

Zdislav Šíma; Jiří Valeška

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## News in the Identification of Tycho Brahe's Handwritings

ZDISLAV ŠÍMA AND JIŘÍ VALEŠKA

Praha

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A detailed study of the handwriting of Tycho Brahe was performed (Šíma and Valeška 2002) so as to be able to identify the persons who had written texts until now supposed to have been written personally by Tycho or by persons from his circle. The identification was used to determine the authorship of two important inscriptions appearing in books kept in the National Library, Prague. These books were owned by Tycho.

### Our Goals

F. J. Studnička collected what he called “Prager Tychoniana”. In his paper, Studnička (1901) judged all these documents to have been written by Tycho.

We have found that not all of these items kept in our libraries are written in Tycho's hand. It was obvious that the manuscripts were written by several different persons. However, nothing is so misleading as ‘obvious’ results.

Our goal is to identify Tycho's handwriting. We want to be sure in future what was written by Tycho and what was not. We want to be sure in future what was written by Tycho and what was not. We want to avoid any mistakes in the ascription of manuscripts to Tycho. Another aim is to decide who is the author of two short but important comments in books kept in the National Library, Prague.

The manuscripts cited by Studnička make so disparate a sample that it was nearly impossible to decide which one of them was written by Tycho. Nothing was certain, so we had to find some samples which we are nearly one hundred percent certain were written by Tycho in person. Only by being absolutely sure at least in some cases could we enlarge the number of manuscripts which could be unambiguously attributed to Tycho.

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Astronomical Institute of AV ČR, Boční II 1401, 141 31 Praha 4, Czech Republic  
Institute of Criminalistics, Prague, Czech Republic

We therefore chose four ‘pillars’, which it is nearly certain that Tycho wrote himself, and we compared them. They are:

● **VI F 44:**

The Album of Tyge Brahe<sup>1</sup> the eldest son of Tycho Brahe, the astronomer. It is kept in the National Museum, Prague. Its shelf mark is Museum Regni Bohemiae VI F 44. It is a typical renaissance album of a young nobleman. On page 2 – right hand side – is the coat of arms of the Brahe family with Tyge’s handwriting „*Tandem bona caussa triumphat. // Tÿcho Brahe, Tÿchonis Filius, // Dresdæ, Die 27 Novembris, // Anno Domini 1598 s. (cripsit)*”<sup>2</sup> – see **Fig. 1** which is in fact a good example of the handwriting of Tyge. He wrote this for himself.

On the left hand side is a dedication from his father, the astronomer Tycho to Tyge: “*Disce puer virtutem ex me // durumque laborem, // Fortiter et sortis sustinuisse // vices. // Tÿcho Brahe // Filio // TYHoni primogenito // scripsi // Anno 1599 Feb(ruarii) 28 // Vitebergæ.*” – see **Fig. 2**.

Tycho wrote this text in Wittenberg during a journey from Wandesbeck (not far from Hamburg; Vandesburgum in Latin) to Prague. The famous *Astronomiae Instauratae Mechanica* was printed in Wandesbeck during his stay there in 1598. Tycho left Wandesbeck during autumn 1598 and started a move to Prague. However, Tycho only arrived in Prague in June 1599, because a stay in Wittenberg at the family of Jesenský (Jessenius), the future rector of Prague’s Charles University, took longer than Tycho had originally thought. It has been said that there was a plague in Prague at that time. Fortunately, this was not true.

The album is extremely important because of the fact that it collects samples of the handwriting of important people from the sphere of Tycho’s family, e.g. Otto Brahe,<sup>3</sup> Franciscus Ganzneb Tegnagel van Kamp (Ritter von Camp), (1573–1636), a pupil of Tycho and Westphalian nobleman, who married Tycho’s daughter Elizabeth, and many others.

