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Calendar for Calculating Easter
In Latin, manuscript on paper
[France (Auxerre?), c. 1400]

i + 10 + i, complete (collation: 1⁴⁰), paper size (205 x 145 mm), watermarks (Briquet 6496, "Fleur à six pétales," Montbrison, 1393-1402; unidentified tête de boeuf sans yeux), incomplete and inaccurate modern foliation in pencil in Arabic numerals, no catchwords or signatures, written in a Gothic cursive bookhand with bâtarde tendencies in brown, black, and red ink, circular tables and rectangular tables, thirteen large rectangular tables with horizontal and vertical double module pricked for ruling in brown ink in 31 lines per table, one large single column rectangular table with horizontal and vertical ruling in brown ink in 28 lines, three small rectangular tables of various size ruled in brown ink, five large circular computus tables of various size ruled in brown ink, one small circular computus table ruled in brown ink, rubrication throughout, ff. 1v, 3r, 8r, 10rv blank, two blank circular tables on ff. 8v and 9r, marginal notations in brown ink on ff. 2rv, 4r, 7r, 8v, marginal notations in second hand in black ink on ff. 5r, 7r, 7v, scribal corrections on ff. 2v, 4r, 5r, 6r, 7rv, moderate bleeding on folios with large circular tables, browning throughout, edges to paper soiled, f. 3 breaking from lower spine edge, marginalia in brown ink moderately faded, upper and lower margins trimmed, slight water staining to upper edge. Bound in modern cardboard with paper covering, flyleaves in modern bonded paper, quire sewing visible on spine, fragment of a printed nineteenth-century breviary used as front and rear paste down overlapping onto front cover, heavy bonded paper used as secondary pastedown over breviary fragment, modern paper used to reinforce joints, fragment of a late fourteenth- early fifteenth-century text in a very faded gothic cursive script describing an undetermined contents of a book used as a front cover binding material, front cardboard shows ledger writing in a seventeenth-century script in brown ink under the paper cover, modern catalogue notation on inside front pastedown "K. 37." Dimensions 95 x 62 mm.

A very rare astronomical manuscript containing the tables and computational data for the calculation of Easter for the period between 1400 and 1440 based on solar and lunar cycles prior to the sixteenth-century reform of calendar calculation under Pope Gregory XII. The importance of this manuscript also lies in the fact that it contains one of the earliest known French examples of the mnemonic device known as Cisiolanus.

PROVENANCE

1. Written in or for the use of Auxerre in the late fourteenth or early fifteenth century. The identification with Auxerre comes from the specific notice for the celebration of the feast of Saint Peregrinus (16 May) on f. 5, who is the patron saint of Auxerre. However, it should be noted that the relics of Saint Peregrinus were translated to the Abbey of Saint Denis in Paris. The dating

derives from the notice on f. 7, which identifies the calculations in the tables for the years 1400-1440.

TEXT

f. 1r, Circular computus table (justification 130 x 130 mm) that identifies the days (by their Cisiopianus syllables) of the movable feasts of Septuagesima, Lent, Easter, Rogation Sunday, and Pentecost according to Sunday letters of the year. The outer ring contains the movable feasts (*nomina festorum*). The inner ring contains the numbers five through ten that equal the number of weeks before Lent. The first column in each part contains the Sunday letters moving inward a-g. The other columns (alternating in rubric and brown ink) correspond to the immovable feasts identified by the Cisiopianus syllables.

f. 2r, Circular computus table (justification 130 x 130 mm) for the calculation of Easter in a leap year. This is divided into nineteen parts, according to the golden numbers. There are seven additional rings corresponding to the Sunday letters, moving outward a-g. Each part consists of three columns. The first column is the Sunday letters, the second column are the calculation numbers needed for correctly identifying the date of Easter in the leap year, and the third column is the numbers of the Paschal regular cycle according to the principals of the Julian Easter.

f. 2v, Computus table (justification 67 x 70 mm) for identifying the day Easter is celebrated. There are three columns used in this table. The first has the golden numbers. The second column is blank except for a marginal note, and the third column has the Paschal term (*luna XIV*) corresponding to each golden number according to the month of the Roman calendar.

f. 2v, Computus table (justification 88 x 115 mm) for identifying the position of the moon in relation to the signs of the zodiac (not the same as Bede's positions). The upper row of this table has the golden numbers. The columns underneath the golden numbers have the "littere signorum," or the letters indicating the position of the moon. The final column identifies these calculations with the zodiac signs in rubric. Another scribe provides a secondary set of Zodiac signs, which are struck out as inaccurate.

f. 3v, Circular computus table (justification 140 x 140 mm) for calculating Easter according to the 76-year cycle that combines the Metonic cycle of 19 years with the leap-year cycle of 4. The outer ring has the 76-year cycle. The second ring from the outside in contains the 30 calendar days of the month. The third circle from the outside in is the 19-year cycle of the Metonic year. The inner most ring contains the golden numbers. The inner box follows the model of computation by Abbo of Fleury to avoid the problem of leap year, which occurs if you calculate from January. The months are listed in order with the beginning of the Cisiopianus for that month, though under March the initial Marti has been omitted.

ff. 4r-6v, Computus tables for the calculation of Easter including immovable feasts for 1400 - 1440 (justification 172 x 44 mm). The first column has the day of the month ("numerus dierum") by forward count instead of the Roman method. The second column has the recalculated golden numbers, four days in advance of the Bedan table. The third column contains the hour of conjunction, reckoned from mid-day. The fourth column has the Sunday letters. The fifth column

is the most interesting. It has the Cisiolanus mnemonic device for remembering the immovable feasts in the liturgical calendar. The sixth column has the "littere signorum," or the letters indicating the position of the moon in relation to the signs of the zodiac (not the same as Bede), though the signs of the zodiac are not listed here.

