

THE FIRST YEAR OF THE *ACADEMIA GUSTAVIANA* PRINT SHOP AS SEEN THROUGH THE HISTORY OF PAPER

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ABSTRACT

Watermarks and paper evidence are useful tools for researching manuscripts as well as printed books on paper, and not only for dating and identifying authenticity, but for studying the history of documents and printed books as material objects themselves. The present paper is based on the publications printed in Tartu in 1632, the first year of operation of the Swedish-era University of Tartu print shop, and the paper used in them. The purpose is to study the watermarks gathered from all survived copies of publications deposited in Estonia, to discuss the possible origins of the paper and the principles for its acquisition and use, and to draw some conclusions concerning general conditions of printing and the printer's personal contacts and preferences during the early days of the print shop.

Keywords: 17th century, Livonia, University of Tartu, printing history, hand-made ragpaper, watermarks

In terms of printing activity, not only the content of the completed products resulting from printing should be considered but also the products or publications as a whole. Expanding the apposite term “the archaeology of a publication” (*Archäologie des gedruckten Buches*)¹ coined by the German

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¹ Boghart himself does not expand on this term when he uses it but it has probably developed from his idea of the typographic cycle (*Der typographischer Kreislauf*) which includes for analysis under this guiding concept or metaphor all actions that are done in printing with movable types, see Martin Boghardt, *Archäologie des gedruckten Buches*, Wolfenbütteler Schriften zur Geschichte des Buchwesens, Bd. 42 (Wiesbaden: Harrassowitz, 2008), 50–74.

book historian Martin Boghart, the research of the material side of printing as a process and the publication as an informational artefact² should include not only the types and colours of print and the bindings used but also the paper that was printed on. The watermarks found in handmade paper have already been successfully used for about a hundred years to date manuscripts and cartographic materials as well as works of music and art and to ascertain forgeries. Yet the potential for researching the history of paper is significantly greater. The first glance at a publication, even before the opportunity presents itself to take a more in-depth look at its content, creates for us an impression of what kind of work the publication is. Larger print and greater than average space between lines or on the page margins indicate that more paper has been used. More paper, in turn, means greater expenditures, and someone has paid for those expenses. To quote Mark Bland: “The difference between looking at a page and seeing ‘a poem’, or seeing a relationship between type, paper, and space is the difference between ‘being literary’, and thinking like a bibliographer. The physical aspects of a text are always determined by the economics of book production [...], as well as the materials and methods combined to create the document.”³ Just as it would be unthinkable in the case of contemporary publications that the choice of paper be left to chance while the book layout is carefully thought out and the material for the book cover carefully chosen, we should not assume that seventeenth century authors and printers used paper at random either. No doubt paper played a role in the cost and quality of the publication and the determination of this role should be the broader objective of the research work of paper historians.⁴

The beginning of book printing in Estonia is connected to the founding of the University of Tartu and the Tallinn Gymnasium in the 1630’s. Prior to that time, authors in Estonia had published their works mostly in Germany, but also in Riga from 1588 onward when Nicolaus Mollin(us) was invited from Germany and founded the first print shop in the Baltic lands.⁵

² For more detailed information, see the article in this collection by Kurmo Kõnsa and Tiiu Reimo.

³ Mark Bland, *A guide to early printed books and manuscripts* (Wiley-Blackwell, 2010), 3.

⁴ A good example of the usefulness of studying the history of paper and watermarks is the Bishop Gezelius’ Bible case in Turku in 1683, where the analysis of watermarks in the paper used in the publications helped to ascertain a previously unknown edition, see further information on this topic Nils J Lindberg, *Paper comes to the North: sources and trade routes of paper in the Baltic Sea region 1350–1700: a study based on watermark research*, IPH Monograph, 2 (Marburg/Lahn, 1998), 86–89.

⁵ Arend Buchholtz had already written a thorough history of the print shop in Riga at the end of the nineteenth century: *Geschichte der Buchdruckerkunst in Riga, 1588–1888*:

According to Vello Helk, the Jesuits who operated in Tartu at the end of the sixteenth century and the beginning of the seventeenth century published their works not in Riga but rather in Vilnius and Braunsberg.⁶

When considering printing conditions in Estonia, it cannot be claimed that there is little literature on the topic. On the contrary, the first studies penned by Baltic German historians appeared at the end of the nineteenth century already and the theme continues to be topical to this day. Without a doubt, of the first print shops in Estonian territory, the printers and print shop of the University of Tartu and of Tartu-Pärnu in the era of Swedish rule have attracted the most attention,⁷ and a complete bibliography of publications has also been compiled.⁸

I would begin the historiography on this theme with the name of Friedrich Puksoo, who has critically analysed and summarised the data provided and claims made by earlier Baltic German researchers concerning print shops in seventeenth century Tartu.⁹ His thorough overview published in 1932 is in many respects the cornerstone of contemporary treatments of the subject as well.¹⁰ Puksoo has also cursorily turned his attention to

Festschrift der Buchdrucker Rigas zur Erinnerung an die vor 300 Jahren erfolgte Einführung der Buchdruckerkunst in Riga (Riga, 1890).

⁶ Vello Helk, *Die Jesuiten in Dorpat 1583–1625: ein Vorposten der Gegenreformation Nordeuropa*, Odense University studies in history and social sciences, 44 (Odense University Press, 1977), 64–65.

⁷ Fr. Puksov, *Tartu ja Tartu-Pärnu rootsiaegse ülikooli trükikoda* (Tartu: Akadeemilise Kirjandusühingu Kirjastus, 1932).

⁸ Ene-Lille Jaanson, *Tartu ülikooli trükikoda 1632–1710: ajalugu ja trükiste bibliograafia = Druckerei der Universität Dorpat 1632–1710: Geschichte und Bibliographie der Druckschriften* (Tartu: Tartu Ülikooli Raamatukogu, 2000), a bibliography of the production of the Tallinn Gymnasium print shop was written and published in 2005 by Martin Klöker. This not only includes literature printed in Tallinn but also works written by Tallinners or about Tallinn and Tallinners. As a result of this, 113 Tartu publications are also included in his bibliography, see Martin Klöker, *Literarisches Leben in Reval in der ersten Hälfte des 17. Jahrhunderts (1600–1657): Institutionen der Gelehrsamkeit und Dichten bei Gelegenheit: Teil 2, Bibliographien der Revaler Literatur: Drucke von den Anfängen bis 1657*, Frühe Neuzeit, Bd. 112/2 (Tübingen: Niemeyer, 2005); for reviews of this work, see: Tiiu Reimo, *Keel ja Kirjandus*, 11 (2006), 903–910; Kristi Viiding, *Nordost-Archiv: Zeitschrift für Regionalgeschichte*, NF, 16 (2007), 489–494.

⁹ For instance Carl Schirren, *Zur Geschichte der schwedischen Universität in Livland, Mittheilungen aus dem Gebiete der Geschichte Liv-, Ehst- und Kurland's*, VII:1 (Riga: Kymmell, 1853); Wilhelm Stieda, *Entwicklung des Buch-Gewerbes in Dorpat*, Archiv für Geschichte des Deutschen Buchhandels, VII (Leipzig, 1882); Buchholtz, *Geschichte der Buchdruckerkunst in Riga*.

¹⁰ Matti Sainio has supplemented the list of disputations and orations published at the *Academia Gustaviana* in his bibliography *Dissertationen und Orationen der Universität Dorpat 1632–1656* (Stockholm: Föreningen för svensk undervisningshistoria, 1978); the Baltic German historian Georg von Rauch supplements the list of publications from the

the trade in paper in his writing but unfortunately, his information in this field of activity is random and all too often not covered with references to sources.¹¹ This, however, is typical of the reference source base in general in the history of paper: since paper as an article of trade is often not mentioned in archival materials that have been preserved until the present day, data about its export and local retail trade is mostly random and does not provide systematic information. Information on the acquisition, prices and use of paper, however, is very valuable for gaining insight into the daily routine of work at a print shop as well as for determining the broader context of the preparation of publications. The paper itself and the information preserved in it at the moment of manufacture in the form of watermarks becomes an important source to compensate for deficiencies in the source base. The following overview attempts to recreate the first year of operation of the Swedish-era University of Tartu print shop as seen through the prism of the history of paper. Even though only copies of first editions published in Tartu deposited in Estonian archives and museums were available at the time this article was written, the objective is to arrive as some sort of conclusions concerning the origin of the paper and the principles for its acquisition and use on the basis of the watermarks found in them, and in this way to also draw conclusions concerning general conditions in printing and the printer's personal contacts and preferences during the print shop's first year of operation. The second and broader objective is to introduce the possibilities and perspectives for research in the history of paper that have to this point been used very little in Estonia.

Printing conditions in Tartu in the 1630's

The establishment of the Tartu Gymnasium (*Gymnasium (Collegio) Regio Dorpatense*) on 31 October 1630 can be considered prehistory leading directly to the work of the University of Tartu print shop. The academic dispute was one form of teaching at the Gymnasium and as a result of study and

Academia Gustavo-Carolina in his work *Die Universität Dorpat und das Eindringen der Frühen Aufklärung in Livland 1690–1710* (Essen: Essener Verlagsanstalt, 1943).

