A Definitive Reconstructed Text of the Coligny Calendar

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Introduction

The fragmentary calendar plate from Coligny (near Lyons) apparently dates to the second-century AD, although the Gaulish calendar engraved on this plate is plainly the result of a long transmission process. The 25-year-cycle calendar, the final system of this transmission process, probably originated early in the first-century BC, before Caesar's conquest. It is within this late pre-Roman period that the calendar took on its final form and notation to enter a two-century long transmission process during which many copying errors were introduced (Olmsted 1992: tab. 58).

Embedded within the notation of the 25-year-cycle Coligny calendar is a 30-year-cycle calendar. The notation on the Coligny plate indicates that the original constant-lunar 30-year-cycle calendar system (from which the later shifting lunar calendar developed) had each month begin on the first day of the new moon. In contrast Plinius states (*Naturalis Historia*, XVI: 250; perhaps taken from observations of Poseidonius) that the months and years of the 30-year-cycle Gaulish calendar began on the sixth day of the moon.

> Est autem id rarum admodum inventu et repertum magna religione petitur et ante omnia sexta luna, quae principia mensum annorumque his facit, et saeculi post tricesimum annum, quia iam virium abunde habeat nec sit sui dimidia (Zwicker 1934: 55).

Plinius's statement implies that the earliest Gaulish calendar originated some 1000 years before the period of the observation he recorded. The earliest of the surviving Gaulish calendrical systems had its origins clearly in the late Bronze Age. This 1000-year span of the 30-year calendar is an inevitable conclusion of Plinius's statement. The 30-year-cycle constant lunar calendar runs ahead of the moon by 1 day every 199 years (Olmsted 1992: 70-71, 132-133). Though the months originally began on the first day of the moon, after 1000 years of operation of the calendar the months would have shifted to beginning on the sixth day of the moon.

Because of its long evolutionary development with earlier stages still embedded within the later calendar, the Coligny calendar gives a unique window into the astronomical capabilities of a supposedly barbarian people, the Celts of pre-Roman Gaul. The calendar also contains a large number of abbreviated terms describing the day-to-day operation of the calendar, much of it in a seemingly archaic dialect of Celtic. Most of these terms have a clear functional context so that their meaning is not only discernable but verifiable. Because of its significant astronomical and linguistic implications, the Coligny calendar is undoubtedly the most important inscription from Celtic Europe.

A total of 5 years are arrayed on the calendar plate from Coligny, comprised of 62 months made up of 5 repetitions of the 12 lunar months and 2 intercalary months (see plates 3-5). Except for the first 5-year phase of a 25-year or 30-year cycle, when the first intercalary month is not utilized, each 30-month period (2 ½ years) is preceded by an intercalary month on the calendar. The intercalary months then immediately precede either the normal midwinter month SAMON (**samonios*) "summers end" or the normal midsummer month GIAMON (**giamonios*) "winters end". The intercalary months (Column-1 and Column-9 of the Coligny calendar) are utilized to achieve a realignment of the sun and the moon vis a vis the days counted out by the calendar, which are based upon, but during the stage of the calendar's final 25-year-cycle slightly longer than, the lunar cycle.

Since only 40% of the original five-year Coligny calendar survives as a fragmentary mosaic (plate 2), the reconstruction of the original whole must depend upon recognizing repetitive patterns in the daily notation and filling in the missing sequences in these patterns which can be projected onto the lacunae. The patterns apparent in the recurrent notation on the Coligny calendar already have been set forth in my earlier publications. The most significant of these patterns is that discerned in the schemes of the TII and the N lunar/solar counting marks and their associated notation. Unlike the N notation, the pattern in the TII marks (plate 1) only became clear after first determining the original positions of the shifted days, some of which are specified by ordinal numerals indicating their original day positions (see my article in JIES: XVI (1988), nos. 3-4, pp. 267-339; also see review by Claude Lamoureux in *Études celtiques*: 30, 1994, 313-315, who compared the importance of this article to that of the earlier article of MacNeill in *Eriu* X: 1928, 1-67).

Pinault, one of the coauthors along with Duval of RIG: III: *Les Calendriers,* has also accepted my reconstruction of the original pattern in the distribution of these TII marks and their associated terminology (in a review in *Gnomen* (1996), vol. 68: 706-710), although indicating reservations about some of the etymologies for rarely- or uniquely-occurring terminology indicated on the calendar (which I had suggested in a fuller study of the calendar (*The Gaulish Calendar*, Bonn 1992). Pinault accepted as well my suggestion that these marks functioned as a lunar/solar counting scheme.

> Il est évident que P.-M. Duval était conscient que ... ces signes [trigrammes] avait bien une raison d'être don't il n'avait pu trouver la clé. L'idée de relier ces trigrammes (qu'il désigne commodément par TII comme sigle général) aux notations PRINNI LOVDIN et PRINNI LAGET et d'en faire des indicateurs en rapport avec les solstices est, sans aucun doute, l'idée la plus féconde de l'Auteur [Olmsted]... En raison de l'abondance relative des TII (de l'ordre de 200), il a été possible d'élaborer sur ordinateur différents schémas de distribution qui ont abouti à son tableaux 28 et aux 29-32 permettant de déterminer la date des solstices dans le cycle de 25 ans. C'est là semble-t-il un apport capital à la compréhension de la mesure du temps chez les Gaulois. Cela s'obtient au meilleur prix: dans DP [Duval et Pinault] 411-415, j'avais tendé de justifier l'hypothèse de Mac Neill sur un mois EQVOS, pourtant cave, de 30 d aux années I, III, V, mais 28 d aux années II et IV. Si cela apparaît certain en I, II, III et V, c'était moins évident en IV et comme l'hypothèse d'Olmsted d'un EQVOS IV de 29 d, scripturairement possible, permet d'expliquer l'ensemble de l'économie du calendrier, je crois qu'il convient de s'y rallier.

Thus the reconstructions of the counting scheme patterns and their functions toward keeping track of the lunar and solar pathways have been accepted by the scholars who have studied the calendar most closely. So why do I now return to a new study of the calendar? At the time of my earlier studies there was no readily-available means of verifying that the reconstruction of the notational patterns of the calendar in typescript (Olmsted 1992: 137-168) actually did fit into the space provided by the lacunae in the fragmentary calendar mosaic without cramping. Any convincing reconstruction must fill in the missing letters to the same size and spacing as the surrounding lettering, while still aligning with the surviving notation and partial notation engraved on the calendar plates. By its very nature, working from a typed transcript, even with the photos of the fragmentary months in hand, is one step removed from the actual reconstruction process and thus potentially prone to error.

The foremost question in my mind at the time of my original study was whether or not in every instance there actually was room enough in the lacunae separating the surviving fragments of the calendar to contain the missing notation suggested by the patterns apparent in the surviving notation. The actual computer-generated photographic reconstruction of the calendar presented here was developed to alleviate these concerns.

Using a photo-processing program (*Adobe Photoshop V*) segments duplicating the missing notation were copied from surviving fragments of the Coligny calendar and then were utilized to fill in the missing sequences on the calendar maintaining the original spatial integrity of the fragmentary mosaic (originally reproduced digitally at high resolution from the RIG: III originals to ¾ scale and 1200 dpi halftone, but of necessity depicted here at much lower resolution in the month plates to ½ scale and 300 dpi grayscale to comply with the printer's specifications and shown in plates 2 and 3 at about ⅛ scale). Indeed, the original fragmentary mosaic (plate 2) is still embedded in the digitally-reconstructed whole calendar (plate 3). Thus the fragmentary calendar was brought to photographic completion utilizing the original wording and engraving to be found on the surviving fragments.

As the photographic reproduction presented here actually preserves the original fragments of the calendar, the typescript reconstruction presented in my1992 study is shown to be one which fits within the parameters of the original calendar and lines up with the surviving notation. The reconstruction of the calendar based upon the date patterns of the surviving notation presented in my previous studies do indeed fit convincingly within the lacunae. Furthermore, these reconstructions fit within the alignments for the notation worked out by the original engravers of the calendar.

Except for a few insignificant changes in word order or in the wording of the abbreviations probably utilized in specific locations, in only a single instance was a correction in the nature of the notation developed in my 1992 study actually necessary. On day 5 of month 12 Cantlos in year 5 (see plates) the IIT notation should not be indicated alongside of N, even though IIT is the correct mark for that date. It is also now clear that the fuller phrase DS MA NS cannot occur on day 15 of month 5 Ogronios in year 3 (as suggested in my 1992 study) simply because there is not enough room in the lacuna, and the shorter abbreviation NS DS for the same term must have been used here instead.

But for these minor corrections having no significance for the operation of the calendar, this computer-driven photographic reconstruction of the Coligny calendar verifies that my 1992 reconstruction of the distribution of the notation on the calendar is one certainly capable of fitting within the surviving parameters of the calendar. To the extent that the 1992 reconstruction accurately discerns the repetitive patterns on the calendar, it is one that is likely to be correct. For anyone attempting to understand the nature and working of the Coligny calendar, the 1992 reconstruction is adequate.

Nonetheless the computer-driven transcription given here does more accurately reflect the probable original wording of the abbreviated terminology and the alignment of this notation on the calendar. In this sense it is technically more accurate, although the 1992 reconstruction just as accurately reflects the semantic content of the original calendar. Aside from verifying the adequacy of the 1992 transcript, one of the major results of this study is to bring to light new details about the engravers techniques and the minute linear and chronological units utilized on the calendar which previously had been unnoticed.

The Engravers' Techniques

The first task of this new study was to determine the measurement system utilized in ruling off the lines and columns of the calender, so that the measurements utilized in ruling off the original calendar plate could be preserved in the reconstruction. Measurements across multiple columns with interconnecting fragments yield the most consistent results indicating that a standard length was used to rule off the columns of the calendar. Ten measurements across from 2 to 5 different columns (ave. 3.2 columns), defined by the rows of Roman numerals set forth for the days of the calendar, give 8.27 ± .06 cm. or 3.26 ± .02 inches per column (8.20, 8.27, 8.40, 8.20, 8.24, 8.30, 8.27, 8.20, 8.30, 8.27 cm. per column). The average of fourteen individual measures from the full-scale photographs given in RIG: III give similar results of 8.29 ± .17 cm or 3.26 ± .07 in. (3.24, 3.18, 3.30, 3.34, 3.29, 3.23, 3.28, 3.16, 3.30, 3.34, 3.22, 3.38, 3.19, 3.26 in. per column) but with three times the margin of error.

The increased margin of error across individual columns is to be expected if the engraver used a ruler laid out across the plate and marked out the columns to plus or minus one fifteenth of an inch. If a movable block equal to one column in width had been used to established the standardized column widths, the error across three columns would be increased by a factor of the square root of three times that found across single columns or ± .10 in., five times larger than that actually found. Assuming each column was marked off along the edge of a scaled ruler to a length of 3.0 Gaulish inches then gives 2.76 ± .02 cm per Gaulish inch for the more accurate multiple column widths (2.76 ± .06 cm. for the individual columns). Examination of the mean distance between columns and month names indicates that an "inch" equal to 2.76 ± .02 cm was utilized for all of the measurements on the calendar.

The Roman "foot" or *pes* was equivalent to 29.6 cm, yielding a "inch" or *uncia* (equivalent to one twelfth of a Roman foot) of 2.47 cm. (.97 English inches with 2.54 cm. per English inch). Clearly the calendar was not ruled off in standard Roman *unciae*. The long Greek foot of 32.6 cm. yields an "inch" of 2.72 cm., considerably closer, but still outside of the standard deviation of the most accurate measure of the unit apparently utilized in ruling out the calendar. However, the standard of Roman Gaul and Roman Germany during the late first century BC, the *pes Drusianus* of 33.0 cm., yields an inch of 2.75 cm. (1.08 English inches) (Price and Lang 1970: 659). Clearly this was the measurement unit most likely utilized on the Coligny calendar. Since the *uncia Drusianus* is only 1% larger than the Greek inch, it was probably adopted by the Gauls from a unit used by the Greeks in Massalia.

Operating under Tiberius, Drusus Germanicus subdued the Raeti and the Vindelici in 15 BC. In 13 BC he was put in charge of the three Gauls by Augustus. He dedicated an alter to Rome and Augustus at Lugudunum (now Lyons) on August 1 in 12 BC (Momigliano and Cadoux 1970: 365-6). Although the Coligny calendar plate is clearly a copy of an earlier calendar plate, it's present format was set up after 12 BC. Also since the calendar was found just outside of Lyons, it would make sense that it was ruled out in the standard of the *uncia Drusianus*. It seems likely that Drusus simply adopted the prevailing Gaulish inch, since otherwise he would have utilized the Roman standard. Thus the standard utilized on the calendar was most likely a Gaulish "inch" of 2.75 cm. or 1.08 English inches.

The Coligny engravers began with a bronze plate measuring 134. 8 cm. long (49.0 *unciae Drusianus*) by 78.0 cm. high (28.4 *unciae Drusianus*). With the rim attached the plate measured 52.0 by 32.0 *unciae Drusianus*. The engravers then began from the left side of the plate and measured off 15 columns each 3.0 *unciae Drusianus* wide, leaving the sixteenth column 3.5 *unciae Drusianus* wide. They began next at the bottom of the plate and measured up 6.5 *unciae Drusianus* for the bottom month-name line and 6.5 *unciae Drusianus* for each of the next two month-name lines. For the top month names they sometimes started a little above the standard line. The top month-name line averages about 2.5 *unciae Drusianus* below the edge of the top rim. The ANTENOVX lines are established at about 3.25 *unciae Drusianus* (midway) between the month-name lines. After making the month-name lines and the columns in this fashion, they filled in the numerals for the first 15 days in each month. Then they started at the top of the next month-name line and numbered backwards towards the middle for the ATENOVX days. They filled in ATENOVX in the space left between the two 15-day counts for each month.

The engravers then made all of the TII marks, followed by the M's. Next they made the left-hand lines for the D's, but stopping where N occurs in place of D or MD for more than one day in a row. For example in Cutios year-1, the D lines stop at ATENOVX IV and four N's are made, one at each of four the next five days. The D lines are then begun again at ATENOVX VIIII, but shifted slightly more to the left than previously. In other months the left line of each N, particularly starting in year-2, lines up with the left line of each D. Thus for each letter a line is simply ruled out for each day of the calendar and the rest of the N or D is left to be filled in afterwards. But one should note that the letter lines in ELEMBIV year-3 are rather poorly ruled out.

To the right of the D's or N's, the B's of the D AMB's and the R's of the N INIS R's often line up in a column, as if these were all made at the same time for a given month or column. The last items made were the drill holes for the movable pin or pins.

The reconstructed text of the Coligny calendar presented here followed these measurement patterns to the same degree observed in the surviving fragments. Thus the reconstruction can be seen to be one which is not forced upon the calendar, but one which is compatible with the actual design plan, engraving techniques, letter size, and word spacing patterns of the original engravers of the calendar.

Monthly and Yearly Time Reckoning

Although the patterns apparent in the notation have already been outlined elsewhere, a brief description of the function of the solar and lunar counting schemes found on the calendar is necessary to understand the working of a recently-discerned D-AMB or AMB moon-rise counting scheme. This AMB scheme appears to utilize the same type of logic as the schemes which apparently kept track of the solstice dates. It also provides a logical explanation for the function of this term AMB. However, the scheme must be put forward as only a suggestion since the pattern of AMB is simple enough that it is possible that it fitted some other function or is purely random. The credibility of the suggested AMB scheme rests upon its similarity to the other more certain counting schemes on the calendar. Of necessity, I must outline here the nature of the more certain counting schemes.

Before examining these other counting schemes one must first give an outline of the arrangement of days on the calendar. In illustrating the sequence of variation of the 29-day and 30-day months on the Coligny calendar outlined here, double slanted lines // indicate a six-month division. I have used parentheses () around the intercalary month and brackets [] around Equos. The month of Equos is singled out for the following reason. Equos clearly has 30 days in years 1, 3, and 5, yet it strangely has the notation ANM, found elsewhere describing only the 29-day months. On the calendar all of the 30-day months have the notation MAT or MATV. For this reason most observers of the calendar have suspected that Equos had fewer than 30 days in either or both of years 2 and 4. In the first year of each five-year period except for the first year of a 25- or 30-year cycle, the Coligny calendar follows the following pattern in the lengths of the months: (30) //, 30, 29, 30, 29, 30, 30, // 29, 30, [30], 29, 30, 29. In year 3 the pattern is 30, 29, 30, 29, 30, 30, // (30) //, 29, 30, [30], 29, 30, 29. The addition of the intercalary months to years 1 and 3 causes each year to increase to 385 days, where they would otherwise contain 355 days. In addition to counting the actual days in these years, the notation at the beginning of the second intercalary month (in the middle of year 3) states that this year contains a total number of days (LAT) equal to CCCLXXXV and a total number of months (M) equal to XIII. Each of these years with intercalary months has an average of 29.6154 days in each month. Year 5 does not have an intercalary month so the pattern is 30, 29, 30, 29, 30, 30, // 29, 30, [30], 29, 30, 29 to give 355 days. The months in this year have an average of 29.5833 days each. If Equos had 28 days in year 2, year 2 would contain only 353 days. For year-2 the pattern would be 30, 29, 30, 29, 30, 30, // 29, 30, [28], 29, 30, 29. The months in this year would then have an average of 29.4167 days. If Equos had 29 days in year 4, year 4 would contain 354 days. For year 4 the pattern would be 30, 29, 30, 29, 30, 30, // 29, 30, [29], 29, 30, 29. The months in this year would average 29.5000 days. Of course if Equos had 30 days in each of the years 2, 4, and 5, each would contain 355 days to give the same pattern as year-5 above and an average monthly length of 29.5833 days, which is considerably longer than a standard lunar month of 29.5306 days and would cause the calendar to go out of whack with lunar time by around half a day each year. The situation would be even worse during years with intercalary months containing 385 days (13 months) and an average monthly length of 29.6154 days.

To approach the lunar cycle, clearly Equos would have had to have fewer than 30 days in years 2 and 4.

In years 1 and 5 and presumably in year 3 (with lacunae) there are 5 IVOS days at the end of Equos, beginning on day 26 and continuing to day 4 of the following month Elembiu (years 1 and 3 extant) to give a total of 9 IVOS days for each of years 1, 3, and 5. However, the IVOS notation extends to day 5 of Elembiu in year 2 with the end of Equos missing because of lacunae. This extension of the IVOS festival suggests that Equos is missing some days in year 2, and the total length of this IVOS festival period would otherwise be foreshortened. The end of Equos and the beginning of Elembiu are missing in year 4. The ending of the IVOS festival is unknown here. Remember also that Equos is listed as an ANM "incomplete" month even though years 1, 3, and 5 clearly have 30 days. This extra IVOS day in the beginning of Elembiu in year 2 and the notation ANM describing Equos is why previous observers such Mac Neill and Pinault have suggested that Equos had fewer than 30 days in year 2, and by extrapolation, year 4 as well, where the final part of Equos and the entire month of Elembiu are missing. As we shall see, if it were not the case that Equos had fewer than 30 days in these years, the calendar would go hopelessly out of whack with both lunar and solar time.

In the 30-year cycle after an initial 5-year phase of 1801 days in which solar time falls back by 25.21 days (5 X 365.2422 = 1,826.21 days), there follow five 5-year phases of 1831 days during which the sun regains 4.79 days in each 5-year period so that after 5 such 1831-day periods the sun has gained back 23.95 days. Thus in every 30-year period the sun falls back by 1.27 days with respect to the calendar. The calendar priests in their counting schemes would have assumed an initial fall back of 25 days during the first 5-year phase and that the sun gained back this fall-back by 5 days in each subsequent 5-year phase, giving a series of 5-year Intercalary-1 solstice dates occurring at the beginning of each 5-year phase of 1, 26, 21, 16, 11, 6. But notice that the sun actually is still one day later than the daily notation of the calendar so the next 30-year cycle would give intercalary-1 solstice dates of 2, 27, 22, 17, 12, 7 etc (see Olmsted 1992: tab. 24a).

However the counting schemes on the Coligny calendar actually show a progression of TII 5-year intercalary-1 solstice counts of 1, 25, 19, 13, 7 to be followed in the next 25- or 30-year cycle by ITI day counts of 2, 26, 20, 14, 8 and in the final cycle by IIT day counts of 3, 27, 21, 15, 9. To follow this progression one should consult plate 1, Sam 1 M, and one should also see on the month plates: month 1, year 2, where Samonios day 3 and the expected IIT mark have been transferred to Samonios 2a, labeled *tri(ti)nux samo* "the third night of Samonios" (also see Olmsted 1992: tab. 26a-28d). The TII marks and the N counting scheme, clearly indicated on the calendar, all show this same progression (see Olmsted 1992: tab. 43). Thus in Samain we have *prinni loudin* 1, *prinni loudin* 7, TII 13, TII 19, TII 25 //; ITI 2, ITI 8, ITI 14, ITI 20, ITI 26 //; IIT 3, IIT 9, IIT 15, IIT 21, IIT 27. Notice in the scheme the count is completed with only 5 five-year solstice dates rather than the 6 five-year phases of the 30-year cycle and that each solstice date is separated by 6 days rather than the 5 days of the 30 year cycle. The only way this can happen is if the initial count is a 5-year phase of 1802 days during which the sun progresses 1,826.21 days falling back by 24.21 days, to be followed by four 1832-day five-year phases in which the sun gains back 5.79 days in each five year phase. Four of these 1832-day phases add up to 23.16 days (4 X 5.79), which is 1.05 days shorter than the initial fall back. Of course the calendar priests would have seen this as an initial 24-day fall-back to be recouped in four 6-day advances, one occurring in each new five-year phase. If the same 1-day overall fall-back in the sun was assumed in each 25-year cycle as the ITI marks' advancing by 1 day show (in Samain TII = 1, 25, 19, 13, 7; ITI = 2, 26, 20, 14, 8; IIT = 3, 27, 21, 15, 9), then the whole scheme is error with the sun by only 0.05 days in a 25 year period. The N-count indicates the same dates as the TII scheme (Olmsted 1992: tabs. 20, 26a-b).

The lunar reckoning of this 25-year calendar is interesting as well. The 25-year calendar contains 9130 days (1802 + (4 X 1832)). 25 solar years contain 9131.05 days (25 X 365.2422), 1.05 days longer than the calendar. The 25-year calendar contains an initial phase of 61 months followed by four phases each of 62 months for a total of 309 months. 309 lunar months contain 9124.95 days days (309 X 29.5306), 5.05 days shorter than the calendar. Thus year-26 begins with the sun 1.05 days behind the calendar and the moon 5.05 days ahead of the calendar. These amounts total almost exactly 1 day behind for the sun and 5 days ahead for the moon, a solar accuracy equivalent to the Gregorian calendar. But notice that if the triple marks divide each 15-day period indicated on the calender into 3 periods of 5 days each (the Old Irish *cóicde*), then with each 25-year phase the moon would shift into the next 5-day week. Thus TII indicates not only the first 25-year phase but the first 5-day week of the moon as well. ITI indicates not only the second 25-year phase and falls appropriately one day later in the calendar (for the 1-day fall back in the sun), but it also indicates the second 5-day week of the moon. IIT not only indicates the third 25-year phase and falls later by an additional day from ITI, but also indicates the third 5-day week of the moon. With each 5-year phase the moon progresses by exactly one additional day within each week dominating the 25-year cycle.

Notice that this 25-year cycle has 1802 days and 1832 days in the 5-year phases rather than the 1801 days and 1831 days of the 5-year phases in the 30-year cycle. This extra day in each 5-year phase would arise by giving Equos 29 days in year 4 rather than the 28 days in year 4 necessary for the 30-year cycle. Equos would still have 28 days in year 2 accounting for the extra IVOS day in Elembiu year 2. Thus in years 1, 3, and 5, the IVOS count for the end of Equos and the beginning of Elembiu would be 9 days with 5 IVOS days at the end of Equos (30 days) and 4 IVOS days at the beginning of Elembiu. In year 4, 4 IVOS days would occur at the end of Equos (29 days) and 4 IVOS days would occur at the beginning of Elembiu for a total of 8 days. In year 2, three IVOS days would occur at the end of Equos (28 days) but now 5 IVOS days would occur at the beginning of Elembiu for a total of 8 days. Like MacNiell's scheme, the 25-year scheme still accounts for the extra IVOS day in Elembiu year 2. The ANM notation for Equos is assured in both counts since Equos has fewer than 30 days in years 2 and 4.

It is clear that the 25-year calendar was adapted from Plinius's 30-year Gaulish calendar by simply giving an extra day to Equos in year 4 making it 29 days long rather than the original 28 days. It is the completeness of these schemes and their accounting for the TII distribution that caused Pinault to call for the adoption of my 25-year scheme in his *Gnomen* (1996: 706 ff.) review.

A Brief Description of the TII Counting Scheme

The TII scheme (plate 1) normally counts only in the MAT (30-day) months in the first half of the year when the sun daily rises in the sky (the *loudin* half of the year) and in the ANM (29-day) months in the second half of the year when the sun daily lowers in the sky (the *laget* half of the year). The *loudin* "rising" solar pathway thus occurs in the 4 MAT "complete" months in the first half of the year, and the *laget* "lowering" solar pathway occurs in the 4 ANM "incomplete" months in the second half of the year. In this scheme 3 days are added each time the count shifts from a MAT to an ANM month or vice versa, which normally occurs at 6-month intervals. In this way the TII-count normally tallies out 12 days each year (one day for each month), the same as with the N-count, to be discussed below.

To keep track with the sun the TII counting scheme must limit the 30-month count to 27 days. This limitation is achieved by the use of alternating anomalous day counts, which occur every other time the solar fall-back count reaches day 28 (see 1992: tables 28b-d). In the anomalous count the ANM months are used in the *loudin* half of the year in place of the normally utilized MAT months, and the MAT months are used in the *laget* half of the year in place of the normally utilized ANM months. Rather than skipping forward and adding 3 days at the solstice, the anomalous marks then count days 29 and 30 around to day 1 for the next solstice in Samonios or Giamon. Through such a scheme only 27 days are counted in each 30-month period (Olmsted 1988: table 10a; 1992: table 32).

The distribution of the marks TII, ITI, and IIT are determined by the latest of these solstice counting schemes, for which these marks actually form the counting sequence (1988: tables 6a-b). The greater complexity of this TII counting scheme is in itself an indication of its final stage in the developmental sequence. Rather than a TII mark, the notation *prinni loudin* and *prinni laget* count out days 1 to 8 of the solar pathway for the first 25-year cycle. Although the TII marks have a distribution analogous to that of the N found in the N-counting scheme, the reconstructed sequence of the mark TII simply continues the counting pattern from days 9 to 30 of the *prinni loudin* and *prinni laget* notation. But note that the ITI and IIT marks, which begin at days 2 and 3 and go through day 30, count out the second and third 25-year cycles respectively.

The total scheme for the whole TII, ITI, IIT series generates marks at 510 days (of which more that 200 survive, distributed randomly because of the random mosaic of the surviving pieces of the calendar). Thus for the first 25-year cycle, *prinni loudin* and its associated TII marks count the 30 MAT months found in the 5 years of the calendar, and *prinni laget* and its associated TII marks count the 30 ANM months. For the second 25-year cycle the ITI marks do the counting, and for the third 25-year cycle the IIT marks do the counting.

Since nearly 200 marks survive and fit this simple reconstructed pattern, also found in the PRINNI notation, there can be no doubt in the reconstruction itself. The pattern is perfect with all of the marks either surviving in their proper place and sequence or fully reconstructable with lacunae in the appropriate places. With the possible exception of the distribution of D AMB, the reconstruction of the TII marks is perhaps the most certain item on the calendar.

However, with the conclusively-verified total of 1832 days in a 62-month period, as noted above, the moon runs 1 day ahead of the calendar in each 5-year phase. Furthermore, in place of MacNeill's and Plinius's 30-year cycle, such a calendar follows a 25-year cycle. In such a repetitive 25-year cycle the sun falls 1.055 days behind the calendar and the moon runs 5.048 days ahead of the calendar in each cycle (as opposed to 1.266 days error for the sun and 0.151 days error for the moon in the 30-year cycle).

Under the scheme of the 25-year cycle the normal sequence of marks TII, ITI, IIT, each falling one day apart, can be explained as an indication of the regular 1-day lag in the sun in each such 25-year cycle. Thus the triple marks stand for a triple sequence of 3 separate 25-year cycles. Since with each advance in a 25-year cycle the months all begin in a new 5-day week of the moon, the three mark-types (TII, ITI, IIT) also stand for a 3-fold division of each lunar fortnight (with 3 five-day phases in each fortnight). For each new 25-year cycle the TII marks then indicate the advance of the lunar-week phases as well.

The nature of the TII mark thus not only indicates the 5-day week phase of the moon under which the months in each 25-year cycle begin, but the mark also denominates the cycle as a whole. Furthermore, to the 5-day lunar-week indicated by the TII mark one can simply add an additional day for each 5-year phase passed through in the 25-year cycle to keep exact track of the moon. The TII mark then gives not only the number of the 25-year cycle and the corresponding fall-back of the sun, but the 5-day phase of the moon with which each month begins in that cycle as well!

With the TII marks the calendar then keeps track of the regular 1-day regression of the sun and the 5-day progression of the moon with respect to the calendar in each 25-year cycle. The actual reckoning of the position of the sun would be off by only 0.055 days and that of the moon by only 0.048 days in each 25-year cycle. Thus the calendar scheme falls into error with respect to either body by less than 1 day in every 455 years!

This extreme accuracy of the 25-year cycle may be compared to the error in the 30-year cycle of 0.266 days with respect to the sun and 0.151 days with respect to the moon in each 30-year cycle (with the 30-year calendar assuming the same 1-day known lag of the sun and an exact lunar sequence; see 1992: tables 45a and 46a and b). Under the 30-year cycle the reckoning with respect to the sun would fall into error by 1 day every 113 years, an accuracy in itself comparable to that of the Julian calendar, but in no way approaching the accuracy of the 25-year cycle. The lunar reckoning for the 30-year cycle is more accurate than the solar reckoning, being off by 1 day every 199 years.

If as seems likely, and indeed is actually demanded in the evolution of the calendar scheme itself, a 30-year cycle which closely followed the moon, preceded the 25-year calendar with its shifting lunar phases, a good motivation can be seen for the change from the 30-year to the 25-year cycle. The 25-year cycle was 4 times more accurate in its prediction of solar positions and nearly 3 times more accurate in its prediction of lunar position. Indeed through this scheme Gaulish calendar priests developed by far the most accurate solar and lunar predictor in the ancient world.

The major reason the TII counting schemes have been difficult to discern is that the TII marks were shifted along with the other day notation in the schemes for shifting days within the months or between months. However, one can work out the origins of these shifted days precisely because each TII mark was shifted along with the rest of the day from its original position on the calendar. Thus the shifted TII marks are out of order with the schemes, and they can be returned to their original positions, since this also returns the regularity to the original pattern. Where these shifts do occur, the calendar indicates the original position by naming the day and the month from which it was shifted (Olmsted 1992: tab. 6c).

