

**The Palmer Hours:  
Making a 14<sup>th</sup> Century Book of Hours**

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## Abstract

Appearing as its own class of text in the mid-13<sup>th</sup> century, a book of hours is a prayer book designed for the laity and intended for personal devotion. These books commonly include a series of psalms, hymns, Bible verses, and prayers. They also quickly became symbols of status and wealth, from the simply designed to the lavishly decorated manuscripts only affordable by the wealthy middle class and nobility.

Traditionally, the development of a single manuscript was a production undertaken by an entire team of craftsmen. Depending on the size and complexity of the book, several calligraphers could be employed to write out the entire text block. As many as thirteen scribes have been identified in the production of the Eadwine Psalter, a book of Psalms created at Christ Church in Canterbury, England, in the mid-12<sup>th</sup> century.<sup>1</sup> The books would then be sent to an illustrator, if the manuscript were to feature illumination. A gilder would see the manuscript after the illustration had been laid out, followed by the painter. When the text block was completed, it was returned to the book seller, who would bind the manuscript in his own shop.

The book of hours presented here is modeled after a book belonging to the British Library. Yates Thompson MS 13 (the "Taymouth Hours") is dated to the 2<sup>nd</sup> quarter of the 14<sup>th</sup> century and utilizes the Sarum Rite texts. The Rite, alternatively called the Use of Salisbury, was a variant of the Roman Rite widely used for the structuring of the Christian public worship, including the Mass and Divine Office.

The following text describes the process of period book production, from creation of the text block to the binding. It outlines the steps taken to produce a Gothic-style illuminated manuscript in a similar manner of the Taymouth Hours. This includes selecting, arranging, and writing out the text, gilding and painting the illuminations, and finally, binding the book.

Great care was taken in reproducing each step in appropriate period fashion. While the original bindings no longer exist, steps to create a Gothic-style binding described by Karen Jutzi were followed closely using appropriate period materials, including oak boards, leather hides for covers, and linen thread and leather thongs for stitching.

A manuscript of English origin, the Taymouth Hours is simply, but heavily, illuminated, featuring full foliate borders, base-de-page scenes, and grotesque decoration on all pages, as well as full-page miniatures at each incipit page of the Hours of the Virgin. It is illuminated with ground pigments, likely bound in glair, or overly-whipped egg whites. The ink used is iron gall ink, the primary ink used

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<sup>1</sup>Elaine Treharne, "Cambridge, Trinity College, R.17.1," in *The Production and Use of English Manuscripts 1060 to 1220*, ed. Elaine Treharne et al. (Leicester: University of Leicester, 2013). <http://www.le.ac.uk/english/em1060to1220/mss/EM.CTC.R.17.1.htm>

throughout Europe at this time. Some exceptions have been made for materials depending on their health risk or availability. An exception has also been made concerning the use of modern tools for construction.

## Books of Hours in the Middle Ages

The Harry Ransom Center at the University of Texas at Austin describes a book of hours as “a prayer book designed for laymen, a compendium of psalms, Bible verses, hymns, antiphons, and prayers for private devotional use.”<sup>2</sup> The book takes its name from a prescribed text called the Little Office of Our Lady, known commonly as the “Hours of the Virgin.” “Hours” refer to the eight canonical hours of the day: Matins, Lauds, Prime, Terce, Sext, None, Vespers, and Compline. The Hours of a given Office describes the appropriate set of prayers, hymns, and verses to be recited at each hour of the day.

The book of hours first appeared as its own class of texts in the mid-13<sup>th</sup> century, developing out of the breviary and ultimately the Psalter, containing hymns and texts both monks and nuns were required to recite. A condensed version of the Offices described in the breviaries was soon in high demand among lay practitioners of Christianity. This demand corresponded to both the greater availability to worship privately at home and the growing popularity of the Cult of the Virgin throughout Europe.

While the book of hours was indeed a prayer book with personal devotional purpose, it quickly became a status symbol for those “wishing to join the ranks of the literate, well-to-do middle class.”<sup>3</sup> The decoration of the books of hours ranged widely from lavishly ornate, custom manuscripts, to subtler books with little illustration of any kind. Most of these manuscripts were little bigger than a modern day, small-text paperback book or standard note card, designed to be easily portable and for individual reflection.

