilled archival researcher and had searched vigilantly in all the Zeeland archives. De Waard combined a series of findings:

(1) First, De Waard had found in the registers of the daily administration of the States of Zeeland a note stating that 'a young man' (of whom the name was left blank) 'also says he knows the art of making instruments for seeing far.' Thus there was indeed irrefutable contemporary evidence that another person had lived in Middelburg in 1608 with the knowledge how to construct a (crude) telescope. De Waard was convinced that this person had been Zacharias Jansen.

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<sup>92</sup> Frederiks, 'Johan Lipperhey van Wesel' (1885).

<sup>93</sup> *Ibidem*.

<sup>94</sup> W. Gleuns, *Algemeen Handelsblad* (25 December 1889). Critical newspaper article, commenting on the Antwerp exhibition commemorating the 300-year anniversary of the invention of the microscope.

<sup>95</sup> Japikse, *Het aandeel van Zacharias Janse* (1890).

<sup>96</sup> De Waard, *Uitvinding* (1906).

(2) Further, in the judicial archives, De Waard found several hitherto unknown documents relating to Jansen. And although almost all the documents revealed particulars only about Jansen as a counterfeiter, a pedlar or a drunk, De Waard concluded that Jansen must have been very dexterous with his hands, a quality very necessary for an optician.

(3) Then, in Simon Marius' *Mundus Jovialis*, published in Nuremberg in 1614, De Waard found a passage mentioning a telescope with a broken objective, that had been offered for sale by an unnamed Dutchman at the Frankfurt book fair in September 1608. According to De Waard, Jansen, a known pedlar, was a good candidate for this unnamed Dutchman, who apparently had been in the possession of a telescope, a month before Lipperhey's presentation in The Hague.

(4) But De Waard's most crucial discovery was an entry in a notebook of an early seventeenth-century natural philosopher, Isaac Beeckman, a native of Middelburg, who earned his living as rector of the Latin School of Dordrecht. Like many of his contemporaries in the 1630s, Beeckman had become very interested in optics, and his desire to obtain a good quality telescope had brought him *inter alia* to Middelburg to learn the art of glass grinding from Johannes Sachariassen, the son of Zacharias Jansen. In his notebook Beeckman kept a detailed record of all kind of particularities, and De Waard found an entry, dated 1634, in which the following statement was recorded:

'Johannes Sacharias says that his father made the first telescope in this country in the year 1604, after an example of an Italian, on which was written: ano 1[5]90.'<sup>97</sup>

Taken together, these 'facts' convinced De Waard not only of Jansen's genuine existence as a historical figure, but also made him very eager to support Borel's claim, which made Jansen the first Dutch telescope maker. And so, De Waard concluded, it must have been Jansen, who in 1604 made the first Dutch telescope, probably after an earlier model, made by one of the many Italians, which at the time were working in the Netherlands. This could have been one of the employees of the glassworks of Govaert van der Haghe, who in 1581 had founded in Middelburg the only glass factory in the Northern Netherlands where glass was made according to the high quality Venetian recipes. But what about Lipperhey? For De Waard, too, he remained the second inventor, and even the first constructor of a binocular telescope.

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<sup>97</sup> De Waard, *Uitvinding* (1906), 154-155 (with a facsimile); Cf. Van Helden, *Invention* (1977), 53.

Although De Waard had made exhaustive researches, in later years Dutch archives continued to reveal more particulars about Zacharias Jansen. In 1909, and also in 1933-1934, the Amsterdam historians Johannes Breen and Hendrik Fredrik Wijnman brought to light that Zacharias Jansen had moved to Amsterdam in November 1626, working there for some time as a spectacle maker. However, in that profession Jansen had not been successful, because he was declared bankrupt in May 1628.<sup>98</sup>

*The Jansen-Lipperhey debate: the present state of affairs*

So where do we stand in 2009, after 400 years of debate? It is obvious that De Waard, with his monumental investigation of the relevant sources, has contributed enormously to our knowledge about Jansen and Lipperhey, especially as he has printed most of his archival findings *in extenso*. Very luckily indeed, for the majority of these sources were destroyed in the Second World War. Of these documents, the most relevant one's were translated into English by Albert Van Helden in his own thoroughly documented study *The Invention of the Telescope*. In this monograph, published in 1977 (and reprinted in 2008), Van Helden concluded that the question 'who invented the telescope' actually boils down to the question: 'who first realized that such a device could be used for another purpose and set about adapting and improving it in order to obtain the greatest magnification possible?' That question, Van Helden remarked, could not be answered on the basis of the available evidence. He concluded:

'When all is said and done, we are still left with the fact that the earliest undeniable mention of a telescope is to be found in the letter of 25 September 1608, which Lipperhey carried to The Hague and that Lipperhey was the first to request a patent on the telescope. But to award the honour of the invention to Lipperhey solely on that basis is an exercise in historical positivism.'<sup>99</sup>

A fresh look at the events of 1608 was presented in 2007 by Rolf Willach, a Swiss optical engineer. He presented a elegant answer to the remaining and

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<sup>98</sup> Breen, 'Topographische geschiedenis' (1909) 183 & 188; Wijnman, 'Sacharias Jansen te Amsterdam' (1933) and idem, 'Nogmaals Sacharias Jansen' (1934). In the latter paper Wijnman distinguished two persons with the name Sacharias Jansen, both living in Amsterdam in the same period: the spectacle maker from Middelburg and a brass founder from Schobel. The latter is erroneously identified as the spectacle maker by Van Kerkwijk, 'Neurenberger rekenpenning in 1628 te Amsterdam door Zacharias Jansz vervaardigd' (1926).

<sup>99</sup> Van Helden, *Invention* (1977), 25.



intriguing question: ‘If the knowledge of the magnification potential of two combined spectacle glasses was already available many decades before 1608, why was the telescope not invented earlier?’

In his paper Willach argued that the rather poor quality of the lenses available in the sixteenth and early seventeenth century could make possible a telescopic image of reasonable usefulness, if a small but crucial modification was made to the instrument; that is a small opening in a cardboard disc mounted in front of the convex objective lens. This so called ‘diaphragm’ blocks the light passing through the outer part of the imperfect objective lens, as this part would otherwise blur and degrade the telescopic image.<sup>100</sup> Thus, the invention of the telescope has now been reduced to the invention of the diaphragm, which brings Willach to his conclusion:

There is no doubt that Lipperhey was the first who had this knowledge. He could repeat the construction of the telescope as often as needed, including binoculars, the most difficult construction. His idea was as simple as ingenious, but this simplicity should not diminish its merits. We can see how his success was based on numerous small steps made over many centuries. He just happened to be the last link in a long chain.<sup>101</sup>

In addition to Willach’s conclusion, which is based on numerous measurements of surviving spectacle lenses, it is interesting to note that at least one archival source indicates that in 1609 the notion of the diaphragm indeed was known in Holland. In 1642, Théodore Deschamps, a physician from Bergerac, remembered that in 1609, during his stay at Leiden University, he had not only witnessed a demonstration of a telescope by the mathematics professor Rudolph Snellius, but had also met a Delft spectacle maker, who in his telescopes had covered up ‘the parts of the convex glass on which the rays coming from the object intersect each other too soon.’<sup>102</sup> However, just as interesting is the remark made by Beeckman that in 1618, when he was shown a telescope

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<sup>100</sup> Willach, ‘Der lange Weg (2007). Idem, *The Long Route* (2008).

<sup>101</sup> Willach, *The Long Route* (2008), 99.

<sup>102</sup> Théodore Deschamps to Marin Mersenne, 5 May 1642: ‘Or j’estoy à Leyden en l’an 1609, où Rodolphus Snellius, professeur en mathematiques, qui nous lisoit l’*Optique* de Ramus, à la sortie de sa leçon, me monstra les lunettes communes qui n’avoient qu’un tuyeau’ [...] ‘[Je] recogneus que ce lunetier de Delft n’avoit fait autre chose que mettre les verres en deüe distance, et couvrir les parties du verre convexe sur lesquelles les rayons venants de l’object s’entrecouppent trop près les uns les autres.’ Cf. De Waard, *Journal* 1 (1939), 12, 209; idem, *Correspondance Mersenne* 11 (1970), 140-141.

in the French city of Caen, he remembered a Middelburg spectacle maker who constructed telescopes *without* a diaphragm.<sup>103</sup> So probably the last word on this subject has not yet been written.

#### IV. EPILOGUE

##### *High social status and its importance for the credibility of a testimony*

This survey of 400 years of the – mostly Dutch – debate about the invention of the telescope reveals that historiography is indeed a dynamic process, in which the motives of actors fluctuate according to their own background, coloured by national interests, and in which witnesses and their testimonies are valued according to the standards of time and place.