Thus D PETIRIVRI ANAG now found at Rivros 8a in year 3 and [D] PETIVX ANAG now found at Rivros 8a in year 2 come from Anagantio day 4. M D or N OCIOM RIVRI or OCIOMV RIVRI now found at Anagantio 4 in year 2, 3, 4, and 5 comes from Rivros 8a (day 23 = 8a in the notation of the calendar which recounts after the first fortnight of 15 days (15 + 8 = 23)). The TII pattern across the 5-year period given in the calendar guarantees that the shifts are correct. One can easily reconstruct **pet(u)riu Anagant* and **oc(t)iomu Rivri* "from the fourth of Anagantio" and "from the eighth of Rivros" for these days which the TII pattern shows that they can only have been shifted from day 4 of Anagantios and day 8a of Rivros through an interchange of days. In a similar fashion *trinux samo* or *trino samoni* at Samonios 2a (17) can be show from the TII pattern to come from Samonios 3 and *[D Du]m ele* on Samonios 3 to come from Dumannios 2a. First Samonios 2a and Dumannios 2a exchanged days, and then Samonios 3 and Samonios 2a exchanged days. Thus Samonios 3 now has the notation *[D Du]m ele* and Samonios 2a has the notation *trino Samoni* or *trinux Samo*. Putting the two abbreviations together, *trinoux Samoni* can be expanded as *tri(tio) noux Samoni* "from the third night of Samonios" (as *petiux* above could be expanded as *pet(uar)iu (no)ux*). The *ele* of *[D Du]m ele* is at least suggestive of an abbreviation of a corrupted Gaulish *aliu*, dative of *alios* (?**aleu*?). There should be little problem with seeing ordinal numerals naming the origins of these dates which independent analysis shows must come from the days the abbreviated ordinals indicate. This is after all a calendar. In English we also say, "Jim returns to school on the *fifth* of September."

The abbreviations in the month names, many removing letters from the middle of words, as in *Wm.* for *William*, show that the abbreviations in ordinal day names are of the expected types. Thus the month Semivisonns occurs in the nominative singular abbreviated as *Simivis, simivi,* and in the genitive singular abbreviated as *simis, simivisonn, simivisonna.* Year-1 provides *simiviso, simivis, simiso, simivi.* Year-2 provides *semiviso, semi.* Year-3 provides the additional variant *simi.* Year-4 provides *semivi, semiv, sim* and the corrupt form *[sem]bv* for *[sem]iv.* Year-5 gives the additional abbreviation *[si]mivs.* Dumannios has *dumanni, dumani, dumann, dumn, dum.* Anagantio has *anagan, [an]agtio, anagantio, anag, anagtios.* Samonios has *samon, sam, samoni, samo, and smo.* I think that one can see that these ordinal numeral day abbreviations are consistent with other abbreviations on the calendar (such as occur in these months names).

The term DEꝹORIV G PIVRI for DEC*V*ORIV G PIVRI or DEC*I*ORIV G PIVRI occurs on Rivros 13 in year 1. Here the C is written over top of the left hand fork of the V making the reading ambiguous as a correction to CI or CV. The apparent L in the alternative reading DEVO R LVGO (suggested by Pinault 1986: 427) is simply the result of the engraver mistakenly starting to chisel out another D, as the I of RIV occurs directly in line with back side of the line of D's indicating *divos.* The G is very close to an O which is almost but not quite closed. The PIVRI is clearly a mistake for RIVRI. I think that what was intended here was *DECIO*M*IV G *R*IVRI or *DECIO*M*V G *R*IVRI, with the M misinterpreted as a RI at some stage in the transmission process and the phrase misconstrued and reconstructed as DECIO RIV G RIVRI. Year 2 has [...]MIV G RIV - IVO and year 4 has [....]IV - G - RIVRI, [....], so that the reconstruction DEC*I*O*M*IV G RIVRI or DEC*I*OMV G RIVRI "from the tenth G(...) day of Rivros" for year 1 seems safe enough. This reading can scarcely be doubted, once one understands that this day was transferred to its present location on the calendar from Rivros 10a..

No TII mark is associated with this day date, as indeed no mark should occur on either Rivros 10a or 13. As we have seen, Rivros 4 was transferred to Rivros 10a. This transference then suggests that first Rivros 4 and Rivros 10a exchanged days, followed in turn by an exchange between Rivros 4 and Rivros 13 (1992: table 7d). Such an exchange would place Rivros 13 at Rivros 4, Rivros 10a at Rivros 13, and Rivros 4 at Rivros 10a. To emphasize that such an exchange has taken place that this is actually day 10a or Rivros rather than day 13, the usual Roman numeral has been left off of the beginning of this day, the only instance of leaving off the day number on the calendar. Clearly DECIOMIV “the tenth” goes in place of the expected XIII “the thirteenth”.

Even without the DECVORIV of Rivros 12 year 1, correctable to DECIOMIV on analogy with OC(T)IOMV above, one may reconstruct the form [DECIO]MIV for the ordinal numeral designation of the day now found at Rivros 13 year 2, since we know that this day was transferred from Rivros 10a year 2. The form [DECIO]MIV guarantees that the R or RI of DECVORIV should be corrected to an M and that our surmise, above, was correct. This reconstruction would then project a Gaulish ordinal numeral **deciomo-s, *deciamo-s* "the tenth" corresponding to IE **dek$_e$mo-s* (IEW: 192), an alternative to the attested Gaulish *decametos, decometos* corresponding to IE **dekm-to-s* (IEW: 192). The La Graufesenque sherds give *decometos* as well as *decametos* (Lambert 1996: 131). Latin preserves a similar form *decimus* "tenth" (see Buck 1933: 230-1), but an older form *decumus* also survives. As a Celtic form **decuomios* seems less likely than **deciomios*, the I is probably a better reading than the V for the DECIO*M*IV/DECVO*M*IV indicated by conflating the forms on the calendar. I would speculate that all these ordinal numeral forms in *-iamo-* or *-iomo-* applied only to the days of the month, while the other forms in *-am-eto-* applied to adjectival applications of the ordinals. Otherwise, we may be simply viewing a dialect variation or an archaism.

Since Rivros day 4 originally comes from Rivros day 13, one would then expect the ordinal numeral for day 13 to occur here. If BRIC is seen as an error for *TRIC, just as PRINO above at Samonios 2a has been seen by all observers to be an error for *TRINO, the reconstructed ordinal form is clear. Combining BRIC, [..]ICIO, and [.....]OMV gives **T*RICIO and *TRICIOMV. *TRICIOMV could be seen as an abbreviation for *TRI(TIO-DE)CIOMV "from the thirteenth", as in Latin *trēdecim* "thirteen" and *decimus* "tenth" (see Buck 1933: 230-1). However, one should note the Latin ordinal *tertius decimus* "thirteenth" and Greek *trītos kai dēkatos* "thirteenth" with both the "three" and the "ten" given in ordinal form. The Irish form is *tris deac* "thirteenth" ("the third of ten"). One would then have to assume a form on analogy with Latin *duodecimus* "twelfth" and *duodecim* "twelve" to develop **trideciomos*. More likely then is **tritios deciomos* (dative = ?*tritiu deciomu*?) or perhaps compounded as **tritio-deciomos* (dative **tritio-deciomu*) for the original form behind *TRICIOMV.

The N-Counting Scheme

The N-counting scheme represents the first stage in the development of the procedures to predict the position of the sun with respect to the lunar-based calendar. Since the intercalary months recapitulate the pathway of the sun with respect to the calendar, superficially the N-counting scheme might seem to have developed from the notation of the intercalary months. MacNeill (1926: 40) was the earliest researcher to note that N "falls at dates from which the days of the intercalary months derive their notation". MacNeill's proposal was later catalogued by Duval in 1966 (277-88). However, like MacNeill, Duval failed to understand N's true significance, labelling it "*N commémoratif*". Duval, thus, adopted MacNeill's erroneous view that the N's represent a commemoration of the days utilized in the intercalary notation.

In spite of the failure of previous researchers to grasp its significance, the N-counting scheme works in a simple straight-forward fashion. Considering the other counting schemes on the calendar, there can be no doubt whatsoever as to the function of N. With each month's advance, the calendar simply indicates a 1-day advance in the notation N (see Olmsted 1992: table 20). Here N stands for **noux* "night" and is itself a shortening of NS, presumably for **noux sonno* "a night of the sun". During a **noux sonno* the calendar priests apparently assumed that the sun retraced backwards the progress it made during the course of that day. Such a 1-day retrenchment each month would then explain the 1-day lag behind the moon each month. This 1-day advance in N thus accounts for the roughly 1-day lag of the sun behind the moon with each passing month. Since there are 29.531 days in a lunar month, but 30.437 days in 1/12 a solar year, in the course of a month the sun actually lags behind the moon by 0.906 days, which is close to 1 day.

The connection between the days labeled N and the notation of the intercalary months is in reality somewhat fortuitous, although both derive from the same ultimate source. The notation of the intercalary months corresponds to the 30 days added to the calendar to make up for the 1-day lag of the sun behind the calendar which is supposed to occur each month during the 30 months between each intercalary month. The N notation, found at dates increasing by 1 day each month, counts out this fall-back of the sun during a given 30-month period. On average the N's actually count only 27 days in each 2 1/2-year (30-month) period, since a block of 6 days is skipped in each 5-year (60-month) period. Thus both the intercalary-month notation and the N notation fall on the same days of the month (but in differing years), although each is an independent aspect of the way the calendar deals with this solar fall-back. The similarity between the two items arises from the fact that both the intercalary-month notation and the N-notation independently increase a day for each month traversed, thus falling on Samonios 1, Dumannios 2, Rivros 3, etc., each attempting to keep track of the actual solar path.

To fully comprehend this situation, we must first examine the actual solar and lunar pathways of the 30-year Gaulish cycle mentioned by Plinius. In the course of a year (365.2422 days) the sun lags behind 12 lunar months (354.3671 days) by 10.8751 days, and in the course of 5 years (1826.211 days) it lags behind 60 lunar months (1771.835 days) by 54.376 days (see table 45a). However, if 1 intercalary exact lunar month (29.531 days) is added to the 60 months to make up the 5-year period, the sun will lag behind exact lunar time by only 24.845 days. If 2 intercalary exact lunar months are added, the sun will then be able to leap ahead of exact lunar time by 4.686 days every 5 years. Five such 5-year phases each with 2 intercalary months (5 X 4.686 = 23.430 days) will therefore come within 1.42 days of making up for one initial 5-year phase with 1 intercalary month (with 24.845 days fall-back).

Calendars, however, must deal with an whole number of days. In a calendar with 1831 days in 62 months (as opposed to the exact lunar cycle above with 1830.897 days in 62 months), since there are 1826.211 days in 5 solar years, the solstices will occur earlier by 4.789 days (1831 - 1826.211) every 5 years rather the 4.686 days of the perfect lunar calendar above. Five of these 1831-day phases thus add 23.945 days. However, an initial phase of 1801 days will lose 25.211 days (1826.211 -1801). In this 30-year calendar, these five 1831-day phases, each generating 4.789 days, gradually eat away this initial 25.211-day fall-back. Thus the 30-year cycle will consist of a total of five 1831-day 5-year phases added to an initial 1801-day 5-year phase. As the total from the last five 5-year periods is not quite equal to the initial fall-back of the first 5-year period, the sun will fall back 1.266 days (25.211 - 23.945) over the whole 30-year cycle.

Let us next examine the 25-year cycle which is actually indicated on the Coligny calendar. This 25-year cycle is developed from the 30-year cycle by adding an additional day every five years to the 30-year-cycle calendar. In this 25-year calendar there is an initial phase of 1802 days followed by four 5-year phases of 1832 days. In a calendar with 5-year phases of 1832 days (as opposed to the 1831 days of the 30-year cycle), shifting 1 day with respect to the moon every 5 years, since there are 1826.211 days in 5 solar years, the solstices will occur earlier by 5.789 days (1832 - 1826.211) every 5 years. Four of the 1832-day phases thus add 23.156 days. In this 25-year calendar, these 4 phases, each generating 5.789 days, gradually eat away an initial 24.211-day fall-back (1826.211 - 1802). Thus the 25-year cycle will consist of a total of four 1832-day 5-year phases added to the initial 1802-day 5-year phase. As the total from the last four 5-year periods is not quite equal to the initial fall-back of the first 5-year period, the sun will fall back 1.055 days (24.211 - 23.156) over the whole 25-year cycle, almost exactly 1 day.

In these calendar schemes the two intercalary months, comprising 60 days, are theoretically added to make up the supposed 60-days fall-back of the sun, 1 day for each month of the 5-year period. But as we have seen above, in adding these extra 60 days, the sun actually leaps ahead in each 62-month phase by either approximately 5 days or approximately 6 days, depending on whether the calendar contains 1831 days or 1832 days. These extra intercalary days will then cause the intercalary solstices to occur either 5 days earlier each phase after an initial fall back of nearly 25 days in the 30-year cycle or 6 days earlier each phase after an initial fall-back of nearly 24 days in the 25-year cycle. In the first 25-year cycle, for example, after the first midwinter solstice on day 1 of Samain, the midwinter intercalary solstices will occur at 5-year intervals on days 25, 19, 13, and 7 and the midsummer intercalary solstices will occur on days 28, 22, 16, 10, and 4.

To account for the discrepancy in the 60-days fall-back predicted by the 1-day fall-back each month (the intercalary months are not counted in the fall-back) and the fall-back actually observed in cycling through the calendar, the N-counting scheme on the Coligny calendar simply shifts forward a block of days once in each 5-year period, a block of days equal in length to the number of days the sun leaps ahead (the number of days the solstices occur earlier) in each such period. If we closely examine the N-counts proceeding from the intercalary solstices at Int-1 days 25 and 13 (see 1992: tables 20 and 26b), we see that the counts actually do skip 6 days. With such a scheme one can keep track of the sun with an inherent variational error of about ± 3 days. But note carefully since 6 days rather than 5 days are leaped over in the Coligny N-counts, the calendar must have had 1832 rather than 1831 days.

Although on the Coligny calendar the N-counting scheme adopts a 6-day shift consistent with an 1832-day calendar, the N counting scheme system itself makes more sense as a solstice predictor in a calendar with 1831 days. With the present 6-day shift, the count leaps over the solstices in Qutios in years 6 and 16 (1992: table 26b). With a 5-day shift it would not do this (1992: table 24a-b). This leap over the two solstices suggests that the present 1832-day calendar (recycling every 25 years) actually developed from an earlier 1831-day exact lunar calendar (recycling every 30 years).

Adopting a 5-day leap, alternately at the beginning and in the middle of each 5-year phase, this earlier 1831-day calendar then simply moved the N forward a day each month to account for the approximate 1-day fall-back of the sun each month. Such a calendar is capable of predicting solar positions within ± 3 days and is inaccurate by an additional 1 day ever 113 years. In keeping track of the sun, this purely lunar calendar assumes a 1-day known shift every 30 years.

The counting scheme of the 1831-day calendar is simple enough that it could have been used in a purely oral calendar. Indeed, the known shift of the calendar with respect to solar time by 1 day every 30 years suggests that the calendar was deliberately allowed to progress 1 day earlier with respect to the sun every 30 years. This 1-day fall-back of the sun with respect to the calendar every 30 years has the effect of shifting every 30 years the lunar festivals associated with the solstices and equinoxes 1 day earlier than solar time and the actual events these festivals commemorate. On the Coligny calendar such festivals are labeled IVOS and always occur as a block of days centering around day 1 or 1a.

As noted, such a 30-year cycle calendar would have to have been in operation for 1000 years to explain why the months began on the sixth day of the moon as recorded by Plinius. By his time the Gaulish calendar had shifted by five days from the original scheme of the months beginning on the first day of the moon (1 day's shift for each 199 years). The term ATENOVX "returning night" (indicating the full moon) on the sixteenth day of each month of the Coligny calendar would imply that the Gaulish calendar originally began on the first day of the new moon. After 1000 years of operation not only would the Gaulish calendar have begun each month on the sixth day of the moon, but in any given year the oscillating lunar festivals associated with midwinter and midsummer would have occurred between 1 and 1 ½ months earlier than the actual solar events. This shift in the festivals could have provided the impetus for the reform bringing in the 25-year calendar.

If the Celts who settled Ireland had a calendar similar to the 30-year Gaulish calendar, it could explain why the medieval Irish celebrated midwinter (*samain*) on November 1 and midsummer (*beltaine*) on May 1, each around 55 days before the actual solar event. Over the course of some 1500 years operation, the lunar festivals associated with the solar events would have shifted to such an extent in the normal course of the 30-year calendar. On the Coligny calendar *samonios*, clearly cognate with Irish *samain*, is definitely associated with the winter solstice, which normally occurs in that month (except during and immediately following an intercalary month.

The Possible D AMB Moon-rise Counting Scheme

The concept of dividing the daytime and the nighttime into 12 hours each was known by the Hellenistic Greeks (*hōrai*) and the Republican Romans (*horae*). To measure these hours in the daytime, the most commonly utilized instrument was the sundial (Greek: *hōrológion*; Roman: *solarium*), which was supposedly invented by Anaximandros (610-540 BC). This would place the concept of the hour within the Grecian Classical phase (Rose 1970a: 253; 1970b: 1075). If the following analysis of the function of AMB or D AMB on the Coligny calendar is correct, it suggests that the concept of an hour was known to the Gauls as well, who must have adopted the sundial from the Greeks in Massalia (founded c. 600 BC).

Over the course of the 29.54 days of a lunar month, the time that the moon rises or sets falls back approximately 24 hours with reference to the sunrise. Over the long term this daily fall back must average 49 minutes per day. A glance at any ephemeris table will show that there is considerable variation from month to month in this fall back with a standard deviation of plus or minus 17 minutes. The minimum time, around 26 minutes, that the moon rises and sets later each day at the new and full moons is reached close to the autumnal equinox when the sun rise occurs between one to two minutes later each day and the sun set occurs between one to two minutes earlier each day. The maximum time around 74 minutes for the new and full moons are reached during the vernal equinox when the sun rise occurs between two to three minutes earlier each day and the sun sets between two to three minutes later each day. The maximum and minimum time of the daily lunar fall-back around the first and last quarter moons occurs at the solstices, when the sun and moon reach their maximum perpendicularity. The full moon rises at twilight in the evening almost exactly 1 hour later than the previous day at the date closest to the winter solstice, and the new moon sets at twilight in the evening almost exactly 1 hour later than the previous day at the date closest to the summer solstice, which may be the original reason for the day being divided up into two periods of 12 hours each.

Also one might note that in traversing from Midwinter to Midsummer solstice in the region of Traverse City, Michigan (45 degrees, at approximately the same latitude as Lyons, 46 degrees), the hours of daylight increase from 9 hours a day to 15 hours a day with 12 hours of daylight at the equinox. Thus the length of time the sun shines each day gains or loses approximately 1 hour each month depending on whether or not one is in the rising half of year or the falling half of the year.

To follow the trajectory of the moon each month, a simple counting scheme could assume that the moon falls back 12 hours with respect to sunlight in each fortnight of fifteen days, and over the long run it would be accurate to around ± 2%. The easiest way to construct such a scheme would be to assume that during the period between the full moon and the new moon, the moon will rise an hour later each day, and during the period between the new moon and the full moon, the moon will set an hour later each day, but it will skip the count for 3 days in each such fortnight. Such a scheme also could be effected by counting backward every fifth day except for day fifteen.

This regimen of counting backward approximately every fifth day fits the pattern of the notation D AMB in the first fortnight of the Coligny calendar, as this notation occurs on days V and XI. A similar fall back is assumed for the sun in the concept of the *noux sonno* outlined above in counting out the supposed fallback of the sun vis-a-vis lunar time by one day each month. In the *noux sonno* scheme, the sun is assumed to retrace its pathway backwards during the night so that it begins the next day at the same position as the previous day.

The D AMB scheme would count the hours later than sunset the moon sets each day beginning with the new moon as follows: (new moon) I D 1 hr, II D 2 hrs, III D 3 hrs, IIII D 4 hrs, V D AMB 3 hrs, VI D 4 hrs, VII D 5 hrs, VIII D 6 hrs, VIIII D 7 hrs, X D 8hrs, XI D AMB 7 hrs, XII D 8 hrs, XIII D 9 hrs, XIIII D 10 hrs, XV D 11 hrs; (full moon) ANTENOVX I D 12 hrs, ANTENOVX II D 1 hr, ANTENOVX III D AMB 12 hrs ANTENOVX IIII D 1 hr, ANTENOVX V D AMB 12 hrs, ANTENOVX VI D 1 hr, ANTENOVX VII D AMB 12 hrs, ANTENOVX VIII D 1 hr, ANTENOVX VIIII D AMB 12 hrs, ANTENOVX X D 1, ANTENOVX XI D AMB 12 hrs, ANTENOVX XII D 1 hr, ANTENOVX XIII D AMB 12 hrs, ANTENOVX XIIII D 1 hr, ANTENOVX XV D AMB 12 hrs; (new moon) I D 1 hr, etc. Here the indication 12hrs would be equivalent to 0 for the hours till moon rise following the sunset.

Notice that the scheme does count the time of moon set between the period between the new moon and the full moon, assuming the new moon occurs at the beginning of each month, as occurred at the beginning of the 1000-year period during which the 30-year calendar was in use. During the ATENOVX half of the month, assuming this occurs between the full moon and the new moon, when the moon rises and sets an hour later each day and the crescent becomes smaller and smaller, a period of increasing darkness, the D AMB counting scheme simply ratchets between 12 hrs (0 hrs) and 1 hr. The whole scheme simply counts the time elapsed till the onset of the period in which starlight will be the sole source of light after sunset. The calendar seems to be only interested in how much additional time each night will be lighted by the moon after sunset and has no concern with how much additional moonlight is added to the period preceding dawn. Obviously if a sundial is the sole means of telling time, the span of time preceding dawn could not be accurately determined.

Such a scheme indeed suggests the use of a sundial which starts each day at a sunrise of 1 o'clock; the calendar counts around the additional hours of lightness which will be added to daylight by moonlight after sunset. Perhaps in the pseudo-science of the calendar, this D-AMB counting of the period the moon sets later each day may have been tied to the concept of the *noux sonno*, whence its importance in being noted on the calendar.

If this analysis is then correct, it indicates that not only did the Gauls utilize an inch measure to subdivide the foot, but they subdivided the day into 12 hours as well. Although the *unciae Drusianus* is certain, the Gaulish hour is less certain, but it would seem to be implicated in a possible counting scheme which is repeated in every month of the five years indicated on the calendar. Furthermore, since the notation D AMB is fixed throughout the entire calendar, like ATENOVX it must relate to the constant lunar or 30-year phase of the calendar. It must be dated to the earlier phases of the calendars development and thus, presumably, predate the Roman conquest.

Terms Utilized on the Calendar

Through the projection of structural tables for all the notation on the calendar one may discern the function and significance of the various daily terminology (as in my 1992 study). Every item of reconstruction rests upon the same footing, the discernment of patterns in the remaining fragments which can be projected to completion on the missing sections. Through such a process the calendar can be reconstructed to a state containing 99% of its original notation before it was broken into fragments. The functioning of virtually all the calendar's notation thus can be explained, including the smallest details of distribution. With this functional understanding plausible etymologies can be projected for most of the calendar notation.

Pinault in his review of my 1992 study of the calendar called into question my interpretation of the etymological significance of some of the terms on the calendar. "En résumé, on a ici un travail très stimulant et qui fait beaucoup progresser la recherche sur le comput celtique même si on peut rester réservé sur l'interprétation calendaire d'inscriptions rares ou uniques" (Pinault 1996: 709-710). For the significance of the month names, other the Samonios, Giamonios, and Equos, which are certain, all etymologies must remain speculative. My 1992 suggestions for the month names are probably not less valid than any one else's suggestions. I see little need to return to them here.

For the recurrent terms apart from the month names, their function determines their significance. With the determination of the function, plausible expansions and etymologies can be given for the terms themselves. Nonetheless a problem is apparent in the phonetic symbols utilized for the etymologies given in my 1992 study. This problem arose from the limited character set available in column-mode in Word Perfect 2, in which the original tables and text for my 1988 and 1992 studies were developed. The work had to be printable from diskette so that no hand corrections could be made. Thus for é the symbol é was available but for ē only è was available, etc., creating confusion whenever ē, ā, or ō was called for in the text and è, à, or ò were used instead. The standard PIE phonetic symbols utilized by Pokorny were also unavailable in column mode. Therefore it is justifiable to return to the etymologies of some of the more important recurrent terminology whose significance can hardly be in doubt.

Because of the more or less random unsystematic technique of applying abbreviations on the calendar, dropping internal as well as ending letters (as in SIMIVIS, SIMIVISO, SIMISO, SIM, SIMIS, [SI]MIVS for the month name *SIMIVISONNS) functional understanding has to precede etymological speculation. Without first producing structural tables, who could guess the significance of terms such as TIOCOBRIXT and TIOCOBREXTIO for *T(R)IOCO(NTO)BRIXTIOS, TRINO and TRINVX for *TRI(TIO)NOVX, PETIVX for *PET(VAR)I(ONO)VX, and OCIOMV for *OC(T)IOMV, all of which are now known to contain numerals.

The significance of the terms utilized on the calendar first must be determined through analyzing the function of each term in the operation of the calendar. Such an analysis of the function of the terms is, of course, impossible without first reconstructing the complete operation of the calendar as whole. Such a reconstruction was accomplished in my 1992 study. Thus, with this understanding of the calendar's operating system as a background, I return again to the problem of the highly abbreviated terminology on the calendar and its significance. Only when the functional significance of each term has been determined is any attempt made to ascertain an expanded form of the term and a possible etymology. Any attempt to analyze the significance of terms without first analyzing their function on the calendar is worthless. Nor, can terms be analyzed in isolation without studying their relationship to other terms on the calendar. Thus it is the fundamental operating assumption of the analysis presented here that only after the meaning of an abbreviated term first has been established through a complete analysis of its usage on the calendar can one attempt to expand the abbreviated term to its probable original full form, and only then can one attempt to establish an etymology.

The shifted days with written-out ordinal numerals indicating which days they were shifted from provide prime examples of the need to examine the terms in their *zusammenhängend* relationship to each other. The degree of abbreviation, the corruption in the transmission process, and the archaism of the suffixes otherwise makes it difficult to recognize what the terms are. Outside of my own studies (1988b, 1992: 79-85) only TRI(TIO) and PET(VAR)I have been recognized independently as numerals (Thurneysen 1899: 540; Lambert 1996: 110, 112). Since the origins of the shifted days can be established independent from any etymological speculation from the TII-mark patterns alone, it can be determined further that the TRI(TIO) "third" of SAMON found on day 17 of SAMON indeed comes from the third day of that month, the PET(VAR)IV "from the fourth" of RIVRI found on day 25 of RIVROS indeed comes from the fourth day of that month, and the PET(VAR)IV "from the fourth" of ANAGANT found on day 23 of RIVROS indeed comes from the fourth day of ANAGANT. It is clear here that we deal, moreover, with the ordinal rather than the cardinal form of these numerals. Since the **A*LE (single attested corrupted form ELE) "from the second" of DVMAN found on the SAMON day 3 comes from the second day of the ANTENOVX of DVMAN, the OC(T)IOMV "from the eighth" of RIVRI found on day 4 of ANAGANT comes from the eighth day of the ANTENOVX of RIVROS, the DECIOMIV "from the tenth" of RIVRI found on day 13 of RIVROS comes from the tenth day of the ANTENOVX of RIVROS, and the **T*RI(TIODE)CIOMV(single attested corrupted form BRICIOMV for **T*RICIOMV) "from the thirteenth" of RIVRI found on day 4 of RIVROS comes from the thirteenth day of that month, other ordinal numeral forms become apparent as well. Without a study of all of the forms in relationship to one another, a determination of the pattern of shifted days, a determination of the pattern of the TII marks, and a determination of the origin of the shifted days, only one of these ordinal forms, PETIV, would have been readily recognized. Even worse, endless unsupported etymological speculation as to their significance in isolation would continue to masquerade as scholarship.

The archaic ordinal numerals suggested by these corrupted abbreviations are **(a)lios; *tri(ti)os; *pet(ur)ios, *pet(uor)ios* or **pet(uar)ios; *oc(t)iomos; *deciomos;* and **(t)ri(tiode)ciomos* or **(t)ri(de)ciomos*. These ordinal forms correspond to PIE **al̯i̯os* (IEW: 25), **triti̯os* (IEW: 1090-1), **ku̯etur-i̯os* (IEW: 642-3), **oktomos* or **oktou̯os* (IEW: 775), **dekₑmos* (IEW: 191). These ordinal forms also correspond to attested Gaulish forms from La Graufesenque *alos, allos* (Lambert 1995: 131, Thurneyson 1946: 249, but Ir. *aile* (< **alios*), *tritios* (Lambert 1995: 131), *petuarios* (Lambert 1995: 131), *oxtumetos* (Lambert 1995: 131-2), *decometos, decametos* (Lambert 1995: 131-2, Thurneysen 1946: 250). On the whole the ordinal forms are as close to those of PIE as they are to the attested Gaulish forms, suggesting an archaic language of culture of the Gaulish calendar priest, as Sanskrit is the language of culture of the Brahman priests of India and Latin that of the Catholic priest of Spain, Italy, and France.

No valid etymology or even significance can be suggested for any term on the calendar without first determining how that term functions within the overall working of the calendar. Even valid etymologies for the month names cannot be suggested without first determining what present months of the year they roughly correspond to. It is clear, even without reference to the significance of LOVDIN or LAGET, that the PRINNI LOVDIN counting scheme corresponds to the half of the year when the sun is rising in the sky and this count takes place between SAMON and GIAMON. The PRINNI LAGET counting scheme corresponds to the half of the year when the sun is lowering in the sky and this count takes place between GIAMON and SAMON. It follows necessarily that the winter solstice occurs in SAMON and the summer solstice occurs in GIAMON. Such is simply a fact of nature: the sun daily rises in the sky between the winter and summer solstices and daily lowers in the sky between summer and winter solstices. Since the root _sam-_ "summer" is apparent in SAMON and the root _giam-_ "winter" is apparently in GIAMON, SAMON can only indicate "the end of the summer half of the year", and GIAMON can only indicate "the end of the winter half of the year". Irish _samain_, presently falling on November 1, ends the _samrad_ half of the year, and _beltaine_, presently falling on May 1, ends the _gemrad_ half of the year providing close parallels, so one need hardly belabor the case. However, on the Coligny calendar, SAMON corresponds to the winter solstice and not to November 1 as with Irish _samain_. With the one-day progressive fall-back of solar time every 25 years with respect to the Coligny calendar or Plinius's Gaulish calendar, the Irish festivals apparently gradually became out of sync with the solar year, accounting for the present dating of the Irish festivals.

Knowing the fact that SAMON corresponds roughly to January, makes it clear that Pinault (1962: 149) and Lambert (1996: 110) must be incorrect in seeing the significance of the name of the eighth month SEMIVISON, corresponding roughly to August, as "milieu du printemps" corresponding to Old Welsh _guiannuin_ "spring" (<_*u̯es-ant-eino-_). Since Lithuanian _vasarā_ (<_*u̯es-r-_) means "summer" and derives from the same IE root, clearly there are other possibilities for the significance of SEMIVISON. In this light the first stem *semi-* may be related to **sem-* "summer" (IEW: 905) as readily as to **sēmi-* "half" (IEW: 905).

Pinault, however, was correct in his *Gnomen* criticism of my 1992 work (1996: 710) to suggest that the utilization and significance of a term need not necessarily coincide with its etymology. Where the expanded forms of the abbreviations and their etymologies seem transparent, nonetheless, I have no hesitation in suggesting not only what the expanded form was but in utilizing it as such in the analysis of the functioning of the calendar. Where the etymologies are less certain, I enclose the expanded form in question marks (?...?). It should be clear that the function and significance of the abbreviations is much more certain than their expanded forms and possible etymologies. Where the abbreviations differ, but clearly signify the same term, all of the abbreviated forms are first collated to eliminate errors in transcription and to develop the fullest form possible of the abbreviated term.