● **DG IV 25:**

The Album of Sebald (Siebald) Plan. It is kept in the library of the Strahov Monastery, Prague. There is a text saying: “*plures sapiunt palato // quam cerebro // Tycho Brahe // scripsit Uraniborgi // Anno 1591*” – see **Fig. 3**.

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<sup>1</sup>We shall use the name Tyge to distinguish him from his father despite the fact that the astronomer was also baptised as Tyge, the name “Tycho” being only a Latin version of his name.

<sup>2</sup>We use the literal transcription of the text conserving all written signs and conserving even the capitals and minuscules to enable perfect identification of all written letters and signs. It is not the standard transcription of the Latin texts.

<sup>3</sup>Three of Tycho’s four brothers had sons named Otte. We are not sure which of them is this “Otto”. Most probably it was Otte Axelsen Brahe (1579–1611), son of Tyche’s brother, Axel Brahe.

*Tandem bona causa triumphat.*



Fig. 1

Disce puer virtutem ex me  
Cūrūq; Laborem,  
Fortiter & sortis sustinuisse



Joh. Brahe  
Filio  
Tycho ni primogenito  
Scrupj  
Anno 1599 Feb 28  
Witoberga.

Fig. 2

Tycho wrote this text during the prosperous development of the observatory at the Uraniborg. In that year he had only a few problems with Rasmus Pedersen and in the following year, 3<sup>rd</sup> July 1592 the young, fifteen-year-old Danish King Christian IV personally visited Tycho at Uraniborg. Tycho received a massive gold chain with Christian's portrait from the King. (Tycho made the last observation at Uraniborg much later, on 15 March 1597.)

Plures sapientis palato  
 quum cerebro  
  
 Tycho Brahe  
 Strassburgi Viramberg  
 Anno 1598

Fig. 3

Auxilium meum à Domino  
 Qui salvos facit rectos corde  
 Erick Langr. loco et die  
 ut supra  
 H17.

Fig. 4

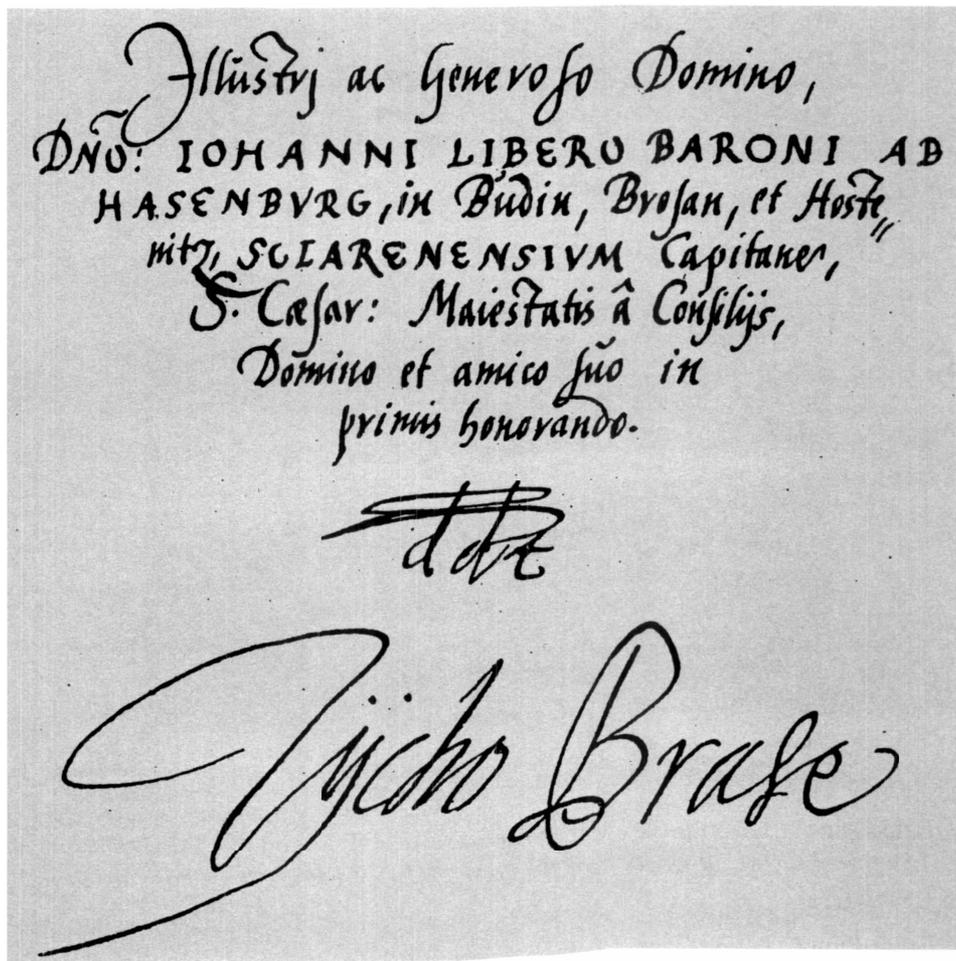
Below this inscription is another one, a little bit forgotten: “*Auxilium meum a Domino // Qui salvos facit rectos corde. // Erick Langr, loco et die up supra*”. – see **Fig. 4**.