Since there was such high demand for these books, the small volumes were produced in greater number than nearly any other text for almost three hundred years. As a result, the book of hours is the most common type of surviving medieval illuminated manuscript.<sup>4</sup>

The illuminated manuscript presented here is a book of hours, modeled after Yates Thompson MS 13 (also called the Taymouth Hours), housed in the British Library. The Taymouth Hours has been dated to the 2<sup>nd</sup> quarter of the 14<sup>th</sup> century. The book itself was made in England and is primarily scribed in Latin. In addition to common book of hours components, the Taymouth Hours includes Anglo-Norman verse prayers and prose tales written in French..

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<sup>2</sup> "Books of Hours at the Ransom Center," Harry Ransom Center, University of Texas at Austin, accessed 28 March 2017. Retrieved from <http://www.hrc.utexas.edu/enews/2010/may/booksofhours.html>

<sup>3</sup> *ibid.*

<sup>4</sup> *Ibid.*

For clarity, the original manuscript used as a model will be referred to as the "Taymouth Hours," while the contemporary reproduction will be referred to as the "Palmer Hours."

## The Text

The contents of a book of hours can vary widely depending on the date and place of production. Variations may also exist in the event of a specially commissioned book, catering to any personal preferences of the patron. However, most books of hours still possessed certain common elements, some more frequent than others. Unless otherwise noted, the Palmer Hours contains each section as appropriate for a medieval book of hours.

## *The Calendar*

A calendar appears at the beginning of almost every existing Book of Hours. Medieval calendars generally record dates by the religious feasts celebrated on a given day combined with the ancient Roman system of ides, nones, and kalends. Red inks usually mark the most important feast days; however, this was not always standard. The Taymouth Hours records the feasts days in four colors: red, mauve, blue, and gold. Presumably the most important feast days were described in blue and gold, as these are the least frequent colors seen in the calendar pages.

The calendar in a book of hours can be helpful in providing origin information. Many of the feast days varied from one region to another, depending on which Rite the book was written to follow. For example, the Taymouth Hour's calendar reflects many of the feast days venerated by the Sarum Rite, a variant of the predominant Roman Rite used by the Church in Rome. Saint Osmund, Bishop of Salisbury, and Richard Poore established the Sarum Rite in the 11<sup>th</sup> century. The Rite became the local form used in the Diocese of Salisbury, England, and eventually became prevalent throughout southern England, Wales, Ireland, and, later, Scotland until the reign of Queen Mary I and King Philip. The calendar also encompasses important local feast days not usually seen on the general calendar, and can include feast days holding personal significance to the patron of the book.

Most books of hours do not have calendar illustrations. When such illustrations are present, they are almost always small in scale and depict signs of the zodiac. More commonly, however, illustration in the calendar reflects the kinds of work or activities associated with a particular month. Harvest and preparation of the fields for the coming winter are not uncommon labors, for example, to be depicted in the later summer months of the calendar.

### *Hours of the Virgin*

The Hours of the Virgin is the primary set of devotional texts that lend the book of hours its name. The Hours generally appear about a third of the way into the book and is almost always written in Latin.<sup>5</sup> If a book of hours has any illumination or illustration at all, it will be found in the Hours of the Virgin. The Hours themselves consist of eight separate devotional texts, including hymns and psalms, each to be recited at their respective canonical hours of the day. The Hours found in a layman's book of hours is considerably simpler than the complex Divine Office recited by holy orders.

Early on, defined image sequences began to accompany the Hours of the Virgin. While never becoming officially standard, the imagery accompanying each hour became associated with a chronological sequence of events from the life of the Blessed Virgin. These are, generally, as follows:

- **Matins**, *before dawn*, The Annunciation
- **Lauds**, *dawn*, The Visitation
- **Prime**, *mid-morning*, The Nativity
- **Terce**, *late morning*, The Annunciation to the Shepherds
- **Sext**, *noon*, Adoration of the Magi
- **None**, *mid-afternoon*, Presentation at the Temple
- **Vespers**, *sundown*, Flight into Egypt
- **Compline**, *late evening*, Coronation of the Virgin

The Hours of the Virgin is sometimes, but not always, accompanied by one or more additional Little Offices; such as the Hours of the Holy Spirit, the Hours of the Trinity, and the Hours of the Cross, each with their own set of devotional texts. These sections can follow the Hours of the Virgin or stand alone in their own sections. They can also take a condensed form or take a long form, as is the case with the Taymouth Hours. These additional Little Offices, however, have been omitted from the Palmer Hours, which contains only the Hours of the Virgin.