AMB: ?

AMB occurs at days 5 and 11 in the fortnight before the *atenoux* (dividing the month into two halves) and at the odd days except for day 1 in the fortnight after the *atenoux* (thus days 5, 11, 3a, 5a, 7a, 9a, 11a, 13a, 15a). Notably then, AMB occurs only on odd days. In the *matus* "complete, orderly" 30-day months the days which are not labeled D AMB are designated by M D for **matus divos* "good day" or "orderly day". Since the D is apparently the same abbreviation in M D and D AMB, the significance of D AMB, which thus must stand for **divos amb-*, would seem to contrast with M D, standing for **matus divos* "good day".

On analogy with ANM for **anmatus*, Mac Neill (1928, 33) suggested that AMB stands for the Gaulish negative prefix *an-*, derived from IE **n-* (IEW: 757-8), followed by a word beginning in *b-*. If AMB, beginning with a negative prefix, is then to contrast with *matus* "good, complete, orderly" , the significance of B(...) may be similar in context to that of *matus*. But just what this term may have been is anybody's guess (perhaps Irish *bil* "good, fortunate", glossed by O'Clery as *maith* is relevant). However, it is by no means certain that Mac Neill's suggestion is correct.

Since the MAT (*matus*) months contrast with the ANM (*anmatus*) months, it is reasonable to conclude that the M D (*matus* *divos*) days contrast with the D AMB days. Here then just as M stands for *matus*, AMB could stand for AM B **anmatus b(...)* or AM-B **anmatub(...)* as a compound. AM could then be the compound form of ANM *anmatus*. D AMB would then indicate “a day of disorderly B(..)”. The B could stand for any number of stems. Celtic **belo-* (<**bhel-*) “shining, white” (IEW: 118-119) or IE **bhel-*, **bhlē-* “to swell” (IEW: 120), as in here “to wax” spring to mind. These possibilities would fit the D AMB moon set counting scheme outlined above. Because of the uncertainties, however, the abbreviated term AMB is best left unexpanded. All one can conclude reasonably is that AMB occurs on many of the odd days, that it somehow contrasts with M for **matus*, and that it may be involved in a lunar counting scheme.

ANM: **anmatus*: "incomplete, inauspicious".

The term ANM occurs beside the names of the months of the five-year cycle which have fewer than 30 days (usually 29). ANM alternates with the term MAT, which occurs beside the names of months having 30 days. The term MAT also occurs in the third line of the first intercalary month as MATV. Since MATV, if this is not an error for *MATI, almost certainly stands for *matus* "good, complete, orderly, lucky", ANM would appear to be the opposite term, as it typifies the incomplete and apparently inauspicious months. Thus ANM would indicate the month was "incomplete" and contained fewer than 30 days. With near certainty ANM may then be expanded to **anmatus* or **anmatis*, with *an-* the negative prefix as in Irish and Welsh *an-* derived from IE **n-* (IEW: 757-8).

The significance of **anmatus* would appear to be more than just "incomplete", however. The days of the first fortnight of the *matus* months, except days 5 and 11, and day 1 plus the even days of the second fortnight are labeled M D or MAT D. Here MAT D for **matus divos* can hardly mean "complete day", but it might signify "good day, lucky day". If the AMB moon-set hourly counting scheme is correct **matus divos* would indicate “orderly day”, when the time till moonset increases in an orderly fashion by an hour each day. In this scenario D AMB would indicate a day when the orderly count did not occur, but actually subtracted an hour from the count instead. Clearly like AMB the significance of **anmatus* must have included "unlucky, bad, disorderly" as well as "incomplete".

The MAT months also count out the LOVDIN "waxing" solar pathway, and the ANM months count out the LAGET "waning" solar pathway. One should note that the quality of the day, D or M D is always transferred with the solar path mark TII. Thus the significance "propitious" and "unpropitious" for MAT and ANM must arise as an aspect of the relationship to the solar path. The MAT "propitious" months all count in the *loudin* "waxing" solar pathway, and the ANM "unpropitious" months all count in the *laget* "waning" solar pathway.

ATENOVX: "(fortnight of) returning night" or "(fortnight of) increasing nighttime".

This term is used to divide each month into two fifteen-day periods (Irish *cóicthiges* and French *quinzejours* "fifteen days", partially equitable to the English *fortnight* "fourteen nights"). For the ANM months the second fortnight has only 14 days (except for Equos which has 15 days in years 1, 3, and 5; 13 days in year 2; and 14 days in year 4).

Lambert (1996: 112) suggested that ATENOVX may be analyzed as **ateno* VX, where VX stands for the number 15 and **ateno-* stands for **ate-nou̯i̯o-* "*renouvellement*", thus a "recommencement of 15 days". Although intriguing in isolation, this suggestion makes little sense in the context of the calendar, where day 15 is always written as XV, as in the normal usage for Roman numerals, and never as VX. Furthermore, NOVX apparently is already found in the abbreviations TRINVX and TRINO for the expanded term TRI(TIO)-NOVX "the third night", where the context and significance of *tri(tio)-* as "third" is certain. The second element in this abbreviation thus must be *noux*. Since *noux* is independently verifiable as occurring on the calendar, it is elementary to analyze *atenoux* as the common prefix *ate-* and *noux*. Mac Neill (1926: 16) suggested the significance "return of night" for *atenoux*, perhaps after Nicholson's 1898 etymology from **atenouxtion* "period of further nights". Here then *ate-* would go back to IE **ati-*"over, beyond" (IEW: 70) and would relate to Irish *aith-* "again" and Welsh *at-*. In the context of a calendar with enumerated days (and nights) it seems certain that NOVX derives from IE **noku̯-t-s* "night" (IEW: 762), as in Irish *i-nnocht* "tonight" and Welsh *nos* "night". The Welsh and Irish forms suggests a derivation from **nokt-s* (IEW: 70), which would give a Gaulish **nox*. **Atenoux*, perhaps for **atenucts*, might then have developed from **atinoku̯ts* perhaps through vowel raising. It is uncertain whether or not *-ou-* stands for a diphthong or it represents a transcription from an earlier calendar written in archaic Gaulish with Greek lettering and epigraphy (for **atenucts*), after the significance of the original archaic term had been forgotten.

If the original purpose of the term ATENOVX was to divide the month into waxing and waning halves, its significance is probably "returning night" or "increasing night". The use of *atenoux* "increasing nighttime" suggests the 25-year cycle with its shifting lunar cycle post-dates the use of the expression. Thus the term *atenoux* is another indication that the 30-year cycle, which followed the lunar phases almost exactly, preceded the 25-year cycle. In the thirty-year constant-lunar calendar, day 16 would correspond to the full moon with day 1 corresponding to the new moon and 29.5306 days per lunar month. Each night following the full moon would increase in darkness as the moon decreases in size each night and appears later by nearly an additional hour each night in its time of rising. There is independent evidence that such a thirty-year cycle was indeed the system of the earliest-known Gaulish calendar (1992: 132-134), not to mention again Plinius.

In the 25-year cycle with the lunar phases advancing 5 days in each 25-year period no such correlation with constant moon phases is possible. If Samonios 1, year 1, begins at the winter solstice on the new moon (it's darkest phase), then 77 1/2 years later Giamonios 1, year 78, will begin on the summer solstice on the full moon (day 16). The lunar and solar cycles will then shift through waxing and waning cycles every 77 1/2 years.

The origin of the term ATENOVX must date to the period before the 25-year cycle, since it clearly refers to fixed lunar conditions. ATENOVX "returning night" therefore refers to the period beginning with the full moon, which at the origin of the 30-year cycle would have occurred on day 1a. At first sight this reference to returning night at the full moon seems paradoxical. However, we must remember that the full moon begins the waning fortnight. "Returning night" does aptly describe the process of the moon waning, with the crescent getting smaller and smaller and appearing later and later in the evening as the nights grow increasingly darker and darker. "Returning night" also describes the process of the ever-increasing period of darkness during the month in which the sunset precedes the moon rise by roughly an hour longer each day until the new moon.

D: DS: **divos*: "day".

This term occurs independently frequently as DS and D, and apparently once as DIB (1-12-29), where the context DIB CANT clearly suggests the significance "a day of Cantlos". It apparently also occurs in compounds as -DIV and -D (in SINDIV and SIND), and also probably as DIV- and DIVO- (in DIVERTOMV, DIVORTOMV). The stem here is likely to be the **divo-* "day" suggested by Dottin (1918, 252). This stem would derive from the u̯-enlarged IE root **diu̯-* "day" (IEW: 185). Here then SINDIV would indicate "this day, on this day, today" cognate with Irish *indíu*. Thurneysen (1946: 217) saw Irish *(in-)diu* as derived from "the dative (instrumental) of a neuter stem *diwo-*, cp. Skt. *divā* 'by day'". Lambert (1995: 112) would see **diion* as the Gaulish word, rather than Thurneysen's **divon*, with *sindiu* as the locatif of **sindiion*. Pokorny (IEW: 185) notes the old Latin nominative *diēus*, which would correspond to a Gaulish **diios* rather than **diion*. Pokorny (IEW: 185) saw Irish *indíu* as developed from **-dii̯ū*, also giving the Latin locative or dative *diū*.

One might try to analyze the context of its occurrence to resolve the question of what is indicated by the full or abbreviated form SINDIV (the full form for **sindiu* in the dative or locative, or an abbreviation for **sindivos* or **sindivon*). SINDIV occurs in month 1, year 1, as M D TRI(TI)NO SAM - SINDIV and in month 1, year 4, as II (M) D *T*RINV SAM SINDIV. Here the corrupt form PRINI occurs in place of TRI(TI)NV. Month 1, year 2, has (M)D TRI(TI)NVX SAMO and month 1, year 5 has M D *T*RINO SAMONI, again with the corruption PRINO for the expected *TRINO. The full phrase can be reconstructed as MD TRI(TIO)NOVX SAMONI SINDIV. As the seventeenth day (ATENOVX day 2) of Samonios is transferred from the third day of Samonios, the phrase must indicate "an orderly day, the third night of Samonios, this day", "an orderly day, the third night of Samonios, on this day" or "an orderly day, the third night of Samonios, to this day". In this semantic context SINDIV could be either an abbreviation for the nominative singular, or the full form of the locative singular or the dative singular.

Since the forms DS and D freely interchange with no difference in meaning as in DSMA-N-S RIVR found on the fifteenth day of the second intercalary month for the usual form NSDS, here DSMA clearly is a longer form of DM, which occurs in place of MD on month 1, year 1, on days 12, 13, 14, and 15. Here the DS form is an abbreviation for the nominative singular so that only the masculine forms **diios* and **divos* are possible for the nominative singular and not the neuter form **diion* suggested by Lambert (1996: 112) or the neuter form **divon*, which Thuneysen (1946: 217) suggests lies behind the Irish *indiu*. If the word signified by DS also occurs in DIV-ERTOMV, DIVO-RTOMV, which semantically indicates the loss of day 30 (ATENOVX day XV) in the ANMATVS months, then the only form of these two which is possible is **divos*. I think it is transparent that the expanded abbreviation *DIVO-ERTIOMV, always used to indicate "the missing day 30" or "day 30 absent", contains a reference to the term "day", which here can only be **divo-*. Verifying this is the single occurrence of the form DIB (1-12-29). As Evans (1967, 155) has pointed out in examining the deity names Bormos, Borvos, Borbos, *v*, *m*, and *b* interchange freely in Gaulish, perhaps suggesting lenition. In this case, DIB- would simply be a variant of DIV-. The nominative singular abbreviation DS then determines that the DIVO- stem indicated on the calendar corresponds to a masculine word **divos* rather than a neuter word **divon*.

These various abbreviations for **divos* are used to indicate three categories of days. (1) In the MATVS months the days of the first fortnight, excluding days 5 and 11, along with the even days plus day 1 of the second fortnight are all labeled as M D for **matus divos* "good day, lucky day, orderly day". In place of M D, **matus divos* is occasionally indicated by D M, D MAT or MAT D (on some days of Int1), and DS MAT (in the presence of NS as in DS MAT NS or NS DS MAT). (2) In the ANMATVS months these same days are indicated simply by D or DS (in the presence of NS) for **divos* "day" alone. (3) Days 5 and 11 in the first fortnight and the odd days from ATENOVX day 3 on are indicated by D AMB or DS AMB (in the presence of NS) for the both the MAT and the ANM months.

DIVERTIOMV, DIVORTOMV: **divo-ert-iomu* or **divo-er-tiomu*: "?in place of the lacking *?30?*th day?".

This term occurs as DIVERTOMV, DIVIRTOMV, DIVERTIOMV, DIVORTOM, and DIVORTOMV. These forms suggest the differential application of abbreviation. If so, combining these forms suggests a fuller abbreviated term **divo-ert-iomu* or **divo-er-tiomu*. Variations of this abbreviated phrase always occur in place of day 15a (day 30) in the 29-day months. Considering the practical nature of most of the terminology of the calendar in describing its function, a working supposition is that the term indicates that day 15a is missing. More likely, however, the day itself is not indicated, but the missing total of 30 days is indicated. The first stem is probably *divo-* "day", and the last element *-iomu* is probably the dative of a numeral suffix (most likely for the 15th or 30th).

Thurneysen (1899: 527) saw here **di-vertomu* with the main root cognate with Welsh *uert-* cognate with Breton *gwerz* "prix, valeur" with the negative suffix *di-*. However, if the reconstructed fuller abbreviated form **divo-ert-iomu* or **divo-er-tiomu* is correct, Thurneysen's etymologies cannot be correct.

The full phrase clearly functions to refer to the missing day 30 or the missing total of 30 days in the incomplete **anmatus* months. The next element following *divo-* may be **er-* from **per-* "to drive or bring over, to set over, to flee" (IEW: 816) perhaps with the t-expansion as in Latin *pōrto-* "drive, offer, bring". **Divo-ero-*, **divo-eri-* or **divos ertos* would then be a "lost day" or a "set-aside day".

In DIVERTIOMV following Duman in year 1, the suffix *-iomu* would appear to be the same ordinal suffix as that in *oc(t)iomu* and *deciomu*. This equation then suggests an analysis as **divo-erto-tiomu*, **divo-ero-tiomu*, or **divo-er-tiomu*. TIOMV would then be an abbreviation for an ordinal numeral as in OC(T)IOMV and DECIOMV. Considering the shared connection to day 30, TIOMV may be the same numeral as in the TIOCO of TIOCO-BREXTIO, with TIOCO- for **trioconto-*, "thirty" and *brextio-* indicating "going in place of". Here TIOCO is probably an abbreviation for the cardinal numeral and TIOMV an abbreviation for the ordinal numeral. These correlations then suggests, in any case, an expansion of TIOMV as *TIOTIOMV from **triocontiomu*, again in the dative "at the thirtieth", with *-iomo* the ordinal suffix as above. We may then see the expansion of the abbreviation **divoertiomv* first to **divo-er-tio-tiomv* and from this expression extrapolate to **divos er(...) triocontiomv* "a lost day at the thirtieth". In this extrapolation the **divos* and the **triocontimu* are more certain than the **ertos* , **eros* or perhaps even **eris*, etc.

EXO: **exo(?...?)*: "extraordinary".

This term occurs as EXO, and EX. It is used to describe the *ivos* "feast" days on Dumannios 1, Anagantios 1, Giamonios 1, and probably on Rivros 1a as well. It is used to describe the main feast day in the group of IVOS feast days in the period in which the sun was apparently rising in the sky. What is signified here is probably a word beginning with Gaulish *ex-* from IE **eghs-* "out" (IEW: 29), as in Latin *ex-* "beyond", equivalent to Irish *ess-* and also found in Irish *ectar* "extra". Whatever the root beginning with O-- that followed, the significance "extraordinary" would seem likely.

IVOS: "feast".

This term occurs as IVOS, IVO, and IV. Except for the displacement into the previous month during the year following an intercalary month, IVOS occurs in a fairly regular fashion (see Olmsted 1992: tables 7-9). IVOS occurs from two to five days before and after the beginning of Samonios (1M), Dumonios (2A), Anagantios (4A), Giamonios (7A), and Elembivios (10A), and from three to four days before and after the beginning of the ATENOVX of Rivros (3M). IVOS also occurs on Simivisonna (M8) day 9, and on the first 3 days and day 25 of Edrinios (M11). In both instances of its single-day occurrence IVOS is indicated by the fuller phrase SINDIV IVOS "this day *ivos*".

On analogy with the Irish term *oenach*, used to describe the Irish quarter festivals of Samain, Imbolc, Beltain, and Lugnasa, which occur three days before and after Nov. 1, Feb. 1, May 1, and Aug. 1, a pattern similar to that occurring for IVOS, Thurneysen (1899, 530) suggested the significance "feast" for *ivos*. It seems likely that *ivos* does denote periods of festivity. If so, *ivos* may well derive from the reduced form of IE **i̯eu-* "preparation of food" (IEW: 507), as in Welsh *iwt* "mash, broth" from **iu-tā̆*.

LAGET: **lagetos*: "waning, diminishing".

This term occurs in the phrase PRINNI LAGET as LAG, LAGE, and LAGET (as in months 1-2-5, 2-2-5, 3-2-5) and is used to label the first eight days of the *laget* series of solstice counting marks. The first PRINNI LAGET begins on day 1 of the seventh month Giamonios (A7), an ANM month, and counts through the ANM (29-day) months. The count increases by one day with each *laget* month, continuing on through day 7 of Giamonios and day 8 of Equos, so that in these two months LAGET occurs twice: once on day 1 and day 2 respectively, and again on day 7 and day 8 respectively.

There are 60 regular months (+ 2 intercalary months) in the five-year period shown on the calendar. Since 30 of the 60 regular months are ANM (6 out of 12 in any given year), the complete PRINNI count would not be reached until the end of a five-year period. Nonetheless, by switching from the *loudin* series to the *laget* series and vice versa, which adds three days at each shift, day 30 is actually reached in half that time.

Because of its usage on a calendar, LAGET might be seen to be cognate with Irish *log* "flame. It also might be seen to derive from an extended form of IE **plō̆-* "bright, to burn, warm" (IEW: 805), possibly giving Welsh *go-leu* "light". But these suppositions do not suit well the fact that for 26 out of 29 days, the counting takes place in the six months from Giamonios to Samonios, a period when the solar pathway is daily apparently lowering in the sky. As we have seen, Giamonios and Samonios mark the two solstices of the year. Dividing the year into two halves at the solstices does not create a bright and a dark half. Thus these etymologies have little conviction.

The important consideration in a calendar oriented around the two solstices is that in the northern hemisphere the sun is rising in the sky (heading north) for the six months of the year between the summer solstice and the winter solstice and falling in the sky (heading south) for the six months between the summer solstice and the winter solstice. Thus the solstices divide the year into two periods, from midwinter to midsummer when the sun is daily rising in the sky or waxing, and from midsummer to midwinter when the sun is daily getting lower in the sky or waning.

Thurneysen (1899, 529) sought an etymology for LAGET in Irish *laigiu* and Welsh *llai* "smaller" and in Irish *lagat* "diminution, smallness" from IE **lgu̯h-*, Celtic **lag-*, (IEW: 661), apparently combined with the adjectival suffix *-ito-*. I believe he was essentially correct. The LAGET counting of the solar path then takes place in the six months of the year when the sun is declining in the sky and when the daytime is decreasing, from the summer solstice to the winter solstice. Thus it seems certain that LAGET indicates "diminishing". This etymology would then confirm that the summer solstice occurs in Giamonios.

LOVDIN: **loudinos*: "waxing, increasing".

This term occurs as LOD, LOVD, LOVDI, and LOVDIN (2-1-7) in the phrase PRINNI LOVDIN and counts the first eight days of the *loudin* half of the year in the solstice counting series. The *prinni loudin* first occurs on day 1 of Samonios and the count increases by one day for each of the matus "complete" months.

This term might be seen to describe the sun in the winter half of the year. Assuming *-ou-* stands for *-u-*, again perhaps showing Greek epigraphic influence as with ATENOVX, **ludin-* might be seen as cognate with Welsh *lludd* "fatigue", *luddiant* "hindrance" and then would derive from the zero-grade of IE **leud-* "to stoop, bend down, to make small" (IEW: 684). But I do not think this is very likely. A major obstacle is that LOVDIN must be the opposite of LAGET. As we have seen above LAGET means "waning, diminishing".

A more likely explanation of the term is that LOVDIN relates to IE **leudh-* "to mount up, grow" (IEW: 684), and that *-ou-* indicates the Gaulish diphthong developed from IE *-eu-*. The zero-grade form in **ludh-stu-* (IEW:685) gives Irish *luss* and Welsh *llysiau* "plant (ie. that which grows)". Perhaps here in LOVDIN, IE **leudh-* "to mount up, grow" (IEW: 684) is combined with the suffix *-eno-* or *-ino-*. If LOVDIN is seen as "waxing or increasing", the term very aptly describes the period from midwinter to midsummer, when the sun is gaining in height and the daytime increasing with each passing day. Thus it seems certain that LOVDIN signifies "increasing". Since the *loudin* series counts primarily in the six months following Samonios (in the **matus* or good months), this etymology would confirm that the winter solstice occurs in Samonios.

LAT: **latii*: "days".

This term abbreviated as LAT occurs in the second intercalary month, where the number of days in the year is given as LAT CCCLXXXV (385). It is clearly cognate with the Irish neuter io-stem *laithe* "day" (Thurneysen 1946: 180) derived from the IE o-stem **ləto-* "day" (IEW: 680).

M: MAT: **matus* or ?**matis*?: "good, orderly, perfect, complete, auspicious".

This term occurs frequently as MAT, MA, and M, and once in a clear reading as MATV in the third line of the first intercalary month. Here is an abbreviation presumably containing the Celtic root *mat-* "good, complete, perfect, lucky, orderly", as in Irish *math, maith* "good, excellent, skilled; prosperity, wealth". This Celtic root *mat-* also occurs in the Latinized Gaulish personal names Mata (Lambert 1995: 142) and Matidonnus (IEW: 693) and in a Latinized inscription in a dative o-stem (Buck 1933: 180) to the Gaulish DEO RATAMATO (Olmsted 1994: 439). The root *mat-* in these Celtic words and names derives from IE **mā-* "good, good time, orderly" (IEW: 693). However, Irish *maith* is clearly an i-stem (Thurneysen 1946: 226) as is the Gaulish stem *mati-*. As it only occurs once on the calendar, it is possible that MATV is an engravers error for *MATI. However, Evans (1967: 229) feels that the stems in *-o* and *-u* are simply variants for the more prevalent stem in *-i*. The personal names in *-u*, such as Matumaros (Evans 1967: 229), are mostly ambiguous and could refer to the Celtic stem *matu-* "bear", as could the deity name Matuberginnis (Olmsted 1994: 356) if this refers to a place name "Bear Mountain" rather than a functional name "Good High One". It is a toss-up whether or not to correct the single occurrence MATV to *MATI or leave it as evidence for a Celtic u-stem with a significance similar to the Latin u-stem *mātū-* in *mātūrus* "correct time, full term, perfect, ripe" (IEW: 693). In this case the u-stem would be simply a variant of the i-stem. Here I have used the expansion **matus* rather than the corrected expansion **matis*. In any case the significance of the term is clear.

The term MAT, MA, M is used to describe the months which always have 30 days and count in the waxing solar pathway. It is also used to describe all of the even days and certain of the odd days (see DIVOS) within the **matus* months. The months which do not always have 30 days are labeled as ANM months for **anmatus* "incomplete, unlucky, imperfect, unorderly".

M: MID: **mids*: "month".

This term occurs as MID or M before each month name, but also in the first intercalary month as MID X[III], indicating that 13 months occur that year. The meaning of the term is clearly "month". However, according to Pokorny Irish *mí* "month" derives from **mēns* (IEW: 732), supposedly also giving Welsh *mis* and Breton *miz*, although Thurneysen (1899: 525) saw **midx* as the Celtic root behind these Insular Celtic forms as well as the MID on the Coligny calendar. Lambert (1996: 110) agrees with Thurneysen in seeing a "*d barré*" behind the Celtic forms, thus **mids*.

N: **noux*: "night".

Thurneysen (1899, 527) argued that as D stands for **diuos* "day", so N should stand for **noux* "night" (IE **nokʉ̯-t-s*; IEW: 762). On the calendar the use of the term *noux* in *tri(tio)noux* and *atenoux* rather than an expected **nox* seems clear. An analysis of the distribution shows that N is used to count around to the solstices which will occur in the intercalary months (see Olmsted 1992: table 36). NS in the term NSDS is clearly not a fuller form for N, for Int-2 day 15 shows a point of separation between the N and the S in DS MA - N - S. Reconstructing NS as an abbreviation of **nouxus* for "night", as Pinault (1961: 158) has suggested, finds no support.

In NSDS, where DS presumably stands for **divos* "day", N for **noux* "night" is followed by another term S, probably for **sonno* "of the sun". Thus NS would be **noux sonno* "night of the sun". In the N-counting scheme, used to count around the intercalary solstices, N marks the day each month that the sun falls behind the calendar and the moon. Here N clearly stands for, and could be expanded to, the longer term NS for **noux sonno*, "night of the sun". However, as the N scheme is different from the TII scheme, which utilizes NS with some regularity, I leave the N in that series unexpanded to clearly differentiate the N count from the TII count. During a **noux sonno* "night of the sun", the sun presumably was assumed to travel backward during the night retracing in reverse the progress of the previous day. Thus following a **noux sonno* the sun would take a day longer in its trajectory.

NS: **noux sonno*: "a night of the sun".

This term occurs in the abbreviated phrase NSDS. It would seem to be implied as well in the single notation N used in the N-counting scheme outlined above (see Olmsted 1992: table 18). It is also clearly indicated in the single N on Edrinios 30, which functionally parallels the NSDS found on Dumannios 29 and on Simivisonna 29 and 30 (see 1992: table 38). Here N can simply be expanded to the fuller phrase NS or NSDS. However, note carefully that the N of N INIS R has nothing to do with the sun and is a purely lunar notation. Thus the N in the phrase N INIS R simply indicates NOVX "night" and cannot be expanded to NOVX SONNO.

The usage of the full phrase NSDS is also clear, as outlined above under N. The term functions to count each approximate one-day fall-back of the sun with the passage of each month, resulting from the solar year being approximately 10 1/4 days longer than 12 lunar months. Thus it is clear that the abbreviation should contain a reference to **sonns*. Here DS presumably stands for **divos* rather than **divos sonno*, for no point (-) is ever found to separate the D from the S, as occurs between N and S in DS MA - N -S on Int-2 day 15. In Int-2 the point (-) clarifies that N and S are indeed separate terms. Nonetheless, one should note the remote possibility that DS stands for **divos sonno* "day of the sun", a seemingly redundant term.

NOVX: "night".

This word occurs in combination as -NVX, -NO, -VX, and -NOVX in TRINVX, TRINO, PETIVX, and ATENOVX and independently as N as outlined above. NOVX must derive from IE **nokų-t-s* "night" (IEW: 762), giving Welsh *nos* "night" and Irish *i-nnocht* "tonight", but why a form with *-ou-* rather than *-o-* occurs on the calendar is uncertain (see ATENOVX, above). The use of *noux* rather than **divos* for the third day of Samonios, the TRI(TIO)NOVX, and for the fourth of Rivros, the PET(VOR)I(NO)VX, arises clearly from the lunar phase mark IIT associated with both dates and used in counting the **noux sonno* solar pathway. In the TII counting scheme the TII mark indicating the lunar week phase which occurs at the beginning of the month clearly takes the place of N or NS for **noux sonno.*

Like the TII marks NS is added to and occurs alongside of the ordinary notation to be found on a particular day. Except for the fact that the TII marks are never shown where NS occurs or where single N with the significance N(S) occurs, all other notation is normal. NS is then used synonymously for any of the three TII marks, TII, ITI, or IIT, except that it can also occur where a TII mark is suppressed or does not normally appear. Thus the notation NS goes in place of the TII mark.

When NS is used in place of the TII mark, the only minor change in the associated notation is that DS is used in place of the usual D. It is possible that DS stands for **divos sonno*, but as pointed out above, no point of separation (-) is ever used between the D and the S. Since *divos* does end in *-s* there is nothing to support such a supposition. At any rate, every day is already a **divos sonno*, "a day of the sun". The most likely surmise is that like D, DS simply is another abbreviation for DIVOS. In support of this, it should be noted further that DS MAT or DS MA is used in place of normal D M or M D for **divos matus* "a good day". Thus we have NSDS in place of D, NSDS MAT or DS MAT NS in place of D M or M D, and NSDS AMB in place of D AMB. The only significant notation is then N - S, **novx sonno*, in place of the TII mark.

The implication is that something happens during this special night, the **noux sonno*, to cause the sun to fall back a day with respect to the calendar in its assumed falling back by 12 days each year. The calendar designers then apparently assumed that the sun travels backwards all night to begin the next day at the same point with which it began the previous day.

NS is used exclusively for the anomalous day count and in the three **noux sonno* days transferred into the intercalary months on days 7a, 8a, and 9a. In the first instance, it clearly takes the place of the TII marks. In the second instance, its function is clearly to account for the three days the sun is assumed to stand still at the solstice.

N INNIS R: **noux innis(...) rii*: "night of an ?...? moon".

This term occurs as N INIS R, N INNIS R, and N IN R . The distribution in the first half of the month averages 1.4 occurrences in the months in which it is found, falling on day 7 ± 2 days. In the second half of the month it appears on average on 1.9 days in each month in which it is found, falling on day 8a ± 2 days. The term does not occur in Equos and is absent from the first half of the month in Edrinios , Cantlos, and Samonios. It is absent from the second half of the month in Semivisonna, Equos, Elembivios, and Edrinios . When N INNIS R is found in the first half of the month it selects the odd days. It occurs in both the first and second half of the month only in the period from Dumannios to Giamon, following the same distribution as EXO IVOS, which occurs only with the IVOS days while sun is in the PRINNI LOVDIN "waxing pathway".

A glance at table 14 in my 1992 work shows that this distribution is complementary to IVOS, which occurs on day 1 or 1a (in the case of Rivros) and normally on the 2 or 3 days before and after day 1 or 1a. Otherwise, the distribution of N INNIS R is completely random and has nothing to do with the sun or the solstices. N INNIS R then occurs in the middle of a fortnight, while IVOS occurs around the beginning and end of a fortnight. Like IVOS, N INNIS R must therefore have an origin in the purely lunar 30-year calendar, which predates the present 25-year calendar, since both clearly relate to fixed dates within the month. N INNIS R is also used as a synonym for GANO R or GO R, with which it interchanges freely.

No TII mark can occur on the same date as N INNIS R, though N INNIS R is totally independent of these marks or the sun. However, one should note that the count is still assumed to have taken place at such a date, since it occurs as it normally should in the next month in which it is found.