f. 7r, Circular computus table for the calculation of Easter (justification 58 x 58 mm). The inner ring has the golden number, while the outer ring has the Sunday letters of the entire solar cycle, which properly begins with a leap year GF. The cross at 3 o'clock marks the beginning of the solar cycle; A GF year with golden number 15 would be 1420. That at 7 o'clock seems to indicate post-leap B year with Golden number 3, presumably an oddity of 1389. The red bar is difficult to decipher. It could mean "start or end here." If it starts here, that would be a post-leap-year with Sunday letter A and golden number 10, which would point to 1497, which is also odd. The seemingly miscalculations likely result from the fact that the two circles do not run in complete concordance.

f. 7r, Computus table (110 x 67 mm) for the calculation of Easter. The upper-most row has the regular numbers of the paschal cycle of the Julian Easter. The second upper row has the dominical letters, and the first column has the golden numbers. The numbers within the tables are the golden numbers for the paschal cycle for the years between 1400 and 1440 according to the marginal notes.

f. 7v, Computus table showing the astrological calendar calculated in conjunction with the lunar calendar with a description of the dangers or benefits of hot and cold humors according to the zodiac sign (justification 152 x 92 mm). The upper row has the golden numbers. The columns containing the calculations contain the "littere signorum," or the letters indicating the position of the moon. The margin left of the first column identifies the zodiac position. The scribe has placed his counsels on the good and bad things in the far right margin of the last column corresponding to the zodiac signs on the right.

f. 8v, Circular computus table that uses the solar calendar in conjunction with the Zodiac signs (justification 80 x 80 mm). The table is composed in 12 parts according to the months and zodiac signs. The outer ring has the zodiac sign. These correspond to the inner three rings. The second ring has the hours of the day and the third ring has the hours of the night in order to find the position of the astronomical signs in accordance with months of the year found in the inner circle.

f. 9v, Circular computus table to find the new moon in relation to the days of the Roman calendar (justification 123 x 123 mm). The outer ring has the first mnemonic Cisiolanus syllable for the first day of the month for each month corresponding to the second outer ring, which contains the names of the month. The third ring has Roman dating references regarding the kalends, the fourth ring the nones, and the fifth the ides. The inner ring identifies each month by whether this belongs to the third or fifth cycle. These correspond to the lunar regulars or calculations for the new moon.

This interesting manuscript contains the tables and computational data for the calculation of Easter and other major movable and immovable feast days throughout the calendar year. It employs

several methods of calculation to ensure the proper calculation of Easter given the variants of the Julian calendar and the problems of astronomical calculation prior to the scientific revolution of the sixteenth century. This calendar shows the development of the precision in calculating Easter with the incorporation of the Arabic numerals and astronomical treatises brought into circulation in Europe from the eleventh century onward. The increasing inaccuracy of the lunar tables established by the Venerable Bede was noted in the later Middle Ages to be increasingly problematic. In this calendar, golden numbers are assigned to other days, falling four days earlier than the earlier Bedean tables, which this author does not use.

The calendar tables in this manuscript are designed to function on several temporal levels, from the specific calculations of Easter for the years 1400-1440 on f. 74, to the nineteen-year metonic and 72-year cycles found on f. 3v. Attention is paid to the importance of leap year in the table found on f. 2r and f. 3v. Throughout the manuscript, the author uses solar and lunar cycles in conjunction with the positions of the astrological signs corresponding to each month. One interesting feature is the incorporation of the zodiac with the position of the moon on f. 7v to determine whether or not actions taken during this period would be good or bad as they are attached to the twelve signs.

This manuscript also shows a very early French use of the mnemonic device known as Cysioianus, which appears in several of the computus tables. This device, which used abbreviated syllables in rhythmic fashion, was used to identify the immovable feast days and help calculate the liturgical year. The name of the device comes from the first five syllables of the month of January: "Cysioianus Epy[phany] sibi vindicat Oc[tavus] Feli[x] Mar[cellus] An[tony]..." It consists of 24 hexametrical verses with a syllable for each day in the year. The device likely originated in Northern Germany in the twelfth century, being used most commonly in Eastern Europe and Scandinavia. Erik Drigsdahl notes that the Cysioianus came very late to France, "and was not commonly used before the end of the 15th century, when vernacular versions began to circulate, mainly spread with the calendars in printed books of hours." Given the early date of this manuscript, it may serve as one of the earliest uses of the Cysioianus in medieval France.

LITERATURE

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ONLINE RESOURCES

Medieval calendar tools by O. Lieberknecht

<http://www.lieberknecht.de/~prg/calendar.htm>

Medieval calendar calculator

http://www.wallandbinkley.com/mcc/mcc_main.html

Online calendar of saint's days

<http://www.the-orb.net/encyclop/religion/hagiography/calendar/home.htm>

On reading the medieval calendar

<http://medievalwriting.50megs.com/whyread/calendar.htm>

Internet resources for the calculation of Easter

http://www.phys.uu.nl/~vgent/easter/easter_text6b.htm

The Cisiolanus tables in Latin and French by Erik Drigsdahl

<http://www.chd.dk/cals/cisiojan.html>

Comparable Cisiolanus tables

Universitätsbibliothek Graz, Handschriftenkatalog: Katalogisat 1000, Bl. 52v-59v.

<http://www.uni-graz.at/ub/sosa/katalog/katalogisate/1000.html>

Rodolphe Audette on the history of the Gregorian calendar and Easter reckoning
<http://hermes.ulaval.ca/~sitrau/calgreg/>

Medieval Easter calendar by Karl Hagen
<http://www.polysyllabic.com/?q=calhistory/easter/medieval>