### *Prayers to the Virgin*

Two prayers addressed to the Virgin Mary are present in nearly all 15<sup>th</sup> century books of hours: The *Obscuro te* ("I beseech thee") and the *O intemerata* ("O immaculate Virgin"). Each of these prayers is written and recited in the first person and makes a mournful appeal directly to the Virgin Mary for aid and intercession with her Son.

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<sup>5</sup> *ibid.*

These prayers are sometimes personalized, inserting the name of the book's original owner into the text or the owner's image in the accompanying illustration. The *Obscuro te* specifically asks that death not come suddenly or unexpectedly, a "plea that may have provided some comfort against the toll of plague and war that afflicted late-medieval Europe."<sup>6</sup>

The Prayers to the Virgin seem to have no standard or fixed position in a book of hours, but can often be found between the Hours of the Virgin and the Gospel readings. The Taymouth Hours omits these two prayers entirely, but they have been added for the Palmer Hours.

### *The Gospels*

Several books of hours often contain a section with select readings from each of the four Gospels, usually accompanied by a miniature depicting the relevant Evangelist and their respective attribute. The readings in books of hours are frequently excerpts of the Gospel texts included in the official Mass recited on four of the Church's major feast days: Christmas, the Feast of the Annunciation, Epiphany, and the Feast of the Ascension.

Interestingly, the Taymouth Hours does not include any Gospel readings in the overall text; they also been omitted from the Palmer Hours.

### *Psalms*

One or both of two well-known cycles of Psalms may be included in a book of hours. These cycles are known as the Seven Penitential Psalms and the Gradual Psalms (Ps. 6, 32, 38, 51, 102, 130, and 143, and Ps. 120 – 134, respectively, in the King James Bible - numbering will differ between KJV, the Vulgate, and other translations).

Since these two cycles were so well known to medieval worshippers, each Psalm is often indicated only by its incipit, or opening line. The reader is expected to recite the rest Psalm from memory.

When the Penitential Psalms include miniatures, they are often opened by a scene from the life of King David, who is believed to have authored the Book of Psalms.

The Taymouth Hours includes both sets of Psalm cycles; the full text of the Penitential Psalms and abbreviated incipits of the Gradual Psalms. However, the full text of the Penitential Psalms only is included in the Palmer Hours.

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<sup>6</sup> *ibid.*



### *Litany of the Saints*

The litany of the saints is a formal prayer that generally follows the Penitential Psalms. In the litany, the reader invokes a long list of saints, martyrs, and confessors to intercede on their behalf. Each name read aloud is followed by the phrase *ora pro nobis*, "pray for us."

### *Suffrages*

The suffrages (or *memoriae*) are part of a section that includes antiphons and prayers addressed to popular, local, or personal saints, often seeking their protection from harm or danger. As an example, the prayer to Saint Sebastian, the patron saint of plague victims, seeks specific protection from that illness.<sup>7</sup> This particular prayer may have been exceptionally popular by the end of the 14<sup>th</sup> century.

When the suffrages are present in the book of hours, they are often seen near the end of the manuscript. While this may be typical, the Taymouth Hours includes the suffrages at the end of Lauds, in the Hours of the Virgin. In the Palmer Hours, this section is moved to the end of the Hours.

The section usually lists commemorated saints in accordance with a strict traditional hierarchy. The Virgin Mary is first, followed by the Archangel Michael and Saint John the Baptist. Next are the suffrages for the apostles, followed by martyrs.

The suffrages included in the Hours are dedicated to the Holy Spirit, Trinity, the Holy Cross, Michael the Archangel, John the Baptist, John the Evangelist, Peter and Paul, Stephen, Andrew, Lawrence, Thomas Becket, Nicholas, Katherine, Margaret, Mary Magdalene, all the saints, and peace.

### *Office of the Dead*

The Office of the Dead is seen in nearly all extant books of hours, and is generally found at the end of the manuscript. Unlike other Offices found in books of hours that were simplified or abbreviated for use by lay readers, the Office of the Dead is usually found in its full form and contains the text of the Church's official prayers for the dead. Rarely does it contain more than a single miniature, usually seen at the beginning of the section.

