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Paper Identification Database: Characterization and Documentation of the Papers of the First Finnish Paper Mill, Tomasböle, 1667–1713

ABSTRACT

Papermaking started quite late in Finland, in 1667. Published evidence regarding the appearance of early Finnish handmade papers and the history of the first paper mill, Tomasböle,1667–1713, is limited to only three prior sources. The original Tomasböle papers are easy to find in about ninety published titles written by Bishop Gezelius and printed by Johan Winter.

An internet-based Paper Identification Database was used as a tool for the documentation. Forty-nine copies of twenty-two titles by Gezelius from several Finnish libraries and archives were surveyed, and the papers documented. All results—not only the Tomasböle papers—are published in the Paper Identification Database. The provenance has also been added to the database. The documentation of the Tomasböle papers confirms information published earlier about watermarks and the poor quality of the papers, but it also provides precise information to bibliophiles and literature researchers about the printing history of some of the titles.

The Paper Identification Database has been created to collect data for the characterization and identification of historic and modern paper. The data collected include not only watermarks but also details of the mold characteristics of handmade rag paper. Sheet size, coating, color, acidity measurements, fiber morphology, pulp type, paper sizing, and other components in paper are included in the database. Manufacturing and context information, as well as various images of paper details, can also be found. The database is available on the internet at http://kronos.narc.fi/paperi/, and access is free of charge.

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INTRODUCTION

The use of paper in Finland was minimal prior to the founding of our first university in 1640. The need for paper increased when the first printing house was established in 1642 in the city of Turku. Still, handmade paper production started quite late in Finland. Not until 1667 at the Tomasböle paper mill in southwestern Finland was the first handmade paper produced. During that time, Finland was a part of the Swedish Kingdom, where paper production started in 1565 at the Norrström paper mill in Stockholm and 1612 in Uppsala (Vida Group 2006). The quality of the earliest Finnish handmade paper was not very high. There are several reasons for the production of poor-quality paper. As Finland was a part of the Swedish Kingdom until 1809, all the best rags were transported to paper mills located in Sweden (Karlsson 1981). Another reason was the harsh climate. Finland has long, cold winters and it was not possible to make handmade paper when the rivers were frozen. Due to the fact that accessibility to water in rivers lasted for only a short period each year—a few months in spring and autumn—paper production was not very profitable and thus it received little investment (Karlsson 1981).

Most of the handmade paper used in Finland during the Swedish Kingdom period was brought in from abroad (Lindberg 1998), as only three paper mills existed in Finland before 1809 (Nikander and Sourander 1955). After Sweden lost a war to Russia (1808–1809), Finland became a part of the Russian Empire (1809–1917). During that period better raw materials were available, and several new, small paper mills started production just prior to the industrialization of paper manufacturing. However the total number of Finnish handmade paper mills was only thirteen, which is very little compared with the 130 Swedish hand paper mills.

As can be seen in table 1, the number of Finnish handmade paper mills is limited as is the number of different watermarks used. When paper conservation educators at

Table 1. Finnish hand paper mills, years of production, and the number of known watermarks.

Paper Mill	Years of Production	Number of Watermarks
Tomasböle	1667–1713	7–11
Järvenoja	1774–1820	4
Tampere	1785–1860	15
Tervakoski	1818–1905	15
Möllby	1820–1854	3
Juvankoski	1822–1902	19
Jungsund	1831–1876	2
Långfors	1842–1873	4
Långfors	1842–1873	7
Vianto-Taipale	1847–1857	not known
Haga	1848–1856	1
Terttilä	1850–1874	10
Talisola	1851–1864	not known

EVTEK University of Applied Sciences, Institute of Art and Design, first created the Paper Identification Database for paper characterization and documentation purposes in January 2006, it became clear that it was our national duty to document most of the existing Finnish handmade papers for this database. The National Archives of Estonia also considers the documentation of Estonian handmade papers a national duty. Documentation of Tomasböle papers is the start of this project.

TOMASBÖLE MILL, THE FIRST FINNISH PAPER MILL

Bishop Johannes Gezelius started the production of handmade papers in Finland. He invited two brothers, Bertil and Mårten Obenher, to come to Finland from the Uppsala paper mill in Sweden to make paper. The Tomasböle mill, which operated from 1667 to 1713, produced poor-quality printing paper.