Thus in the early nineteenth-century Van Swinden and Moll came to an interpretation of the facts different from Lambrechtsen and De Kanter's. While the former undertook a critical evaluation of all contemporary documents, leading to one of the earliest attempts in Dutch history to write an archive-based 'history of science,' the latter were clearly obsessed by the wish to highlight the importance of the local history and culture of Zeeland.

The question 'whom to believe in respect to the invention of the telescope,' appears to be one of the leading themes in this historiography. In many ways it resembles the history of the first observations made with this very instrument. When Galileo discovered the moons of Jupiter with his telescope in the winter of 1610, almost nobody believed him at first. Little wonder, for no one had telescopes good enough to show them – And even when observers had access to Galileo's own telescope very few could see Jupiter's satellites because the instrument was so difficult to use and its field of view was so small. (about 15 arc-minutes). Later, in Tuscany, he was more fortunate. Guided by Galilei, Grand Duke Cosimo de Medici was able to observe these heavenly bodies. This grand-ducal testimony was crucial for Galilei to achieve the credibility he needed for his discoveries to be accepted as real and trustworthy.<sup>104</sup>

Similar examples can be given at various occasions through the seventeenth century. Even in natural philosophy the high social status of a witness provided the credibility, which an instrumental observation or experiment could not

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<sup>103</sup> Entry by Beeckman in his notebook on 13 August 1618, commenting on Sirtori's *Telescopium*. In May 1628, also in his notebook, Beeckman discusses the function of the diaphragm in a telescope. Cf. De Waard, *Journal Beeckman*, 1 (1939), 208-209 & 3 (1945), 46.

<sup>104</sup> Van Helden, 'Telescopes and Authority from Galileo to Cassini' (1994), 11.

achieve in itself. This testimonial way of establishing 'facts' could generate authority in its own right, which only few people would dare to question.<sup>105</sup>

With respect to the priority question about the invention of the telescope, this same mechanism has put its stamp on history. The high social rank of Willem Boreel, a nobleman, knighted in 1619 by the English king, was crucial in the acceptance of his verdict, first in the seventeenth century by Boreel, and later, in the nineteenth century, by scholars such as De Kanter, Harting, Japikse and others.<sup>106</sup> Even the highly critical scholar Moll accepted Boreel's statement relating to Jansen as the inventor of the microscope. Without Boreel's second testimony, published in Boreel's *De Vero Telescopii Inventore*, probably nobody would have paid any attention to Zacharias Jansen. Perhaps his name would have popped up in 1906, when Beeckman's little remark was found by De Waard. But given the fact that Jansen was not mentioned in the archives as a spectacle maker before 1616, Beeckman's small note would never have received such weight. So, in the end, Boreel's high social status remains the most crucial element in the credibility of Johannes Sachariassen's testimony. This feeling was put nicely into words by Harting in 1853:

'When one realizes that WILLEM BOREEL, one of our most honourable statesmen in the early seventeenth century, to whom, during this important period of our [Dutch] history, was entrusted the position of ambassador, first to England and later to France, then surely one must acknowledge that the testimony of such a man deserves a very high degree of credibility.'<sup>107</sup>

Curiously, in his turn, Harting's own credibility as a university professor appeared to be crucial for the acceptance of the undocumented Snijder-tube as Jansen's 'first microscope.' Although in 1866, the secretary of the *Zeeuwsch Genootschap* had expressed some doubts about the authenticity of Snijder's legacy, this hesitation had vanished completely after Harting's investigation. Harting's reasoning concerning Snijder's tubes had been extremely speculative, but his authority as a specialist in optical instruments removed all reticence, with the result that the smallest tube was seen by many as *the* original microscope, the oldest product of Jansen's workshop.

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<sup>105</sup> Cf. Dear, "Totius in Verba" (1985) and Shapin, *A Social History of Truth* (1994).

<sup>106</sup> Cf. Gerrits, *Grote Nederlanders* (1948), 45.

<sup>107</sup> Cf. Harting and Matthes, 'Verslag over den vermoedelijken uitvinder van het microscoop' (1853), 70.