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<sup>7</sup> *ibid.*

## The Parchment

Most manuscripts throughout the Middle Ages were written on substrates such as parchment or vellum. "Vellum" refers to substrate made from the skins of calves, while "parchment" refers to substrate made from the skins of any other animal, most commonly goat or sheepskin. To produce parchment or vellum, flesh was removed from the animal skins in a lime bath, stretched on a frame, and then scraped with a special knife while damp. The skins were subsequently treated with pumice and chalk and then cut to size.

The Taymouth Hours was no exception. Like many other manuscripts, the book was written on parchment. However, in this area the Palmer Hours differs from the Taymouth manuscript. Due to the prohibitive cost of large amounts of parchment, the Palmer Hours was made with 160gsm pergamenata, a 100% sulphite, pH neutral machine-made paper produced in Italy. It is a translucent paper designed to simulate the look and feel of traditional animal parchment.

Deemed an appropriate substitute to help balance overall costs, full-sized sheets of pergamenata were ordered and then cut to size. The current dimensions of the Taymouth Hours are 17 x 11.5 cm, roughly 6 5/8 x 4 1/2 inches,<sup>8</sup> and the decision was made to create the Palmer Hours using similar dimensions.

## Inks and Paints

Ferrous oak gall ink, or iron gall ink, has been the standard writing and drawing ink in Europe since about the 12<sup>th</sup> century, though it has been known much earlier than this date.

One of the earliest recipes for oak gall ink comes from Pliny the Elder, and there have been a number of different recipes to produce the ink. Generally, the ink is made by mixing iron sulfate, plant tannins – generally extracted from the oak galls – and a binder such as gum arabic. Due to its permanence and lightfast qualities – the ink binds with the paper and will not easily fade – the ink became increasingly popular in Europe, especially along the Mediterranean coasts.

As appropriate for the type of manuscript and geographical location in which the Taymouth Hours was created, oak gall ink was used for the main text of this project. The ink used for this project was provided by Lord Ian the Green of the Midrealm. The hand – or writing style – used throughout the Taymouth Hours is the formal Gothic style. The same Gothic hand is used for the calligraphy in the Palmer Hours.

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<sup>8</sup> British Library, "Yates Thompson MS 13," accessed 28 March 2017.  
[http://www.bl.uk/manuscripts/FullDisplay.aspx?ref=Yates\\_Thompson\\_MS\\_13](http://www.bl.uk/manuscripts/FullDisplay.aspx?ref=Yates_Thompson_MS_13)

Many earth pigments were ground and mixed with appropriate binders, such as glair or gum arabic, to create paints used in illuminated manuscripts. A number of different pigments developed numerous hues in illumination, and there is an incredibly broad range of colors utilized by scribes.

However, because this project was so extensive, modern gouaches were used. Large amounts of paint could be mixed and saved to be used throughout the project to avoid running out of paint and having to re-mix new batches. As gouache is a water-based paint, large amounts of a color can be made and reconstituted for use once dried. Gouache paints are also a close approximation to the paints used in period – modern watercolor and gouache paints use many of the same pigments or pigments designed to match hues of pigments used in period.

## Gilding

Illuminated manuscripts are called “illuminated” primarily due to the use of gold in such books. Similar to the thought process of gilding artworks and objects in large buildings such as churches, the gold not only provided a luxurious tone and indication of wealth, but also reflected light and was used to help illuminate a space in dim lighting.

The use of gold leaf for decorative purposes is an ancient artistic technique. While no one knows how long ago artisans discovered that gold could be beaten into thin sheets and applied to prepared surfaces as a decorative element, it “certainly goes back to the earliest roots of civilization.”<sup>9</sup> Catalogues of Egyptian tombs reveal elaborate gold leaf work, and examples of Phoenician gold work and the use of ornamental gilding in ancient China still remain. While the materials may have changed over time with technological improvements, the techniques used by craftsmen are still practiced today.

At the same time, a wide variety of tools have been used for gilding – the application of gold leaf to a prepared surface – but the basic implements have not changed for centuries.<sup>10</sup> These include the gilder’s tip, a wide brush made from squirrel or sable hair and used to apply the gold leaf to the prepared surface, and the burnishers, tools created from smooth agate stone or canine teeth from animals such as the fox or wolves and designed to rub the gold gently and create a mirror-like finish in water gilded surfaces.

