## Excerpts from Pliny's Natural History in Codices Reg. Lat. 309 and Vat. Lat. 645

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Among the sources for parts of Books 2 and 18 of Pliny's Natural History, apart from the complete manuscripts of these books, is a collection of excerpts made probably in the eighth century and known as the York excerpts (excerpta Eboracensia). A critical edition of these based on ten manuscripts ranging in age from the early ninth to the eleventh centuries was published in 1888 by Karl Rück.<sup>1</sup> The designation, York excerpts, was first given to this collection by Rück (p. 87) by reason of the fact that a close similarity exists between these excerpts and citations from Pliny in Bede's De rerum natura, and this led him to believe that the anonymous excerpts had been taken from a compilation of texts on astronomy based partly on Pliny and greatly influenced by Bede. This in turn led Rück to assume that the compilation had been put together in some English center of intellectual activity. York seemed to him to be the most likely spot; hence the designation, York excerpts. The Rück edition of the excerpts (designated m) was employed by Mayhoff in the preparation of his Teubner edition of the Natural History for both Book 22 and Book 183 and by Beaujeu in the preparation of his Budé edition of Book 2.4

The ten manuscripts on which Rück's edition of the York excerpts is based are the following:  $^5$  Monacensis lat. 210, a. 818 (= $\alpha$ ); Vindobonensis lat. 387, a. 830 (= $\beta$ ); Montepessulanus H 334, saec. IX (= $\gamma$ ); Monacensis lat. 6364, saec. IX (= $\delta$ );

<sup>&</sup>lt;sup>1</sup> Karl Rück, Auszüge aus der Naturgeschichte des C. Plinius Secundus (Munich 1888). This work will henceforth be designated **Rück** (1).

<sup>&</sup>lt;sup>2</sup> Carolus Mayhoff, C. Plini Secundi Naturalis Historiae Libri XXXVII 1 (Leipzig 1906).

<sup>&</sup>lt;sup>3</sup> Carolus Mayhoff, C. Plini Secundi Naturalis Historiae Libri XXXVII 3 (Leipzig 1892).

<sup>&</sup>lt;sup>4</sup> Jean Beaujeu, Pline l'Ancien, Histoire Naturelle Livre II (Paris 1950).

<sup>&</sup>lt;sup>5</sup> Rück (1) 26.

Monacensis lat. 14436, saec. xI  $(=\epsilon)$ ; Monacensis lat. 6362, saec. xI  $(=\zeta)$ ; Bernensis lat. 347, saec. x  $(=\eta)$ ; Bernensis lat. 265, saec. xI  $(=\theta)$ ; Parisinus lat. 8663, saec. x  $(=\iota)$ ; and Parisinus lat. 12117, saec. xI  $(=\kappa)$ .

The excerpts from Book 2 in the York group include selections entitled (1) "De positione et cursu septem planetarum," including parts of Chapters 12, 32, 34–36, 38–44; (2) "De intervallis earum," parts of Chapters 83, 84; (3) "De absidibus earum," parts of Chapters 59–61, 69, 70, 63, 64; (4) "De cursu earum per zodiacum circulum," parts of Chapters 62, 66–69, 71, 75, 76 (first part: first six lines), 77 (first part: last eight lines), 78 (first part: first four lines), 80, 78 (second part: last five lines), 79, 76 (second part: last two lines), 77 (second part: first three lines). Excerpts from Book 18 are presented under the headings (5) "De temporum mutatione," parts of Chapters 220–25, 275–77; and (6) "De praesagiis tempestatum," parts of Chapters 340–65.6

The manuscripts on which Rück's edition is based fall into two families: A  $(\alpha\beta\gamma\iota\kappa)$  and B  $(\delta\epsilon\zeta\eta\theta)$ , of which A is the better. No one of the documents in either family includes all six sections of the York excerpts. Codices  $\alpha\beta$  contain sections 1, 2, 3, 5, 6;  $\delta\zeta$ , sections 1, 2, 3, and the first half of 4 (Book 2, Chapters 62, 66–69, 71, 75, 76 [first part], 77 [first part], 78 [first part], 80);  $\gamma$ , sections 1, 2, 3, 4, 6;  $\eta\theta$ , sections 1, 2, 3, 4;  $\epsilon$ , sections 1, 2, and the first half of 4;  $\iota$ , sections 1, 3;  $\kappa$ , sections 1, 2, 3, 4, and 6 through aquilo (18.353.6).8 Thus it is seen that  $\gamma$  is the most extensive of the ten manuscripts; that only  $\eta\theta\gamma\kappa$  contain the second half of section 4; that 5 is found only in  $\alpha\beta$ ; and that the full version of 6 is contained only in  $\alpha\beta\gamma$  since the text of  $\kappa$  breaks off approximately 70 lines before the end of this section.