The term for the moon must be indicated somewhere on this lunar/solar calendar. The terms for the sun occur as both the simple letter S and in the genitive SONNO. Context here suggests that R indicates the term for moon on the calendar. The same term occurs in the fuller expression RIX RI for **rix rii* "a measure of the moon". Irish *ré* "moon", as in *ré nua* "a new moon", seen as ultimately arising from the significance of *ré* (io, n) as "a lapse of time, interval of time", could be a derivative of an original Celtic neuter io-stem **rion*, genitive **rii*, signifying both "moon" and "an interval of time". The IE root behind this word is **rē̆-* "to figure, to count" (IEW: 59, 60, 853), also giving Irish *rím* and Welsh *rhif* "number". R and RI may then possibly be expanded as *RION. N INNIS R therefore possibly might stand for **noux innis(...) rii* "night of an ?...? moon", but the full form of the abbreviated term INNIS is uncertain here.

PRINNI: **prinnios*: "?way, course, path?".

This term occurs in PRINNI LAGET and PRINNI LOVDIN describing the two series of solstice marks TII (see table 8). It occurs primarily as PRIN, PRINI, PRINNI, but in year 5 it occurs twice, ending in *-o* rather than *-i* as PRINO (5-9-8) and PRINNO (5-6-4).

The *Loudin* series converges on Samonios in the **matus* months, counting primarily in the first half of the year, and the *laget* series converges on Giamonios in the **anmatus* months, counting primarily in the second half of the year. In each series days 1-8 are directly labeled PRINNI LOVDIN and PRINNI LAGET. The term PRINNI clearly applies to the whole series even though the actual labeling does not extend beyond day 9. Only days 1 and 7 of the labeled series actually occur on the solstices. It should be noted that when one solstice occurs on day 1 the next solstice, six months later, always occurs on day 7. In the other months the days indicated as PRINNI are assumed to count the falling behind of the sun with respect to the calendar.

Although the significance of PRINNI is clear, its etymology is not. A relationship to **ku̯rei-* "to buy" (IEW: 648), as in Irish *crenid* and Welsh *prynu* "to buy, to redeem" (**ku̯ri-n-*), does not seem to make much sense, unless in the sense of "buying time".

The term PRINNI might also refer to the sun's falling behind the calendar. If so, it might relate to Welsh *prinhau* "to diminish, to become scarce" and to Irish *crínaid* "to fade, wither away". Thus PRINNI may refer to the "fading back" of the sun. But this etymology also seems doubtful, since the solar pathway waxes as well as wanes, which would juxtapose "increasing" with "fading back".

More likely a variant of **ku̯er-* "to make or shape" (IEW: 641) is indicated here. Significantly Welsh *pryd*, derived from the zero-grade form **ku̯r-tu-* (IEW: 641), indicates "time" as well as "form". Perhaps an n-expansion of this root lies behind Welsh *prynhawn* "afternoon" (from *pryn nawn*?). Irish *cruth* indicates "form, shape, way, appearance". The -i and -o alternation in the ending of PRINNI and PRINNO perhaps suggest an io-stem. The significance of **prinnio-* would then be "form, shape, way, time, period".

At any rate, the term is clearly used to count out the pathway of the sun between solstices. The PRINNI LOVDIN series thus counts the solar path while the sun is rising in the sky, going from south to north in the period from midwinter to midsummer. During this period the days get longer and longer. The PRINNI LAGET series thus counts out the solar path while the sun is lowering in the sky, going from north to south in the period from midsummer to midwinter. During this period the days get shorter and shorter. At the anomalous days, the falling sun series is assumed to continue even following the winter solstice, and the rising sun series is assumed to continue even following the summer solstice.

PRINNI LAGET thus probably refers to the "diminishing, lowering, or waning pathway or (day)time". PRINNI LOVDIN, on the other hand, probably refers to the "mounting up, increasing, or waxing [solar] pathway or (day)time." These terms may then simply be rendered as the "waning pathway" or "decreasing daytime" for PRINNI LAGET and the "waxing pathway" or "increasing daytime" for PRINNI LOVDIN.

The PRINNI count may be outlined as follows (Olmsted 1992: table 28a). The count shifts between the MAT and ANM months at the half-year boundaries. At each such boundary shift, the count adds 3 days. The anomalous days 29 and 30 are used after the first occurrence of day 28 as a solstice in the intercalary month MI2, and they are not used on the next occurrence of day 28 at Qutios M6. They then are used after the first incidence of solstice day 28 in Cantlos A12, but they are not used after the next day 28 in Cantlos A12 following. They then are used following solstice day 28 in Qutios M6 and are not used on the next day 28 in Qutios M6 following, and so on repeating this constant pattern. The anomalous days 29 and 30 thus alternate in occurring and not occurring following solstice day 28.

Similarly solstice day 28 first falls twice in month M6, the first time counting 29 and 30, the second time not. It then falls twice in month A12, the first time counting 29 and 30, the second time not. After the anomalous days 29 and 30, the PRINNI will always fall on a solstice on day 1. If the anomalous days 29 and 30 do not occur (as in year 6), the PRINNI will always fall on a solstice on day 7. By this simple alternating scheme the calendar always follows the solstices.

To determine in which month a solstice occurs, a simple rule is also followed. The solstices occur in Samonios (M1) and Giamonios (A7), except when an intercalary month (MI) occurs. The solstice always falls in an intercalary month when this occurs. After the intercalary month the *prinni* series counts in the regular fashion indicated above until day 28, 29, or 30 is reached. Until these days are reached, the solstices then fall in Cantlos (A12) and Cutios (M6). After the count reaches 30, it reverts back to the M1 and A7 scheme of the beginning.

R: RI: **rion*: "moon".

This term occurs as R and RI in the phrases GANO R, RIX - RI, and N INNIS R. As we have seen previously, N INNIS occurs with a statistical distribution on day 7 ± 2 days in the first half of the month and on day 8 ± 2 days in the second fortnight of the month. It therefore follows a distribution coinciding with the middle of the periods of the waxing and waning moons in the original 30-year calendar. Since N stands for "night", we are left with the conclusion that R and RI should stand for "moon".

Irish *ré* "moon", as in *ré nua* "a new moon", seen as ultimately arising from the significance of *ré* (io, n) as "a lapse of time, interval of time", could be a derivative of an original Celtic neuter io-stem **rion*, genitive **rii*, signifying both "moon" and "an interval of time". The IE root behind this word is **rē-* "to figure, to count" (IEW: 59, 60, 853), also giving Irish *rím* and Welsh *rhif* "number".

RIX RI: **rix rii*: "a measure of the moon".

This term occurs with a point of separation between RIX and RI on Samonios 5 in year 1. RIX may derive from **rēk-t-s* with the root **rēk-* meaning "to put in order, to reckon" (IEW: 863). Here then a Gaulish **ricts* giving *rix* could indicate "a measure". It is perhaps significant that it occurs at the end of the first five-day week, a **quonquedivi* giving Irish *cóicde*.

[S]AMMEN M: *?*sammeni? mids*: "a month of ?summer?".

This term occurs at the beginning of the second intercalary month. Here then I would see Celtic *sam-* "summer", as in Irish *sam* and Welsh *haf* from IE **sem-* "summer" (IEW: 905). If so, it verifies that Giamonios, which the second intercalary month immediately precedes, is normally the first month of summer,

SIND: SINDIV: "this day".

The term SINDIV is equivalent to Irish *indiu* "today".

S: **sons* or **sonns*: "sun".

The term *sons* or *sonns* occurs in the phrase CIALLOS BIIS SONNO CINGOS, which occurs at the beginning of the second intercalary month. Here *sonno* is clearly a genitive, probably of a u-stem or a consonantal stem, with the loss of final -s. The phrase *sonno cingos* probably indicates "the course of the sun".We must remember as well the genitive of the month name S[IMIVI]SONNA, if this does contain the same root. This suggests a nominative **sons*. In any case, the meaning of SONNO is clearly "of the sun". It must represent a development from IE **sun-* "sun" (IEW: 881), although the usual Insular Celtic forms derive from IE **sā̆uel-* (IEW: 881), as in Welsh *haul*. Avestan *xəng* "sun" from IE **su̯ens* provides a parallel form to the **sons* apparently found on the Coligny calendar. Gothic preserves both forms *sauil* and *sunnō*, so it would not be surprising if both forms were found in Celtic as well.

TIOCOBRIXTIO: **trioconto-brixtios*: "a day to make up thirty".

The attested forms are TIOCOBREXTIO, TIOCOBRIXT, TIOCOBREX, TIOCOBR, and TIOCOB. As I previously indicated (Olmsted 1992: tables 39 and 40), these day are to be used in place of days 30, 31, or 32, which are necessary for the counting scheme but do not actually exist. BREXTIO, BRIXTIO is probably a development of the IE root **bhrē̆-* "transferred, carried, go in place of" (IEW: 128), but with the abstract suffix form *-ek-tio-* appended to it. The significance would seem to be "the day which goes in place of" or "a day to make up".

Since, as we have already seen, day 30 (15a) is implicated in this "going in place of", TIOCO- is most likely an abbreviation for *T(R)IOCO(NTO)- "thirty". *TRIOCONTO- comes from **trio-* "three" (IEW: 1090) and **komt-* "ten" is used in the numeral compounds of ten (IEW:192). The form is close to the attested Gaulo-Roman ablative plural TRICONTIS (Latin *trīgenta* with neuter plural *trī*, see Buck 1933: 231), but is even closer to the Greek *triākonta* (from **triā-*). The Irish form is *trícho* and the Breton form is *tregont*. Rather than Greek influence here in *TRIOCONTO-, I would simply see another possible instance of an archaism. Again in *trio-*, an *-o-* occurs in place of an expected *-a-*.

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Catalogue of Plates

1. Reconstructed series of TII marks neglecting yearly variations in marks indicated and also returning transferred days to original calendrical positions.

2. Fragmentary mosaic of surviving pieces of Coligny calendar to approximately 1/8 scale, reconstructed from digitally piecing together individual month plates in RIG: III.

3. Reconstruction of Coligny calendar to approximately 1/8 scale with original fragments imbedded within the reconstruction.

4. Reconstruction of first 30 months (left half) of Coligny calendar to approximately 1/5 scale with original fragments imbedded within the reconstruction.

5. Reconstruction of second 30 months (right half) of Coligny calendar to approximately 1/5 scale with original fragments imbedded within the reconstruction.

6-69. Month-by-month definitive reconstructed text of Coligny calendar showing on each plate first the surviving fragments, then the reconstructed month, and finally the reconstructed transcript all to approximately ½ scale.

MONTH	LOVDIN TII	ITI	IIT	LAGET TII	ITI	IIT
INT(1) M						
SAM 1 M						
	PL1	2	3			
	PL7	8	9			
	13	14	15			
	19	20	21			
	25	26	27			
DVM 2 A						
				PL5	6	7
				11	12	13
				17	18	19
				23	24	25
				N29	N7A	
RIV 3 M						
	PL2	3	4			
	PL8	9	10			
	N14	N15	16			
	20	21	22			
	26	27	28			
ANA 4 A						
				PL6	N7	8
				12	13	14
				18	19	20
				24	N25	26
				N25	N17G	
OGR 5 M						
	PL3	4	5			
	9	10	11			
	N15	16	17			
	21	22	23			
	27	28	29			
QVT 6 M						
	PL4	5	6			
	10	11	12			
	16	17	18			
	22	23	24			
	28	29	30			

MONTH	LOVDIN TII	ITI	IIT	LAGET TII	ITI	IIT
INT(2) M						
GIA 7 A						
				PL1	2	3
				PL7	8	9
				13	14	15
				19	20	21
				25	26	27
SEM 8 M						
	PL5	6	T7			
	11	12	13			
	17	18	19			
	23	24	25			
	N29	N30	T7			
EQV 9 A						
				PL2	3	4
				PL8	9	10
				N14	N15	N16
				20	21	22
				26	27	28
ELE 10 A						
				PL3	4	5
				9	10	11
				N15	N16	N17
				21	22	23
				27	28	29
EDR 11 M						
	PL6	T7	T8			
	12	13	14			
	18	19	20			
	24	25	26			
	N30	T7	T8			
CAN 12 A						
				PL4	5	6
				10	11	12
				16	17	18
				22	23	24
				28	29	T15

Plate 1

RECONSTRUCTED SERIES OF TII MARKS
(Neglecting yearly distribution and transferred days)

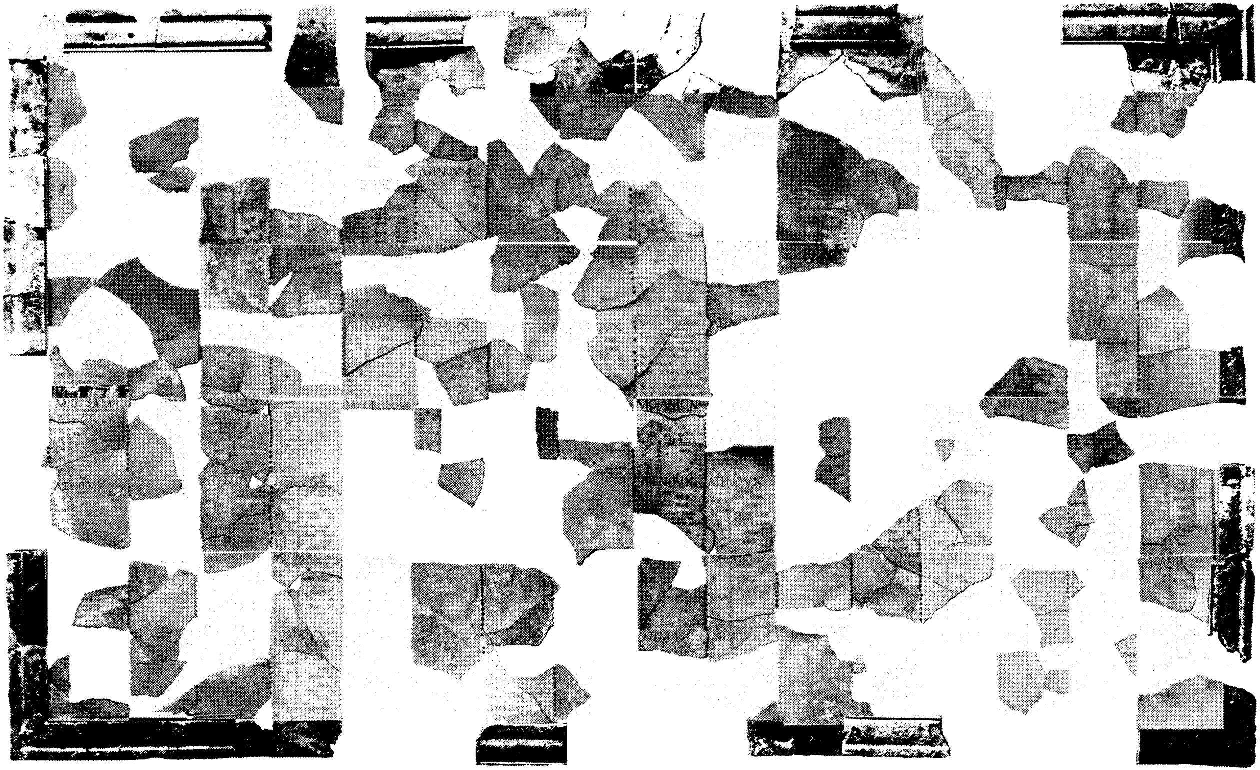
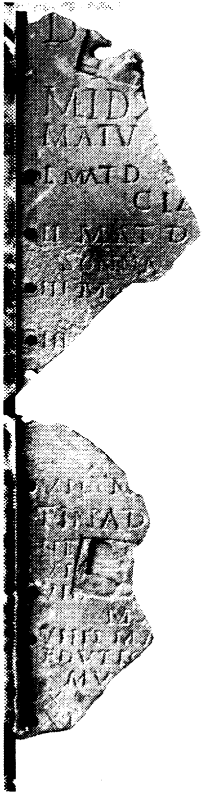


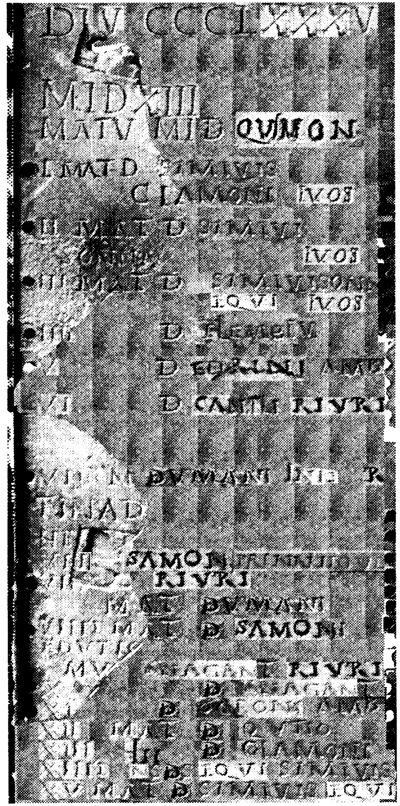
Plate 2

Plate 3

Plate 4

Plate 5





COLUMN-1 TOP HALF

INTERCALARY MONTH 1 FIRST HALF

DI [V CCCLXXXV]

MID X [III]
MATV [*MID QVIMON*]

I MAT D S [IMIVIS]
GIA [MONI IVOS]
II MAT D [SIMIVI]
SONNA [IVOS]
III MA [T D SIMIVISONN]
[EQVI IVOS]

IIII [D ELEMBIV]

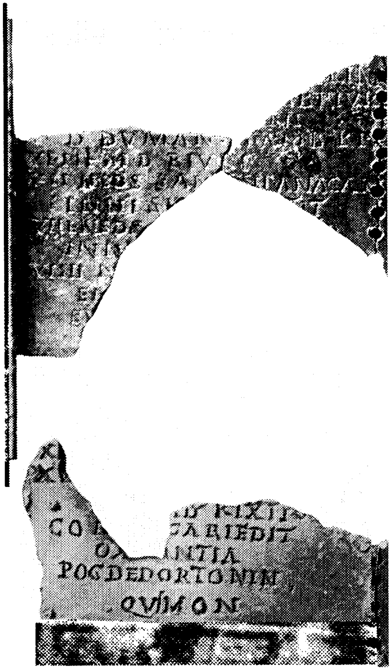
[V D EDRINI AMB]

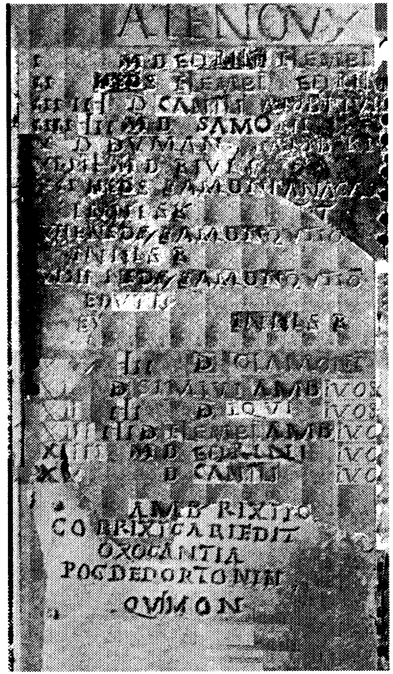
[VI D CANTLI RIVRI]

VII • N [DVMANI INIS R]
TINA D*I* [................]

NE [......................]
VI [I SAMON PRINNI LOVD]
VIII D [RIVRI]
MA [T DVMANI]
VIIII MA [T D SAMONI]
EDVTIO [................]
MV [..... ANAGANT RIVRI]
X [D ANAGANT]
XI [D OGRONI AMB]
[XII MAT D QVTIO]
[XIII TII D GIAMONI]
[XIIII NSDS EQVI SIMIVIS]
[XV MAT D SIMIVIS EQVI]

MATV [?*MID QVIMON*?]
VII TINA D?*I* [V? ....]





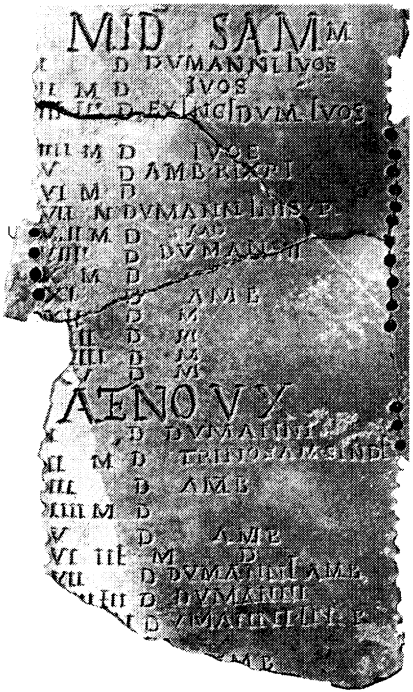
```
[         ATENOVX          ]
[I          M D EDRINI ELEMBI ]
[II      N(SDS) ELEMBI E]DRINI
[III   IIT   D CANTLI A]MB RIVRI
[IIII TII   M D SAMO]NI
 V        D DVMANNI AMB (   )
 VI • IIT   M D RIVRI
 VII       NSDS SAM[O]NI ANAGAN
       INNIS  R[......]TIT
 VIII      NSDS [SAMONI QVT]IO
       INN[IS R               ]
 VIIII       N[SDS SAMONI QVTIO]
     ED[VTIO...............   ]
    SV[.......        INNIS R  ]

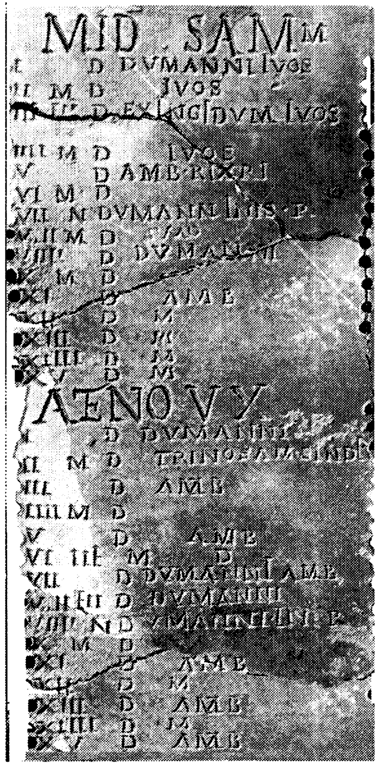
 X     [TII      D GIAMONI      ]
[XI           D SIMIVI AMB IVOS]
[XII   ITI      D EQVI      IVOS]
[XIII  ITI    D  ELEMBI AMB IVO]
 XI[III        M D EDRINI     IVO]
 XV[            D CANTLI     IVO]
[        A]MB RIV TIO
  COB[RIXT] CARI EDIT
      OX[OC]ANTIA
  PO(N)C(E) DEDOR TON IN(ON)
         QVIMON(IV)
```

```
V D DVMANNI AMB RIVR
VIIII ED[?VTIO?................]
XV  A]MB RI?X? TIO
```

COLUMN-1 TOP HALF

INTERCALARY MONTH 1 SECOND HALF





MID SAM M

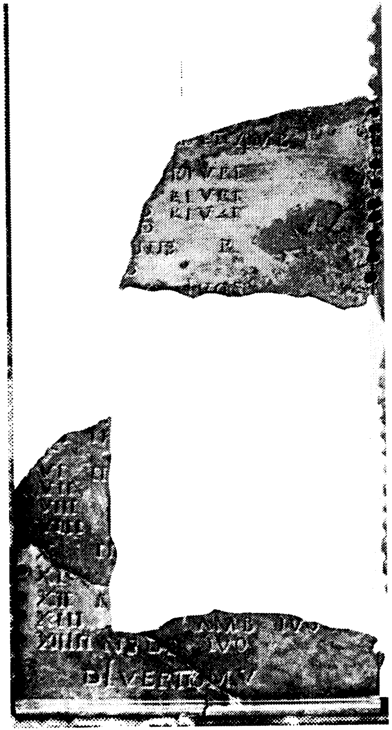
I D DVMANNI (EX) IVOS
II M D IVOS
III TII D EXINGI DVM IVOS
IIII M D IVOS
V D AMB•RIX•RI
VI M D
VII N DVMANN INIS•R
VIII M D S(A)MO
VIIII D DVMANNI
X M D
XI D AMB
XII D M
[X]III D M
[X]IIII D M
XV D M

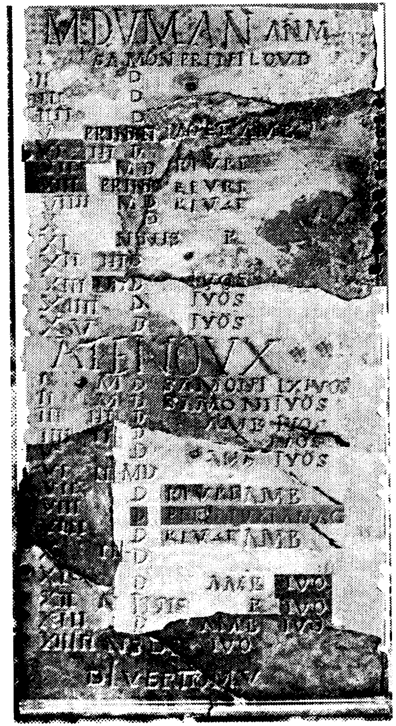
ATENOVX

I D DVMANNI
II M D TRI(TI)NO SAM•SINDIV
III D AMB
IIII M D
V D AMB
VI IIT M D
VII D DVMANNI AMB
VIII TII D DVMANNI
VIIII N DVMANNI•IN R
[X M] D
[XI D] AMB
[XII D M]
[XIII D AMB]
[XIIII D M]
[XV D AMB]

COLUMN-1 BOTTOM HALF

MONTH-1 YEAR-1





COLUMN-1 BOTTOM HALF

MONTH-2 YEAR-1

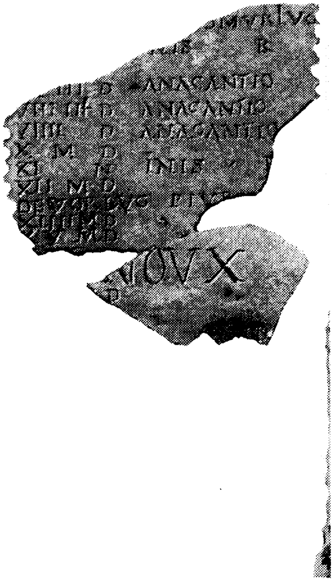
[M DVMAN ANM]

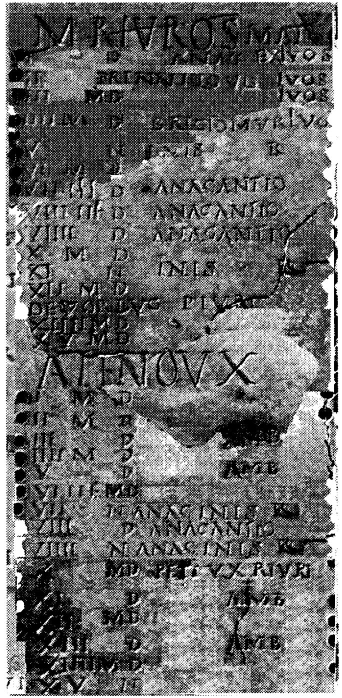
[I SAMON PRINI LOVD]
[II D]
[III D]
[IIII D]
[V PRINNI L] AGET AMB
[VI ITI D]
[VII M D] RIVRI
[VIII PRINI] RIVRI
[VIIII M] D RIVRI
[X] D
[XI N] INIS R
[XII ITI] D
[XIII IIT D] IVOS
[XIIII D IVOS]
[XV D IVOS]

[ATENOVX]

[I M D SAMONI IXIVOS]
[II M D SAMONI IVOS]
[III] *ITI* [D AMB IVOS]
[II] II II [T D IVOS]
V [D AMB IVOS]
VI II [T M D]
VII [D RIVRI AMB]
VIII [D PET(V)RIV ANAG]
VIIII [D RIVRI AMB]
X II [T D]
XI [D AMB IVO]
XII N [INIS R IVO]
XIII [ ] D AMB IVO
XIIII NSDS IVO
DIVERTIOMV

⟨[III] ?*ITI*? [D AMB IVOS]⟩
⟨VIII [D PET RIVRI ANAG]⟩





COLUMN-2 TOP HALF

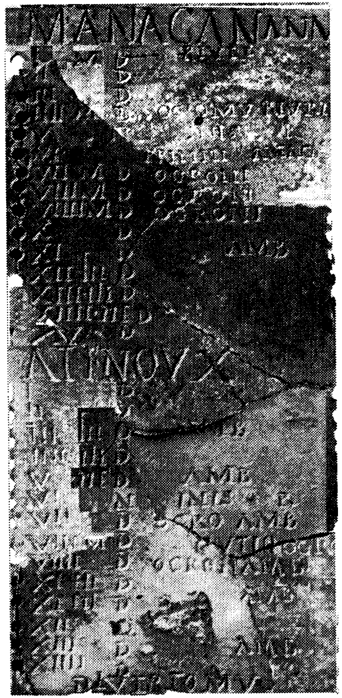
MONTH-3 YEAR-1

[M RIVROS MAT]
[I D ANAG EXIVOS]
[II PRINNI LOVD IVOS]
[III M D IVOS]
[IIII M D TRICI]OMV RIV(R)O
[V N] INIS R
[VI M D]
[V]II ITI D ANAGANTIO
VIII IIT D ANAGANTIO
VIIII D ANAGANTIO
X M D
XI N INIS • R
XII M D
DECIOMIV G RIVRI
XIIII M D
XV M D

[ATE]NOVX
[I M]D
[II M D]
[III D] AMB
[IIII M D]
[V D AMB]
[VI IIT M D]
[VII N ANAG INIS R]
[VIII D ANAGANTIO]
[VIIII N ANAG INIS R]
[X M D PETIVX RIVRI]
[XI D AMB]
[XII M D]
[XIII D AMB]
[XIIII M D]
[XV N]

⟨[IIII M D BRICI]OMV RIV(R)O⟩

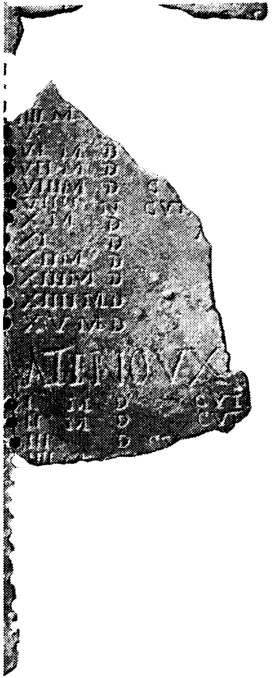
⟨(XIII) DEWORIV G PIVRI⟩

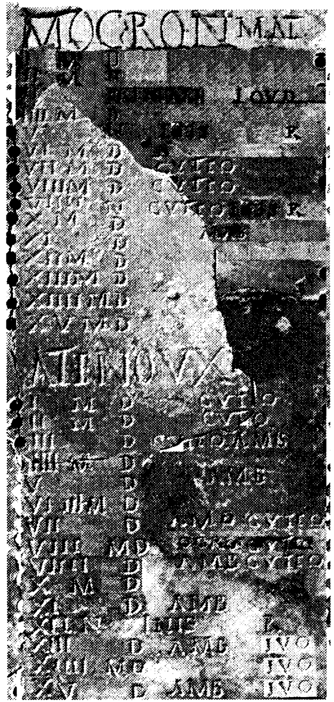


```
[M  ANAGAN   ANM ]
 [I      M D RIVRI          ]
 II        [D                ]
 III       [D                ]
 IIII   M[D OC(T)IOMV RIVRI]
 V          N[ INIS         R  ]
 VI           PR[INNI ANAG    ]
 VII     M D OGR[ONI          ]
 VIII    M D OGRONI
 VIIII   M D OGRONI
 X           D
 XI          D      AMB
 XII TII     D
 XIII•ITI    D
 XIIII•IIT   D
[X]V         D
[AT] ENOVX
[I          ]D
[II         ]D
[III   TII  D]  AMB
[IIII  ITI  D]
[V     IIT  D]  AMB
[VI         N]INIS      R
[VII        D]OGRO    AMB
[VIII   ]M D     CVTIO  [OGRO]
 VIIII      D  OGRON[ AMB      ]
 X     TTI  D          [          ]
 XI    IIT  D           A[MB      ]
 XII        D              [        ]
 XIII       D           AM[B      ]
 XIIII      D                [    ]
      DIVIRTOMV              [    ]
```