There are several different methods of applying gold to a surface; the two basic methods are oil gilding and water gilding. In addition to these, Cennini describes a

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<sup>9</sup> William B. Adair, "Introductory Gilding," (Workshop handout for the Prince of Wales Foundation's Artisan Training Program, 2009), 3.

<sup>10</sup> *ibid.*, 6

method in which garlic bulbs are used as a mordant for the gold leaf.<sup>11</sup> He continues on to say that this method is limited in its use, especially in dark, damp areas. Egg whites, whipped to the point of breaking down to produce glair, are also used as a mordant in gilding.

In the case of creating illuminated manuscripts, several methods were used to apply gold, and in some cases more than one technique could be used in a single manuscript to achieve different effects. Gold could be applied to the surface as ink or "shell gold" paint, for use in detail work, though it was more frequently applied through gilding. In some cases, the gold leaf could simply be laid down over a binding medium such as glair or specially prepared gums, a common technique used during the Middle Ages.<sup>12</sup> Illuminated manuscripts were also gilded, however, through gilding over specially prepared gesso.

However, because there is fairly limited gold work in the illumination of the Taymouth Hours, shell gold has been used for these areas of the Palmer Hours. This was done to mitigate overall costs of the project.

## Gothic-Style Bindings

The binding of a manuscript is the last stage in the manufacture of a book. Following the rise of universities, the growth in secular manuscript development and consumer demand led to increasing specialization and commercialization of book production. Stationers, or booksellers, received and subcontracted commissions for manuscripts.

Once the calligraphy, gilding, and illumination were completed, the stationer collected all of the components from the craftsmen and assembled the text block. Up until the 19<sup>th</sup> century, many books were bound at the time of sale, according to the client's specifications. This included the "type and style of binding, paying more for extra decoration or higher quality materials."<sup>13</sup>

Throughout the Middle Ages, styles of binding have evolved to include a variety of different methods. In researching different binding styles, one thing in particular about the technique was made apparent. Just like any other craft, changes in

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<sup>11</sup> Cennino d'Andrea Cennini, *The Craftsman's Handbook: Il Libro dell'Arte*, trans. D.V. Thompson (New York, NY: Dover, 2<sup>nd</sup> ed., 1954), 97.

<sup>12</sup> "Glossary: Gilding/Gilt," British Library, accessed 28 March 2017, <http://www.bl.uk/catalogues/illuminatedmanuscripts/GlossG.asp>

<sup>13</sup> Priscilla Anderson, "Fifteenth Century Bookbinding Structure in Italy and the Netherlands: A Survey of Manuscripts and Printed Books," *The Book and Paper Group Annual* 18 (1999): para. 2, accessed 28 March 2017, <http://cool.conservation-us.org/coolaic/sg/bpg/annual/v18/bp18-01.html>

bookbinding technique and style didn't happen overnight.<sup>14</sup> Many of the recognized styles of bookbinding overlapped and coexisted. For the Palmer Hours, a Gothic-style binding technique was used as the most likely binding used in the timeframe of the Taymouth Hours.

The most notable features of Gothic bindings are the shaped boards covered by tanned leather, rounded spines, an increased number of visible, raised bands, and metal fastenings and furnishings. The wood boards were generally shaped and were cut larger than the text block, giving a slight overhang to protect the parchment or paper. The supports used in sewing the text block were alum-tawed leather or vegetable fiber cords. After the text block was bound, the supports were laced through the exterior face of the board rather than the edge. As Jutzi states, doing so tended to pull the spine into a "natural round, which was often made more pronounced with backing hammers and reinforced hide glue and linings on the spine."<sup>15</sup>

## Contemporary Production of a Gothic-style Book of Hours

Production steps are described below. Images of the production are provided in Appendix A.

### *Illumination*

The Taymouth Hours is simply, but heavily, illuminated in tempera colors and gold. It features full foliate borders, base-de-page scenes, and grotesque decoration on every page. The bas-de-page narratives are both secular and religious in nature. The book also features twenty-four miniatures as well as decorated foliate initials of varying sizes. In addition to full foliate borders, the calendar pages contain twenty-four roundels with illumination describing appropriate labors of the month and zodiac signs.

Full foliate borders, calendar roundels, twenty-four miniatures, and foliate initials were illuminated in the Palmer Hours, inspired by the original Taymouth Hours. Grotesque decoration and most bas-de-page scenes were removed from the new illustration.