¹¹ The reason for this kind of cursoriness could have been the information that Puksoo presented indicating that someone named P. A. Brandt had completed a thorough study of the paper used for recording the minutes of the Tartu town council in the years 1583–1700, which was, however, still in manuscript form in 1932 (see Puksov, *Tartu ja Tartu-Pärnu rootsiaegse ülikooli trükikoda*, 28, footnote no. 5). To this point unfortunately, no information whatsoever has been found concerning that work or its author.

research work, the need developed for printing the disputations that were to be defended at the Gymnasium. Two Tartu Gymnasium publications are known to have been printed in Riga at Gerhard Schröder's print shop and in Uppsala because there was no local print shop.¹² Most of the lecturers who formed the academic staff of the *Academia Gustaviana* upon its founding in 1632 had already arrived in Tartu during the time that the Gymnasium operated.¹³ More lively trade in books was also needed in addition to printing facilities and according to Arnold Feuereisen, Christian Rittaw, a book binder and trader from Riga, presented a permit obtained from Jakob (sic!) Skytte, who had been appointed Governor-General of Livland, Ingria and Karelia, in 1630 already for opening a book store and print shop in Tartu.¹⁴ This plan did not come to fruition, probably due to Rittaw's death in the same year.¹⁵

The establishment of a print shop rose to the agenda again the following year when Johan Skytte submitted a petition to the king for turning the Gymnasium into a university.¹⁶

Chapter XXI:VI of the university's constitution mentions the establishment of a print shop in general terms.¹⁷ Chapter XVII section II paragraph 2 adds: "Disputations that are permitted have to be publicly announced on the Sunday immediately preceding the dispute, and copies are to be distributed in church to the professors by the bedell after the church service before midday. Those disputations that the professors have not had the

¹² They are: Johannes Racijs [P], Petrus Turdinus [R], Disputatio physicomeditica votiva ... surgenti jam Dorpati novo Collegio Regio, quam publicae disquisitionis facit Johannes Raicus ... ad quam respondere canobitur ... Petrus Johannis Bothniensis Svecus. ... Habebitur disputatio ... in 11. die Februarii [26. Marty] ... 1631 (Riga: Gerhard Schröder, [1631]); Georg Mancelius [P], Henricus Boismannus [R], Disputatio theologica de Sacrosancta scriptura: ... ad disputationem Publica Collegio Regio Dorpat. Proposita praeside Georgio Mancelio ... respondente Henrico Boismanno ... Ad diem [26.] Augusti ... (Uppsala: Mathias Eschillus, 1631) (see Ene-Lille Jaanson, 18; Kaarina Rein, *Meditiiniitopograafia Tartu linna kohta aastast 1631* (Medical Topography of the City of Tartu in 1631), *Mäetagused*, 45, 106–144, <<http://www.folklore.ee/tagused/nr45/rein.pdf>> [accessed 7 February 2014]).

¹³ *Tartu ülikooli ajalugu 1632–1982, I: 1632–1798*, ed. by Helmut Piirimäe (Tallinn: Valgus, 1982), 60.

¹⁴ Arnold Feuereisen, *Die Anfänge des Buchgewerbes in Dorpat* (Dorpat: Laakmann, 1905), 3.

¹⁵ Jaanson, *Tartu ülikooli trükikoda*, 18.

¹⁶ *Tartu ülikooli ajaloo allikaid. I. Academia Gustaviana, a) ürikuid ja dokumente = Quellen zur Geschichte der Universität Tartu (Dorpat). I. Academia Gustaviana, a) Urkunden und Dokumente*, ed. by Juhan Vasar (Tartu, 1932), 29.

¹⁷ *Tartu Akadeemia (Academia Gustaviana) põhikiri = Constitutiones Academiae Dorpatensis (Academia Gustaviana)*, ed. by Marju Lepajõe, trans. Kristi Sak (Tartu: Tartu Ülikooli Kirjastus, 1997).

chance to examine will not be admitted to the dispute.”¹⁸ Locally available printing facilities had to make it possible to meet this requirement and for this reason, the duplication of papers written by professors and students and of official publications became the objective of the University of Tartu print shop as well, similarly to other academic printing establishments. The equipment of the print shop belonged to the university and the university’s Senate paid the print shop staff.¹⁹

Postmeister Jacob Becker was the print shop’s first manager. He himself had not learned the business of printing but he nevertheless started the print shop up with the help of two journeymen and apprentices. The characterisation that Arnold Feuereisen brought into circulation perhaps best described Becker’s personality, in which he refers to Becker as a restless and enterprising man (*ein unruhiger unternehmungslustiger Mann*).²⁰

In addition to starting up local postal service, attempts to start up a local paper mill and to begin trading in books were among Becker’s enterprises in Tartu. A considerable uproar arose from the former enterprise and court cases concerning ownership of the paper mill continued for a long time after Becker had left Tartu once and for all, yet the mill apparently never developed to the point of actually manufacturing paper.²¹ Becker achieved better results in establishing postal services. He was appointed postmaster of the province of Livland in 1645 and chief postmaster of Sweden’s overseas provinces in 1648.²²

The university senate was responsible for supervising the *Academia Gustaviana* print shop and the printers swore their oath of office before the university rector. The position of printer was permanently included in the university budget and the print shop manager’s (*Procuratori Typographiae*) salary was set at 100 copper dalers in 1632.²³ Additionally, the university paid for publications with the exception of invitations and programmes

¹⁸ *Ibid*, 51.

¹⁹ Jaanson, *Tartu ülikooli trükikoda*, 23.

²⁰ Feuereisen, *Die Anfänge des Buchgewerbes in Dorpat*, 3.

²¹ Leo Utter and Öie Utter, “Tartu paberiveski asutamisest,” *Paar sammukest XXI*, Eesti Kirjandusmuuseumi aastaraamat (2004), 41–56.

²² See the following writings by Enn Küng for further information about the establishment of the postal system in Livland: “Die Einrichtung des Postwesens in Est- und Livland in der ersten Hälfte des 17. Jahrhunderts,” *Das Leben auf dem Lande im Baltikum*, Baltische Seminare, 16 (Lüneburg: Carl Schirren Gesellschaft, 2012), 67–102; “Kullerposti ja reisijateveo sisseseadmine Eesti- ja Liivimaa 17. sajandi esimesel poolel,” *Läänemere provintside arenguperspektiivid Rootsi suurriigis 16/17. sajandil*, Ajalooarhiivi toimetised, 8 (15) (2002), 205–238 and others.

²³ *Tartu ülikooli ajaloo allikaid*, no 50.

published in the name of the rector, which were printed free of charge for the university. Professors paid money to have their publications printed. Unfortunately, there is no definite information concerning what printers were paid for printing jobs. According to some later invoices, however, it can be concluded that the price for printing might have been about one riksdaler per sheet,²⁴ to which the cost of the paper was added.

Surviving accounting documents concerning 1632 are sporadic at best. Among dated documents, the print shop can be found named mostly in annual budgets and among the expenditures made from the university treasury. For instance, Jacob Becker was paid 173 dalers and 16 öre from the university treasury from August of 1632 to May of 1633.²⁵ Among university treasury expenditures for September of 1633, it is recorded that 100 dalers were paid to the print shop manager (compared to 200 dalers to the quaestor of the academy, and 200–500 dalers for professors)²⁶ and 73 dalers and 16 öre to the book printer Jacob Becker (*Bookctrückiaries effter her Jacob Becker*) as an extraordinary expenditure. The paper costs are not ordinarily systematically recorded separately on such invoices. It is, however, clear that Becker had difficulty in managing the print shop because the remuneration received was insufficient for the sustainable operation of the print shop and for paying wages to the journeymen. Hopes for earning extra income through printing work and publishing clearly did not pan out.²⁷

Publications of Academia Gustaviana printed in 1632

According to Ene-Lille Jaanson, 18 titles and 30 extant copies are known of *Academia Gustaviana* publications from the print shop's first year of operation. Not a single copy of two publications is known to be extant.²⁸ Consid-

²⁴ Puksov, *Tartu ja Tartu-Pärnu rootsiaegse ülikooli trükikoda*, 31.

²⁵ This document is published in the collected work *Eesti ajalugu, III: Vene-Liivimaa sõjast Põhjasõjani*, ed. by Enn Küng (Tartu: Tartu ülikooli ajaloo ja arheoloogia instituut, 2013), 399.

²⁶ University of Tartu Library Department of Manuscripts and Rare Books [henceforth TÜR KHO], f. 7, n. 1, s 42, l 3.

²⁷ Jaanson, *Tartu ülikooli trükikoda*, 26.

²⁸ See *ibid.* Jaanson, however, has omitted one publication located in Tallinn from her calculation (Table 1, no. 6) and there are 2 copies of one publication (Table 1, no. 2) at the University of Tallinn Academic Library [henceforth TLÜAR], which brings to 32 the number of known extant copies from 1632 according to current information when publications deposited in Estonia are considered. Of those 32 copies, 11 are deposited in Estonia.

ering the average annual number of publications (36) over the entire period of the *Academia Gustaviana* (1632–1656) and 1642 as the year with the largest number of published publications (63), production from the first year of operation was rather modest. Only in 1635 (12) and 1656 (4) were fewer publications printed. The reasons for the small number of publications in 1632 were apparently the small amount of manuscripts received as well as other similar problems associated with starting up academic life. Since the Tartu print shop had been established to print publications associated first and foremost with academic work, the results of the work of the print shop thus also depended directly on how active the work of the university itself was. Of the publications from the first year, 9 titles were disputations, along with 4 university invitations and ordinances, one monograph, one sermon, one random publication, and one publication can be categorised among other publications. A similar division among genres in fact characterises the work of the print shop over the entire *Academia Gustaviana* and *Academia Gustavo-Carolina* (1690–1710) period, where 60% of the total production consisted of academic publications.²⁹

Table 1. Publications printed at the *Academia Gustaviana* print shop in 1632, deposited in Estonian archives and libraries.