The paper is dark, is not well beaten, has uneven fiber distribution, and is made from poor-quality, dark rag material (Karlsson 1981). The existing paper samples are easy to find as they are in books written by Gezelius and printed by Johan Winter of the Gezelius printing house, the second printing house in Finland, established in 1669. Finland's first printing house, Åbo Akademis, also printed Gezelius books on Tomasböle papers, but only between 1667 and 1669. There are about ninety titles by Bishop Gezelius Senior published during the existence of the Tomasböle paper mill, from 1667 to 1713 (National Bibliography of Finland 2006). The titles exist in numerous copies and can be found at the National Library, several university libraries, and at the Library of the Finnish Literature Society. Not only Tomasböle papers but also foreign-manufactured papers were used in Gezelius's printed books, especially in the editions of the1685 Bible (Lindberg 1998).

In the 1970s Kurt Karlsson became the first filigranologist to find and study Tomasböle papers with watermarks. Karlsson has documented this finding by drawing five different watermark types from the Tomasböle mill and two that he considered to be from Tomasböle.

Lindberg has published over eight-hundred drawn watermarks in his PhD thesis publication, How Paper Came to the North (Lindberg 1998). The samples were found in Finnish archives and libraries, but only six of those are of Finnish origin from the Tomasböle mill. Lindberg also studied the watermarks of different volumes of Gezelius's Bibles where Tomasböle, as well as foreign, paper can be found, but was unable to document the watermarks as they are in bound volumes. Lindberg found two new and one suspected Tomasböle watermarks. So the total number of known Tomasböle mill watermark types before this study was seven. Three watermarks were suspected to be from Tomasböle. Nine of these are illustrated at the end of this paper.

DOCUMENTATION OF TOMASBÖLE PAPER IN DIFFERENT COLLECTIONS

As explained earlier, there is a lack of very precise documentation of Finnish handmade papers. This documentation and survey of Finnish handmade papers began as an element of the author's PhD studies. Documentation of early Finnish handmade papers started in spring 2006 with the papers from the Tomasböle paper mill from Gezelius publications. Forty-nine copies of twenty-two titles from six different library collections have been surveyed. Watermark details were documented as well as other characteristics of the paper. Mold type, chain and laid lines measurements, paper thickness, source, dating information, and context were among the most important details. Papers from several other paper mills have also been documented and added to the database. Images from the bound volumes were recorded by digital imaging with a help of a light board one millimeter thick.

PAPER IDENTIFICATION DATABASE

The documentation of objects is a very important task for conservators. It is essential for a paper conservator to be able to perform material and chemical analyses for identification and characterization of different techniques and materials of handmade papers as a part of conservation documentation. The documentation work done so far has been added to the newly created EVTEK Paper Identification Database found at http://kronos.narc.fi/paperi/. It has quite recently been presented in the International Association of Book and Paper Conservators

(IADA) *PapierRestaurator* journal (Kecskeméti 2006), so only the main features of the internet-based database will be presented here.

The content of the Paper Identification Database is divided into the following headings:

Basic information
Type of paper
Watermark
Visual observation
Measurements
Fiber analyses and spot tests
Reflectometric analyses
Acidity, pH value
Information on paper
Illustration
End use of paper

All headings have subheadings where data will be chosen from pre-selected menus.

Under the headings *Type of paper*, *Watermark*, and *Measurements*, information about molds and mold mark measurements, watermarks, and paper size measurements will be found.

For documentation on papers from certain paper mills or papers found in certain publications, the heading *Information on paper* is important. The manufacturer information, dating by written or paper technology information publication context, sources, and references to other documented samples can be added. It is equally important to add clear images of the paper's technical details and watermarks under the heading *Illustration*.

The database was created by three students from EVTEK Institute of Technology: Samuli Toivonen, Paavo Pekkanen, and Samu Lindholm under the supervision of lecturer Aarne Klemetti. Visitors can do a wide range of searches in order to find relevant information.

RESULTS AND DISCUSSION

Although the documentation survey is new (started in spring 2006), the first results are encouraging. Even though the Tomasböle papers are easily found in Gezelius publications, it has not been certain which of the watermarks really originate from the Tomasböle mill. As the papers are in bound books, the documentation is difficult. In addition the poor quality of the papers makes the exact documentation of watermarks difficult. Only one mold-pair watermark type was documented earlier.