The illumination is first blocked out in graphite; it is then inked over using the same ink reserved for the calligraphy and all graphite markings are erased for a cleaner design.

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<sup>14</sup> Karen Jutzi, "Medieval and Early Modern Manuscripts: Bookbinding Terms, Materials, Methods, and Models" (New Haven: Yale University, 2013).

<sup>15</sup> Ibid.

## *Calligraphy*

The hand – or writing style – used throughout the Taymouth Hours is the formal Gothic style (Figure 1). The same Gothic hand is used for the calligraphy in the Palmer Hours (Figure 2).

Once the blocking for the illumination is completed, the entire text is written using period-appropriate oak gall inks.

The calendar text was written out with the same pen as the main text, a crow quill nib. The Taymouth Hours records the feasts days in four colors: red, mauve, blue, and gold (Figure 3). Presumably the most important feast days were described in blue and gold, as these are the least frequent colors seen in the calendar pages. For the Palmer Hours, the most important days were again written out in blue ink and shell gold (Figure 4). Other feast days are written out in red ink, and the remaining feast days are written out in iron gall ink. The calendar feast days were then outlined in the same red inks used for the text.

## *Painting*

Once the manuscript has been completely inked and the text completed, the illustrations are painted. Shell gold is applied to designated areas throughout the manuscript (Figure 6). Gouache paints are used for the remaining illustration, layered to achieve desired depth and shading (Figures 7 & 8).

In period, the paints used would have been dried and ground pigments mixed with a binder such as glair or gum arabic. However, because this project was so extensive, modern gouaches were used. Large amounts of paint could be mixed and saved to be used throughout the project to avoid running out of paint and having to re-mix new batches. As gouache is a water-based paint, large amounts of a color can be made and reconstituted for use once dried. Gouache paints are also a close approximation to the paints used in period – modern watercolor and gouache paints use many of the same pigments or pigments designed to match hues of pigments used in period.

The pigments used for the Palmer Hours include ultramarine, vermillion, lamp black, cadmium scarlet, zinc white, and alizarin crimson.

Gouache paints are also bound with gum arabic and will behave much in the same manner as period paints made for illuminating manuscripts. Efforts were made to find pigments that were either the same as those used in period or an appropriate substitute in hue to the paints used in the original manuscript.

After the illumination was completed, the text block was prepared for binding.

### *Bookbinding: Sewing the Text Block*

The text block was prepared for binding by punching holes at equal segments along the spines of each quire (Figure 9), or gathering – the folded segments of parchment or paper. Five holes in total are made along the spines; three for the support bands connecting the quires together, and one on either end to act as additional support for the text block.

The quires were then stacked in the sewing frame to be stitched together. According to Baranov, stitching together the text block was done with the help of a sewing frame. The support bands for the spine are tied to it vertically, suspended from the top and bottom of the frame. The first quire is placed on the bench with its spine up against the taut bands and is sewn through its center and around the bands. The next quire is placed on top and sewn around the bands. The next quire follows, then the next, and so on until the entire text block has been stitched by its spine to the frame.

In a Gothic-style binding, the supports used in sewing the text block were alum-tawed leather or vegetable fiber cords. For the Palmer Hours, three jute support bands are used, and wax-coated linen thread is used to stitch the text blocks (Figure 10). A herringbone stitch is used to bind the quires to the supports, and a kettle stitch is used in the secondary support holes on both ends.

Traditionally, once the text block is finished, the edges are trimmed using a drawknife or a plough. However, this step was skipped. The margins around the folios are close enough to the pages edges to require trimming.

Once the stitching is completed, endbands for additional support and stabilization are sewn to each end of the text block (Figure 11) with jute cord and decorative cotton floss.

### *Binding Boards*

Following the completion of the text block, the cover boards are prepared. In the later Middle Ages, wood boards were used as binding boards for manuscripts to function as the front and back covers. In England, the predominant wood used in bookbinding was oak, although beech was also used.<sup>16</sup> Both of these were the most common woods used on the European continent, though Szirmai noted that several other wood varieties of wood, including; birch, lime, chestnut, maple, poplar, plane, pinewood, and walnut have also been used.<sup>17</sup>

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<sup>16</sup> Ibid., 8.

<sup>17</sup> Ibid.