Erick Langr (Lange) was a friend and collaborator of Tycho. He was also his distant cousin. Later he married Tycho’s sister, Sophia. He died in Prague in the

year 1613. The text in the album of Sebald Plan is an important example of Erick's handwriting.

● **AG XI 56:**

This is a copy of his 'Astronomiae Instauratae Mechanica', Vandesburgi 1598, which is kept in the above mentioned library of Strahov. At the beginning of the book there is – apart from a nice realistic portrait of Tycho – a dedication by Tycho to Johannes Hasenburg: "*Illustrj ac Generoso Domino, // D(omi)NO: IOHANNI LIBERO BARONI AB // HASENBURG, in Budin, Brosan, et Hoste = //nitz, SOLARENENSIVM Capitaneo, // S. Cæsar: Maiestatis â Consilij, // Domino et amico suo in // primis honorando. // ddt // Tÿcho Brahe*" – see Fig. 5.



The image shows a handwritten dedication in Latin, written in a cursive script. The text is arranged in several lines, with the first line being a large, decorative flourish. The main text is in a smaller, more formal cursive. Below the main text is a large, stylized signature, and at the bottom is a large, flowing signature in a different cursive style.

*Illustrj ac Generoso Domino,*  
**DNO: IOHANNI LIBERO BARONI AB**  
**HASENBURG, in Budin, Brosan, et Hoste,**  
*nitz, SOLARENENSIVM Capitaneo,*  
*S. Cæsar: Maiestatis â Consilij,*  
*Domino et amico suo in*  
*primis honorando.*

*dt*

*Tycho Brahe*

Fig. 5

The problem of this text lies in the fact that the whole first part of the dedication (i.e. till "... primis honorando") is not a typical example of a handwriting. It is more or less a piece of calligraphy, or "painting with letters". All personal features of handwriting are therefore lost in this part. Moreover, it is highly probable that this part was executed by a professional calligrapher. The book, with the dedication prepared in such a manner, was given to Tycho only for his signature.

● **III-a-18/1693:**

This, like the preceding item, is a copy of his 'Astronomiae Instauratae Mechanica', Vandesburgi 1598, which is kept in the library of the castle of Křivoklát. This library forms part of the collection of the National Museum of Prague.

At the beginning of this copy there is a dedication by Tycho to Desiderius Pruskowski: "*ILLUSTRI ET GENEROSO DOMINO, DOMINO // Vldarico Desiderio Pruskowski, Libero // Baroni de Pruskow, Domino in Altenburg et Neo Bistritz. sacr. (æ) // Cæsareæ Maiestatis Came = // rario, et supremi magi = // stri stabuli munus // administranti // Amico Suo // honorando // Dono dedit // Tÿcho Brahe // Ano 1601 // Martij // 12*" – see Fig. 6. There was a tear on this page and during restoration the relative positions of the two parts were unfortunately shifted. This is to be seen in the words "magisTRI, STABuli, administranTI".