COLUMN-2 TOP HALF

MONTH-4 YEAR-1





COLUMN-2 BOTTOM HALF

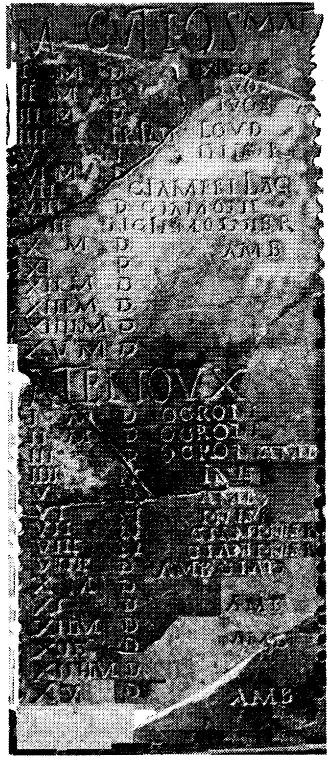
MONTH-5 YEAR-1

[M OGRON MAT]

[I M D]
[II M D]
[II]I [PRINNI LOVD]
IIII M [D]
V N[INIS R]
VI M D[ ]
VII M D CVTIO]
VIII M D CV[TIO]
VIIII N CVT[IO INIS R]
X M D [ ]
XI D A[MB]
XII M D [ ]
XIII M D [ ]
XIIII M D [ ]
XV M D [ ]

ATENOVX [ ]

I M D CVTI[O]
II M D CVTI[O]
III D CV[TIO AMB]
IIII M [D]
[V D AMB]
[VI IIT M D]
[VII D AMB CVTIO]
[VIII M D OGRO CVTIO]
[VIIII D AMB CVTIO]
[X M D]
[XI D AMB]
[XII N INIS R]
[XIII D AMB IVO]
[XIIII M D IVO]
[XV D AMB IVO]



COLUMN-2 BOTTOM HALF

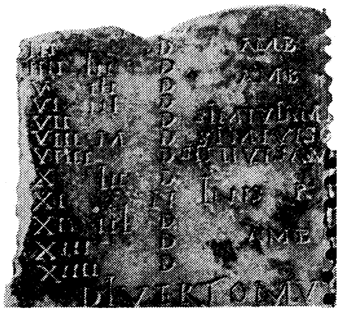
MONTH-6 YEAR-1

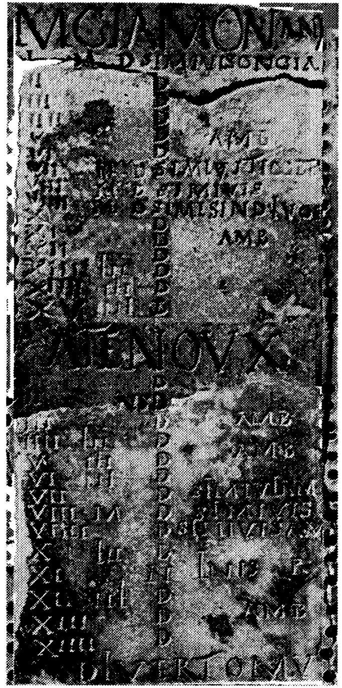
M [CVTIOS MAT]

I	M D		[EXIVOS]
II	M D		IVOS
III	M D		IVOS
IIII		PRINI	LOVD
V	N		INIS •R
VI	M D		
VII			GIAM PRI LAG
VIII	D		GIAMONI
VIIII	N		GIAMO INIS R
X	M D		
XI	D		AMB
XII	M D		
XIII	M D		
XIIII	M D		
XV	M D		

ATENOVX

I	M	D	OGRON [I]
II	M	D	OGRON [I]
III		D	OGRO [NI AMB]
IIII		N	IN [IS R]
V		D	AMB [ ]
VI		N	INIS [R]
VII		N	GIAM [INIS R]
VIII		N	GIAM [INIS R]
VIIII		D	AMB G [IAMO]
X	M	D	[ ]
XI		D	[AMB]
XII	M	D	[ ]
[XIII]		D	[A] MB
[XIIII	M	D]	
[XV		D]	AMB

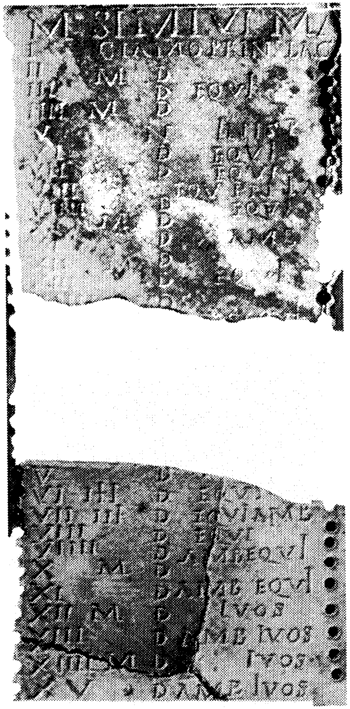


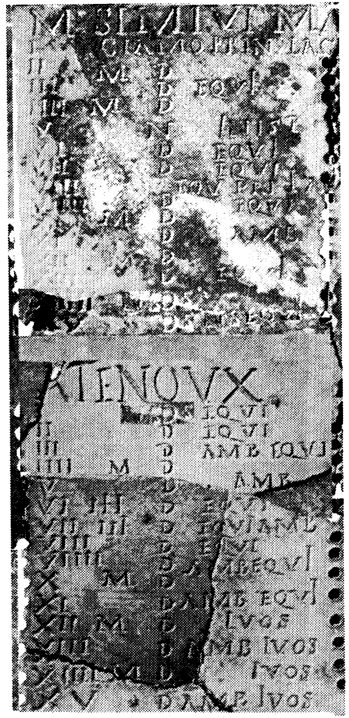


COLUMN-3 TOP HALF

MONTH-7 YEAR-1

[M GIAMON ANM]
[I M D SIMIVISON GIA]
[II D]
[III D]
[IIII D]
[V D AMB]
[VI D]
[VII M D SIMIVI TIOCBR{EXT}]
[VIII M D SIMIVIS]
[VIIII M D SIMI SIND IVOS]
[X D]
[XI D AMB]
[XII D]
[XIII TII D]
[XIIII ITI D]
[XV IIT D]
[ATENOVX]
[I D]
[II] N[SD]S
III D AMB
IIII TII D
V ITI D AMB
VI IIT D
VII D SIMIVI AMB
VIII M D SIMIVISO
VIIII D SIMIVIS AMB
X TII D
XI N INIS R
XII IIT D
XIII D AMB
XIIII D
DIVERTOMV





M SIMIVI MAT

I GIAMO PRIN LAG
II M D
III D EQVI
IIII M D
V N INIS R
VI D EQVI
VII D EQVI
VIII EQV PRI LAG
VIIII D EQVI
X M D
XI D AMB
XII M D
XIII D EQVI
XIIII NSDS(EQVI)
[XV DS]NS EQVI

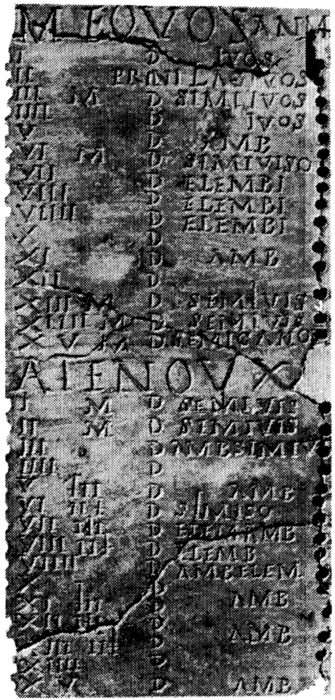
[ATENOVX]

[I NSDS EQVI]
[II D EQVI]
[III D AMB EQVI]
[IIII M D]
V D [AMB]
VI ITT D EQVI
VII IIT D EQVI AMB
VIII D EQVI
VIIII D AMB EQVI
X M D
XI D AMB *IVOS*
XII M D IVOS
XIII D AMB IVOS
XIIII M D IVOS
XV D AMB IVOS

COLUMN-3 TOP HALF

MONTH-8 YEAR-1

<XI D AMB *EQVI*>



M EQVOS ANM

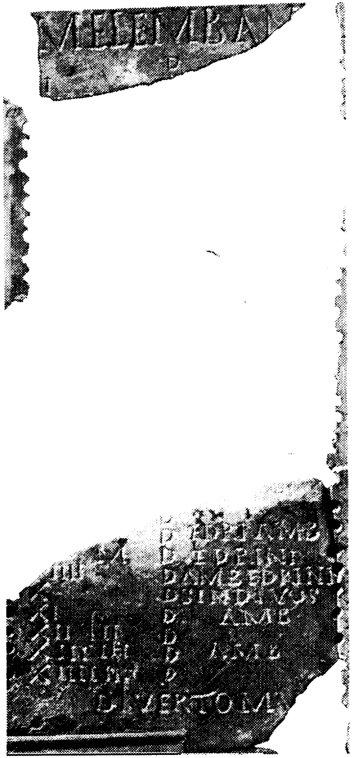
I		D	IVOS
II		PRINI	LAG IVOS
III	M	D	SIMI IVOS
IIII		D	IVOS
V		D	AMB
VI	M	D	SIMIVISO
VII		D	ELEMBI
VIII		D	ELEMBI
VIIII		D	ELEMBI
X		D	
XI		D	AMB
XII		D	
XIII	M	D	SEMIVIS
XIIII	M	D	SEMIVIS
XV	M	D	SEMI GANO R

ATENOVX

I	M	D	SEMIVIS
II	M	D	SEMIVIS
III		D	AMB SIMIVIS
IIII		D	
V	TII	D	AMB
VI	IIT	D	SIMISO
VII	ITI	D	ELEM AMB
VIII	IIT	D	ELEMB
VIIII		D	AMB ELEM
X		D	
XI	TII	D	AMB
XII	ITI	D	
XIII	IIT	D	AMB
XIIII		D	
XV		D	AMB

COLUMN-3 BOTTOM HALF

MONTH-9 YEAR-1



COLUMN-3 BOTTOM HALF

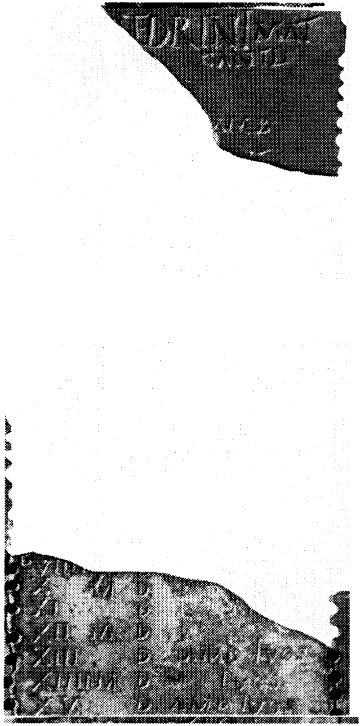
MONTH-10 YEAR-1

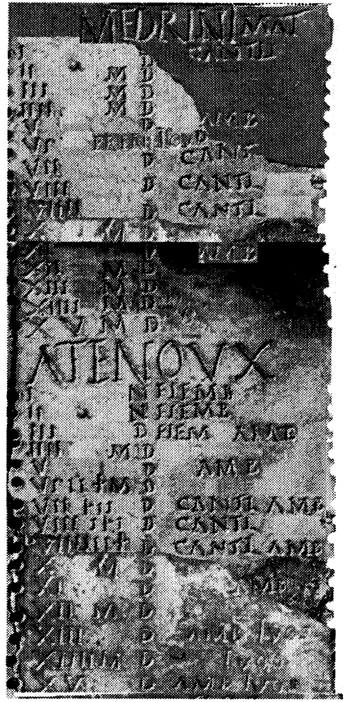
M ELEMB AN[M]

I D [IVOS]
II D [IVOS]
[III PRINNI LAG IVO] S
[IIII D]
[V D AMB]
[VI D]
[VII M D EDRIN TIOCOB]
[VIII M D EDRIN TIOCOB]
[VIIII M D EDRINI]
[X {N} INI R]
[XI D AMB]
[XII D]
[XIII D]
[XIIII D]
[XV N(SDS)]

[ATENOVX]

[I M D EDRINI]
[II M D EDRINI]
[III D AMB EDRIN]
[IIII D]
[V D A]MB
[VI TIT] D
[VII] D EDRI AMB
[VIII] M D EDRINI
[V]IIII D AMB EDRINI
X D SIND IVOS
XI D AMB
XII TII D
XIII ITI D AMB
XIIII IIT D
DIVERTOMV





COLUMN-4 TOP HALF

MONTH-11 YEAR-1

```
   M  EDRINI MAT
[I             D]  CANTLI
[II          M D]
[III         M D]
[IIII        M D]
[V             D]    AMB
[VI         PRIN LOVD]
[VII           D   CA]NT
[VIII          D   CANTL     ]
[VIIII         D   CANTL     ]
[X           M D             ]
[XI           {D}    AMB     ]
[XII         M D             ]
[XIII        M D             ]
[XIIII       M D             ]
[XV          M D             ]
[  ATENOVX                   ]
[I           N(SDS) ELEMB ]
[II          N(SDS) ELEMB ]
[III           D ELEM AMB ]
[IIII        M D          ]
[V             D AMB      ]
[VI     IIT    D          ]
[VII    TII    D CANTL AMB]
[VIII   ITI    D CANTL    ]
 VIIII  IIT    D[CANTL AMB]
 X           M D [        ]
 XI            D AM[B     ]
 XII         M D
 XIII          D AMB IVOS
 XIIII       M D    IVOS
 XV            D AMB IVOS
```

(VIIII ?IIT? D [CANTL AMB])

M CANTLOS ANM

I M D AEDRIN
II D
III D
IIII PRINNI LAG
V D AMB
VI D
VI[I] D CANTLI
[VIII] D CANTLI
[VII]II D CANTLI
[X] D
XI D AMB
XII D
XIII D
XIIII D
XV D TIOCOBRIXT

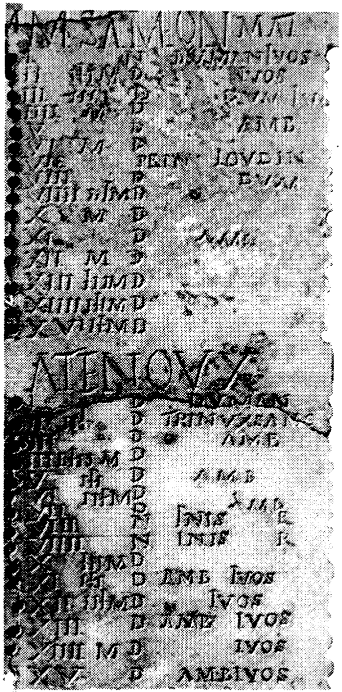
[ATENOVX]

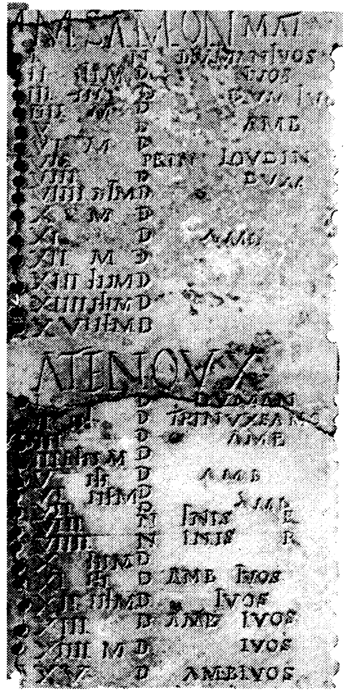
[I TII D]
[II ITI D]
[III IIT D AMB]
[IIII N INIS R]
[V D AMB]
[VI IIT D]
VII [TII D CANTLI AMB GO]R
VIII• I[TI D CANTLI]
VIIII II[T D CANTLI AMB]
X D[ ]
XI D[AMB]
XII D[ ]
XIII TIT D AMB IV[O]
XIIII ITI D IVO DIB CANT
DIVERTOMV

(XIII ?I?IT D AMB IV[O])

COLUMN-4 TOP HALF

MONTH-12 YEAR-1





COLUMN-4 BOTTOM HALF

MONTH-1 YEAR-2

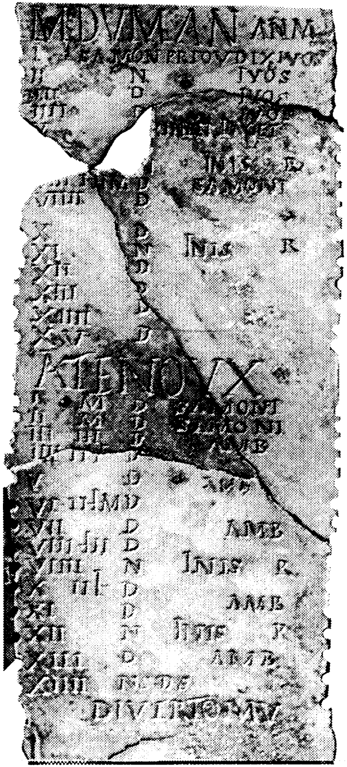
M SAMON MAT

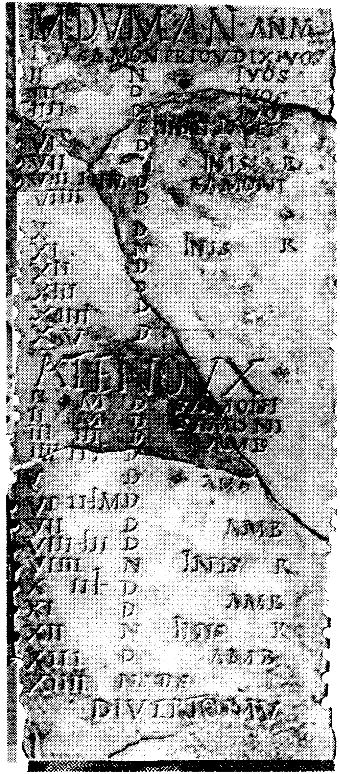
```
I                N DVMAN   IVOS
II      ITI  M D         IVOS
III     TII•    D DVM (ALE)  IVO
IIII         M D
V               D          AMB
VI           M D
VII             PRIN   LOVDIN
VIII            D          DVM
VIIII  IIT M D
X            M D
XI              D        AMB
XII          M D
XIII    TII  M D
XIIII  ITI  M D
XV      IIT M D
```

ATENOVX

```
I                D DVMAN
II IIT    (M)D TRI(TI)NVX  SAMO
III             D          AMB
IIII    TII M D
V       ITI     D        AMB
VI      IIT M D
VII             D          AMB
VIII            N    INIS        R
VIIII           N    INIS        R
X       TII M D
XI      ITI     D   AMB      IVOS
XII     IIT M D          IVOS
XIII            D   AMB      IVOS
XIIII        M D              IVOS
XV              D    AMB     IVOS
```

(III   TII• D DVM (ALE) IVO)





M DVMAN ANM

I	SAMON		PRI(N L)OVD		IXIVOS
II			N		IVOS
III			D		IVOS
IIII			D		IVOS
V			[P]RINNI LAGET		
[V]I		[	D]		
[VII]			N	INIS	R
VIII	ITI	M	D	SAMONI	
VIIII			D		
X			D		
XI			N	INIS	R
XII			D		
XIII			D		
XIIII			D		
XV			D		

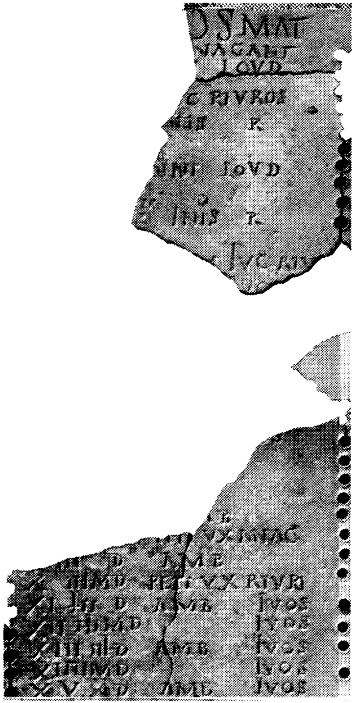
ATENOVX

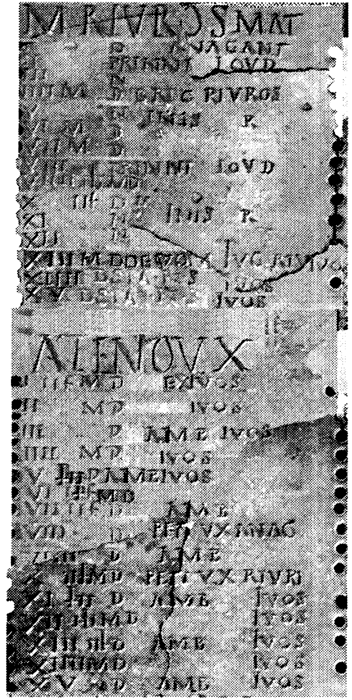
I		M	D	SAMONI	
II		M	D	SAMONI	
III	ITI		D	AMB	
IIII	IIT		D		
V			D	AMB	
VI	IIT	M	D		
VII			D	AMB	
VIII	TII		D		
VIIII			N	INIS	R
X	IIT		D		
XI			D	AMB	
XII			N	INIS	R
XIII			D	AMB	
XIIII			NSDS		

DIVERTOMV

COLUMN-4 BOTTOM HALF

MONTH-2 YEAR-2





COLUMN-5 TOP HALF

MONTH-3 YEAR-2

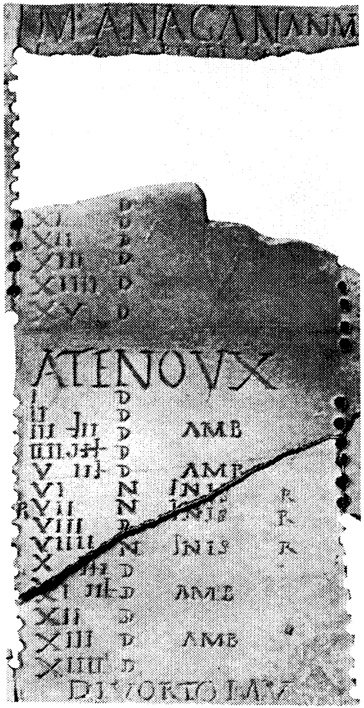
[M RIVR]OS MAT

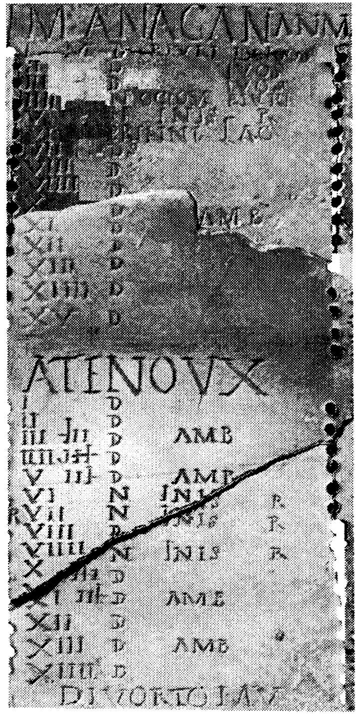
[I D A]NAGANT
[II PRINN]I LOVD
[III N]
[IIII M D TRI]C RIVROS
[V N I]NIS R
[VI M D]
[VII M D]
[VIII PRI]NNI LOVD
[VIIII ITI M D]
[X IIT D]M
[XI N] INIS R
[XII N]
[XIII MD DECIO]MIV G RIV[IVO]
[XIIII DS MA•N•S] IVO[S]
[XV {DS MA•N•S} IVOS]

[ATENOVX]

[I IIT M D EXIVOS]
[II M D IVOS]
[III D AMB IV]OS
[IIII M D IVOS]
[V TII D AMB IVOS]
[VI ITT M D]
[VII IIT D A]MB
[VIII D] PETI(N)VX ANAG
[V]IIII D AMB
X IIT M D PETI(N)VX RIVRI
XI TII D AMB IVOS
XII ITI M D IVOS
XIII IIT D AMB IVOS
XIIII M D IVOS
XV D AMB IVOS

([IIII M D ERI]C RIVROS)





COLUMN-5 TOP HALF

MONTH-4 YEAR-2

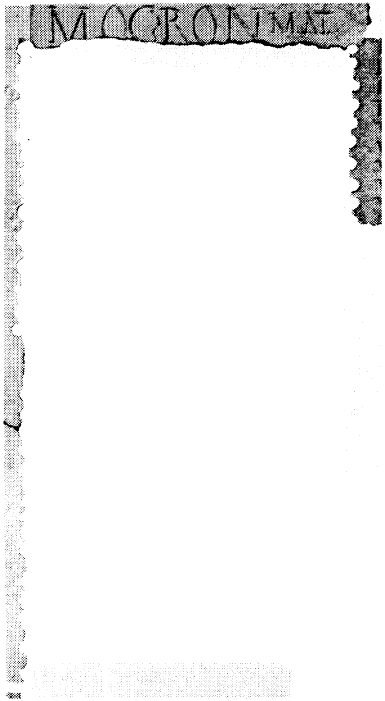
M ANAGAN ANM

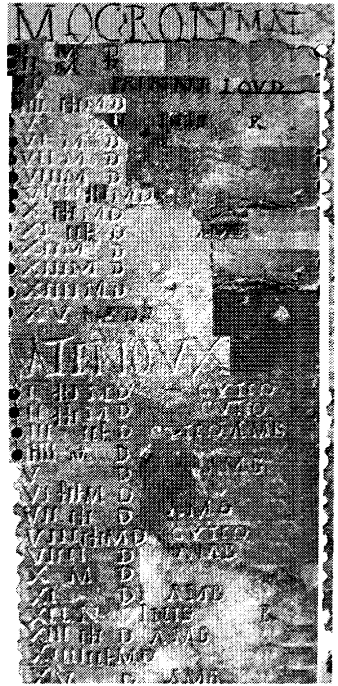
```
 I        M D RIVRI IX IVO[S ]
[II         D          IVOS  ]
[III        D          IVOS  ]
[IIII       N OC(T)IOM(V) RIVRI]
[V          N   INIS       R ]
[VI         PRINNI LAG       ]
[VII      NSDS               ]
[VIII       D                ]
[VIIII      D                ]
[X]         D      [         ]
 XI         D A[MB           ]
 XII        D
 XIII       D
 XIIII      D
 XV         D
```

ATENOVX

```
I           D
II          D
III     TII D AMB
IIII•   ITT D
V       IIT D AMB
VI          N INIS   R
VII         N INIS   R
VIII        D
VIIII       N INIS   R
X       TTI D
XI      IIT D AMB
XII         D
XIII        D AMB
XIIII       D
DIVORTOMV
```

⟨IIII• IIT D⟩
⟨X ?T?TI D⟩





COLUMN-5 BOTTOM HALF

MONTH-5 YEAR-2

M OGRON MAT

[I M D]
[II M D]
[III PRINNI LOVD]
[IIII ITI M D]
[V N INIS R]
[VI M D]
[VII M D]
[VIII M D]
[VIIII TII M D]
[X ITI M D]
[XI IIT D AMB]
[XII M D]
[XIII M D]
[XIIII M D]
[XV NSDS]

[ATENOVX]

[I TII M D CVTIO]
[II {TTI M D CVTIO}]
[III IIT D CVTIO AMB]
[IIII M D]
[V D AMB]
[VI TIT M D]
[VII ITI D AMB]
[VIII ITI M D CVTIO]
[VIIII D AMB]
[X M D]
[XI D AMB]
[XII N INIS R]
[XIII ITI D AMB]
[XIIII IIT M D]
[XV D AMB]

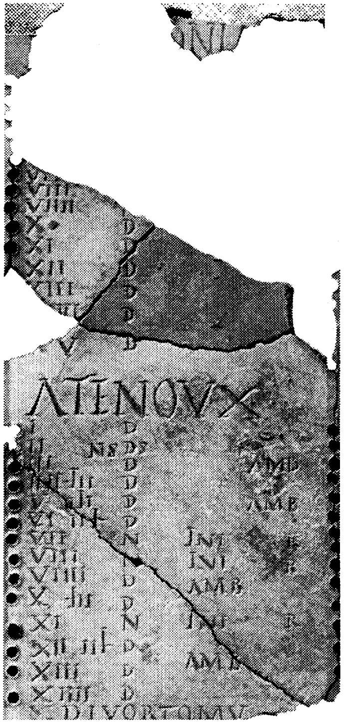
([II {TII M D CVTIO}])

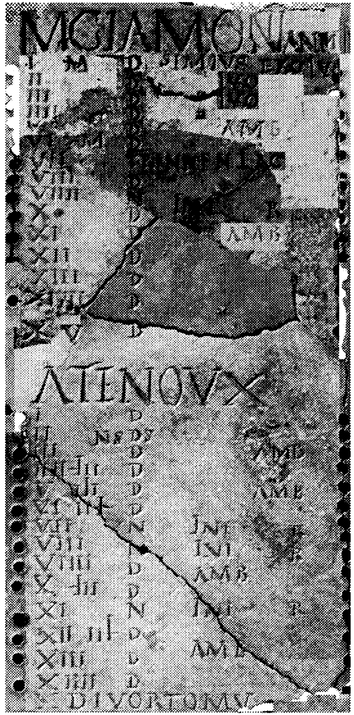
[M CVTIOS MAT]
[I M D]
[II M D]
[III M D]
[IIII PRINNO LOVD]
[V N INI R]
[VI N]
[VII M D]
[VIII M D]
[VIIII N INI R]
[X TII M D]
[XI ITI D AMB]
[XII IIT M D]
[XIII M D]
[XIIII M D]
[XV M D]

[ATENOVX]
[I ITI M D OGRONI]
[II IIT M D OGRO]
[III ITI {D} AMB {OGR}]
[IIII N INI R]
[V D AMB]
[VI N INI R]
[VII TII D AMB]
[VIII IIT M D OGRONI]
[VIIII IIT D AMB]
[X M D]
[XI D AMB]
[XII M D]
[XIII TII D AMB IVO]
[XIIII ITI M D IVO]
[XV IIT D AMB IVO]

COLUMN-5 BOTTOM HALF

MONTH-6 YEAR-2





[M GIAM] ONI A [NM]