Boards used for bookbinding were traditionally quartered. In doing so, the growth rings in the wood run mostly perpendicular to the surface of the board. This makes the wood less likely to warp or shrink from changes in humidity.

Baranov mentions that pasteboards were also used, though infrequently, during the Middle Ages, but became more and more common throughout southern Europe. Pasteboards are, in essence, sheets of cardboard formed from layers of waste paper or parchment glued together. While he doesn't cite specific extant manuscript examples, he states that the regions that adopted the use of pasteboards were Spain and Italy; specifically, Bologna, Milan, and Padua.

For the Palmer Hours, quarter-sawn white oak boards were used for the front and back covers, as is appropriate for an early 14<sup>th</sup> century English manuscript.

The oak boards are shaped and tunnels and channels are prepared (Figure 12) for lacing the support bands. In a Gothic binding, the boards are generally left slightly larger than the text block and the edges are beveled. The supports are laced through the front of the covers and attached on the inside of the boards. Board edge shapes varied widely, as did lacing path patterns. A groove is also channeled into the back cover to fit the strap for the closure.

### *Attaching the Boards*

Rabbit hide glue is used to secure the supports to the oak boards and pegged (Figure 12). Once dried, the pegs are trimmed flush to the boards and sanded smooth.

The book is placed over the leather to be fitted and the leather cut down to size. Thin 2oz vegetable-tanned leather dyed red is used. The flesh side of the leather is shaved down to avoid bulking around the folds.

### *Leather Covering*

The spine and the abutting area of leather are dampened with wheat starch paste (Figure 13) and pressed and tied down to dry. Once the spine has dried, the process is repeated with the covers, making sure that the book will be able to be opened and closed without straining the leather. The book is pressed between two boards and clamped and set aside to dry.

The closure clasp is added to the book with a single strap of the same leather attached to the back cover.



## Appendix A: Process Images



Figure 1 (left). Gothic hand, folio 62r. Yates Thompson 13 (Taymouth Hours), c. 1325. Image courtesy of the British Library.

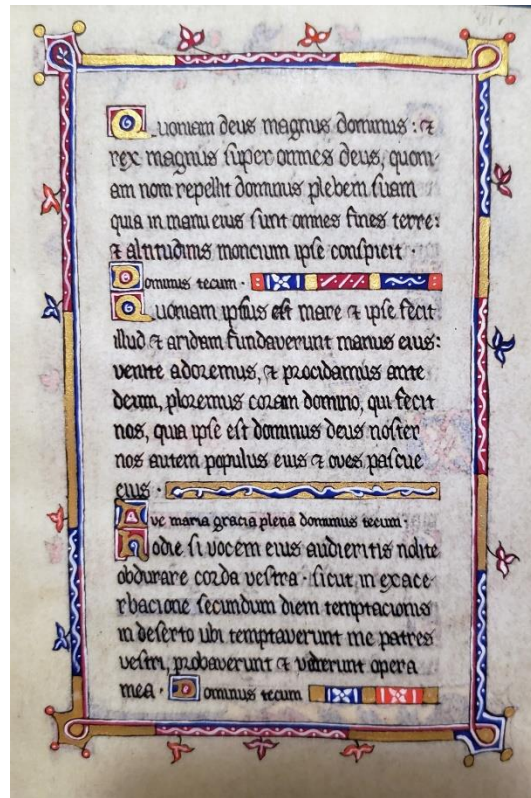


Figure 2. A similar Gothic hand is used for all the calligraphy in the Palmer Hours. Calligraphy is written using a crow quill pen nib and iron gall inks.



Figure 3 (left). Folio 3r, "May." Yates Thompson 13 (Taymouth Hours), c.1325. Image courtesy of the British Library.