The problem of this text is practically the same as in the preceding case (the dedication from Strahov). Again, the whole first part of the dedication (i.e. till "... Dono dedit") is more or less a piece of calligraphy, and again, it is highly probable that this part was written by a professional calligrapher.

● **VENICE:**

The next document probably falls into the same category. We received a copy after a conference held in Prague, thanks to Dr. G. Truffa. Unfortunately, but as is only natural, we have it only in the electronic form of the jpg format. It is a dedication of the same book – 'Astronomiae Instauratae Mechanica' – to the Republic of Venice. The text is "*INCLYTÆ ATQUE ILLUSTRISSIMÆ // VENE-TORUM // Reipublicæ // submissee dono mittit // Tycho Brahe // manu propria.*" – see Fig. 7. For more details see the paper of G. Truffa.

All of these examples of handwriting (except that of Sebald Plan which is about 10 years older) are from the same period of Tycho's life – i.e. from the last period of his life before his death.

**Results – signatures:** We have found that all four signatures (and the signature from Venice too) differ from each other only within the normal parameters of spontaneous variation in the writing of one person's signature. Therefore, they were written by one person, and it is practically certain that this was Tycho Brahe.

ILLVSTRI ET GENEROSO DOMINO DOMINO  
Vldarico Desiderio Průskowski, Libero  
Baroni de Průskow, Domino in  
Altenburg, et Neobishruff. Sacr.  
Cæsareæ Maiestatis Came-  
rario, et supremi magi-  
stri consilii munitis  
administrationi  
Amico suo  
honorando



Dono dedit

Cycho Bruse  
Anno 1601  
Martij  
12



Fig. 6

INCLYTA ATQ; ILLUSTRISSIMÆ  
VENETORUM  
Reipublice

Submissæ auro nitenti

Pietro Brasc  
manipulo

Fig. 7

A short comment on Tycho's signatures: He wrote the name Tycho as Tijcho in all cases except Strahov (DG IV 25). This transcription can be found in old documents. The letters 'ij' written together look like 'ÿ', which was used by us in our transcription above.

In the list of dedications of "Astronomiae Inst. Mech." made by G. Truffa there is also mentioned a dedication which is now in **Detmold, Lippische Landesbibliothek**, Germany: "Illustrissimo D(omi)no Simoni, Comiti // et Nobili Domino in Lippa s. (suae?) Sa(cr)æ Cæs.(are)æ // Ma(iesta)ti a consiliis Aulae Imperialis ac in = // ferioris Circuli Saxonici Praefecto // bellico generalis. Domino // viro clementi. // Submisse offero // Tÿcho Brahe T.(ychonis) F. (ilius)" – see **Fig. 8**.

This handwriting is in very good correlation with handwriting samples of Tyge (see VI F 44 – **Fig. 1**). It seems that it is practically certain that it was written by