Seq. No.*	Title and publication data	Format	No of sheets in the copy	Depository data
1	PostOrdnung, Was massen hinfüro in der Weitberümbten Königl. See- vnd Handel Stadt Riga in Liefflandt die Ordinari Posten sollen auff gewisse Tage vnd Stunden abgefertiget vnd hinwiederumb erwartet werden. Neben angehengten BrieffTaxt, vnd Tage der Reisenden, jedes Orts, darnach sich ein jeder wird wissen zu richten. Außgangen, vnd zu drucken gegeben Durch der Königl. Mayest. zu Schweden, etc. verordneten PostMeister durch Liefflandt vnd Preussen Jacob Becker. ... Actum Dörpat den 28. Septemb. – Dörpath in Liefflandt, J. Becker, 1632.	1°	1	EAA, f. 957, n. 2, s. 438

* Seq. no. matches the entry number of the publication in the bibliography of publications compiled by Ene Jaanson (see Jaanson, *Tartu ülikooli trükikoda*, 175–178).

²⁹ Jaanson, *Tartu ülikooli trükikoda*, 38.

Seq. No.	Title and publication data	Format	No of sheets in the copy	Depository data
2	Dunte, Ludwig, Eine Christliche Predigt vber den Sieben vnd Achtzigsten Psalm Davids. Von Herligkeit, Zierde, vnd Seligkeit der Christlichen Kirchen, vnd sonderlich der Hohen Schulen. Gotte zun[!] Ehren in Reval den 1. Novemb. als am 15. Tage des vorhergehenden Monats ... Gustavus Adolphus der Schweden etc. König, ... die Hohe Schule zu Dorpath hatte einführen lassen. Gehalten, vnd publiciret Durch ... Lvdovicvm Dvnte Predigern Göttliches Worts daselbst an S. Olai Kirchen. – Dorpath, L. Dunte, [1632] : J. Becker. [8], 51 S.	4°	7+1/2	TLÜAR Baltica I-4271 TLÜAR Baltica I-1533 University of Tartu Museum, ÜAM 197:105 Ar
5	[Menius (Mein), Friedrich] Relatio Von Inauguration der Universität zu Dörpat, geschehen den 15. Octobris, Im Jahr 1632. – Dörpath in Lieflland, J. Becker, [1632] : J. Becker. [32] S.	4°	1/2+3+1/2	TLÜAR Baltica III-140
6	Programma, quo magnificus rector, professores, doctores, magistri, verbi Divini ministri, studiosi, omnesque SS. theologiae cultores et amatores, ad disputationem solennem, quam ... Georgius Mancelius ... SS. theol. in Regia Academia Dorpatensi professor et candidatus, ... pro summo in theologia gradu consequendo proponit ... invitatur a decano collegii theologici in Academia Dorpatensi. – Dorpati Livonum, 1632: J. Pistorius.	4°	1	TLÜAR Baltica I-5541**
7	Programma quo magnificus rector, professores, doctores, magistri, verbi Divini ministri, studiosi, omnesque SS. theologiae cultores et amatores, ad disputationem solennem, quam ... Petrus Goetschenius ... SS. theolog. candidatus, et Graecae linguae in Regia Academia Dorpatensi professor ordinarius, ... pro licentia supremum in SS. theol. gradum consequendi proponit, ... invitatur a decano collegii theologici in Academia Dorpatensi. – Dorpati Livonorum, 1632 : J. Pistorius. [8] p.	4°	3/4	TLÜAR Baltica I-5541

** The availability of this publication is marked in Jaanson's bibliography as Uppsala University only (see Jaanson, *Tartu ülikooli trükikoda*, 176) but one copy is actually also located in the University of Tallinn Academic Library. The relevant information is available in the library's electronic catalogue Ester <<http://www.elnet.ee/ester/>> [accessed 25 February 2014].

Seq. No.	Title and publication data	Format	No of sheets in the copy	Depository data
11	Skytte, Johan Johan Skytte der Elter, ... General Gouverneur der Fürstenthumben Liefflandt, Ingermanlandt vnd Carelen, der Vniversität zu Vbsala Canzler vnd LandtRichter in NordtFinlandt, etc. Fuege allen vnd Jeden dieser Provintz Liefflandt Eingesessenen, ... zu wissen, ... Datum Dörpath am 21. Septembris anno 1632. – [Dorpati, 1632 : J. Becker].	1°	1	EAA, f. 957, n. 2, s. 438***
14	Virginus, Andreas [P] – Boisman(nus) (Bößsman), Henricus [R] Disputatio sexta de miraculosa et salutifera Servatoris nostri conceptione et nativitate. Quam ... in Regia Academia Dorpatensi sub praesidio ... Andreae Virginii, ... publice defendendam suscipit Henricus Boismannus, ... Ventilabitur ... die 31. Decemb. – Dorpati Livonorum, 1631[sic!] : J. Pistorius. [8] p.	4°	1	TLÜAR Baltica XII-947
15	Virginus, Andreas [P] – Goetschenius, Petrus [R] Disputatio theologica de apostasia fidelium sive renatorum: qua invictis fundamentis asseritur, fideles sive renatos, moraliter peccando, posse excidere gratia Dei, amittere fidem, atque excutere Spiritum Sanctum: et contra Calvinianorum objectiones diluuntur. Quam ... praeside ... Andrea Virginio, ... pro licentia supremum in S.S. theologia gradum consequendi, publice, in Academia Livonum, ad 2. d. Jan. anno ...CIO.IOC.XXXIII. ... defendendam suscipiet ... Petrus Goetschenius, ... – Dorpati Livonorum, 1632 : J. Pistorius. [40] p.	4°	4	TLÜAR Baltica I-5541
17	Virginus, Andreas [P] – Mancelius (Manzel), Georgius [R] Disputatio solennis de justificatione hominis peccatoris poenitentis coram Deo: quam ... in Regia Dorpatensi quae ... Livonum Academia est, praeside ... Andrea Virginio ... pro summo in theologia gradu consequendo publicae disquisitioni et censurae subjicit Georgius Mancelius, ... a. d. 19. Decembr. ... – Dorpati Livonorum, 1632 : J. Pistorius. [20] p.	4°	2+1/2	TLÜAR Baltica I-5541

*** This announcement is printed on the other side of Jakob Becker's "PostOrdnung" (see no. 1 in the table 1) and these two publications thus form one copy in terms of paper.

General characterisation of publications

Friedrich Puksoo has considered the typographical design of University of Tartu publications from the era of Swedish rule³⁰ and the work by E. Jaanson includes a chapter dedicated to this topic provided with abundant reproductions.³¹ For this reason, there is no point in describing these typographical designs here in detail once again without further analysis and broader material for comparison. As a reminder, it should simply be mentioned that in the context of 1632, the printing production of that year already was uncharacteristically decorative for that time yet on the other hand entirely characteristically for Jacob Becker. In other words, to quote Fr. Puksoo: “[...] the Swedish era print shop in Tartu and Pärnu never published more artistic printed matter in later times than it did during Becker’s time.”³² The stock of decorative printing type at Becker’s disposal was surely not particularly abundant but he used the existing elements amply, combining them skilfully. He focused his attention mainly on the title pages of works in German (see for instance Ludwig Dunte’s sermon “Eine Christliche Predigt”, where the verbose title is bordered by a massive closed figural frame of religious content and even the artist who made the woodcut is mentioned – Nicolaus Barte),³³ initials in Gothic letters with twirls decorate the text portion where the body of the letter is halved by little transversal lines (for instance, Menius’s “Relatio”; J. Skytte’s announcement of the opening of the university, and others). Disputations in Latin are also skilfully yet at the same time modestly decorated. Here we see borders and headpieces consisting of single types, and roman type initials decorated with Moresque ornamentation as well as more modest majuscules used in the text portion. Single type in simple ovolo motif appears to be Becker’s favourite. This can be found both as single rows within text and as multiple patterns, and combined with little stylised leaves in the framing of the title page in almost all the publications of 1632. The title page of only one disputation includes only a simple dividing line as its decorative element (“Disputatio theologica de apostasia”, the defence of which was presided over by A. Virginus). The mark of the printer or publisher on the title page (a direct analogue to the watermark) can also be considered a decorative element. Becker was the only printer in Estonia in the seventeenth century to use this kind of mark (in the Baltic region, the book trader Chr. Rittaw

³⁰ Puksov, *Tartu ja Tartu-Pärnu rootsiaegse ülikooli trükikoda*, 35 ff.

³¹ Jaanson, *Tartu ülikooli trükikoda*, 85–154.