În a supplementary study of excerpts from Pliny's *Natural History* published in 1898, Rück discusses several other manuscripts which contain portions of the York excerpts. Among these is Monacensis lat. 11076 (copied between 1445 and 1450), 10

<sup>&</sup>lt;sup>6</sup> Rück (1) 25-26.

<sup>7</sup> Rück (1) 26-27.

<sup>&</sup>lt;sup>8</sup> Rück (1) 25.

<sup>&</sup>lt;sup>9</sup> Karl Rück, Die Naturalis Historia des Plinius im Mittelalter (Sitzungsberichte der königl. bayer. Akademie der Wissenschaften) (Munich 1898) 204-12. This will henceforth be designated **Rück** (2).

<sup>10</sup> Rück (2) 204-7.

which contains "De praesagiis tempestatum" of the York excerpts. A full collation of this with Rück's 1888 text is published as an appendix to the 1898 study (pp. 314-17). Attention is called to the fact that sections 1, 2, 3, 4, and 6 of the excerpts are to be found in Codex Harleianus 647, saec. IX-X, Codex Harleianus 2506, saec. xi, and Codex Cottonianus Tib. B 5, saec. xi. leianus 2506 and Cottonianus Tib. B 5, however, are direct copies of Harleianus 647 and so have no independent value except as sources for filling in lacunae in Harleianus 647. 11 Other manuscripts listed as providing parts of the York excerpts include an eleventh-century leaf in the Cologne Stadtarchiv containing excerpts from Book 2 (family B); Parisinus 13955, saec, x, containing the excerpts from Book 2; Codex Bodl. 176, saec. xiv, containing the text of "De praesagiis tempestatum"; Laurentianus 29, 24 of the eleventh century containing some excerpts from Book 18; and Codex Vossianus 15 (no date given), which also contains some excerpts from Book 18.12

In 1934 Lynn Thorndike, on the basis of two late manuscripts (BL Laud Misc. 594, saec. xiv-xv, and Vat. Ottobon. lat. 1870, saec. xv), published as an anonymous work the text of "De praesagiis tempestatum." <sup>13</sup> In the preface to his edition Thorndike takes note of the fact that the supposedly anonymous work under consideration is also contained in two other manuscripts: Bruges 523, saec. xiii-xiv, and FL Ashburnham 1727 (no date given). <sup>14</sup>

In a note published in *Isis* in 1942 Thorndike revealed that his associate, Dr. Pearl Kibre, had identified "De praesagiis tempestatum" as being made up of excerpts from Book 18 of Pliny's *Natural History*. <sup>15</sup> In the same note Thorndike listed two additional manuscripts as containing the work: Vat. pal. lat. 1377, saec. xiv–xv, and Parisinus lat. 6443, saec. xiii. <sup>16</sup> In their catalogue of incipits of medieval scientific writings in Latin, Thorndike and Kibre add to the list of manuscripts containing "De praesagiis tempestatum" the following: Cambridge

<sup>&</sup>lt;sup>13</sup> Lynn Thorndike, A History of Magic and Experimental Science 3 (New York 1934) 707-14.

<sup>&</sup>lt;sup>14</sup> Thorndike (above, note 13) 708.

<sup>&</sup>lt;sup>15</sup> Lynn Thorndike, "Pliny and Liber de Praesagiis Tempestatum," Isis 34 (1942) 28.

<sup>&</sup>lt;sup>16</sup> Thorndike (above, note 15) 28.