Gezelius typically printed a few examples of each publication on better-quality foreign paper, but most of the examples from Tomasböle were printed on poor-quality paper. It is very interesting to compare the same editions printed on very different quality paper. Several foolscap, crown, and lion watermarks not yet identified are found among the foreign papers (table 2).

Table 2. The Tomasböle watermarks found in Gezelius books.

Date of Publication	Watermark Types Found
1667	1, 2, 10
1668	1, 2
1669	6, 7
1670	6
1671	1, 3, 5, 6, 7
1672	6
1683	4
1685	3, 4, 5, 11
1689	3
1693	3, 5
1702	9

Notes: In 1685 the Bible was printed, and much foreign paper was used for that edition. Watermark TB8 was not found in this survey.

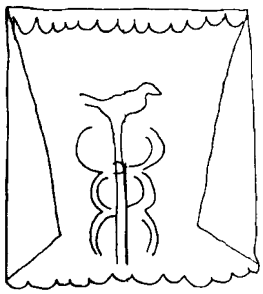
Watermarks TB1 and TB2 include a bird theme, which is also present in TB3 and TB5. This theme is similar to the private seal of Bishop Gezelius. Watermarks TB6 and TB7, with symbols of a bottle and a bishop's miter, are very common between years 1669 and 1672. In figure 1, database paper number 67 is presented. It is from Johannes Gezelius's *Jumalan Palveluksesta*, printed in 1669, from the collections of Turku University Library. For example, paper numbers 63, 64, 65, and 66 possess similar watermarks in the database. This watermark, with an image of a bottle, is very common among Gezelius's printed books. TB4 has French lilies and the initials "JW." The French lily was also present in the arms of the city of Turku. The initials JW would refer to printer Johan Winter. Typical to all these papers is the very poor quality of the paper. These seven watermarks are certainly from the Tomasböle paper mill.

Watermark TB8 was not found in this survey. The only example Karlsson and Lindberg have found is on one letter. The watermark is very small, and situated in such a way that when the sheet is printed, folded, and cut, it is cut out. This might be the explanation why this watermark was not found in this survey of bound books.

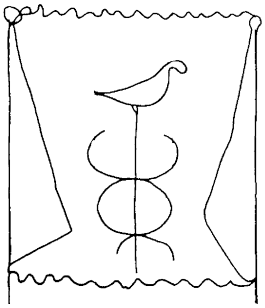
Watermark TB9 was found in two printed letters of Gezelius from 1702, but the paper quality was extremely good and raises doubts whether it would be from Tomasböle. Only two examples were found.

A new watermark type probably belonging to paper from the Tomasböle mill was found. It was found in Gezelius's 1667 publication *Ewangeliumit ja Epistolat*, page C4 (stored in the Finnish Literature Society's library). It is

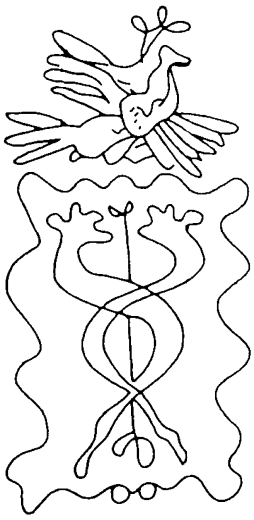
Fig. 1. A watermark possibly from Tomasböle (TB6), according to Karlsson, found in this survey in several of Gezelius's publications. It seems quite certain to be one of the early Tomasböle watermarks. The image of the watermark looks like a bottle, categorized as "P: container" according to the International Association of Paper Historians (IPH) watermark standards.