³² Puksov, *Tartu ja Tartu-Pärnu rootsiaegse ülikooli trükikoda*, 23

³³ Jaanson, *Tartu ülikooli trükikoda*, tab. XXVI.

also did so in Riga). Of the publications of 1632, this mark can be seen on the title page of Menius's "Relatio".³⁴ The mark is a figural composition consisting of two figures standing beside the mouth of a cave. According to their attributes, they can be recognised as Mercury and Vulcan. The personal motto of Fr. Menius (*difficile at possibile* – difficult but possible) can be found accompanying the image and the motto is supplemented by the word *penetrandum* (one must enter, one must penetrate) and the initials of the printer I. B. Kristi Viiding has more thoroughly considered the circumstances under which this mark was designed and what kind of meaning it could have had.³⁵

In terms of format, broadsheets (1°, also referred to as pat. fol.) and small format quarto publications (4°) were printed in 1632. According to Puksoo, disputations written in Latin usually required 2 sheets of paper. Publications in other languages were ordinarily more sizable.³⁶ Generally speaking, this claim is also valid for the first year of operation, where disputations required one to 2.5 sheets (meaning that ½ or ¼ of a sheet was used for the title page in addition to the two sheets on which the text was printed). The "Disputatio theologica de apostasia" by Virginus and Goetschenius (Table 1, no. 15) is an exception, consisting of no less than 4 sheets. In addition, 2 one-sheet invitations were printed. Two works in German that year were L. Dunte's "Eine Christliche Predigt" and Menius's "Relatio", 7,5 and 4 sheets respectively.

There is unfortunately no information whatsoever on the print-runs of publications during the time of the *Academia Gustaviana*. It likely differed for different kinds of publications. It is not possible to come up with any sort of average by comparing disputes in Latin, for instance, or letters patent issued by governmental institutions. All that can be relied on is only the information presented by F. Puksoo and E. Jaanson concerning

³⁴ The other work that is known to bear J. Becker's publisher's or printer's mark is *Friderici Menii diatribe critica, de maris Balthici nominibus et ostiis. Ubi contra novatores nonnullos vetus Ptolomaei sententia defenditur et rectius explicatur* [Dorpati Livonorum, J. Pistorius, 1634] [19] p. 4°.

³⁵ Kristi Viiding, "Haritlaste tunnuslaused 17. sajandi Eesti- ja Liivimaa: allikad ja kasutusviis," *Lugemise kunst = The art of reading*, Raamat ja aeg = Libri et memoria 2, Eesti Rahvusraamatukogu toimetised = Acta Bibliothecae Nationalis Estoniae, 13 (2011), 220–271 (245–248); Kristi Viiding, "Das humanistische Druckersignet im 17. Jahrhundert: die antiken Vorlagen und Funktionen eines Spätlings aus dem baltischen Raum," *Antike nach der Antike: Der Ostseeraum. Praktiken - Diskurse - Modellbildungen - Funktionalisierungen*, ed. by Arne Jönsson; Gregor Vogt-Spira (Hildesheim: Georg Olms Verlag) [forthcoming].

³⁶ Puksov, *Tartu ja Tartu-Pärnu rootsiaegse ülikooli trükikoda*, 33.

the *Academia Gustavo-Carolina* period when print-runs ranged between 100–400 copies. The number of copies of dissertations, speeches and programmes printed was usually 250.³⁷

Paper used in publications

Of the 11 publications deposited in Estonia that have been examined, all copies contain paper with watermarks. There are 5–6 different watermarks in total, whereas there are only two different motifs.

The postal system plan (see Table 1, no. 1) published on 28 September 1632 by Jacob Becker, who was the university's first printer and also served as the postmaster of Riga, which indicated the postal rates and the schedule for how quickly dispatches from Riga should arrive at different destinations,³⁸ is considered to be the very first publication of the *Academia Gustaviana* and thus also of Estonia.³⁹ Dating this publication as the earliest is, however, debatable since an ordinance from Governor-General J. Skytte announcing the opening of the university in Tartu (see Table 1, no. 11) that bears an even earlier date (21 September 1632) is printed on the other side of the same sheet of paper yet does not name Tartu as the place where it was printed. Thus the "PostOrdnung" is for this reason usually referred to as the first known publication from Tartu that is provided with publication information.⁴⁰ The common bearer of both these publications is paper with cut edges in page format sized 265 × 345 mm. The features that can be detected by visual observation are a rough surface structure,

³⁷ *Ibid.*, 52; Jaanson, *Tartu ülikooli trükikoda*, 33–34. Kaarel Vanamölder has ascertained that the print-runs of official announcements and ordinances printed in Tallinn during the last quarter of the seventeenth century was in the range of 60–80 based on the invoices presented by Cristoph Brendeken, who worked as the Tallinn Gymnasium printer in 1649–1710 (Kaarel Vanamölder, "Gümnaasiumi trükkal ja keskvoimu korralduste publitseerimine 17. sajandi lõpu Tallinnas," Kaarel Vanamölder, *Kommunikatsiooniväli Rootsi Läänemere-provintside 17. sajandi lõpul – Reval(i)sche Post-Zeitung varauusaegse informatsioonikandjana*, *Dissertationes historiae Universitatis Tartuensis*, 27 (Tartu Ülikooli Kirjastus, 2012), 38).

³⁸ The only known copy of this publication is deposited at the Historical Archives in Tartu: EAA, f. 957, n. 2, s. 438.

³⁹ In earlier literature, the disputation by Andreas Virginus and Henricus Boismannus with the date 31 December M.DC.XXXI on its title page has mistakenly been considered the very first publication (see for instance Puksov, *Tartu ja Tartu-Pärnu rootsiaegse ülikooli trükikoda*, 18), but by now, the suspicion that even Puksoo had expressed has been proven once and for all that this was a printing error and this dissertation that was defended as the sixth disputation in the sequence was nevertheless published on 31 December 1632 (see Jaanson, *Tartu ülikooli trükikoda*, 21).

⁴⁰ See for instance *ibid.*, 19.

the coarseness of the ground fibres, the irregular formation of fibres (knots and badly-beaten fibres are visible in the paper), and a brownish-gray hue.⁴¹ All these attributes bear testimony to a product of poor rather than good quality. The most expensive raw materials were obviously not used for making this product and the production process itself could also have been defective. The watermark that is visible in the paper but is very difficult to discern due to the dense print depicts the symbol of medicine, the Rod of Asclepius, in other words a rod or staff with a serpent wearing a crown entwined around it.⁴² A couple of capital letters can be vaguely perceived above the image (the first letter appears to be P). The size of the main motif without the letters is approximately 65 × 80 mm and it is located in the middle of the left side of the sheet. Serpent shaped watermarks have been in use for a very long time and appear as single images and as signs consisting of a combination of several symbols (for instance a serpent with a heart, a postal horn, a house or a coat of arms, also two serpents entwined around a winged staff, in other words the Rod of Hermes, and so on). The first analogous marks, meaning with the serpent as the primary figure, can be found in Briquet's catalogue dated at the end of the fourteenth century.⁴³ Later marks of this kind are also known from as late as the latter half of the eighteenth century in Germany.⁴⁴ Currently, a specific analogue to the "PostOrdnung" watermark or the initials that are part of it has yet to be found on the basis of literature and databases. It can be assumed that paper with this kind of watermark was produced in Germany in the first half of the seventeenth century.⁴⁵ This mark, however, turned out to be exceptional in printing and writing paper in Tartu in the first half of the

⁴¹ See EEP no 276: <<http://paber.ut.ee/EN/vesimargid/eksemplar/276>> (viewed on 7 February 2014).

⁴² According to the International Association of Paper Historians (IPH) classification E8/2: *Snake on a shaft (Aesculapian; medicine)* or E8/4: *Snake on a shaft/column (ample)*, see *International standard for the registration of papers with or without watermarks*, 2.1 (2012), 48 <<http://www.memoryofpaper.eu/products/IPHN2012E.pdf>> (viewed on 13 February 2014).

⁴³ Briquet Online, <http://www.ksbm.oew.ac.at/_scripts/php/BR.php?IDtypes=134&lang=de> [accessed 7 February 2014].

⁴⁴ Wasserzeichen-Informationssystem, <<http://www.wasserzeichen-online.de/wzis/struktur.php?po=43656>> [accessed 7 February 2014].

⁴⁵ According to information from the Finnish paper historian Nils J. Lindberg, a watermark with the same motif has been found in the Finnish National Archives, for instance (LIN 680–91), the paper was in use in 1629–1631 and the place where the paper was produced has been determined as the Kalldorf paper mill in Lippe in the region of Northern Westphalia (Lindberg, *Paper comes to the North*, 60).

1630's. The symbol of the serpent (combined with a house motif) is next encountered in publications from 1639.⁴⁶

Since the publication chronology of all the publications of 1632 is unfortunately not precisely known, I will consider them by grouping them thematically and I will begin with the paper used for the disputations defended in 1632, arranging them according to the date on which each was defended as indicated on the title page. Of the three disputations from 1632 that are in Estonia, the earliest is “Disputatio solennis de justificatione hominis peccatoris poenitentis coram Deo” (see Table 1, no. 17) defended on 19 December by professor of theology Georgius Mancelius and presided over by Andreas Virginus. The best way to ascertain the original size of the paper used in a publication is to observe the deckle edge of the paper, which has an uneven shape. Unfortunately, this original edge is found more in the case of documents in manuscript form. The paper for publications was ordinarily cut either before or after printing or also during binding all at once with straight edges and to the necessary size. Thus in describing bound publications, it is very important to understand how many times and in what direction the paper has been folded, and what has happened to the watermark image in the process, and the directions of the chainlines and laidlines. This publication is in the quarto format (meaning the sheets have been folded twice). It contains two four-page sheets of text and one half-sheet for the title page, adding up to a total of 20 pages (see the gathering scheme in Fig. 1). Even though the edges of the publication have been cut to size, it can be concluded that the size of the sheet of paper was originally about 390 × 290 mm.⁴⁷ The paired pages of the text sheets are A2 and A3, and B2 and B3. Both pages have the watermark that has been correspondingly folded in half and is partially obscured in the binding.⁴⁸ Since this

⁴⁶ For instance *Disputatio theologica solennis, de libero arbitrio, tum in genere, tum in specie, Dei, angelorum, diabolorum et hominum, juxta quadruplicem eorundem statum, quam, ... in Reg. Acad. Gustaviana, quae Dorpati est praeside ... Andrea Virginio, ... pro gradu in theologia summo consequendo, publicae disquisitionum et censurae submittit ... Petrus Andreae Schomerus ... ad diem 25. Septembr. ...* (Dorpati Livonorum: Typ. acad., 1639) [16], 248 p. 4° or *Dissertatio theologica de Deo in essentia uno, et in personis trino. Quator dictorum classicorum. Ex Deuteron. 6. v. 4., Psalm. 33. v. 6., Matth. 28. v. 19., 2. Corinth. 13. v. 13. ἀνάλωσις et praecipuorum erotematum ἐξήγησις exhibens in Regia Academia Dorpatensi publicae censurae subjicietur praeside Andrea Virginio ... respondente Jacobo Friederich ... d. [] April. ...* (Dorpati Livonorum, Lit. acad., 1639), [48] p. 4°.