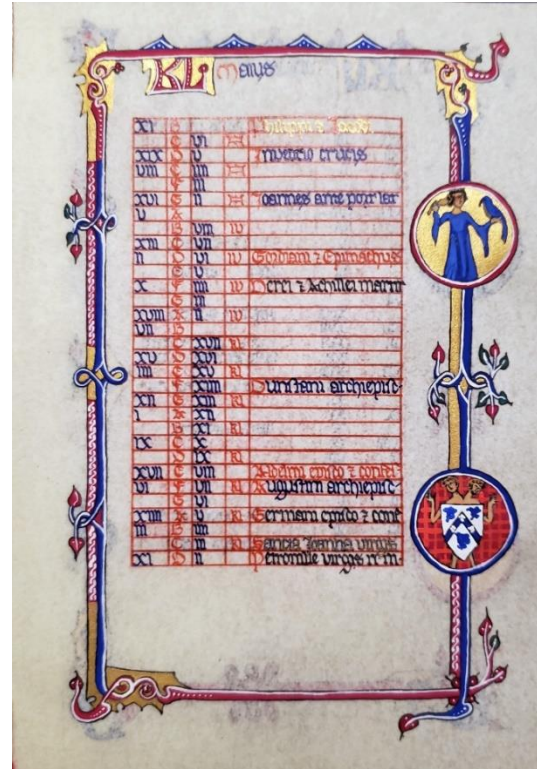


Figure 4. Palmer Hours, "May." Similarly to the Taymouth Hours, the calendar pages of the Palmer Hours are written in gold and blue and vermillion inks.





Figure 5 (left). Incipit miniature for the Office of the Dead, folio 151r. Yates Thompson 13 (Taymouth Hours), c. 1325. Image courtesy of the British Library.



Figure 6 (right). Palmer Hours, incipit miniature to the Hours of the Virgin. Shell gold is applied to specified areas after the line work is finished.



*Figure 4 (right).* Palmer Hours, incipit miniature to the Hours of the Virgin. Gouache paints using appropriate pigments are layered until desired depth and shading is achieved.

*Figure 8 (right).* Palmer Hours, incipit miniature for the Office of the Dead. Gouache paints using appropriate pigments are layered until desired depth and shading is achieved.





Figure 9. Once calligraphy and illumination is finished, the text is prepared for binding. Holes are punched into the quires along the spine.



Figure 10. The quires are aligned on a sewing frame against the jute support cords. Waxed linen thread is used to stitch the quires to the cords with a herringbone and kettle stitch.



*Figure 11.* Cotton floss endbands are added at the head and foot of the spine for additional stability.



*Figure 12.* To prepare the cover, channels and tunnels are carved into oak boards to accommodate the support cords. With a Gothic style binding, the supports are threaded through the outside of the board. The cords are attached with rabbit hide glue and pegged. Once dry, the pegs are trimmed flush and sanded smooth. On the back cover, a channel is carved for the leather closure strap.





*Figure 13.* The spine is glued down to the leather with wheat starch paste. The book is clamped between two boards and the spine is tied down and left to dry. After the spine has dried, the process is repeated with the covers. The leather is glued to the wood boards with wheat starch paste, clamped, and allowed to dry. The leather strap and hook closure is attached after the leather has dried.

## Appendix B: Suppliers

- "Pergamenata: Natural, Full Sheet (160 gsm)." (#PS88-NAT-FS) 100% sulphite, pH neutral  
John Neal Bookseller  
<http://www.johnnealbooks.com/>
- Ferrous Oak Gall Ink  
Lord Ian the Green  
[https://www.etsy.com/listing/629348498/iron-gall-ink-2-fluid-oz?ref=shop\\_home\\_active\\_2](https://www.etsy.com/listing/629348498/iron-gall-ink-2-fluid-oz?ref=shop_home_active_2)
- Winsor & Newton Pigmented Gouache, Various Colors  
Dick Blick Art Materials  
[www.dickblick.com](http://www.dickblick.com)
- Leather Cow Hide  
Reed Wholesale, Amazon.com
- ¼" White Oak Boards (Quarter Sawn)  
Colophon Book Arts Supply  
<https://www.colophonbookarts.com/paperboard/14-inch-white-oak-wooden-boards>
- Lineco Neutral pH Pure Wheat Starch Adhesive  
Plaza Art Materials  
<http://www.plazaart.com/pure-wheat-starch-adhesive.html>
- "Books by Hand" Linen Bookbinding Thread (38 gauge, 50 yards)  
Dick Blick Art Materials  
<http://dickblick.com/products/books-by-hand-linen-bookbinding-thread/>
- Lineco Beeswax (1oz block)  
Dick Blick Art Materials  
<http://www.dickblick.com/products/lineco-bees-wax/>
- Utrecht Genuine Rabbit Skin Glue & Size, Finely Ground  
Dick Blick Art Materials  
<http://www.dickblick.com/products/utrecht-rabbit-skin-glue/>



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