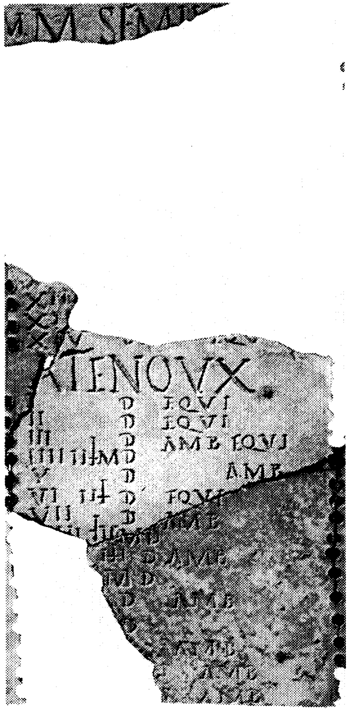
[I M D SIMIVS EXO IVO]
[II D IVO]
[III D IVO]
[IIII D]
[V D AMB]
[VI M D]
VII [PRINNI N LAG]
VIII [D]
VIIII N[INI R]
X D[ ]
XI D [AMB]
XII D [ ]
XIII D [ ]
[X]IIII D [ ]
XV D [ ]

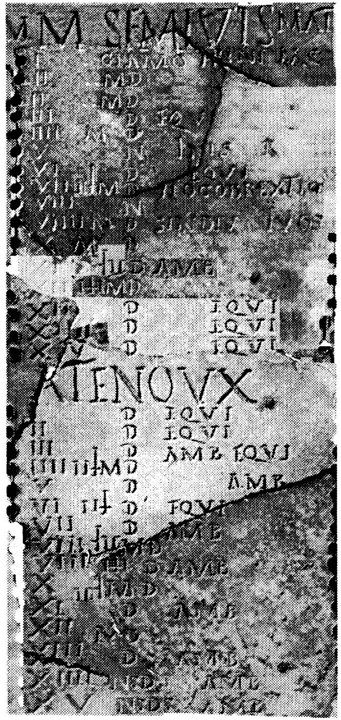
ATENOVX

I D
II NSDS
III D AMB
IIII TII D
V ITI D AMB
VI IIT D
VII N INI R
VIII N INI R
VIIII D AMB
X TII D
XI N INI R
XII IIT D
XIII D AMB
XIIII D
DIVORTOMV

COLUMN-6 TOP HALF

MONTH-7 YEAR-2



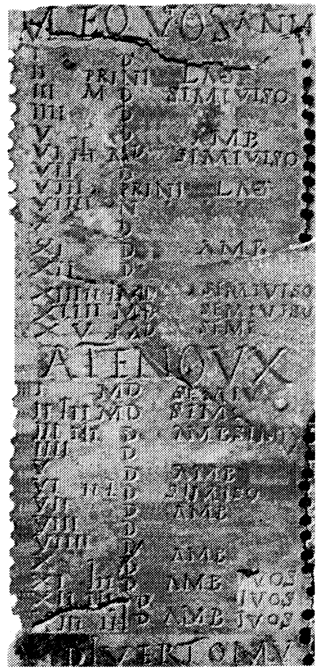


COLUMN-6 TOP HALF

MONTH-8 YEAR-2

```
M  SEMIV[IS MAT  ]
[I          GIAMO PRINI LAG  ]
[II         M D              ]
[III          D EQVI         ]
[IIII       M D              ]
[V            N INIS R       ]
[VI           D EQVI         ]
[VII  IIT   M D TIOCOBREXTIO ]
[VIII         N              ]
[VIIII      M D SINDIV IVOS  ]
[X          M D              ]
[XI   TII     D AMB          ]
 X[II ITI   M D              ]
 XIII [       D    EQVI      ]
 XII[II       D    EQVI      ]
 XV           D    EQVI
ATENOVX
 I            D EQVI
 II           D EQVI
 III          D AMB EQVI
 IIII   IIT M D
 V            D      AMB
 VI     IIT   D EQVI
 VII          D AMB
 VIII   TII M D
[VIII]I ITI   D AMB
[X      II]T M D
[XI        ] D AMB
[XII       M]D
[XIII        D]AMB
[XIIII     NSD]S MAT
[XV        NSD]S AMB

([XIIII NSD]S AMB)
```



COLUMN-6 BOTTOM HALF

MONTH-9 YEAR-2

```
[M  EQ] VOS A [NM]
 I            D[                  ]
 II       PRI [NI  LAG            ]
 III        M D[SIMIVISO          ]
 IIII         D[                  ]
 V            D[    AMB           ]
 VI   ITI  M [D   SIMIVISO        ]
 VII          D[                  ]
 VIII        [PRINI  LAG          ]
 VIIII       [N                   ]
 X            D[                  ]
[XI           D     AMB           ]
[XII          D                   ]
[XIII IIT  M] D     SEMIVISO
[XIIII     M] D     SEMIVISO
[XV        M] D     SEMI
[ATE] NOVX
[I         M  D   SE]MIV
[II   TII  M  D   SEM]I
[III  ITI     D   AMB  SI]MIV
[IIII         D                   ]
[V            D AMB               ]
[VI  {IIT     D SIMISO}           ]
[VII          D AMB               ]
[VIII         D                   ]
[VIIII        D AMB               ]
[X            D                   ]
[XI    TII    D AMB  IVOS         ]
[XII   ITI    D      IVOS         ]
[XIII  IIT    D AMB  IVOS         ]
[DIVERTOMV                        ]
```

COLUMN-6 BOTTOM HALF

MONTH-10 YEAR-2

M ELEMBIV ANM

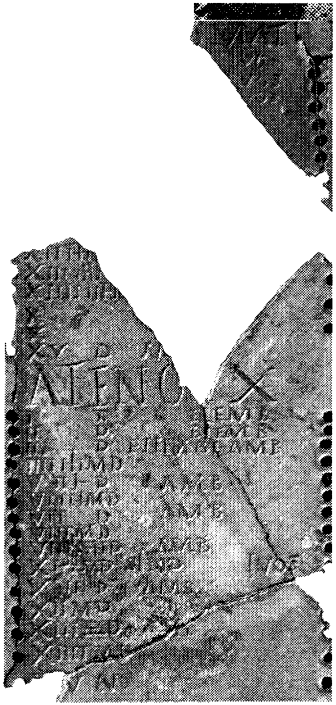
I	D	IVO
II	D	IVO
III	PRINNI LAG	IVO
IIII	D	IVO
V	D (*AMB*)	IVO
VI	D ( )	
VII	D	
VIII	D	
VIIII	*PRINNI LAG*	
X	N INI R	
XI	D AMB	
XII	D	
XIII	D	
XIIII	D	
XV	*N*	

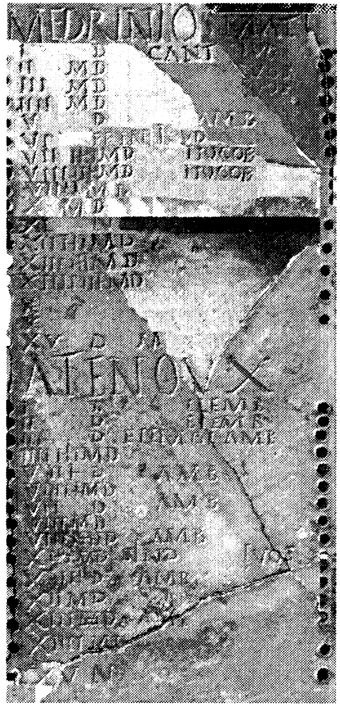
ATENOVX

I	M	D	EDRINI
II	M	D	EDRINI
III	TII	D	AMB EDRIN
IIII		D	
[V]		D	AMB
[VI	IIT]	D	
[VII		D]	AMB [ ]
[VIII		D	]
[VIIII		D	AMB]
[X		D	]
[XI		D	AMB]
[XII	TII	D	]
[XIII	ITI	D	AMB]
[XIIII	IIT	D	]

[DIVERTOMV]

⟨V D (   ) IVO⟩
⟨VI D (*AMB*)⟩
⟨at VIIII *PRINNI LAG* normally D⟩
⟨at XV *N* normally D⟩





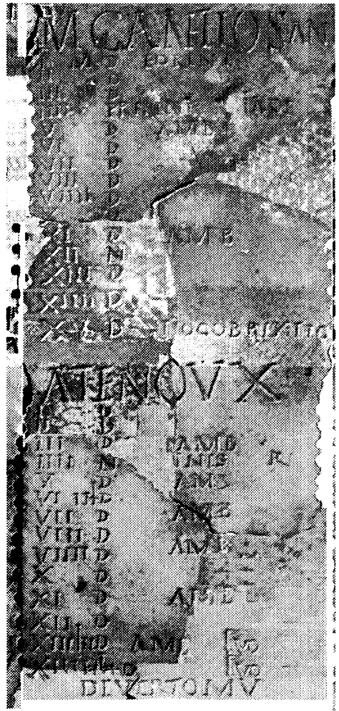
COLUMN-7 TOP HALF

MONTH-11 YEAR-2

```
[M  EDRINIO] S MAT
[I          D  CANT] IVO
[II      M  D       ] IVOS
[III     M  D      I] VOS
[IIII    M  D        ]
[V          D  AMB         ]
[VI         PRIN    LOVD    ]
[VII  ITI  M  D  TIOCOB      ]
[VIII IIT  M  D  TIOCOB       ]
[VIIII     M   D               ]
[X       M  D                  ]
[XI         N                 ]
 XII  TTI  [M   D            ]
 XIII  ITT  M  [D          ]
 XIIII  IIT  M[D        ]

*XV         D    M[   ]
 ATENOVX
 I          D       ELEMB
 II         D       ELEMB
 III        D  ELEMBI  AMB
 IIII  ITI  M  D
 V  IIT     D    AMB
 VI  IIT   (  ) D
 VII        D    AMB
 VIII    M  D
 VIIII  TII  D  AMB
 X   ITT  M  D  SIND   IVOS
 XI  IIT    D  AMB
 XII     M  D
 XIII    *  D  AMB
 XIIII      M  D
 XV         N (SDS) (AMB)
```

⟨XII ITI [M D]⟩
⟨* two lines with erased X alone between XIIII and XV⟩
⟨VI IIT M D⟩
⟨* erased M at XIII⟩



M CANTLOS ANM

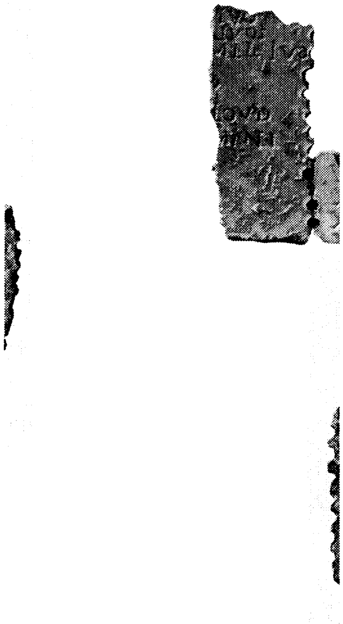
I M D EDRINI
II D
III D
IIII PRINNI LAGE
V D AMB
VI D [ ]
VII D [ ]
VIII D [ ]
VIIII D [ ]
X D
[XI D] AMB
[XII N]
[XIII D]
[XIIII D]
[XV D T] IOCOBREXTIO

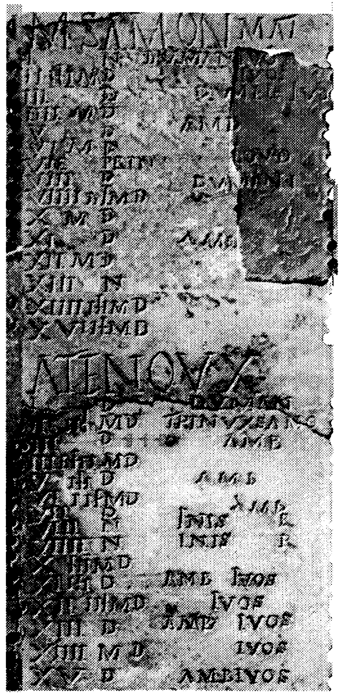
[ATEN] OVX

[I D]
[II D]
III [D] AMB
IIII N INIS R
V D AMB
VI IIT D
VII D AMB
VIII D
VIIII D AM [B]
X D [ ]
XI D A [MB]
XII D [ ]
XIII TII D AMB[IVO]
XIIII•ITI D [IVO]
[DIVERTOMV]

COLUMN-7 TOP HALF

MONTH-12 YEAR-2



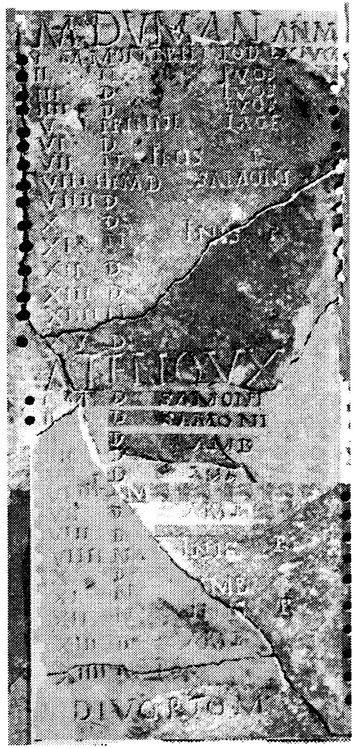


COLUMN-7 BOTTOM HALF

MONTH-1 YEAR-3

```
[M  SAMON MAT                ]
[I          N DVMAN]  IVO
[II  ITI  M D        ]  IVOS
[III        D     DV]M  ALE  IVO
[IIII     M D        ]
[V          D     AM]B
[VI       M D        ]
[VII        PRIN      ]LOVD
[VIII       D       DV]MANI
[VIIII  IIT  M  D                  ]
[X        M  D                     ]
[XI         D     AMB              ]
[XII      M  D                     ]
[XIII       N                      ]
[XIIII  ITI  M  D                  ]
[XV     IIT  M  D                  ]
[ATENOVX                    ]
[I          D         DVMAN        ]
[II  IIT    M  D  TRI(TI)NVX  SAMO]
[III        D            AMB       ]
[IIII  TII  M  D                   ]
[V    ITI  D        AMB            ]
[VI   IIT  M  D                    ]
[VII       D             AMB       ]
[VIII      N      INIS      R      ]
[VIIII     N      INIS      R      ]
[X    {TII  M  D}                  ]
[XI   ITI  D        AMB  IVOS      ]
[XII  IIT  M  D       IVOS         ]
[XIII      D        AMB  IVOS      ]
[XIIII     M  D          IVOS      ]
[XV        D        AMB  IVOS      ]
```

[III D DV]M ALE IVO



COLUMN-7 BOTTOM HALF

MONTH-2 YEAR-3

M DVM [AN ANM]

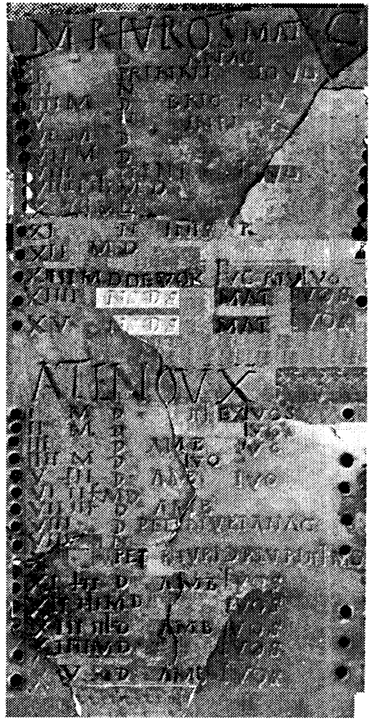
I SAMON PRIN LOD EX[IVO]
II N IVOS
III D IVOS
IIII D IVOS
V PRINNI LAGE
VI D
VII N INIS R
VIII ITI M D SAMONI
VIIII D
X D
XI N INIS R
XII D
XIII D
XIIII N
XV D

ATENOVX

I M[D SAMONI]
II M[D SAMONI]
III [D AMB]
IIII [D]
V D [AMB]
VI IIT D [M]
VII D [AMB]
VIII D]
VIIII N INIS R
X D
XI *D* AMB
XII N INIS R
XIII D AMB
XIIII NSDS

DIVORTOM

XI *N* AMB



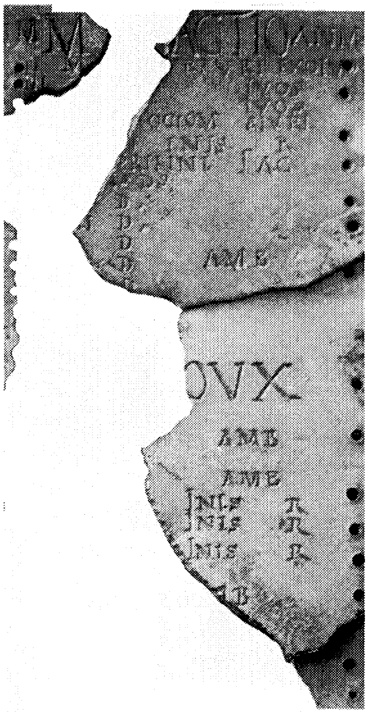
```
M  RIVROS MAT
I                 D   ANAG
II                PRINNI  LOVD
III               N
IIII           M  D   TRIC RIV
V                 N    INIS  R
VI             M  D
VII            M  D
VIII              PRINI   LO[VD
VIIII ITI      M  D          [        ]
X      IIT     M  D         [         ]
[XI               N    INIS  R        ]
[XII           M  D                   ]
X[III M D DECIOMIV G RIV IVO]
XIIII[           NSDS MAT    IVOS]
XV               N[SDS MAT   IVOS]

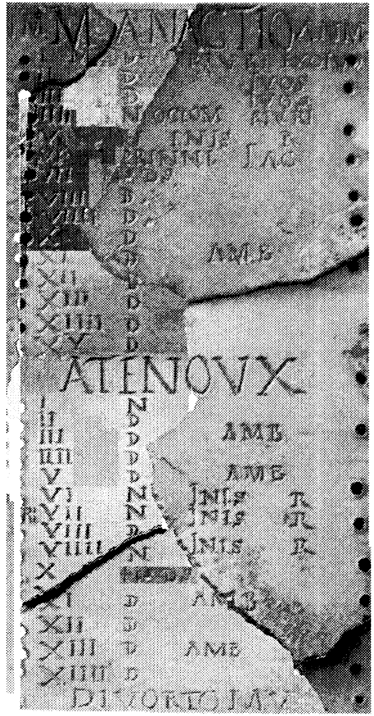
ATENO [VX        ]
I              M D[IIT     EXIVOS]
II             M  D   [        IV]OS
III               D  AM[B     I]VO
IIII           M  D    [IVO ]
V       TII       D  AM[B]     IVO
VI      ITT    M  D
VII     IIT       D  AMB
VIII              D  PETVRIV()ANAG
VIIII             N
[X     PETV]RIV()RIVRI  IIT M D
[XI     TII       D  AMB]    IVOS
[XII   {ITI    M  D}        I]VOS
[XIII   IIT       D  AMB    ]IVOS
X[IIII         M  D        ] IVOS
XV[               D  AM]B    IVOS
```

```
IIII   M D BRIC RIV
X[III M D DECORIV G RIV IVO]
VIII D PETIRIVRI ANAG
[X PETI]RIVRI Ↄ RIVRI IIT M D
```

COLUMN-8 TOP HALF

MONTH-3 YEAR-3





M [AN] AGTIO ANM

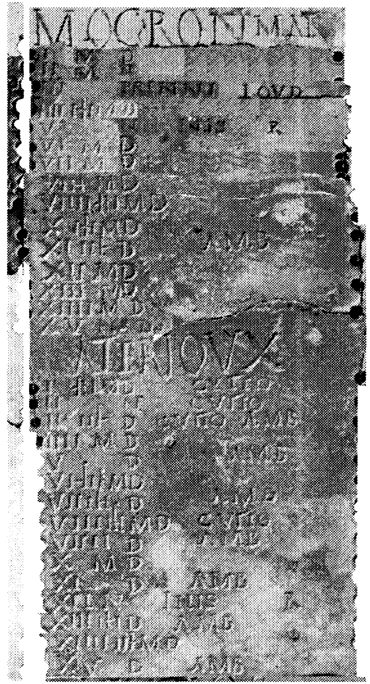
I M [D] RIVRI EXO IVO
II [D] IVOS
[III D] IVOS
[IIII N] OC(T)IOM RIVRI
[V]N INIS R
[VI]PRINNI LAG
[VII]NSDS
[VIII] D
[VI]III D
[X] D
[XI] D AMB
[XII] D
[XIII D]
[XIIII D]
[XV D]

[ATEN] OVX

[I N]
[II D]
[III D] AMB
[IIII D]
[V D] AMB
[VI N] INIS R
[VII N] INIS R
[VIII D]
[VIIII N] INIS R
[X NSDS]
[XI D A]MB
[XII D]
[XIII {D AMB}]
[XIIII D]
[DIVORTOMV]

COLUMN-8 TOP HALF

MONTH-4 YEAR-3

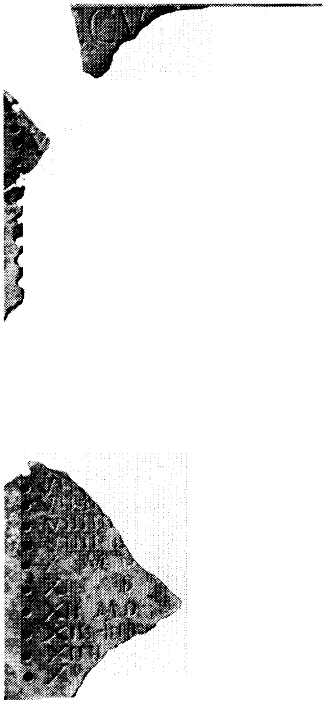


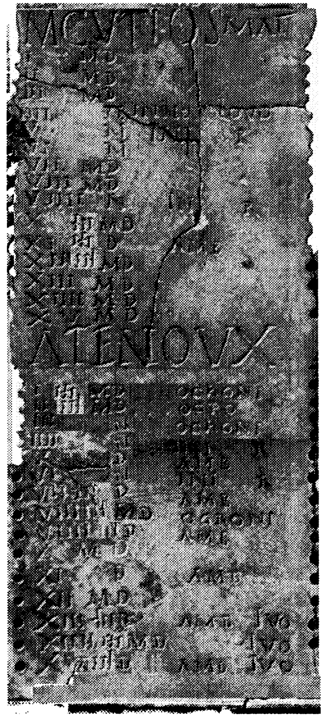
```
[M   OGRON MA] T
[I        M D              ]
[II       M D              ]
[III        PRINNI LOVD    ]
[IIII ITI M D              ]
[V          N INIS R       ]
[VI       M D              ]
[VII      M D              ]
 VIII     M D
 VIIII TII M D
 X   ITI M D
 XI  IIT   D    AMB
 XII      M D
[XIII     M]D
[XIIII     M D]
[XV        NSDS]
[     ATE] NOVX
[I  TII] M D    CVTIO
[II]       N    CVTIO
[I]II IIT  D  CVTIO AMB
 IIII     M D
 V          D      AMB
 VI  TIT M D
 VII  ITI  D     AMB
 VIII  ITI M D  CVTIO
 VIIII      D   AMB
 X        M D
 XI         D  AMB
 XII       N INIS      R
 XIII  ITI D AMB
[X]IIII IIT M D
[X]V        D  AMB
```

COLUMN-8 BOTTOM HALF

MONTH-5 YEAR-3

At VI the *T* is formed from an I.

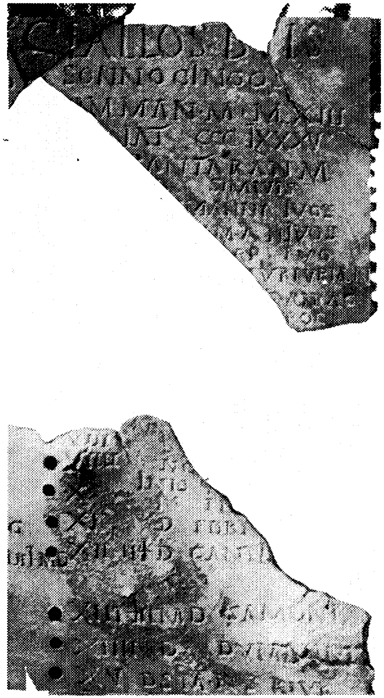


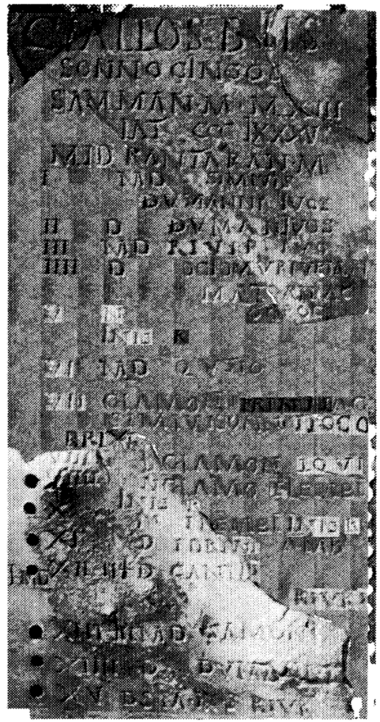


COLUMN-8 BOTTOM HALF

MONTH-6 YEAR-3

```
M  CVT [IOS MAT]
[I        M D          ]
[II       M D          ]
[III      M D          ]
 II[II      PRINNO LOVD]
 V[         N   INI   R]
 V[I        N          ]
[VII      M D          ]
[VIII     M D          ]
[VIIII      N     INI R]
[X   TII    M D        ]
[XI  ITI    D     AMB  ]
[XII IIT    M D        ]
[XIII       M D        ]
[XIIII      M D        ]
[XV         M D        ]
[ATENOVX               ]
[I  ITI  M D    OGRONI]
[II  IIT M D    OGRO  ]
[III        N   OGRONI]
[IIII       N   INI  R]
 V[         D   AMB   ]
 VI[        N   INI  R]
 VII TI[I   D   AMB   ]
 VIII IIT [M D  OGRONI]
 VIIII IIT [D   AMB   ]
 X        M D[        ]
 XI         D[  AMB   ]
 XII      M D[        ]
 XIII TII   D[  AMB IVO]
 XIIII I[TI M D     IVO]
 XV [{IIT   D   AMB}IVO]
```





CIALLOS B[I]IS

SONNO CINGOS

[S] AMMAN•M•M•XIII

LAT CCCLXXXV

[MID] RANTARAN•M

[I M]D SIMIVIS

[D]VMANNI (EX)IVOS

[II D D]VMAN IVOS

[III M D RIV]RI IVO

[IIII D OCIO]MV RIVRI AN

[MA]T ANAG

[V N OG]RO G

[INIS R]

[VI M D QVITIO]

[VII GIAMON PRINI LAG]

[SIMIVISONN TIOCO]

[BRI]XT[ ]

VIII D [GIAMO EQVI]

VIIII N G[IAMO ELEMB]

INIS [R]

X N EL[EMB INIS R]

XI D EDRI[NI AMB]

XII IIT D CANTL[I]

[RIVRI]

XIII TII M D SAMONI

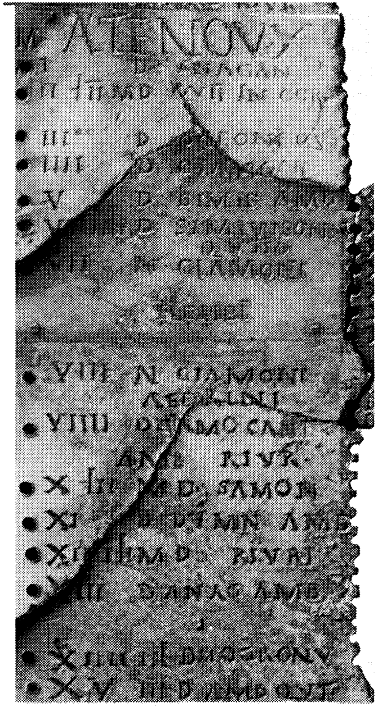
XIIII D DVMANNI

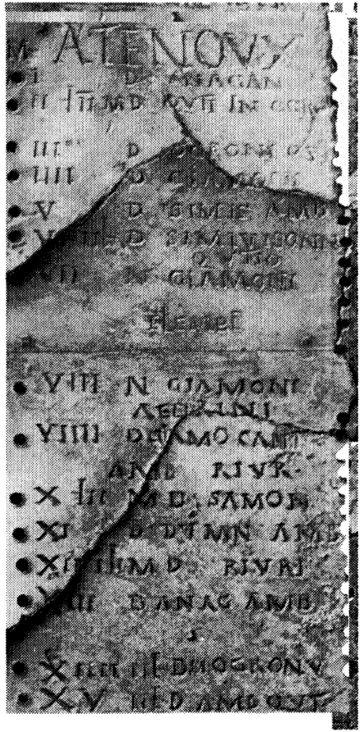
XV DSMA•N•S RIVR

[?S?]AMMAN; ?R?ANTARAN

COLUMN-9 TOP HALF

INTERCALARY MONTH 2 FIRST HALF





ATENOVX

```
I                D ANAGAN
II    TTI  M  D QVTI  IN OGRO

III              D OGRONI QVT  (AMB)
IIII             D GIAMONI

V                D SIMIS   AMB
VI    IIT        D SIMIVISONN
                   (E)QVI
VII              N GIAMONI

                   ELEMBI

VIII             N GIAMONI
                   AEDRINI
VIIII            N GIAMO CANT

                AMB       RIVR
X     TII        M D       SAMON

XI               D DVMN    AMB

XII   ITI        M D  RIVRI

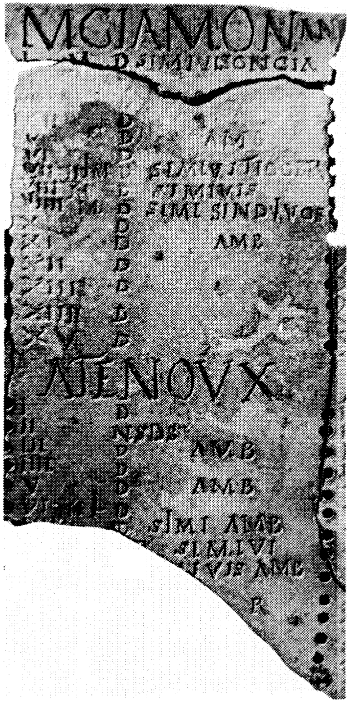
XIII             D ANAG AMB

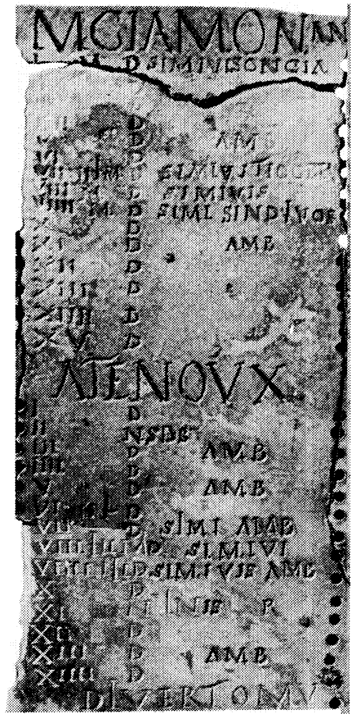
XIIII IIT          D M OGRONV
XV     IIT         D AMB   QVT
```

At II the second T of TTI is formed from I.
VIIIT D SIMIVISONN *QVTIO*
VIIII *N* GIAMO CANT AMB RIVR