Today we must conclude, on the basis of all the evidence gathered in the past four centuries, that the story of Zacharias Jansen as the inventor of the telescope appears to be a mere historical fabrication, made up by his only son at a time when 'fame and possibly gain was to be derived from it,' as Van Helden has put it.<sup>108</sup> In the nineteenth century, Johannes Sachariassen was exposed as a fraudulent witness, lying not only about his age, but about almost every other item in his testimony.<sup>109</sup> His remark, recorded in 1634 by Beeckman, that his father had made a telescope in 1604, should have had no more impact than any other remark by a boaster, singing the praise of his own family. And while Boreel's first testimony about Lipperhey is confirmed by the archival sources, his later testimony in which Zacharias Jansen was launched as the inventor, also contradicts some of the available evidence, with the result that Jansen is also discredited as the inventor of the compound microscope.<sup>110</sup> What is more, historical research has shown that the compound microscope only emerged on the scene in about 1620, and therefore Boreel's testimony, too, can be completely disregarded.<sup>111</sup> Still even in the 21<sup>st</sup> century advocates can be found, who are willing to stand up for Jansen's priority as the inventor

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<sup>108</sup> Van Helden, 'The Historical Problem' (1975), 256.

<sup>109</sup> To summarize the contradictions in Sachariassen's statement of 1655: (1) 'In 1590 my father invented the telescope' [*Zacharias Jansen was born in 1585, so he would have been five years old at the time of the invention*]; (2) At that time examples were given to Count Maurits and Archduke Albertus. [*No archival record whatsoever; it is only recorded that Jansen was active as a spectacle maker since 1616*]; (3) In 1618 my father and I invented the 'long tubes (the astronomical telescope) [*design was published by Kepler in 1611*]; (4) In 1620 Metius and Drebbel bought one of our instruments in order to copy these. [*Metius used a telescope at least from 1613 onwards; Drebbel already wrote on the telescope in 1609*]; (5) 'I am 52 years old [*Actually Sachariassen was 43 in 1655. He probably lied about his own age, in order to validate his own claim for a share in the invention of astronomical telescope*].

<sup>110</sup> Boreel's first testimonial gives an accurate description of Lipperhey and the location of his workshop. To summarize the contradictions in Boreel's second testimonial of 1655: (1) 'Near the house where I was born, ... a certain spectacle-maker lived in the year 1591 by the name of Hans' [*Hans Martens died in 1592, when Boreel was only one year old. He could not have remembered him. In no document is Hans mentioned as a spectacle maker*]; (2) 'Hans had a wife Maria and two daughters' [*The wife was called Maeyken and there was only one daughter*]; (3) 'I knew Zacharias intimately, because ... we played together from an early age' [*Boreel was born in 1591 and Zacharias in 1585: the difference in years, as well as the extreme difference in social status makes this claim highly unlikely*]; (4) 'Hans, or Johannes, with his son Sacharias, as I have often heard, first invented the microscope' [*This instrument emerged only in about 1620; Boreel's statement that in 1619, in England, he saw a 'microscope of that Sacharias' at Drebbel's house, is probably confused with the instrument Drebbel personally had made*]; (5) 'Lipperhey copied the instrument, after an unknown visitor ordered glasses from Jansen' [*This account follows closely the story published by Sirtori in 1618, which Boreel had read*].

<sup>111</sup> Turner, 'Animadversions' (1985).

of the telescope, and who even wonder why 'the Lipperhey myth' has so 'stubbornly' survived.<sup>112</sup>

But who then was the mysterious 'young man,' who on 14 October 1608 showed a second crude telescope to the Middelburg magistrates? Could it be any one else than Jansen? In my view, there is indeed a better candidate. When we look closely at the evidence presented by De Waard in 1906, it becomes clear that Jansen was (albeit scarcely) mentioned as a spectacle maker only beginning in 1616. It is therefore tempting to assume that Jansen took up this profession just because he had inherited the tools of the late spectacle maker 'Lowys Lowysen, geseyt Henricxen brilmakers,' whose children had come under Jansen's guardianship in the previous year. As in these same years Jansen was mainly working as a counterfeiter, producing large series of fake Spanish coins, his optical workshop in fact could have functioned as a cover for these highly illegal activities.

Thus, if Jansen did not work as a spectacle maker *before* 1616, which other Middelburg spectacle maker did? Of course, the spectacle maker 'Lowys Lowysen, geseyt Henricxen brilmakers.' He is evidently a better candidate for this unknown 'young man,' than the wrongly praised Jansen, whose only proven achievement is the production of counterfeit coins.

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<sup>112</sup> Barlow Pepin, *The Emergence of the Telescope* (2004). See also De Rijk, 'Een standbeeld voor Zacharias Janssen' (1975); idem, 'Wie heeft de telescoop uitgevonden?' (1985) and idem, 'Op zoek naar de uitvinder van de Hollandse kijker' (2008).