University Library 227, saec. xiv-xv; <sup>17</sup> British Museum Sloane Manuscript 2030, saec. xiii; <sup>18</sup> and Codex 2436 of the National-Bibliothek of Vienna, saec. xiv. <sup>19</sup>

It is the purpose of this paper to discuss two manuscripts of the York excerpts which have been overlooked in the earlier literature on this subject. These are Codex Vat. Reg. lat. 309 (folios 99v-104v), saec. IX (henceforth designated R), 20 and Codex Vat. lat. 645 (folios 68<sup>r</sup>-76<sup>v</sup>), saec. ix (henceforth designated V).<sup>21</sup> These two manuscipts are very similar both in appearance and in content. Both were copied in clear Carolingian hands of the ninth century. R has had its text altered in many places by an eleventh-century hand (R<sup>2</sup>). A few corrections have been made in V apparently by the original scribe (V1). In both documents the headings of the various sections have been inserted in rustic capitals. The sections contained are the same in both R and V. These are de positione et cursu septem planetarum (numbered III in V but without a number in R); DE INTERVALLIS EARUM (numbered IIII in both manuscripts); DE ABSIDIBUS EARUM (numbered v in both manuscripts); DE CURSU EARUM PER ZODIACUM CIRCULUM in V with no numeral prefixed but DE CURSU EARUM PER COTIDIANUM CIRCULUM in R with the numeral VI prefixed; DE PRAESAGIIS TEMPESTATUM (without number in V, but numbered xII in R). Both R and V include between the last two sections of the York excerpts other astronomical materials labelled with the following headings: DE INTERLUNIO (numbered VII in both); DE ECLYPSI LUNAE (numbered VIII in both); DE ECLYPSI SOLIS (numbered viiii in both, but with the heading itself omitted by V); DE SOLIS ECLYPSI QUANDO VISA SIT (numbered x in both manuscripts); dimensio (demensio R) caelestium spatiorum SECUNDUM QUOSDAM (numbered XI in both manuscripts).

<sup>&</sup>lt;sup>17</sup> Lynn Thorndike and Pearl Kibre, A Catalogue of Incipits of Mediaeval Scientific Writings in Latin (Cambridge) [Mass.] 1963) 1154 (under the heading Purus oriens atque non fervens serenum).

<sup>&</sup>lt;sup>18</sup> Thorndike and Kibre (above, note 17) 1154.

<sup>&</sup>lt;sup>19</sup> Thorndike and Kibre (above, note 17) 391 (under the heading *De tempestatum presagiis tractaturi sole*).

<sup>&</sup>lt;sup>20</sup> For a full description of the contents of this manuscript see Andreas Wilmart, Codices Reginenses Latini 2 (Vatican City 1945) 160-74.

<sup>&</sup>lt;sup>21</sup> For a description of this codex as a whole see Marcus Vatasso and Pius Franchi De' Cavalieri, *Codices Vaticani Latini* (Rome 1902) 496–500. The present study of Codices Reg. lat. 309 and Vat. lat. 645 is based on microfilm copies of these documents made available to the writer by The Knights of Columbus Vatican Film Library at Saint Louis University.

On the basis of the evidence cited above it would appear that R and V are closely related to each other and that the two of them in turn are closely related to  $\gamma\kappa$  since they contain the same sections of the York excerpts which are found in  $\gamma$  and also the same sections found in  $\kappa$  with the exception that the text of "De praesagiis tempestatum" breaks off in  $\kappa$  70 lines before the end of the work, whereas it is complete in RV. Detailed study of the texts of RV adds additional evidence for the assumption that both are related to  $\gamma\kappa$ , and, in fact, indicates that R is almost certainly the source from which  $\kappa$  was ultimately descended, probably with some intermediary having intervened between the two.

The following list of instances in which RV are in agreement with  $\gamma$  or  $\gamma \kappa$ , usually in error, against all other manuscripts cited by Rück is important for showing the close affinity existing among these documents: <sup>22</sup>

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2.68–9.2 scandere (scandi 2.69.3)] scandescere \gamma \kappa RV \parallel incipiunt (not in Pl.) om. \gamma \kappa RV
2.76(1st pt.).5 duplicato] duplato \gamma \kappa RV
18.343.1 futuri (et futuri 18.343.2)] et futuri \gamma RV
18.361.5 solitum (18.361.6)] sonitum \gamma RV
18.363.5 nidus suos (nidos suos 18.363.6)] nidis suis \gamma RV
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In spite of the close agreement existing among  $\gamma RV$ , however, the following list of instances in which RV both retain the correct readings where  $\gamma$  has faulty readings or omissions indicates clearly that neither R nor V could have been copied from  $\gamma$ :

<sup>22</sup> Since it is the chief purpose of this study to show the place of RV in the manuscript tradition of the York excerpts, references are made throughout to book, chapter, and line numbers in the Rück edition of the excerpts (above, note 1); citations in any given series are listed in the order in which they appear in the York excerpts, although this is often not the order in which they appear in the Natural History. Since, in many cases, only parts of chapters appear in the excerpts, this means that in such cases the line numbers of excerpts will not agree with the line numbers of Pliny. Hence, in addition to giving the book, chapter, and line numbers as they appear in Rück, I also include in parentheses after each citation the line number in Mayhoff's edition of Pliny (above, notes 2 and 3) if this differs from the Rück number. If the lemma in Mayhoff differs from Rück's lemma, this fact is also noted. Thus it should be possible for the reader, with relatively little difficulty, to compare RV with either the Rück or Mayhoff texts.