<u>COLUMN-9 TOP HALF</u>

<u>INTERCALARY MONTH 2 SECOND HALF</u>





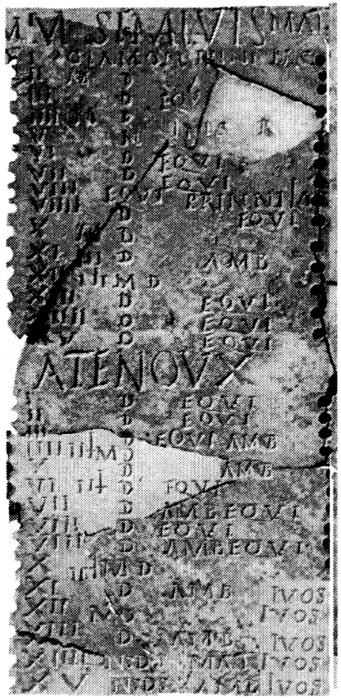
M GIAMON AN [M]
I M D SIMIVISON GIA
II D
III D
IIII D
V D AMB
VI D
VII IIT M D SIMIVI TIOCBR
VIII M D SIMIVIS
VIIII M D SIMI SIND IVOS
X D
XI D AMB
XII D
XIII D
XIIII D
XV D

ATENOVX

I D
II NSDS
III D AMB
IIII D
V D AMB
VI IIT D
VII D SIMI AMB
[VIII TII M]D SIMIVI
[VIIII ITI D SI]MIVIS AMB
[X D]
[XI N INIS] R
[XII D]
[XIII D AMB]
[XIIII D]
[DIVERTOMV]

COLUMN-9 BOTTOM HALF

MONTH-7 YEAR-3



M SIMIV[I MA]T

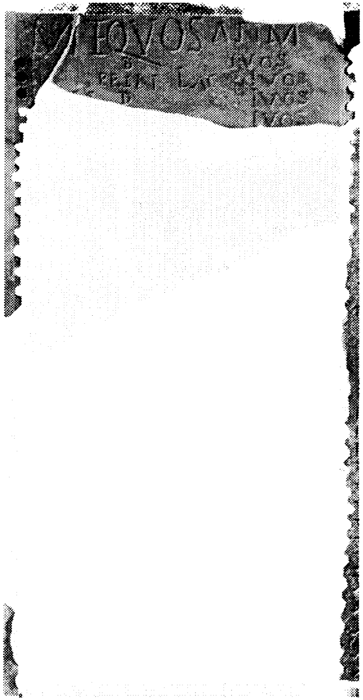
I GIAMON P[RINI LAG]
II M D [ ]
III D EQ[VI]
IIII M D [ ]
V N [INIS R]
VI D EQVI
VII D EQVI
VIII EQVI PRINNI LAG
VIIII D EQVI
X M D
XI TII D AMB
XII ITI M D
XIII D EQVI
XIIII D EQVI
XV D EQVI

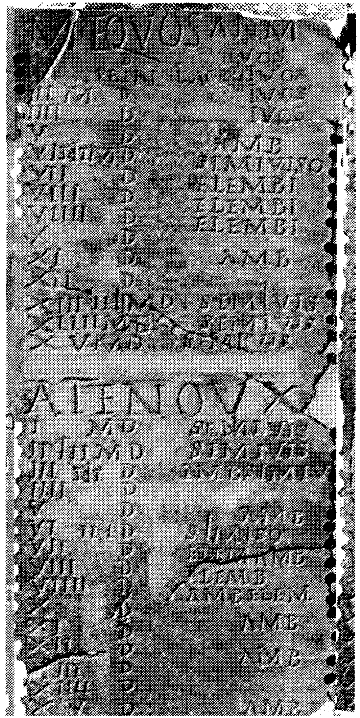
ATENOVX

I D EQVI
II D EQVI
III D EQVI AMB
[IIII IIT M D]
[V D AMB]
[VI IIT D EQVI]
[VII D AMB EQVI]
[VIII D EQVI]
[VIIII D AMB EQVI]
[X IIT M D]
[XI D AMB IVOS]
[XII M D IVOS]
[XIII D AMB IVOS]
[XIIII NSDS MAT IVOS]
[XV NSDS AMB IVOS]

<u>COLUMN-9 BOTTOM HALF</u>

<u>MONTH-8 YEAR-3</u>





COLUMN-10 TOP HALF

MONTH-9 YEAR-3

M EQVOS ANM

I D IVOS
II PRIN LAG IVOS
I[II] M D (SEMI) IVOS
[IIII D] IVOS
[V D AMB]
[VI ITI M D SIMIVISO]
[VII D ELEMBI]
[VIII D ELEMBI]
[VIIII D ELEMBI]
[X D]
[XI D AMB]
[XII D]
[XIII IIT M D SEMIVIS]
[XIIII M D SEMIVIS]
[XV M D SEMIVIS]

[ATENOVX]

[I M D SEMIVIS]
[II TII M D SEMIVIS]
[III ITI D AMB SIMIV]
[IIII D]
[V D AMB]
[VI IIT D SIMISO]
[VII D ELEM AMB]
[VIII D ELEMB]
[VIIII D AMB ELEM]
[X D]
[XI D AMB]
[XII D]
[XIII D AMB]
[XIIII D]
[XV D AMB]

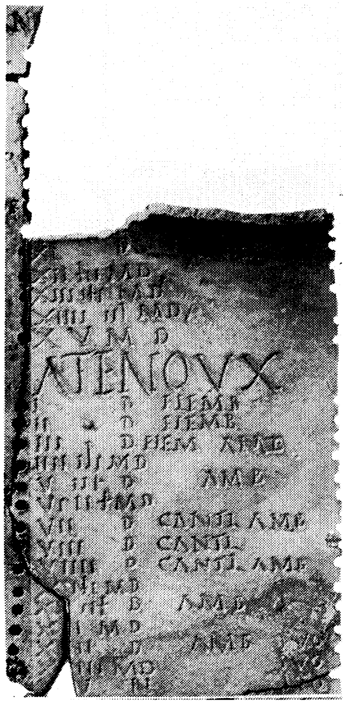
[M ELEMB ANM]
[I D IVOS]
[II D IVOS]
[III PRINNI LAG IVOS]
[IIII D]
[V D AMB]
[VI D]
[VII ITI M D EDRIN TIOCOB]
VIII [IIT M D ED]RIN TIOCOB
VIIII M D EDRINI
X N INIS R
XI D AMB
XII D
XIII D
XIIII D
XV D

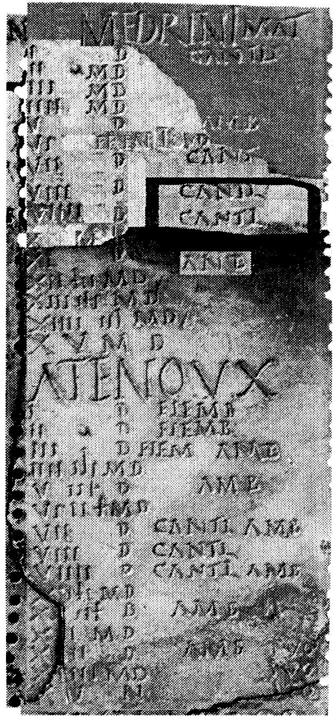
ATENOV [X]

I [M D EDRINI]
II [M D EDRINI]
[III TII D AMB EDRIN]
[IIII D]
[V D AMB]
[VI IIT D]
[VII D EDRINI AMB]
[VIII M D EDRINI]
[VIIII TII D AMB EDRINI]
[X D SIND IVOS]
[XI D AMB]
[XII D]
[XIII D AMB]
[XIIII D]
[DIVERTOMV]

COLUMN-10 TOP HALF

MONTH-10 YEAR-3





COLUMN-10 BOTTOM HALF

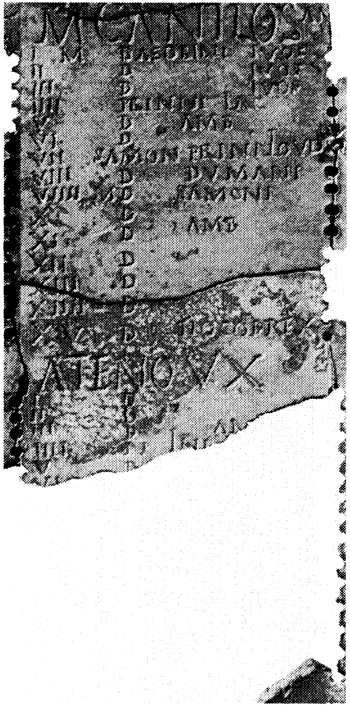
MONTH-11 YEAR-3

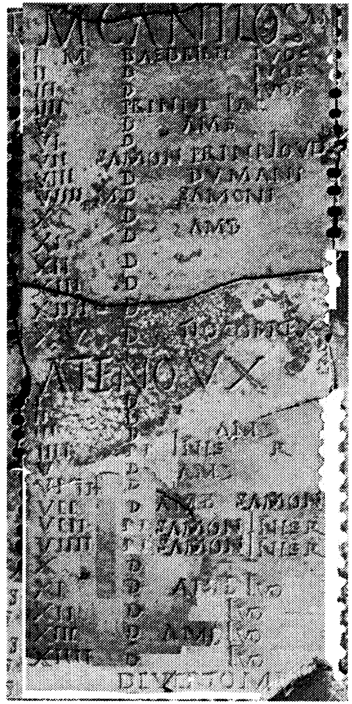
[M EDRINI MAT]
[I D CANTLI]
[II M D]
[III M D]
[IIII M D]
[V D AMB]
[VI PRIN LOVD]
[VII D CANT]
[VIII D] CANTL
[VIIII D] CANTL
X M D
XI D AMB
XII TII M D
XIII ITI M D
XIIII IIT M D
XV M D

ATENOVX

I D ELEMB
II D ELEMB
III D ELEM AMB
IIII ITI M D
V IIT D AMB
VI IIT ( )D
VII D CANTL AMB
VIII D CANTL
VIIII D CANTL AMB
X ITI M D
XI IIT D AMB
XII M D
XIII D AMB IVO
XIIII M D IVO
XV N(SDS) (AMB) IVO

XI D AMB
VI IIT M D





COLUMN-10 BOTTOM HALF

MONTH-12 YEAR-3

```
M  CANTLOS AN[M]
I        M D AEDRINI  IVOS
II         D          IVOS
III        D          IVOS
IIII         PRINNI LAG
V          D   AMB
VI         D
VII      SAMON PRINI LOVDN
VIII       D   DVMANI
VIIII    M D  SAMONI
X          D
XI         D   AMB
XII        D
XIII       D
XIIII      D
XV         D   TIOCOBREX
ATENOVX
I          D
II         D
III        D    AM[B          ]
IIII       N   INI[S R        ]
V          D[  AMB            ]
VI   [IIT  D                  ]
[VII       D  AMB SAMON       ]
[VIII      N  SAMON   INIS  R]
[VIIII     N  SAMON   INIS  R]
[X         D                  ]
[XI        D   AMB  IVO       ]
[XII       D       IVO        ]
[XIII      D  AMB  IVO        ]
[XIIII     D       IVO        ]
  [DIVERTOM] V
```

VII SAMON PRINI LOVD?N?

M [SAMON MAT]
[I D DVMAN IXIVOS]
[II M D IVOS]
[III D DVM ALE IVOS]
[IIII M D IVOS]
[V D AMB]
VI M [D]
VII N [DVMAN INIS R]
VIII M D S [AMO]
VIIII D DVMA [NN]
X M D
XI D AMB
XII M D
XIII TII M D
XIIII *ITI* M D
XV IIT M D

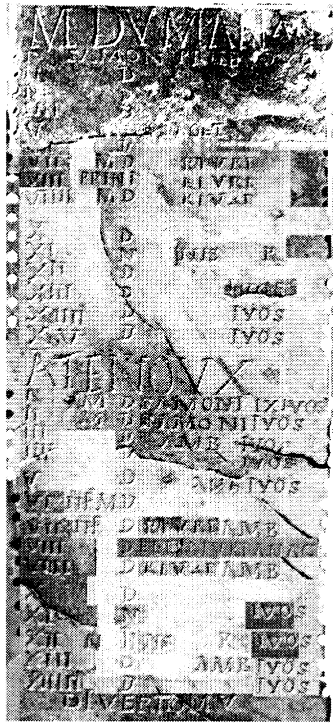
ATENOVX

I D DVMANI
II (M) D *TRINV* SAM SINDIV
III D AMB
IIII TII M D
V ITI D AMB
VI IIT M D
VII D DVM AMB
VIII D DVM
VIIII N DVM INIS R
X TII M D
XI ITI D AMB
XII IIT M D
XIII D AMB
XIIII M D
XV D AMB

COLUMN-11 TOP HALF

MONTH-1 YEAR-4

[III D DVM ELE IVOS]
XIIII IIT M D
II D PRINI SAM SINDIV

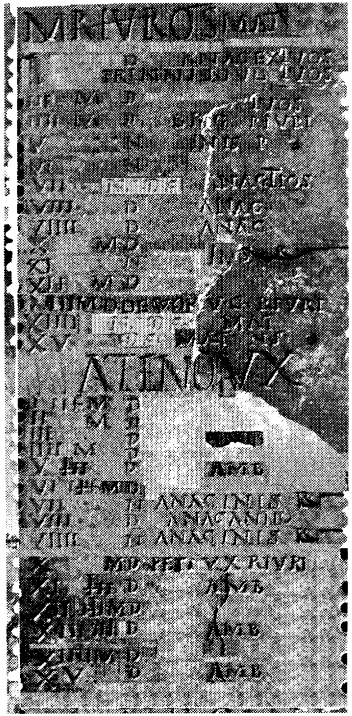


COLUMN-11 TOP HALF

MONTH-2 YEAR-4

```
M  DVMAN ANM
 I       SAMON PRINI LOVDI
 II         D
 III        D
 IIII       D
 V       PRINI  [LAGET       ]
 VI        [D                ]
[VII     M D    RIVRI        ]
[VIII   PRINI   RIVRI        ]
[VIIII   M D    RIVRI        ]
[X          D                ]
[XI         N INIS       R   ]
[XII        D                ]
[XIII       D          IVOS  ]
[XIIII      D          IVOS  ]
[XV         D          IVOS  ]
[ATENOVX                     ]
[I       M D SAMONI IXIVO    ]
[II      M D SAMONI IVOS     ]
[III        D     AMB IVOS   ]
[IIII       D         IVOS   ]
[V          D     AMB IVOS   ]
[VI IIT M D                  ]
[VII IIT   D RIVRI AMB       ]
[VIII      D PETVRIV()ANAG]
[VIIII     D RIVRI AMB       ]
[X         D                 ]
[XI        N          IVOS   ]
[XII       N INIS R IVOS     ]
[XIII      D     AMB IVOS    ]
[XIIII     D         IVOS    ]
[DIVERTIOMV                  ]
```

(VIII D PETIRIVRI ANAG)



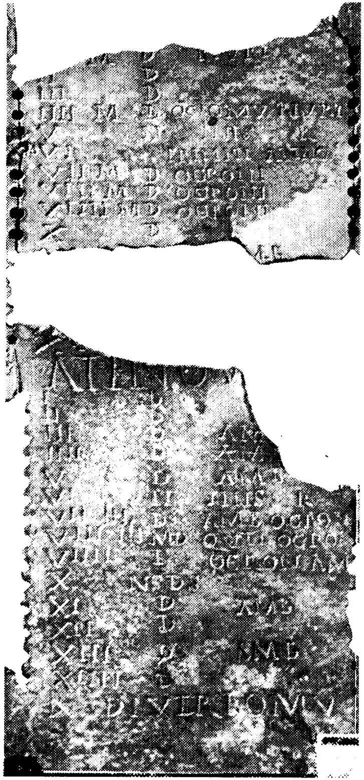
COLUMN-11 BOTTOM HALF

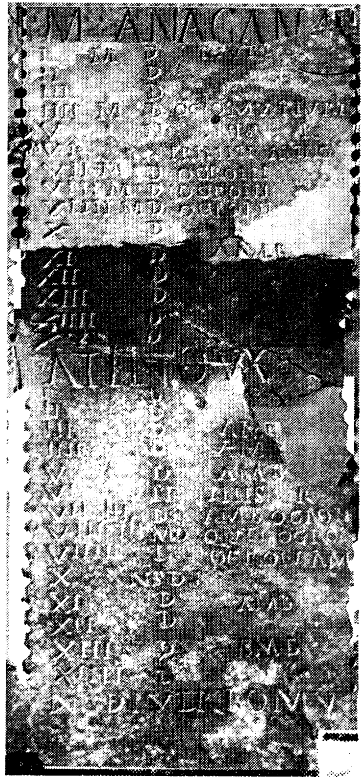
MONTH-3 YEAR-4

[M RIVROS MAT]
[I D ANAG EXIVOS]
[II PRINNI LOVD IVOS]
[III M D] IVOS
[IIII M D TR]IC RIVRI
[V N I]NIS R
[VI N]
[VII NSDS] ANAGTIOS
[VIII D] ANAG
[VIIII D A]NAG
[X M D]
[XI N IN]IS R
[XII M D]
[XIII M D DECIOM]IV•G•RIVRI
[XIIII NSDS] MAT
[XV DS] MAT NS

[ATEN]OVX
[I IIT M D]
[II M D]
[III D AMB]
[IIII M D]
[V TII D AMB]
[VI ITT M D]
[VII N ANAG INIS R]
[VIII D ANAG]
[VIIII N ANAG INIS R]
[X M D PETI(N)VX RIVRI]
[XI TII D AMB]
[XII ITI M D]
[XIII IIT D AMB]
[XIIII M D]
[XV D AMB]

[IIII M D BR]IC RIVRI
[XIII M D DEUOM]IV•G•RIVRI





COLUMN-11 BOTTOM HALF

MONTH-4 YEAR-4

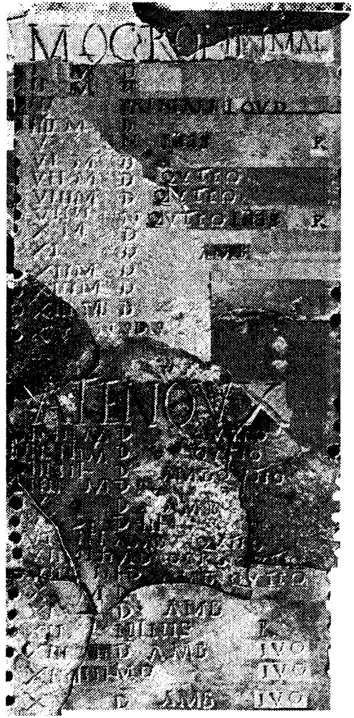
[M ANAGAN] AN

[I] M D RIVRI
II D
III D
IIII M D OC(T)IOMV RIVRI
V N INIS R
VI PRINNI ANAG
VII M D OGRONI
VIII M D OGRONI
VIIII M D OGRONI
X D
[XI D A]MB
[XII D]
[XIII D]
X[IIII D]
XV[D]

ATENOV[X]

I D [ ]
II D [ ]
III D AM[B]
IIII D ( )
V D AMB
VI N INIS R
VII TTI D AMB OGRON
VIII ITI MD QVTI OGRON
VIIII D OGRON AMB
X NSDS
XI D AMB
XII D
XIII D AMB
XIIII D
( ) DIVIRTOMV

IIII D (*AMB*) (with AMB erased)
At VII the second T of TTI is formed from I.
Erased X before DIVIRTOMV

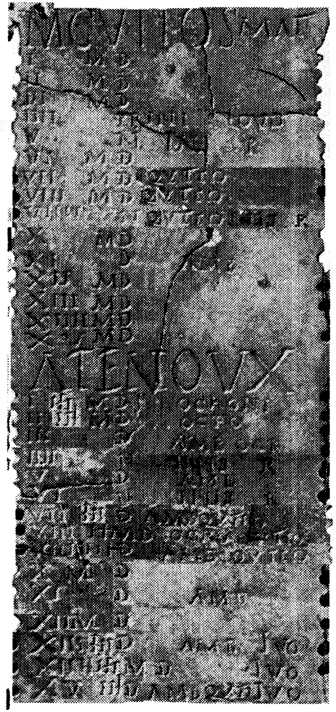


COLUMN-12 TOP HALF

MONTH-5 YEAR-4

```
M  OG] RONN [MA] T
[I          M D              ]
[II         M D              ]
[III          PRINNI LOVD    ]
[IIII       M D              ]
[V            N INIS   R     ]
[VI         M D              ]
[VII        M D QVTIO        ]
[VIII       M D QVTIO        ]
[VIIII        N QVTIO INIS R]
[X          M D              ]
[XI           D   AMB        ]
[XII        M D              ]
 XI[II      M D              ]
 XIIII[     M D              ]
 XV     [    NSDS            ]
 ATENOVX
 I      TII M D      QVTIO
 II     ITI M D      QVTIO
 III     IIT  D    AMB QVTIO
 IIII       M D
 V            D    AMB
 VI        (M)D TIT
 VII    TTI(D)AMB    QVTIO
 VIII    IIT  M D OGRO QVTIO
 VIIII   IIT  D    AMB QV[TIO]
 X          M D[             ]
 XI          [D    AMB       ]
 XII        [ N INIS R       ]
 XIII   [ITI  D    AMB   IVO ]
 XIIII[ IIT   M D        IVO ]
 XV  [        D    AMB   IVO ]
```

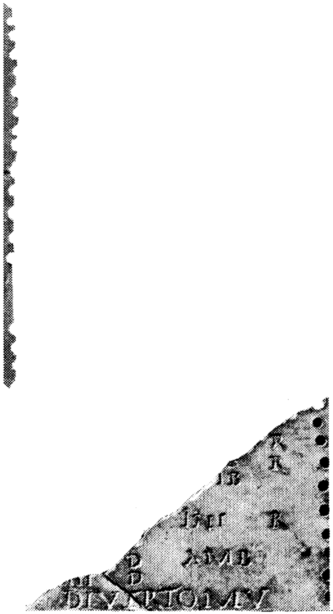
VII TTI(D)AMB QVTIO

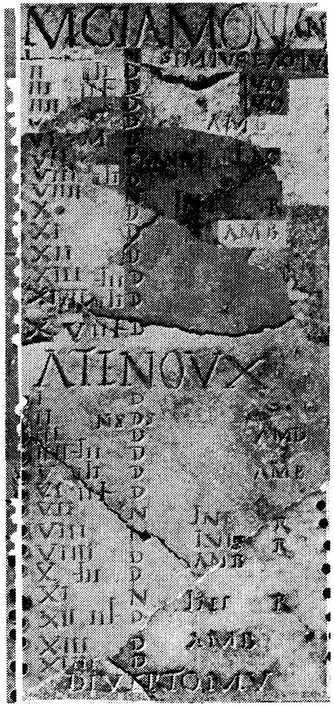


COLUMN-12 TOP HALF

MONTH-6 YEAR-4

[M CVTIOS MAT]
[I   M D   ]
[II   M D   ]
[III   M D   ]
[IIII   PRINI LOVD   ]
[V   N INI R   ]
[VI   M D   ]
[VII   M D   QVTIO   ]
[VIII   M D   QVTIO   ]
[VIIII   N QVTIO INIS R]
[X   M D   ]
[XI   D AMB   ]
[XII   M D   ]
[XIII   M D   ]
[XIIII   M D   ]
[XV   M D   ]
[ATENOVX   ]
[I   ITI M D   OGRONI   ]
[II   IIT M D   OGRO   ]
[III   D AMB OGR   ]
[IIII   N INIS R   ]
[V   D AMB   ]
[VI   N INIS R   ]
[VII   TII D AMB QVTIO   ]
[VIII IIT   M D OGRO QVTIO]
[VIIII IIT   D AMB QVTIO]
[X   M D   ]
[XI   D AMB   ]
[XII   M D   ]
[XIII TII   D AMB   IVO]
[XIIII ITI   M D   IVO]
[XV   IIT   D AMB QVT IVO]



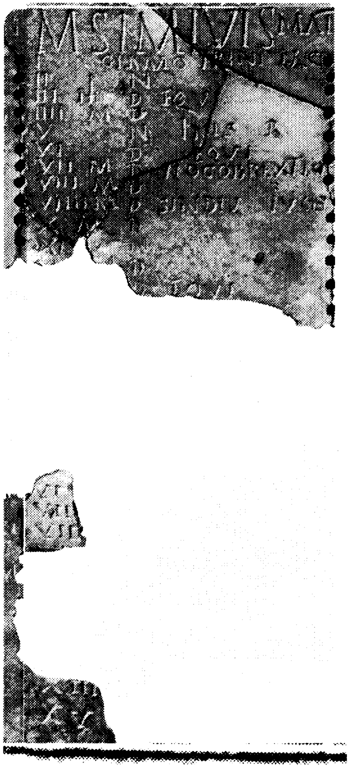


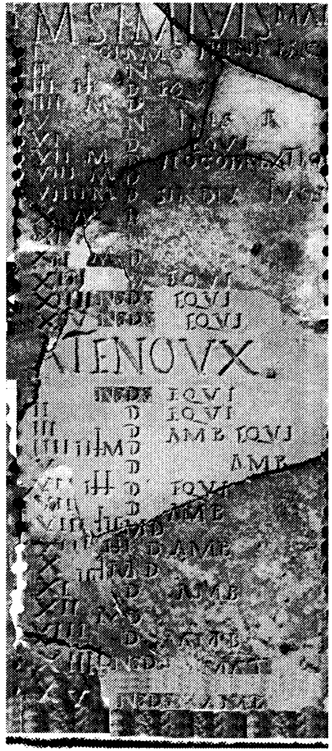
[M GIAMONI ANM]
[I N SIMIVS EXO IVO]
[II ITI D IVO]
[III IIT D IVO]
[IIII D]
[V D AMB]
[VI M D]
[VII PRINNI LAG]
[VIII ITI D]
[VIIII N INI R]
[X D]
[XI D AMB]
[XII D]
[XIII TII D]
[XIIII ITI D]
[XV IIT D]

[ATENOVX]
[I D]
[II NSDS]
[III D AMB]
[IIII TII D]
[V ITI D AMB]
[VI IIT D]
[VII N INI] R
[VIII N INI]S R
[VIIII D A]MB
[X TII D]
[XI N] INI R
[XII IIT]D
[XIII] D AMB
[X]IIII D
DIVIRTOMV

COLUMN-12 BOTTOM HALF

MONTH-7 YEAR-4





COLUMN-12 BOTTOM HALF

MONTH-8 YEAR-4

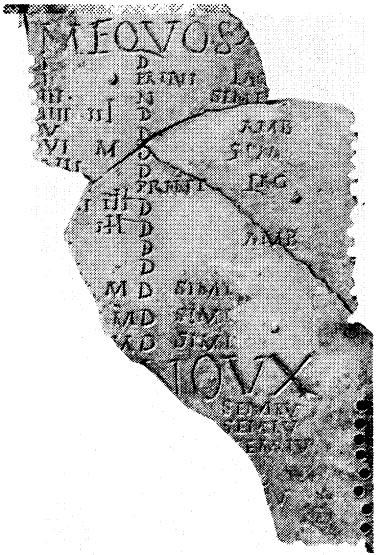
M SIMIVIS MAT

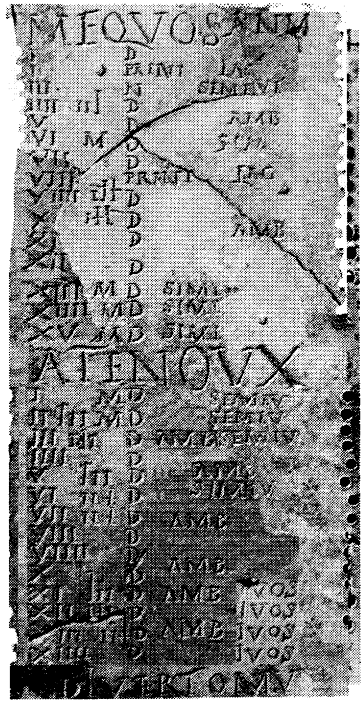
I GIAMO PRINI LAG
II N
III ITI D EQVI
IIII M D
V N INIS R
VI D EQVI
VII M D TIOCOBREXTIO
VIII M D
VIIII M D SINDIV IVOS
X M D
XI (*D AMB*)
X[II] M D
[XIII]D EQVI
[XIIII NSDS EQVI]
[XV NSDS EQVI]

[ATENOVX]

[I NSDS EQVI]
[II D EQVI]
[III D AMB EQVI]
[IIII IIT M D]
[V D AMB]
VI [ITT D EQVI]
VII [D AMB]
VIII [TII M D]
VIIII [ITI D AMB]
[X IIT M D]
[XI D AMB]
[XII M D]
[XIII D AMB]
XIIII [NSDS MAT]
XV [NSDS AMB]

XI *N*





COLUMN-13 TOP HALF

MONTH-9 YEAR-4

M EQVOS A [NM]
I D [ ]
II PRINI LAG [ ]
III N SEMIVI [ ]
IIII IIT D
V D AMB
VI M D SIM
VII D
[VIII] PRINI LAG
[VII] II ITT D
[X] ITT D
[X] I D AMB
[XI] I D
[XII] I M D SIMI
[XIII] I M D SIMI
[XV] M D SIMI

[ATE] NOVX

[I M D] SEMIV
[II TII M D] SEMIV
[III ITI D AMB] SEMIV
[IIII D]
[V TII D AM] B
[VI IIT D SIM] IV
[VII IIT D AMB]
[VIII D]
[VIIII D AMB]
[X D]
[XI TII D AMB IVOS]
[XII ITI D IVOS]
[XIII IIT D AMB IVOS]
[XIIII D IVOS]
[DIVERTOMV]