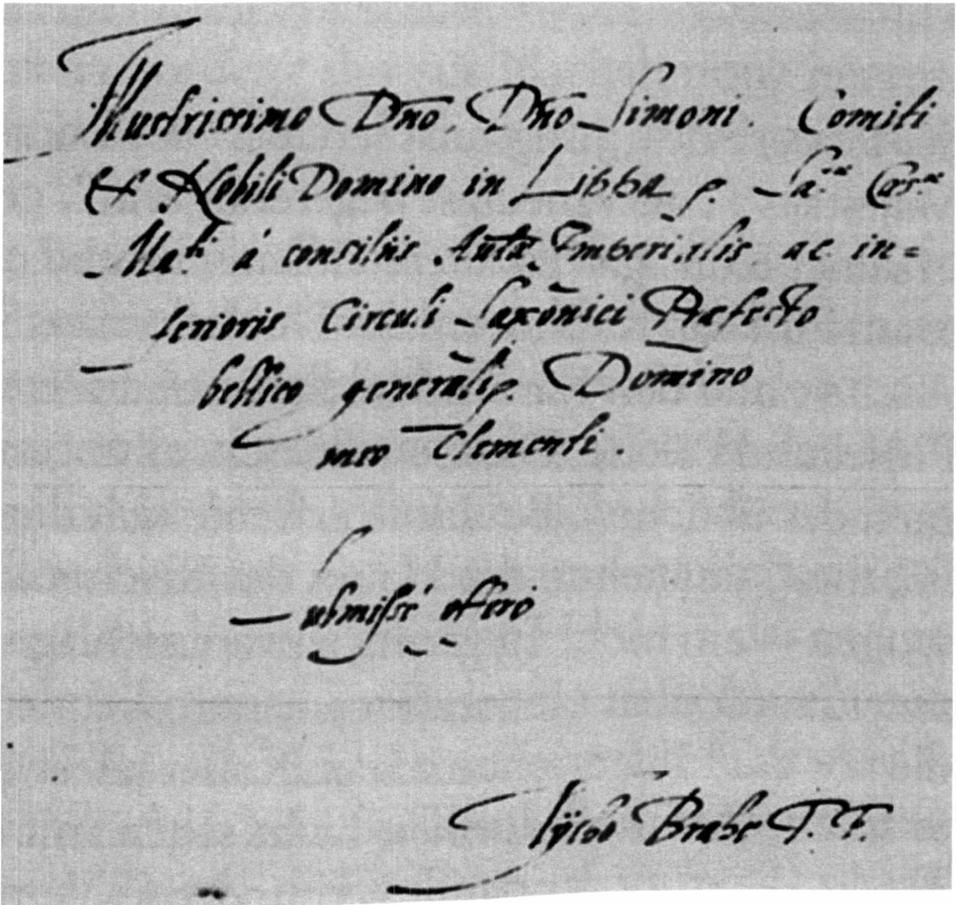


Fig. 8

him. Moreover, there was not found any reason militating against this conclusion. “Nihil obstat”.

To have a better and larger sample of Tycho’s handwriting, we used the examples of his handwriting published by V. E. Thoren 1990. (*The Lord of Uraniborg*). In the book they are given on pages 121, 126 and 323. The examples differ slightly from our ‘pillars’. They were written earlier, and also quickly, whereas our ‘pillars’ were written more officially and slowly. Nevertheless, it seems that all the examples were written by one hand, i.e. by Tycho personally.

### By-Products

There are some old prints and manuscripts of our interest kept in the National Library, Prague. The first one to be mentioned is Sign. **NK 14 B 16**, N. Copernicus: “De revolutionibus ...”. In this printed book there are quite extensive and numerous marginalia. The book belonged to Tycho. For a long time it has been supposed that the marginalia were written by Tycho. A facsimile of this book was published by Z. Horský (1971). Gingerich and Westman (1981) concluded on the basis of this facsimile that the marginalia were written by Paul Wittich.

Our result is: The marginalia **were not written by Tycho**. We have no examples of Wittich’s handwriting to be able to decide whether they were written by Wittich.

The other problematic manuscript is Sign. **NK 14 C 20** – “Triangulorum planorum praxis arithmetica, Tycho Brahe 1591“. Studnička decided that this manuscript was written by Tycho and published a facsimile. It is quite an interesting book (not printed, only a manuscript) on theoretical plane and spherical trigonometry. It demonstrates that Tycho, as its author, was very good at the reduction of measurements. This fact is often forgotten. Unfortunately this manuscript **was not written by Tycho** either. It was undoubtedly the work of a professional calligrapher. This does not change the fact that Tycho was the author of this pamphlet.