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18.357.2 a caelo cadentes (aut caelo cadentes 18.357.1)] aut caelo cadentes RV, om. γ
18.358.2 accenduntur RV, acceduntur γ || in RV, om. γ
18.359.2 predicit (praedicet)] predicit RV, braecedit γ
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18.362.1 anatesque (18.362.2) RV, anetesque γ || pinnas RV, pennas γ
18.362.6 seque concutientes (18.362.7) RV, om. γ
18.363.4 pinna (18.363.5) RV, pennes γ
18.364.2 exultantia RV, exaltantia γ
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On the other hand  $\gamma$  could not have been copied from either R or V. That R could not have been its source is indicated by the presence in  $\gamma$  of the following words omitted by R: 2.60.2 XC; 2.64.4 e; 18.343.4 pluet (18.343.6); 18.356.2 aquam. Likewise the fact that V could not have been the source of  $\gamma$  is indicated by the presence in  $\gamma$  of the following words and phrases omitted by V: 2.84.6 ad iovem (2.84.5); 2.60.2 radios; 2.61.8 ab utroque (2.61.9); 2.80.1 quidem (not in Pliny); 18.351.5-7 autumnum... transierint.

From the evidence cited above it is obvious that R and V are closely related to each other. The existence of this relationship is further emphasized by the following errors shared by these manuscripts against all those reported in the Rück edition:  $18.344.7 \ eo]co \ RV$ ;  $18.355.3 \ adpropinquantique \ (adpropinquanteque)]$  adpropinquatique RV;  $18.360.4 \ atque \ etiam$  written twice in both R and V. At the same time, however, neither of these documents could have been copied from the other since the omissions listed in the preceding paragraph as being found in R (but not shared by  $\gamma$ ) are also not found in V, while those listed in the same paragraph as being found in V are not found in R. It is obvious, therefore, that  $\gamma RV$  are independent, but closely related, manuscripts probably deriving from some common source which is now lost.

Thus, in view of their relatively early date and their independent status, both R and V are important as additional sources for the text of the York excerpts. R is especially important, however, as unquestionably being the ultimate source of  $\kappa$ . A comparison of  $\kappa$  with R shows that  $\kappa$  or its source was copied from R after this manuscript had been revised by R<sup>2</sup>. The following are typical examples of readings in which R or R<sup>2</sup> agrees with  $\kappa$ : <sup>23</sup>

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2.35.2 partium] quartum R^2\kappa 2.36.2 veneris (1)] venus R^2\kappa
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<sup>2.42.3</sup> maculosa (4)] maculosam  $R^2\kappa$  2.42.4 inmensa] inmenso  $R^2\kappa$ 

<sup>&</sup>lt;sup>23</sup> The information here provided about  $\kappa$  is based on photostats of this manuscript kindly made available to the writer by the Bibliothèque Nationale in Paris.

**N.B.** In this and all following lists of readings, only the line number of Mayhoff's Pliny text is given in parentheses after the lemma, where it differs from the Rück line number. A different reading in Mayhoff will also be indicated.