⁴⁷ In order to derive the size of the original sheet of paper, 0.5 – 1 cm should be added to the length and width of the cut sheet in the case of quarto format paper but this nevertheless only provides an approximate result.

⁴⁸ EEP no 44, <<http://paber.ut.ee/EN/vesimargid/eksemplar/44>> [accessed 7 February 2014].

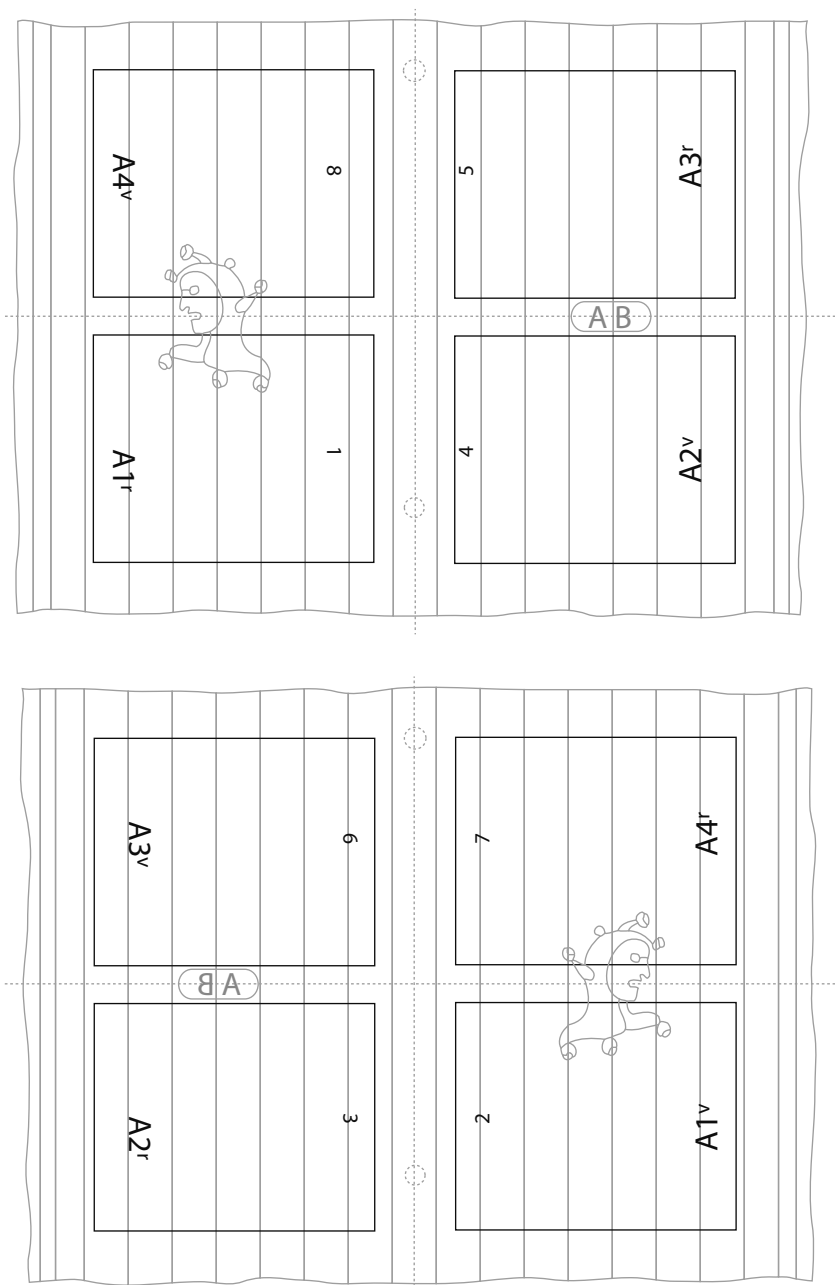


Figure 1. Possible folding schemes of a sheet of paper in quarto format publications.

is a thin publication, the watermarks are almost completely visible. The seemingly similar watermarks are nevertheless not identical. Upon closer examination, there are small differences in details, like the position of the letter B in relation to the edge of the shield, or the shape of the ring below the heart. In one watermark, the tiny knot attaching the letter B is more visible (see Fig. 2). Similarly, the watermarks differ in their dimensions and their position in terms of the chainlines. At the same time, all details nevertheless match to the extent that the paper cannot be considered to be the product of different paper mills. It is more likely that they are twinmarks of one and the same mill.⁴⁹ The similarity of the other attributes of the paper – like hue, structure and smoothness – also supports this claim, alluding to one and the same raw material.

The second known dissertation published in 1632 and available in Estonia is the disputation defended on 31 December 1632 by Andreas Virginius – Henricus Boismannus, which was the sixth of the dissertations (*Disputatio sexta*) published at the *Academia Gustaviana* according to the title page (see Table 1, no. 14). The only known copy of this publication is deposited at the University of Tallinn Academic Library. Its brochure binding is sewn and glued. Its quarto format 8 pages are not obtained by the traditional horizontal-vertical folding that results in pairing pages 1 – 4 and 2 – 3. Instead, pages 1 – 2 and 3 – 4 are paired. Thus it is possible that the foldnig order of the printed sheet was the opposite – first vertically and then horizontally, which, however, would have been a rather unusual practice. The other and more likely explanation is that left-over paper in the form of sheets already cut in half were used for this publication. The paper is quite similar in terms of its structure and attributes, and most likely originated from the same batch of paper. Additionally, a larger page with folded edges was glued to the first sheet later on. The hue, surface structure and density of the wire screen network lines of this added page is not identical to those of paper of the remainder of the publication. The added sheet is part of the dissertation “Dissertatio theologica VII” defended by Virginius

⁴⁹ Twinmarks are watermarks borne on the paper moulds that were used in parallel simultaneously in the paper mill to speed up the process of obtaining paper. Both moulds and watermarks of the mould pair are for the most part made using the same pattern and thus they are extremely similar to each other. The main differences can be in the positions where the filigree is attached to the mould or in later deformations. If, however, the watermarks are similar to each other yet differ not only in their details but also in their dimensions, for instance, it may be a case of the production from a larger mill where work proceeded simultaneously with several paper moulds and several mould pairs were employed at the same time. In such cases, the raw materials are nevertheless the same and the paper’s fibre formation should be identical.

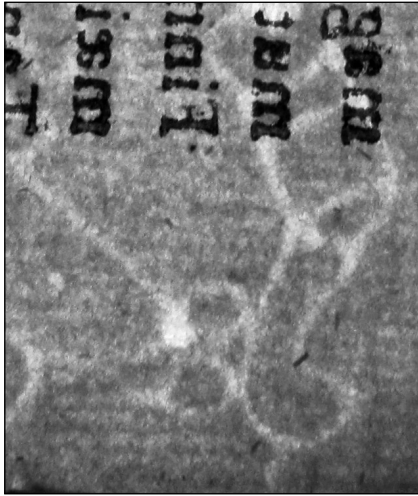


Figure 2. Characteristic letter B in the watermarks.

and Boismannus on 24 May 1633.⁵⁰ There is a watermark on only the paper of the title page and that of the following page of that publication.⁵¹ The watermark is again the bishop's staff (Rod of Basel) on a shield with a heart and a postal horn and the letters D and B. If we compare the dimensions of the image, the recognisably larger attaching loop of the letter B (see Fig. 2) and the general positioning of the letters, it can with reasonable certainty be claimed that this mark is identical to the watermark in the dissertation defended on 19 December (publication no. 17) (on pages A2–A3). This is found

in almost all other publications from 1632 as well (see Fig. 3, no. 2).

As the third publication, I consider the disputation on theology defended by Petrus Goetschenius and presided over by Andreas Virginus on 2 January 1633, which was published at the end of 1632 and is considerably longer than the previous dissertations – a 40-page quarto (see Table 1, no. 15). The total number of watermarks in this publication is five and the motif of them all is once again the same – the Rod of Basel, the heart and postal horn on a shield with the capital letters D and B.⁵² These are the same watermarks that were already found in the dissertation published in September. This means that here twinmarks could be discerned as well, meaning two watermarks that are similar in general but differ in details in paper with very similar structure and processing and most likely originating from the same batch of paper (see Fig. 3, nos. 2 and 3). These watermarks are used in turn in this publication – one watermark is in the A and C gatherings

⁵⁰ *Dissertatio theologica VII. De septimo & octavo Augustanae confessionis articulo, hoc est, de ecclesia, in Regia Academia Dorpatensi ... sub praesidio ... Andreae Virginii, ... publice instituta a Heinrico Boismanno, Wiburgo-Carelio. ... 24. Maji. 1633* [Dorpati, 1633; J. Pistorius], 1^o. (no. 51 in Jaanson's bibliography).