The last manuscript which was in doubt was Sign. **NK XII A 28** – *Brevissimum planimetriae compendium*. It was decided by Studnička (1903) that this manuscript too was written personally by Tycho. It is also an unpublished paper on theoretical goniometry.

Our result, unfortunately, is that this paper is **now written by Tycho** either. It was also a professional writer who wrote it out, and moreover somebody other than the writer of Sign. **NK 14 C 20**.

As a result, not one of the manuscripts held by the National Library, Prague was written by Tycho’s hand.

## The Main Problem

T. B. O. (Tychonis Brahe Ottonidis) TABVLAE SINVVM 1582, Sign. VI E 9, Tres. M 1, Cim. D 82, dimen. 230×163 mm. 20 parchment folios, in the form of texts written across facing pages, so that it contains only 36 written pages. This manuscript, in Tycho's original leather binding, contains only numbers except in the cases described below. It is highly probable that the tables were written by a professional writer. To decide who wrote it is very problematic. However, it is certain that Tycho personally supervised the composition of these tables, and very probably he was the author of the algorithms for calculating them. Also, when they were ready he used the tables nearly daily. They are very much the worse for wear, especially for the angles up to 20°. This is the proof that they are damaged by everyday use and not by bad treatment in libraries.

They are tables of sines and cosines from 0° to 90° in increments of one minute of arc. The tables are calculated to seven decimal places (!) and contain also differences. One of us (Z. Š.) checked several tens of these values using a pocket calculator. The typical error of these tables is 1 in the last position, which follows from incorrect rounding of values. No other errors were found. The tables are therefore much more precise than the published tables of that time such as e.g. Sign. NK 14 C 20 (mentioned above) CANON DOCTRINAE TRIANGULORUM ...; Lipsiae; Ex Officina Wolf. Gunteri; 1551, which also belonged to Tycho. The step of one minute of arc of the VI E 9 is one of the proofs that Tycho wanted to measure all angles with this degree of precision, even without using any glass optics.

On the first page there is written in Greek "*Oisteon kai elpisteon*" (in English: To endure and abide). The last page of the tables has two inscriptions "*Numerorum scientia*" – see Fig. 9. The first one (left) is written in black ink and is hardly legible - it is cramped. The other one (right) is written in an unknown red colour which contains bubbles, visible with a magnifying glass.

These till now unpublished inscriptions reflect the attitude of the writer to the whole of science. It is the beginning of the 'hard' sciences where the most important thing is calculation (as in celestial mechanics, quantum mechanics, etc.) as opposed to the 'soft' sciences, where the most important thing is description, as in (e.g.) philosophy or history or other sciences with a literary technique. This fundamental approach of the writer to the sciences can also be found in the next case.



Fig. 9

There is a book by G. Bruno preserved in the National library, Klementinum – **Sign. NK 15 K 22** (Tres. M 50, Cim. E 98) **IORDANI BRUNI NOLANI CAMORANCENSIS ACROTISMUS, seu RATIONES ARTICULORUM PHYSICORUM aduersus Peritateticos Parisijs propositorum etc.** Vitebergae, Apud Zachariam Cratonem, Anno 1588, dimen. 103×147 mm.

I. Kořán (1969) pointed out the dedication of the book to Tycho Brahe: “*Omni nobilitatis gratiae insigni et famosissimo // (ac) illustrissimo et excellentissimo d(omino) Tichoni Dano in // signum benevolentiae et obsequii author.*”

The last part of the dedication is hardly visible. One of us (Z. Š.) photographed it in 1980, when it was still possible to identify the whole word obsequii.