[VII] II ?I?TT D

```
[M ELEMBIV ANM ]
[I            D         IVO  ]
[II           D         IVO  ]
[III          PRINNI LAG IVO]
[IIII         N         IVO  ]
[V      IIT   D    AMB       ]
[VI           D              ]
[VII          D              ]
[VIII         D              ]
[VIIII TII    D              ]
[X            N    INI   R   ]
[XI     IIT   D    AMB       ]
[XII          D              ]
[XIII         D              ]
[XIIII        D              ]
[XV           N(SDS)         ]
[ATENOVX                     ]
[I          M D EDRINI       ]
[II         M D EDRINI       ]
[III    TII   D AMB EDRIN    ]
[IIII         D              ]
[V            D    AMB       ]
[VI     TIT   D              ]
[VII    ITI   D    AMB       ]
[VIII   IIT   D              ]
[VIIII        D    AMB       ]
[X            D              ]
[XI           D    AMB       ]
[XII    TII   D              ]
[XIII   ITI   D    AMB       ]
[XIIII  IIT   D              ]
[DIVERTOMV                   ]
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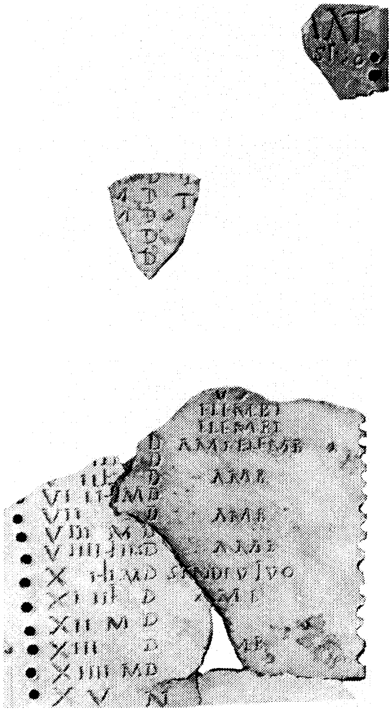
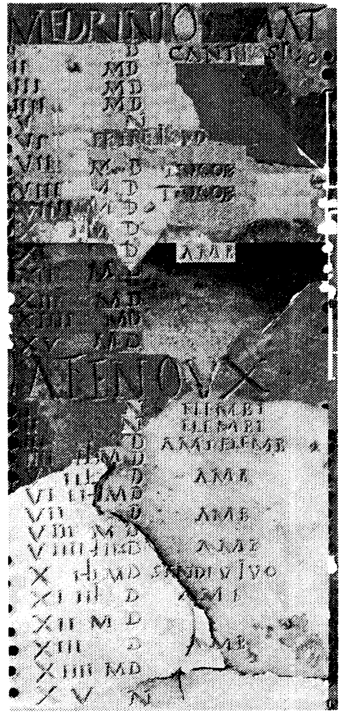
COLUMN-13 TOP HALF

MONTH-10 YEAR-4





[M EDRINIOS] MAT

[I D CANTL]OS IVO
[II M D IVO]
[III M D IVO]
[IIII M D]
[V N]
[VI PRIN LOVD]
[VII]M D T[IOCOB]
[VIII]M D TI[OCOB]
[VIIII]M D [ ]
[X M]D[ ]
[XI]D[AMB]
[XII M]D[ ]
[XIII M D]
[XIIII M D]
[XV M D]

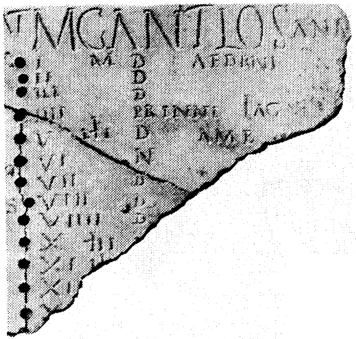
[ATEN] OVX

[I N(SDS)]ELEMBI
[II N(SDS)]ELEMBI
[III] D AMB ELEMB
[IIII] ITI M D
V IIT D AMB
VI IIT ( )D
VII D AMB
VIII M D
VIIII TII D AMB
X ITI M D SINDIV IVO
XI IIT D AMB
XII M D
XIII D AMB
XIIII M D
XV N(SDS AMB)

[IIII] I?T?I M D
VI IIT MD

COLUMN-13 BOTTOM HALF

MONTH-11 YEAR-4



M CANTLOS ANM

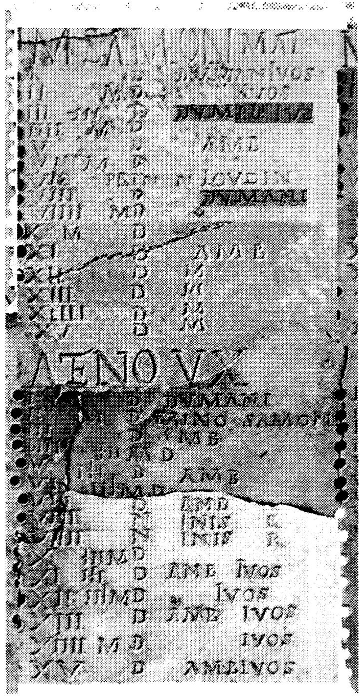
I		M D	AEDRNI	
II		D		
III		D		
IIII			PRINNI LAG	
V	ITI	D	AMB	
VI		N	[	]
VII		D	[	]
VIII		D	[	]
VIIII		D	[	]
X	TII	[D		]
XI	ITI[	D	AMB	]
XII	[IIT	D		]
X[III		D		]
[XIIII		D		]
[XV		D	TIOCOBREXT	]

[ATENOVX]

[I	TII	D		]
[II	ITI	D		]
[III	IIT	D	AMB	]
[IIII		N	INIS R	]
[V		D	AMB	]
[VI	IIT	D		]
[VII	TII	D	AMB	]
[VIII	ITI	D		]
[VIIII	IIT	D	AMB	]
[X		D		]
[XI		D	AMB	]
[XII		D		]
[XIII	TII	D	AMB IVO	]
[XIIII	ITI	D	IVO	]
[DIVERTOMV				]

COLUMN-13 BOTTOM HALF

MONTH-12 YEAR-4



COLUMN-14 TOP HALF

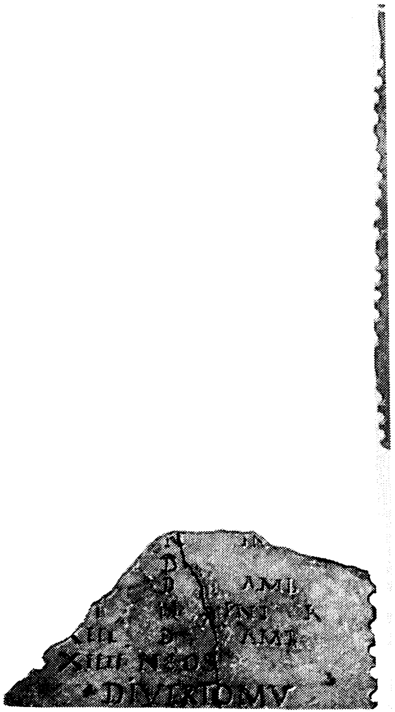
MONTH-1 YEAR-5

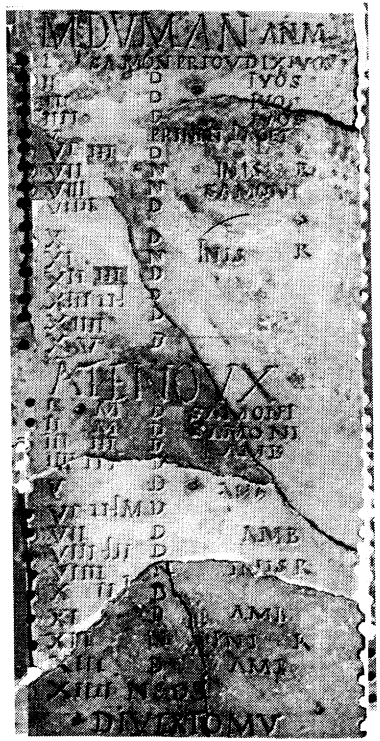
[M SAMON MAT]
[I D DVMAN IVOS]
[II M D IVOS]
[III TII D DVM ALE IVO]
[IIII M D]
[V D AMB]
[VI M D]
[VII PRIN N LOVDIN]
[VIII D DVMANI]
[VIIII M D]
[X M D]
[XI D AMB]
[XII D M]
[XIII D M]
[XIIII D M]
[XV D M]

A [TENOV] X

I D DVMANI
II M D TRINO SAMONI
III D AMB
IIII TII M D
V ITI D AMB
VI IIT M D
VII [D AMB]
VII [I N INIS R]
VI [III N INIS R]
[X TII M D]
[XI ITI D AMB IVOS]
[XII IIT M D IVOS]
[XIII D AMB IVOS]
[XIIII M D IVOS]
[XV D AMB IVOS]

[III TII DVM ELE IVO]
II M D PRINO SAMONI

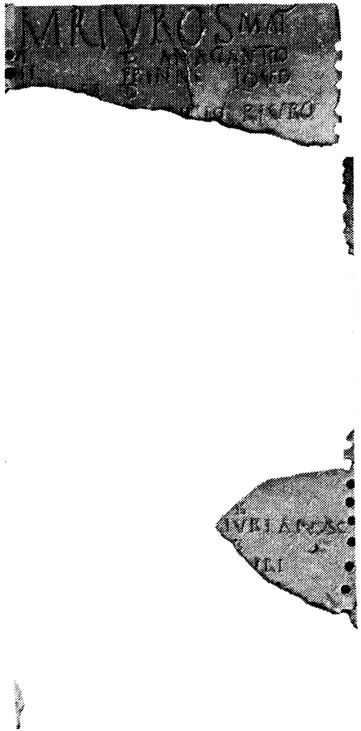


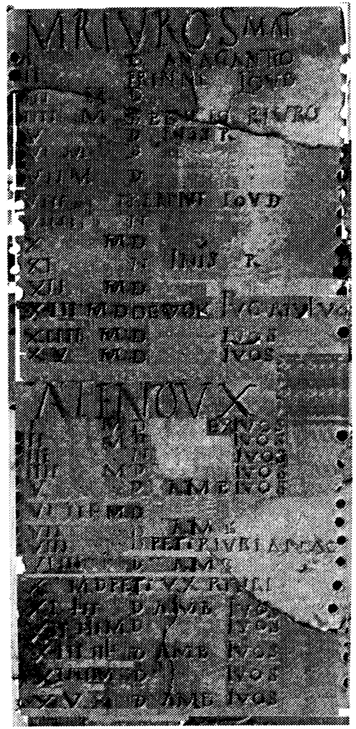


```
[M  DVMAN ANM                    ]
[I SAMON PRI(N  L)OVD IXIVOS ]
[II                 D     IVOS    ]
[III                D     IVOS    ]
[IIII               D     IVOS    ]
[V                  PRINNI LAGET]
[VI       ITI       D             ]
[VII                N    INIS  R ]
[VIII               N   SAMONI   ]
[VIIII              D             ]
[X                  D             ]
[XI                 N    INIS  R ]
[XII      ITI       D             ]
[XIII     IIT       D             ]
[XIIII              D             ]
[XV                 D             ]
[ATENOVX                          ]
[I                M D   SAMONI    ]
[II               M D   SAMONI    ]
[III      ITI       D    AMB      ]
[IIII     IIT       D             ]
[V                 {D    AMB}     ]
[VI       IIT     M D             ]
[VII                D     AMB     ]
[VIII     TII       D             ]
[VIIII             ]N    IN[IS R ]
[X        II]T      D             
[XI]                D    AMB
[X]II               N   INI      R
 XIII               D    AMB
 XIIII             NSDS
     DIVERTOMV
```

COLUMN-14 TOP HALF

MONTH-2 YEAR-5





COLUMN-14 BOTTOM HALF

MONTH-3 YEAR-5

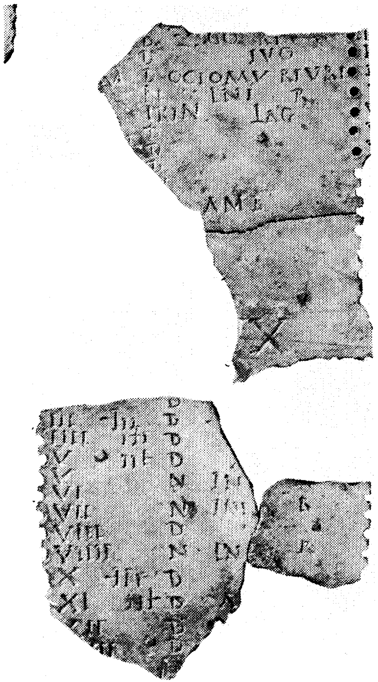
M RIVROS MAT

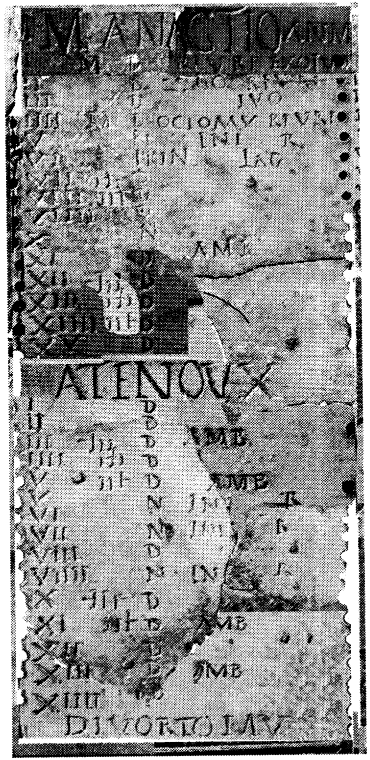
I D ANAGANTIO
II PRINNI LOVD
[III] M D
[IIII M D TR]ICIO RIVRO
[V N INIS R]
[VI M D]
[VII M D]
[VIII PRINNI LOVD]
[VIIII N]
[X M D]
[XI N INIS R]
[XII M D]
[XIII MD DECIOMIV G RIV IVO]
[XIIII M D IVOS]
[XV M D IVOS]

[ATENOVX]

[I M D EXIVOS]
[II M D IVOS]
[III N IVOS]
[IIII M D IVOS]
[V D AMB IVOS]
[VI {IIT M D}]
[VII D AM]B
[VIII D PETV]RIV() ANAG
[VIIII D AM]B
[X M D PETI(N)VX RI]VRI
[XI TII D AMB IVOS]
[XII ITI M D IVOS]
[XIII IIT D AMB IVOS]
[XIIII M D IVOS]
[XV D AMB IVOS]

[IIII MD BRI]ICIO RIVRO
[XIII MD DEWOMIV G RIV IVO]
[VIII D PETI]RIVRI ANAG





[M ANAGANTIO ANM]
[I M D RIVRI EXOIVO]
[II]D GO R IVO
[III] D IVO
[IIII]M D OC(T)IOMV RIVRI
[V] N INI R
[VI] PRIN LAG
[VII IT]I D
[VIII II]T D
[VIIII] D
[X]N
[XI D] AMB
[XII TII D]
[XIII ITI D]
[XIIII IIT D]
[XV D]
[ATENO] VX
[I D]
II D [ ]
III TII D A[MB]
IIII ITI D [ ]
V IIT D A[MB]
VI N INI[R]
VII N INI R
VIII D
VIIII N INI R
X TTI D
XI IIT D A[MB]
XII D[ ]
[X]III D[AMB]
[XIIII] D[ ]
[DIVORTOMV]

COLUMN-14 BOTTOM HALF

MONTH-4 YEAR-5

COLUMN-15 TOP HALF

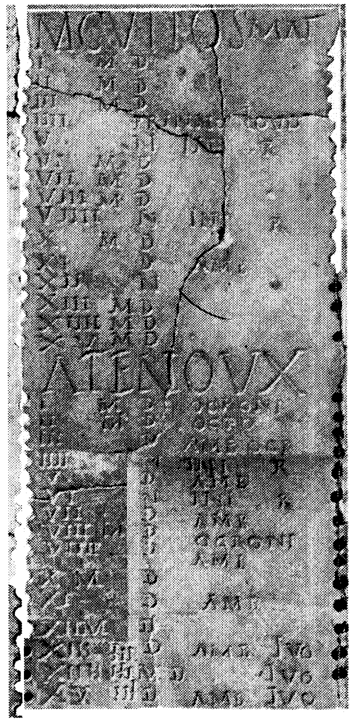
MONTH-5 YEAR-5

[M OGRON] MAT

[I		M	D]	
[II		M	D]	
[III				PRINNI]LOVD
[IIII		M	D	]
[V			N	INI]S R
[VI		M	D	]
[VII		M	D	]
[VIII		M	D	]
[VIIII		M	D	]
[X		M	D	]
[XI			N	]
[X]II		M	D[	]
XIII		M	D	[ ]
XIIII		M	D	[ ]
XV		M	D	[ ]

ATENOVX

I		M	D	QVTIO
II		M	D	QVTIO
III			D	AMB QVTIO
IIII		M	D	
V			D	AMB
VI	IIT	M	D	
VII			D	AMB
VIII		M	D	QVTIO
VIIII			D	AMB
X		M	D	
XI			D	AMB
XII			N	INIS R
XIII	ITI		D	AMB
XIIII	IIT		M D	
XV			D	AMB



COLUMN-15 TOP HALF

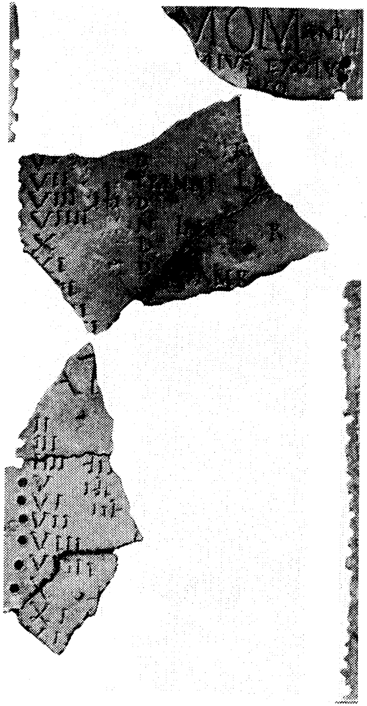
MONTH-6 YEAR-5

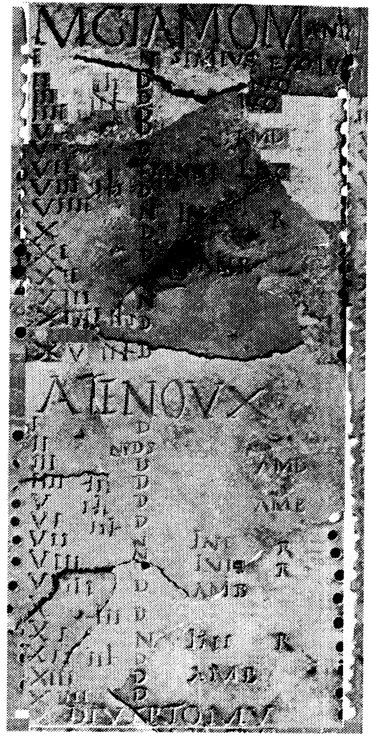
M CVTIOS MAT

I		M	D		
II		M	D		
III		M	D		
IIII			PRINNO LOVD		
V			N	INI	R
VI		M	D		
VII		M	D		
VIII		M	D		
VIIII			N	INI	R
X		M	D		
XI			D	AMB	
XII			N		
XIII		M	D		
XIIII		M	D		
XV		M	D		

ATENOVX

I		M	D	OGRONI	
II		M	D	OGRO	
III			D	AMB OGR	
IIII[		]	N	INI	R
[V		]	D	AMB	
[VI		]	N	INI	R
[VII		]	D	AMB	
[VIII		M]	D	OGRONI	
[VIIII		]	D	AMB	
[X		M]	D		
[XI		]	D	AMB	
[XII		M]	D		
[XIII	TII	]	D	AMB	IVO
[XIIII	ITI]	M	D		IVO
[XV	IIT	]	D	AMB	IVO





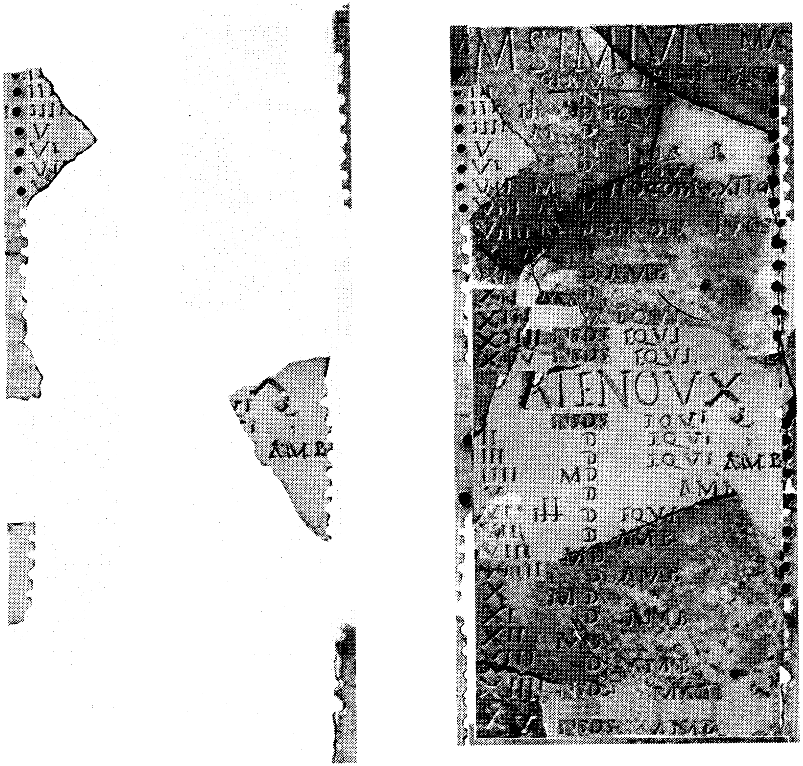
COLUMN-15 BOTTOM HALF

MONTH-7 YEAR-5

[M GIA] MONI ANM
[I N SI] MIVS EXOIVO
[II ITI D] IVO
[III IIT D] I [VO]
[IIII D] [ ]
[V D] A [MB]
VI D [ ]
VII PRINNI LA [G]
VIII ITI D [ ]
VIIII N INI R
X D
XI D AMB [ ]
[X] II D [ ]
[XI] II [N]
[XII] II IT [I D]
[XV IIT D]

AT [ENOVX]

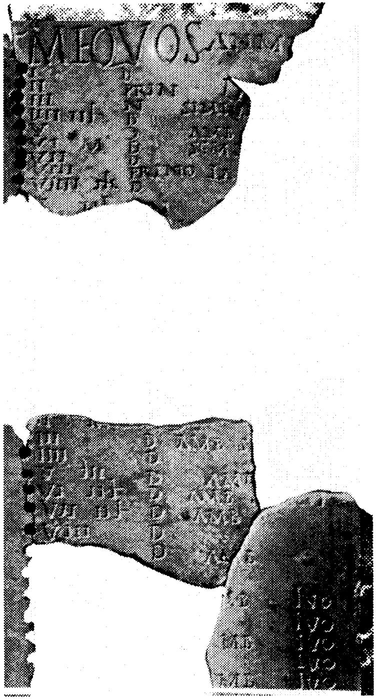
I [D]
II [NSDS]
III [D AMB]
IIII TII [D]
V ITI [D AMB]
VI IIT [D]
VII N [INI R]
VIII [N INI R]
VIIII [D AMB]
X T [II D]
XI [N INI R]
XII [IIT D]
[XIII D AMB]
[XIIII D]
[DIVIRTOMV]

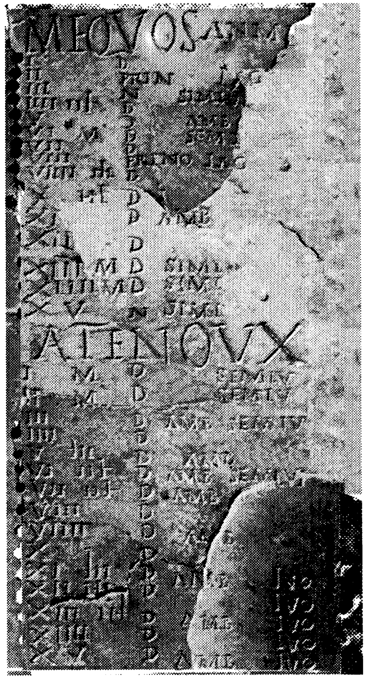


```
[M SIMIVIS M]AT
[I          GIAMO   PRINI   LAG]
 II[             N              ]
 III[    ITI     D EQVI         ]
 IIII[        M  D              ]
 V       [       N   INIS  R    ]
 VI      [       D    EQVI      ]
 VII[         M  D TIOCOBREXTIO]
 V[III        M  D              ]
[VIIII        M  D SINDIV   IVOS]
[X            M  D              ]
[XI              D AMB          ]
[XII          M  D              ]
[XIII            D    EQVI      ]
[XIIII        NSDS    EQVI      ]
[XV           NSDS    EQVI      ]
[ATENOV] X
[I            NSDS    EQ]VI
[II              D    EQ]VI
[III             D    EQV]I AMB
[IIII         M  D        ]
[V               D     AMB    ]
[VI       ITT    D   EQVI       ]
[VII             D   AMB        ]
[VIII         M  D              ]
[VIIII           D   AMB        ]
[X            M  D              ]
[XI              D   AMB        ]
[XII          M  D              ]
[XIII            D   AMB        ]
[XIIII        NSDS    MAT       ]
[XV           NSDS    AMB       ]
```

COLUMN-15 BOTTOM HALF

MONTH-8 YEAR-5





M EQVOS ANM

I D
II PRIN LA[G]
III N SIMIVI[ ]
IIII IIT D [ ]
V D AMB [ ]
VI M D SEMI[VI]
VII D [ ]
VIII PRINO LAG[ ]
VIIII ITI D [ ]
X IIT D [ ]
[XI D A]M[B]
[XII D]
[XIII M D SIMI]
[XIIII M D SIMI]
[XV N SIMI]

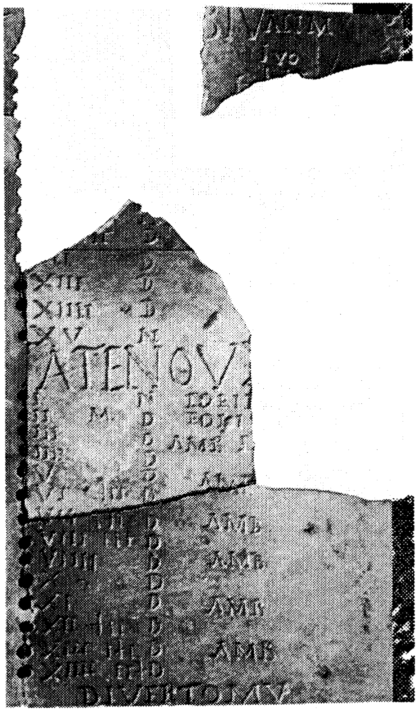
[ATENOVX]

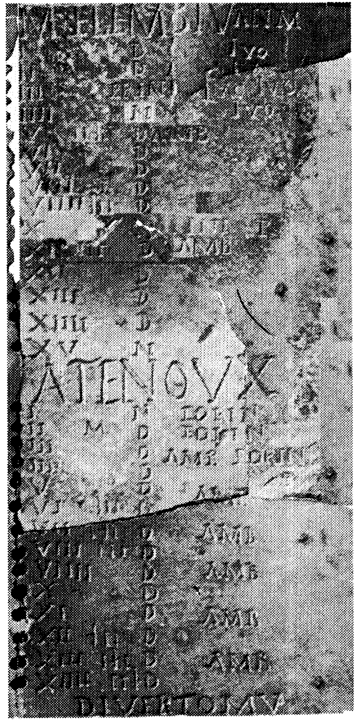
[I M D SEMIV]
II M D[SEMIV]
III D AMB S[EMIV]
IIII D [ ]
V TII D AMB[ ]
VI IIT D ( ) S[EM]IVI
VII IIT D AMB
VIII D
[VIIII] D AMB
[X]D
[XI TII D A]MB IVO
[XII ITI D] IVO
[XIII IIT D]AMB IVO
[XIIII D] IVO
[XV D A]MB IVO

VI IIT D AMB S[IM]IVI

COLUMN-16 TOP HALF

MONTH-9 YEAR-5



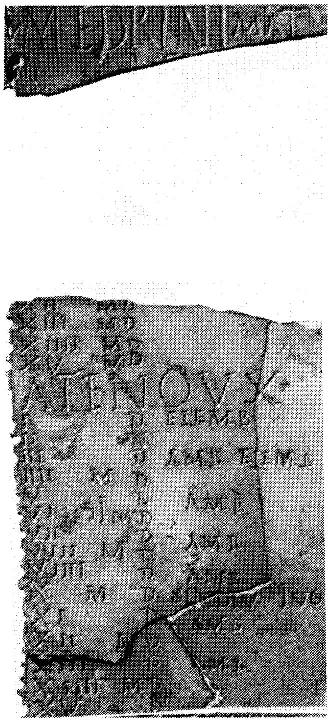


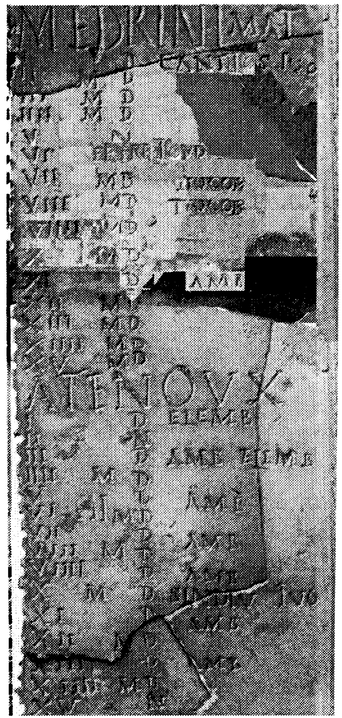
COLUMN-16 TOP HALF

MONTH-10 YEAR-5

```
[M  ELEM] BIV ANM
[I              D]     IVO
[II             D]     IVO
[III        PRINI] L[AG IVO  ]
[IIII           N      IVO   ]
[V      IIT     D AMB        ]
[VI             D            ]
[VII            D            ]
[VIII           D            ]
[VIIII TII      D            ]
[X      ]       N  [INI    R ]
[XI  ]  IIT     D  [AMB      ]
 XII            D     [      ]
 XIII           D      [     ]
 XIIII          D      [     ]
 XV             N(SDS) [     ]
ATENOVX [                    ]
 I              N  IDRIN[I   ]
 II           M D  EDRI[NI   ]
 III            D AMB E[DRIN]
 IIII           D        [   ]
 V              D   AMB
 VI     TIT     D
 VII    ITI     D   AMB
 VIII   IIT     D
 VIIII          D   AMB
 X              D
 XI             D   AMB
 XII     TII    D
 XIII    ITI    D   AMB
 XIIII   IIT    D
    DIVERTOMV
```

VI TII D





COLUMN-16 BOTTOM HALF

MONTH-11 YEAR-5

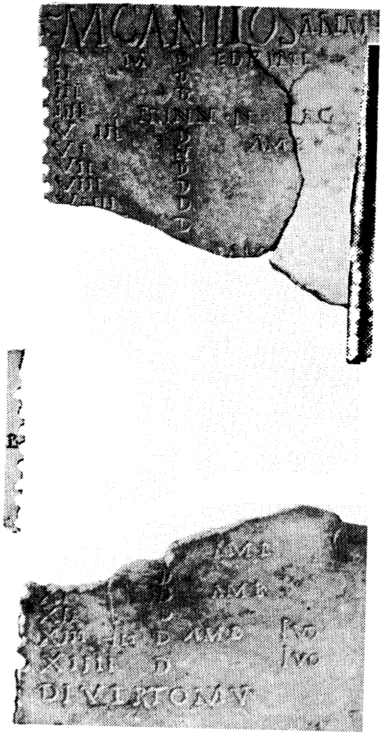
M EDRINI MAT

I D CA[NTLOS IVO]
II M[D IVO]
[III M D IVO]
[IIII M D]
[V N]
[VI PRIN LOVD]
[VII M D TIOCOB]
[VIII M D TIOCOB]
[VIIII M D]
[X M D]
[XI D AMB]
XII M D [ ]
XIII M D
XIIII M D
XV M D

ATENOVX

I *N(SDS)* ELEMB
II N(SDS) (ELEMB)
III D AMB ELEMB
IIII M D
V D AMB
VI IIT ( )D
VII D AMB
VIII M D
VIIII D AMB
X M D SINDIV IVO
XI D AMB
XII M D
XIII D AMB
XIIII M D
XV N(SDS) (AMB)

I *D* ELEMB
VI IIT *M* D



M CANTLOS ANM
I M D EDRINI
II D
III D
IIII PRINN • N • LAG
V ITT D AMB
VI N
VII D
VIII D
VIIII D
[X TI]I D
[XI ITI] D AMB
[XII IIT D]
[XIII D]
[XIIII D]
[XV D {TIOCOB}REXT]
[ATENOVX]
[I TII D]
[II ITI D]
[III N]
[IIII N INIS R]
[V D AMB]
[VI IIT D]
[VII TII D AMB]
[VIII ITI D]
[VIIII IIT] D AMB
[X] D
XI D AMB
XII D
XIII TII D AMB IVO
XIIII (ITI) D IVO
DIVERTOMV

COLUMN-16 BOTTOM HALF

MONTH-12 YEAR-5

V IIT D AMB