⁵¹ EEP no 51, <<http://paber.ut.ee/EN/vesimargid/eksemplar/51>> [accessed 7 February 2014].

⁵² EEP no 46, <<http://paber.ut.ee/EN/vesimargid/eksemplar/46>> [accessed 7 February 2014].

and the other is in the B, D and the last E sheet that has been cut in half. The latter watermark is in turn identical to the one found in the Virginius – Boismannus dissertation (Table 1, no. 14) that had the characteristic affixing loop on the letter B.

Two invitations were also printed in 1632 (Table 1, no. 6 and 7). Both consist of one sheet. Only the lower portion of one watermark is visible in publication no. 7 since the last page of the publication has been cut off, probably during binding. The motifs of the watermarks are the same yet not identical to each other and considering the extent of the differences, they were not made using twin moulds.

The pastor of Tallinn's congregation of St. Olev, Ludwig Dunte's sermon on the occasion of the opening of the university entitled "Eine Christliche Predigt" (listed as no. 2 in Ene Jaanson's bibliography) is the most interesting work from 1632 from the viewpoint of the history of paper. It is interesting due to the fact that there are altogether three copies of this publication available. Two copies are deposited at the University of Tallinn Academic Library and one at the University of Tartu Museum. The publication is in quarto format (the original size of the paper may presumably be 390 × 290 mm) and contains a total of 7,5 sheets. Paper with one and the same watermark motif has been used for all three publications. Five different watermarks (in other words moulds used for making the paper) can be identified according to small differences in details, whereas in the case of one watermark, the same paper mould was probably used but the mark has simply been either corrected or deformed (see Fig. 3, no. 1 and 1a).

Watermarks 1, 1a and 4 are similar in general appearance, as is the case for watermarks 2 and 3. Thus we can venture to claim that they are twinmarks. At the same time, while the watermark's initials are definitely D and B in the case of watermarks 2 and 3, in watermarks nos. 1, 1a and 4, the letter D is on the right of the bishop's staff and the letter on the left is unfortunately not visible in any of the extant copies since it is in the middle of the spine fold.

As can be seen in the table, a reasonably comprehensive picture emerges on the basis of these three copies concerning how and according to which system the paper could have been used during printing. The print-run was printed by setting the type sheet by sheet. The paper was used by successively taking sheets from one batch, for which reason paper with one and the same watermark or with twinmarks ended up primarily in the same sheets. The only exception is sheet B of the 1st copy, where the watermark differs from that in the other two copies. At the same time – the first and

last sheet of all three copies was printed on different paper that definitely could not have been made by the same papermaker and using the same raw materials since the initials on the watermark are different. This can lead to the conclusion that the paper stock in the print shop consisted of a larger quantity of paper with one watermark (meaning paper of similar format and quality) that could have been concentrated in one paper consignment either of paper produced over a longer period of time at the paper mill itself or by the paper retailer. Another alternative is that the sheets used at the beginning and the end could have been printed at a different time than the rest of the sheets used for the text and the next batch of paper was used for those beginning and end sheets.

Table 2. Location of watermarks in three copies of L. Dunte's work *Eine Christliche Predigt* by sheet (presumable twinmarks are indicated in lighter and darker gray)

Sheet	Location of watermarks in copies												
	TLÜAR, Baltic collection I-4271*				4	TLÜAR, Baltic collection I-1533**				TÜM, ÜAM 197:105 Ar***			
	1	1a ^a	2	3		1	2	3	4	1	2	3	4
A		×			This kind of watermark is not found				×	×			
B	×							×			×		
C			×				×					×	
D				×				×				×	
E			×					×				×	
F			×					×			×		
G			×					×				×	
H ^b		×					×						×

The copies are located in the database of Early Estonian Printings under entries no. *622⁵³, **623⁵⁴ and ***476⁵⁵.

^a Identical to watermark no. 1, yet the trace of a wire has been added to the lower point of attachment on the Rod of Basel. For this reason, I am inclined to believe that this was made using the same paper mould that has either been corrected or conversely – this wire existed originally and later fell off the mark. These two are counted as one watermark in the database.

^b The publications end with a half-sheet H1–H2.

⁵³ EEP no 622, <<http://paber.ut.ee/EN/vesimargid/eksemplar/622>> [accessed 7 February 2014].

⁵⁴ EEP no 623, <<http://paber.ut.ee/EN/vesimargid/eksemplar/623>> [accessed 7 February 2014].

⁵⁵ EEP no 476, <<http://paber.ut.ee/EN/vesimargid/eksemplar/476>> [accessed 7 February 2014].

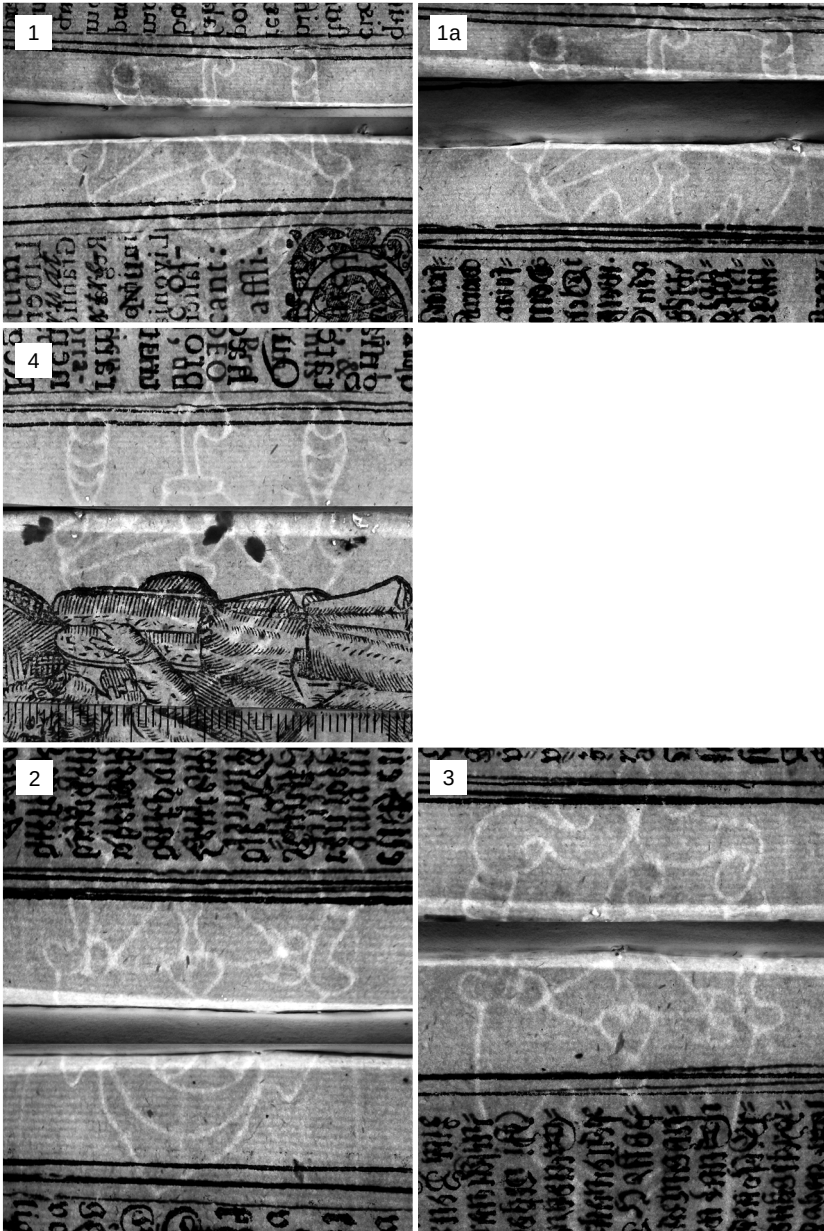


Figure 3. Watermarks found in copies of L. Dunte's work "Eine Christliche Predigt" (numbering according to Table 2).



Figure 4. Watermark on the B sheet of Menius's "Relatio".

The second work published in German in 1632 is an account of the university's inauguration ceremony on 15 October 1632 written by the professor of history Friedrich Menius.⁵⁶ The copy of Menius's "Relatio" deposited at the University of Tallinn Academic Library consists of 3.5 gatherings, each of which is supplied with a watermark. Once again, they include motifs on a shield already familiar to us but this time, not all of them are by far identical to those in the watermarks represented in the previous publications.⁵⁷ Only the watermark in the A sheet appears to be the same. Its

central portion, and thus the initials in the watermark, is unfortunately not visible due to the binding but according to the dimensions of the watermark's lower portion, this watermark could be considered to be the same watermark with the characteristic letter B that was found in all three above-mentioned disputations as well as in the copies of Dunte's sermon (see Fig. 3, no. 2). The other 3 watermarks, however, are completely different. The same symbols are used in considerably cruder form and in the watermark in the B sheet, the customary D and B are replaced by the initials R and B (see Fig. 4). We can conclude from this that the paper of this work originates at least partially from different batches in stock. Whether this was connected to Becker's position as publisher in the case of this book or to Menius's own preferences unfortunately remains unresolved. The quality of the paper, however, is somewhat poorer and the maker of the watermarks was probably also not very experienced since they are not very legible and are rather crudely formed.