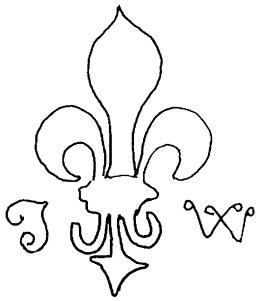
TB1



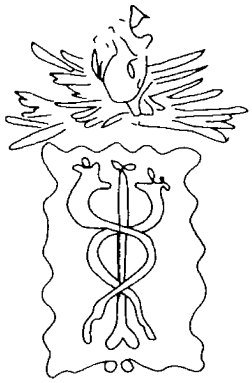
TB2



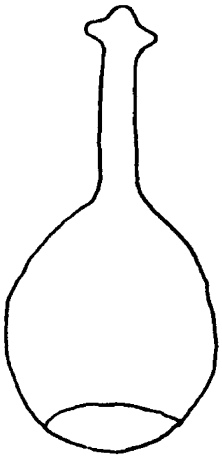
TB3



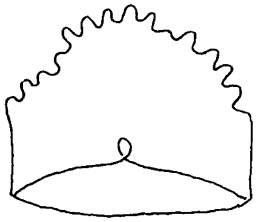
TB4



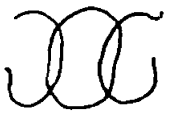
TB5



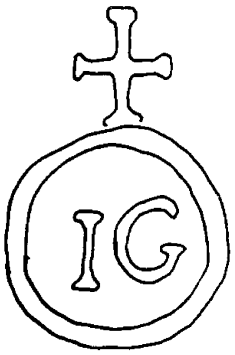
TB6



TB7



TB8



TB9

Tomasböle watermarks drawn by Kurt Karlsson and Nils Lindberg. Not to scale.

documented in the database as paper number 135 and is presented as watermark TB10. According to published sources, a foolscap watermark (fig. 2) has not been recorded in Tomasböle papers. The Tomasböle mill was founded in the same year that the publication was printed (1667). The paper quality is poor and very similar to that of the Tomasböle mill. According to the author's theory, the mold from which this paper was made could have been brought from Sweden (Uppsala) by the first papermaker, Bertil Obenher. It may be that the first papers of Tomasböle were made with "foreign" molds before the molds with Gezelius watermarks were prepared. It is very unfortunate that no countermarks with initials have been found. The case of watermark TB10 will be studied further.

Fig. 2. A previously unknown watermark, TB10, possibly from the Tomasböle paper mill. Found in the 1667 Gezelius publication *Ewangeliumit ja Epistolat*. Database number 135.

Watermark TB11, with a text of MORTN or MORIN and suspected by Lindberg to be from Tomasböle, was found in several examples in the 1685 Bible. It is well-known that part of the edition was printed on good-quality foreign paper, but most of it is on Tomasböle paper. The quality of paper, including TB11, is quite good and light. It is not known if the Tomasböle papermakers were able to manufacture better-quality paper for this special edition. Karlsson and Lindberg have considered that if the text is MORTN, then it would refer to the papermaker Mårten Obenher of Tomasböle from the time the Bible was printed. They also note that if the text is MORIN, it would refer to French-origin paper.

As the published TB11 is actually a countermark of a foolscap watermark and the paper quality is very good, it does not support the theory that TB11 with foolscap would

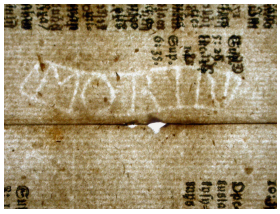


Fig. 3. Watermark TB11 with text "MORTN" or "MORIN." Possibly a new Tomasböle watermark, but only few examples have been found so far. Watermark MORTN could refer to the younger of the Obenher brothers, Mårten.

be one of Tomasböle watermarks. Also the amount of paper produced with these watermarks and used in the Bible would seem to be too much for Tomasböle to produce. One example of MORTN/MORIN watermark is on paper number 145 in the database (fig. 3).

CONCLUSIONS

It is quite evident that the watermarks TB1, TB2, TB3, TB4, TB5, TB6, and TB7 are from the Tomasböle mill. TB8 was not found, and TB9 and TB11 are on such good-quality paper that they are unlikely to be from Tomasböle. TB10 with a foolscap is an interesting example, as it is found only in the very first Gezelius books from the year the Tomasböle mill was founded, 1667, in equally bad paper as the identified Tomasböle papers. The theory of the Obenher brothers bringing one mold pair from Uppsala paper mill to start with in Finland is worth considering. Although many foolscaps are found among Gezelius books in foreign paper, no foolscap watermark similar to TB10 has been found. It is not present in later publications, which might support this theory.

The survey will continue into 2007 and focus on papers from the Swedish Uppsala paper mill from the mid 1660s as well as on archival documents and letters by bishop Gezelius written possibly on Tomasböle papers.

The EVTEK Paper Identification Database is a novel tool for paper documentation suitable for similar projects. As of May 2007 there were about 330 samples in the database, of which sixty percent are of Finnish origin. We wish to invite more paper conservators, paper historians, and others interested in historic paper to document historic paper samples from their own region or collections in our new Paper Identification Database. User passwords exist in the database website. For access to the partner user level, passwords will be provided by electronic mail. Kindly send a request to istvan.kecskemeti@evtek.fi.

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