This very humble and yet at the same time ornate dedication can serve not only as a good example of G. Bruno’s spirit but also as a good example of his handwriting. The book was printed before the time when G. Bruno came to Prague from Wittenberg (where the book was printed). He stayed in Prague for half a year, from 17 April (Easter) until the autumn, when he went to Helmstedt, Germany. However, this was well before the time when Tycho came to Prague, so Bruno’s book was given to Tycho somewhere in Germany and the dedication was written at that time. Maybe the book was only sent to Tycho. The book reached Prague later on, with Tycho.

What is remarkable is the inscription to this book. The last page contains an inscription saying: “*Nullanus nullus et nihil, // convenjunt rebus nomina saepe sujs*” – see **Fig. 10**. This is a hard and unkind condemnation of the author. More-

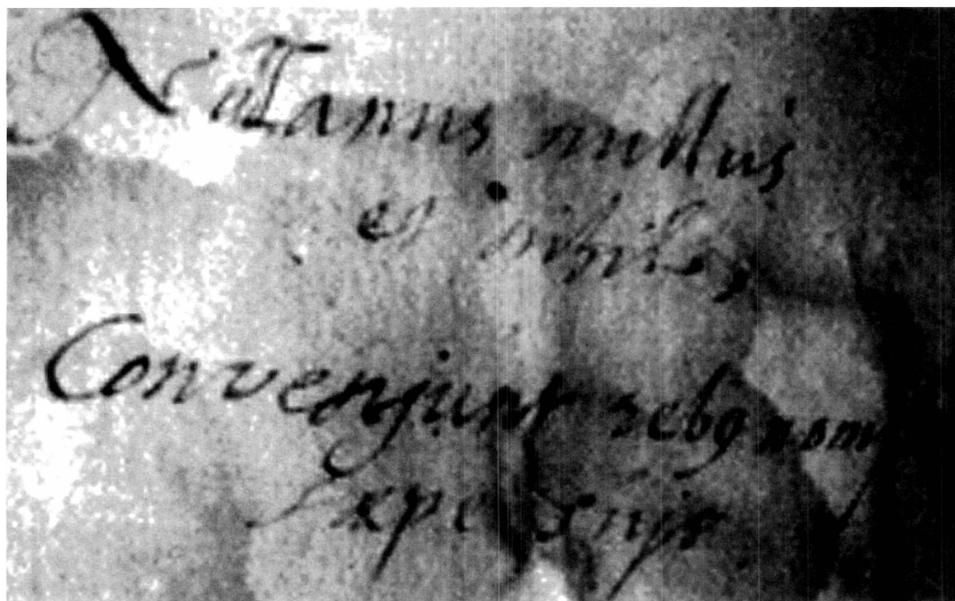


Fig. 10

over, it is in verse. It is a joke based on Bruno's name – Nolanus. Bruno was born in Nola, Italy, not far north-east of Naples, so that he also used the word "Nolanus" as a cognomen – see the title of the book. The similarity of Nolanus to Nullanus (in English good-for-nothing or nullity) is strongly pejorative.

Again we can find in this inscription a whole attitude to the sciences. What is prized and appreciated are those sciences where theories are supported by measurements and by mathematical treatment. If you only speak without making measurements and using mathematics, like the philosopher Bruno, you will not be taken into account at all and moreover you will not deserve to be called a scientist.

The main question is: Who wrote this inscription? Was it Tycho personally? We know that Tycho considered himself to be a 'super scientist', so logically it could be written in Tycho's hand. Nevertheless, some people around Tycho thought in a similar manner. Was it one of them?

The result of the analysis of the handwriting is unfortunately ambiguous. **It could be written by Tycho, but it is not certain.** However, we cannot exclude Tycho as a possible author of this inscription.

There is also another inscription (close to the above mentioned) but we were not able even to read it. May be a secret writings was used. The inscription is in the focus of our future work.

Absolutely the same result is also valid for the red "Numerorum scientia" in IV E 9. We cannot give a proof that it was written by Tycho, but we cannot exclude him. More analysis and more specimens of his handwritings are necessary.

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