Yet what is known about the watermark itself with the symbols that are under consideration here? This is quite an important question in the

⁵⁶ This work has also been translated into Estonian: Friedrich Menius, *Jutustus Tartu Ülikooli inauguratsioonist, mis toimus 15. oktoobril 1632. aastal*, trans. and comm. by Kristi Sak (Tartu: Tartu Ülikooli Kirjastus, 1997).

⁵⁷ EEP no 43, <<http://paber.ut.ee/EN/vesimargid/eksemplar/460>> [accessed 7 February 2014].

context of Tartu since the opinion has been expressed that this is Tartu's own watermark, in other words a watermark found in paper produced in Tartu.⁵⁸ Even though this claim has by now been convincingly disproven,⁵⁹ and if paper was at all produced in Tartu in the first place, it definitely would not have had the watermark under consideration, the possible origin of this watermark and the modifications used here should still be considered in more detail. All the elements in this watermark – the Rod of Basel (R1/3 according to IPH), the heart (IPH A7/3) and the postal horn (also hunting horn) (IPH O3/2/3) – are very widespread in watermarks and are found singly and in combination with other motifs. As can be inferred from the name of the Rod of Basel, this sign originally derived from paper mills in the Basel area where this sign had been in use since the first quarter of the sixteenth century to the first half of the nineteenth century, either standing alone or in combination with an eagle, a house, a coat of arms with a crown, or a cartouche.⁶⁰ Yet according to the Russian researcher A. A. Geraklitov, this sign disappeared from among the filigrees of the Basel paper manufacturers precisely during the first half of the seventeenth century only to resurface again during the latter half of the same century. This filigree, however, is found at the beginning of the seventeenth century in the production of French papermakers (Duran, Lamy, and others). In this case, it is found on a shield with a postal horn.⁶¹

The heart, on the other hand, is one of the most long-standing and characteristic watermark motifs of French paper manufacturers. It was in

⁵⁸ Endel Valk-Falk presented this claim in his brochure *Vesimärk ja pitsatijäljend pütipaberil* published in 1996, where he relied on the works of Baltic German historians, archival sources that can be interpreted in different ways, and watermark symbols: the bishop's staff as the symbol of the city where the bishop formerly had his residence, the postal horn as a reference to J. Becker's position as postmaster and the letters J (!) and B as the initials of Jakob Becker, see the reprint of the referenced article for further information: Endel Valk-Falk, "Paberiveskitest Eestimaal," *Verba volant, scripta manent = Jutt lendab tuulde, kirjutatu jääb. valik raamatuajaloo-alaseid uurimuslikke kirjutisi autori redaktsioonis*, Tartu Kõrgema Kunstikooli toimetised, 8 (2008), 100–121 (108–112).

⁵⁹ Leo and Õie Utter, with long tenure as researchers of the history of paper, responded to Valk-Falk's writing with an article where they expressed serious doubt concerning the existence of the Tartu paper mill and disproved the possible connection between local paper and the watermark under consideration by bringing new sources into circulation and reviewing old sources, see Õie and Leo Utter, "Tartu paberiveski asutamisest," *Paar sammukest XXI*, Eesti Kirjandusmuuseumi aastaraamat (Tartu, 2004), 41–56.

⁶⁰ W. Fr. Tschudin, E. J. Labarre, *The ancient paper-mills of Basle and their marks* (Hilversum, Holland: Paper Publications Society, 1958).

⁶¹ A. A. Geraklitov, *Filigrani XVII veka ha bumage rukopisnykh i pechatnykh dokumentov russkogo proiskhozhdeniya = Watermarks of the XVIIth century in paper of manuscript and printed documents* (Moskva: Akademiya nauk SSSR, 1963), 233, endnote 11.

use in the paper produced by the first paper mill in France already, which was established in 1326 by Richard de Bas.⁶² The third element – the postal horn – was also very widespread in Europe by 1500 and is associated with a certain kind of paper – postal paper,⁶³ which required paper of standard dimensions and weight for being dispatched by mail. This function did not likely have any significance as printing paper and thus this connection between the name and purpose of paper should not be considered the only possible explanation. Throughout Europe, the image of the postal horn is associated with the British paper market first and foremost – it was the most widespread of the watermarks produced in England and those exported to England beginning in the seventeenth century.⁶⁴

When putting together the three motifs considered and the initials D and B, however, it must be stated that the individual origin of each part of the watermark is no longer of any significance here. The postal horn, heart and the Rod of Basel were probably in use in just that combination in some certain region or paper mill. On the basis of R. Gaudriault's overview of French paper production in the seventeenth and eighteenth centuries the Utters state that the watermark in question originates from France and is found in paper from there from the years 1615–1642.⁶⁵ A couple of similar watermarks are described in this book, but they are not identical to the one in our printings and also bear different initials. The dates and provenience of the watermark are determined mainly on the basis of E. Heawood's, Tschudin's and the others researcher's catalogues, and can not be reliably used to date Tartu print shop watermarks under question.⁶⁶ Yet a couple of similar watermarks can be found in the database at Bernstein's portal though they unfortunately do not also have the same initials. These similar marks have been found in paper that was in use in Germany in the mid-seventeenth century,⁶⁷ in England in 1631,⁶⁸ and one analogous watermark with the initials D and B in paper used

⁶² Briquet Online, <http://www.ksbm.oew.ac.at/_scripts/php/BR.php?lang=de>, motif no. 4178 [accessed 7 February 2014].

⁶³ L. and Ö. Utter, "Tartu paberiveski asutamisest," 53.

⁶⁴ *Shelleyan writing-materials in the Bodleian Library: a catalogue of formats, papers and watermarks*, comp. by B. C. Barker-Benfield (Routledge, 2002), 12.

⁶⁵ L. and Ö. Utter, "Tartu paberiveski asutamisest," 54.

⁶⁶ Raymond Gaudriault and Thérèse Gaudriault, *Filigranes et autres caractéristiques des papiers fabriqués en France aux XVIIe et XVIIIe siècles* (CNRS, 1995), pl. 61, pp. 120–121.

⁶⁷ For instance in Heidelberg in 1654: <http://www.memoryofpaper.eu:8080/Bernstein-Portal/appl_start_disp#R_119> [accessed 7 February 2014].

⁶⁸ Gravell Watermark Archive, SLD.032.1, <<http://www.gravell.org/Record.php?RECID=148>> [accessed 7 February 2014].



Figure 5. Watermark used in Holland in 1629 (Gravell Watermark Archive, SLD.146.1).

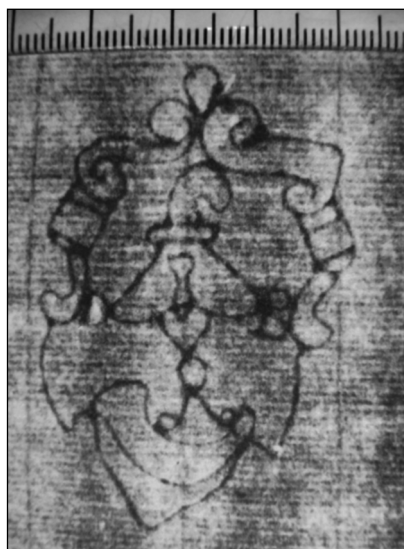


Figure 6. Watermark used in Aardenburg in 1630 (T. and F. Laurentius, *Watermarks*, no. 323).

in Holland in 1629 (see Fig. 5).⁶⁹ Considering its dimensions and positioning in relation to the chainlines, this last watermark can be considered identical to our watermark no. 2 (see Fig. 3) and others that are found in most of the publications of 1632. Another find refers to Holland, namely a watermark under the number 323 in Theo and Frans Laurentius's catalogue "Watermarks 1600–1650 found in Zeeland Archives"⁷⁰ that is identical to another watermark that is common in Becker's publications – the one that includes the so called letter B with the hole (see Fig. 6). According to data from this catalogue, this kind of watermark was found in paper used in the little town of Aardenburg in the 1630's.

Unfortunately, no modification of that same watermark (Fig. 3, no. 1, 1a and 4) with different initials can be identified. Similar watermarks with letter combinations consisting of two D's that nevertheless differ sufficiently

⁶⁹ Gravell Watermark Archive, SLD.146.1, <<http://www.gravell.org/Record.php?RECID=1238>> [accessed 7 February 2014].

⁷⁰ Frans Laurentius and Theo Laurentius, *Watermarks 1600–1650 found in the Zeeland Archives* (Hes & De Graaf Publishers BV, 2007). The author thanks Mr. Gerard van Thienen, curator of the Royal Library at the Hague, for the opportunity to examine this book, as it is he who generously gave this work to the University of Tartu Library as a gift.

in their details can be found in several catalogues,⁷¹ yet since the first letter of the watermark currently under consideration has not been successfully identified, further comparison will not necessarily put us on the right path.

A watermark was found in the Thomas Gravell collection that resembles the watermark with the initials R and B found in Menius's "Relatio" that stood out as an apparently exceptional specimen. No. SLD.122.1 shows a watermark with the same general appearance with the same initials but situated somewhat differently in relation to the chainlines. This watermark is unfortunately not dated but the paper was found in the Bacon family archives and it can be assumed that this paper was in use approximately in the interval 1547–1622 in England.⁷² A similar but unfortunately not identical watermark is also found in the Laurentius catalogue⁷³ where the time of the use of the paper is indicated as 1629 and the place as Steenberg (also a town in the south-western region of Holland about 100 km from Aardenburg).

The same symbols are found in Geraklitov's catalogue of paper used in Russia. Both initials are found in watermarks from the interval 1625–1633,⁷⁴ whereas marks with the letters R and B are dated earlier (1625–1630) than analogues bearing the initials D and B (starting from 1628 onward). Since the reproductions have been obtained by drawing copies of the watermarks and the location or density of the wire mesh used in the paper moulds has not been included, it is difficult to say whether any of these watermarks is identical to our watermarks. At the same time – the similarity is nevertheless of a sufficient degree to claim that the paper originates from one and the same manufacturer.

Looking ahead in time, it is noteworthy that a watermark with these symbols is found in great quantities in publications printed in Tartu also in the following year (1633). Somewhat fewer symbols of this kind are still found combined with new marks in the first half of 1634, yet thereafter they appear less and less frequently and by 1635, the shield with the Rod of Basel and the postal horn disappeared from publications once and for all. This may be merely a coincidence or there may be a connection here, but from that very same year in 1634, Jacob Becker no longer acted as publisher.

⁷¹ See for instance T. and F. Laurentius, *Watermarks*, nos. 319–321.

⁷² Gravel Watermark Archives, SLD.122.1, <<http://www.gravell.org/Record.php?RECID=1071>> [accessed 7 February 2014].

⁷³ T. and F. Laurentius, *Watermarks*, no 322.

⁷⁴ Geraklitov, *Filigrani XVII veka*, 46–49.

Instead he only provided printing services and by 1636, he had essentially also withdrawn from managing the print shop.⁷⁵

According to Mark Bland with a printed book “a special job can be identified by the homogeneity of its paper stock and its difference from the rest of the output at that time.”⁷⁶ Regarding payment for publications, even though it is not clear whether the printing invoices issued by the printer also included the cost of the paper used or if the customer had to acquire the paper himself or pay an additional charge, in this case, we are left with the impression that Jakob Becker procured a larger batch of paper to start the print shop up directly from one manufacturer (or from a retailer) and used that paper to cover most of the print shop’s requirements during the first year, and that leftovers were used up in order to save on expenses. The fact that this so called Becker watermark is also found in a couple of publications of the minutes of the university senate, which were printed at the end of 1633, makes this picture more complicated.⁷⁷ Unfortunately there is currently no good answer to the question of how paper with the same watermark ended up at the disposal of the university senate, where in other cases writing paper with altogether different watermarks and stronger gelatine surface sizing was used. Perhaps Becker also supplied the university office with paper (similarly to his successor J. Vogel), selling the remains of batches of paper left over from publications to the university office, for instance, or perhaps some other contact person or transaction was behind this. The answer to this question has not yet been found from the sources.

The quality of paper with this kind of mark is more likely good. The paper’s fibre structure is relatively uniform. Defects visible to the naked eye are rarely found in this paper. The wire mesh of the paper mould is dense and with even spacing. It can be assumed that this was not the cheapest paper in terms of cost and its existing quantities can allude to Becker’s favourable business contacts with paper manufacturers or retailers. Comparison of the paper used in publications from Tartu to that of publications from Riga from the same period would help to cast light on this matter since G. Schröder is repeatedly pointed out in the relevant literature as an example for and influence on Becker.⁷⁸ Similarly, in addition to

⁷⁵ Puksov, *Tartu ja Tartu-Pärnu rootsiaegse ülikooli trükikoda*, 20–21.

⁷⁶ Bland, *A guide to early printed books and manuscripts*, 27.

⁷⁷ The earliest find is the senate minutes of 30 December 1633, thereafter the same watermark can be found in the minutes for January, after which it disappears again and is replaced by watermarks more typical of writing paper (twin towers, lily, vase, and others).

⁷⁸ Puksov, *Tartu ja Tartu-Pärnu rootsiaegse ülikooli trükikoda*, 24.

publications deposited in Estonia, copies deposited in libraries and archives abroad should also be examined.⁷⁹

Conclusions

The examination of the material side of publications and likewise of documents in manuscript form contributes to the understanding that their importance does not lie in the information contained in the text alone but rather that the medium that bears the text, its manufacture, and the human and economic decisions made in the course of its manufacture are also important. It is interesting to consider to what extent these decisions are independent of each other and to what extent they are associated with the meaning and value ascribed to the text by the customer, manufacturer or user.

This question can be answered in many ways when considering the publications of the first year of operation of the University of Tartu print shop and the paper used in them. On the one hand, it appears that the selection of paper was not of particular concern since practically all the publications were printed on paper from the same batch. At the same time, it is noteworthy that after Jacob Becker's removal from the management of the print shop, the appearance of the publications becomes considerably more differentiated, in terms of the paper as well. It cannot be concluded that all publications were printed on paper with watermarks in any of the subsequent years. On the contrary, an abundance of poor quality paper without watermarks was added to the stock and is often combined with significantly different, better quality paper with a lighter hue even within one and the same publication. Thus it can be concluded that Becker's aesthetic considerations regarding the external appearance of publications were nevertheless carefully planned and apparently also more costly than in later years when the selection of paper for publications appears considerably more random and superficial and evidently depended directly on the customer's financial means or on less advantageous paper acquisition transactions.

⁷⁹ This is inevitably a rather complicated task since according to the data of E. Jaanson's bibliography, 9 copies of the publications of 1632 are deposited at the Uppsala University Library, 6 at the Royal Library in Stockholm, 2 copies may be found at the University of Helsinki Library and one copy each at the Russian National Library in St. Petersburg, Lund University Library, the Växjö Library, and the Academic Library of the University of Latvia in Riga.

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KOKKUVÕTE: *Academia Gustaviana trükikoja esimene tegevusaasta paberiajaloolisest vaatenurgast*

Trükiste, aga samamoodi ka käsikirjaliste dokumentide materiaalse poole uurimine aitab kaas mõistmisele, et nende olulisus ei seisne vaid tekstis sisalduvas informatsioonis, vaid oluline on ka teksti kandja ja selle valmistamise ning valimise juures tehtud inimlikud ja majanduslikud otsused. Huvipakkuvaks on vaadelda, kuivõrd need otsused on eraldiseisvad ja kuivõrd on trükise materiaalne kuju seotud tekstile omistatud tähenduse ja väärtusega kas tellija, valmistaja või kasutaja poolt.

Rootsiaegse Tartu ülikooli trükikoja esimese tegevusaasta trükiseid ja neis kasutatud paberit vaadeldes saab sellele küsimusele vastata mitmeti. Varajaste trükiste puhul on täiesti tavaline, et neisse on koondatud mitmest erinevast partiist või isegi erinevalt tootjalt pärit paberit. Sellele on lihtne põhjust leida: trükikoja poolt korraga hangitud paberivaru ei pruukinud vastata täpselt ühe tiraaži suurusel ning loomulikult ei lastud ülejääke raisku minna, vaid kulutati esmalt ära teiste trükiste valmistamisel. Jakob Beckeri juhendamisel töötanud Tartu ülikooli trükikoja 1632. aasta säilinud trükistest leitud vesimärkide põhjal võib aga järeldada, et siin oli kasutusel suurem kogus peamiselt ühe tootja käest hangitud paberit. Vesimärgina esines paberil üks ja sama kujund: vapikilbil olevad nn Baseli sau, süda ja postisarv, nähtavad olid ka vähemalt ühed initsiaalid: D ja B. Kuna kujundid olid kohati identsed, kohati aga üldkujult sarnased, kuid detailides erinevad, võib oletada et tegu oli osaliselt ühest ja samast partiist pärineva, osalt samas paberiveskis, aga erineval ajal valminud toodanguga. Erandiks olid vaid trükikoja kõige esimene, 1632. aasta sügisel trükitud J. Beckeri "Postordnung" ning Fr. Meniuse "Relatio" ehk jutustus ülikooli avamiseremooniast. Viimases esinevad vesimärgid on tähelepanuväärsed, kuna kujutavad sama, eelpoolmainitud sümboolikat, kuid on detailides täiesti

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erinevad ning kannavad ka erinevaid initsiaale. Mistõttu on tegu ilmselt mujal toodetud paberiga, mille juures kasutati siis juba üldiselt tuntud ja heakskiidetud vesimärki. Ühtpidi tundub, et trükiste paberivalikuga ei ole eriti vaeva nähtud ja olemasolevat paberivaru on kasutatud lihtsalt järjest, kuid “Relatio” näide annab tunnistust sellest, et paberivalikul püüti siiski hoida järjepidevust ning koondada ühte trükisesse sarnase vesimärgiga ning seetõttu eeldatavalt ka sarnase sordilisusega toodangut. Samas on tähelepanuväärne, et pärast Jacob Beckeri eemaldumist trükikoja juhtimise juurest muutub trükiste väljanägemine oluliselt diferentseeritumaks, ka paberi osas. Ühegi järgneva aasta kohta ei saa tõdeda, et kõik trükised on valmistatud vesimärgiga paberist, vaid lisandub rohkelt halvakvaliteedilist vesimärgita paberit, mida sageli kombineeritakse isegi ühe trükise sees oluliselt erineva ja heledama kvaliteetpaberiga. Mistõttu võib järeldada, et Beckeri esteetilised kaalutlused trükiste väljanägemise juures olid siiski hoolikalt läbimõeldud ja ilmselt ka kulukamad kui hilisematel aastatel, mil trükiste paberivalik jätab oluliselt juhuslikuma ja pealiskaudsema ilme ning sõltus nähtavasti otseselt tellija maksevõimest või paberihanke võimalustest.