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2.43.1 iam vero (2)] modo R<sup>2</sup>κ
                                                     non impleant R, expunged by R2, om. K
2.44.4 tricesima (5)] tricerima R,
                                                   2.61.7 delitiscunt (8)1 delitis R, delitescunt
  tricesimali R2k
2.84.2 ab ea ad ] ab ea vero ad R2k
                                                   2.63.2 hii (hi 4)] hii R, om. \mathbb{R}^{2}\kappa
2.84.6 eo ad iovem (5)] eo vero ad iovem
                                                     aliique] alii R2k
                                                   2.64.4 e om. Rĸ
2.59.3 postea (4)] postea autem R<sup>2</sup> κ
                                                   2.76 (1st pt.).5 ascenderant (not in Pl.)]
2.60.2 XC om. Rκ
                                                     descenderant RK
2.60.3 eadem (4)] eadem vero R2k
                                                   2.78 (2nd pt.).1 conparere (6)] parere Rk
  senis | binis R2K
                                                  18.344.4 ab ortu] ad ortu Rk
2.60.4-5 alioqui bimenstris cum cetere
                                                  18.347.5 significant] significat Rκ
                                                  18.348.1 varronem (2)] vassonem R\kappa^{24}
  utraque statione quaternos menses non
  impleant (5-6)] alioqui bimenstris cum
                                                  18.353.3 nubeculam (nubecula)] nubiculam
  cerae utraque statione quaternus menses
                                                    R_{\kappa}
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While some of these cases of agreement between  $R^2$  and  $\kappa$  could be accounted for on the assumption that R2 readings were taken from  $\kappa$ , the substantial number of cases in which the original R text is in agreement with  $\kappa$  indicates definitely that the later manuscript  $(\kappa)$  was copied from the earlier (R) rather than having served as source for the revisions in the ninth-century document. This is further emphasized by the fact that in 18.343.5 (6), where R omits pluet but retains the following aut, the scribe of  $\kappa$  (or of the source of  $\kappa$ ), being unable to make any sense out of aut without the preceding pluet, deliberately dropped aut. comparison of the readings of R in the collation appended below with the readings of κ quoted in the apparatus criticus of Rück's edition of the excerpts it will be seen that, in those cases in which R and  $\kappa$  do not agree, it is usually  $\kappa$  which is in error. The scribe of  $\kappa$  often deliberately changes the tenses of verbs and makes other arbitrary alterations in the text. There are, however, some instances in which  $\kappa$  restores the correct reading where R is in The following are typical examples:

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2.34.2 celeriorem (celeriore 3)] celiorirem R
                                                 2.77(1st pt.).3 raro (4)] rato R
2.59.2-3 discedente sole (discedentes)]
                                                 2.77(1st pt.).5 vespertinos (8)] vespertino
  discendente sole R
2.61.3 longissimis (4)] longissimus R
                                                 2.77(1st pt.).6 creberrimos (8)]
2.69.3 levantur (8)] leantur R
                                                  creberrimus R
2.63.3 vertices (verticibus)] vestices R
                                                 2.78(1st pt.).2 facere (1)] fa R
2.64.8 quial qua R
                                                 2.78(2nd pt.).3 diebus (8)] diebus R
2.66.2 nec] ne R
                                               18.346.4 tempestatem (5)] tempestatum R
2.71.3 vi (4)] III R
                                               18.347.6 rigidum (7)] regidum R
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<sup>&</sup>lt;sup>24</sup> This variant is not noted by Rück (1) in his apparatus criticus. This is one of the very few instances in which his collation of  $\kappa$  is in error. On the whole, it is quite accurate.

While the scribe of  $\kappa$ , if copying directly from R, might have been able to correct some of the above noted errors of R by conjecture, it seems highly improbable that this could have been true of all instances. A simpler way of accounting for these corrections in  $\kappa$  would be to assume that some lost manuscript intervened between R and  $\kappa$  which had some of the erroneous readings inherited from R corrected from some other source and which then in turn passed these corrections on to  $\kappa$ . Whatever the explanation may be, there cannot be any doubt about the fact that  $\kappa$  ultimately derives from R and, therefore, deserves to have its place among the manuscripts of the York fragments taken over by R, which obviously provides an earlier and sounder version of the  $\kappa$  tradition.

The addition of RV to the list of manuscripts of the excerpts is especially important for the text of "De praesagiis tempestatum," which in Rück's edition is based on only four manuscripts  $(\alpha\beta\gamma\kappa)$ . Since there are extensive lacunae in  $\alpha\beta$  and since, as noted above,  $\kappa$  breaks off approximately 70 lines before the end of the work, many segments of the work as edited by Rück are based exclusively on  $\gamma$ . Hence R and V are significant as witnesses to the entire text of "De praesagiis tempestatum," and especially for those portions included in the lacunae in  $\alpha\beta$ , since, as indicated above, R and V, though closely related to  $\gamma$ , are both independent of  $\gamma$ . Furthermore R obviously is in a position to play a major role both by supplying the lost  $\kappa$  tradition for the section of the text following aquilo (18.356.3), where  $\kappa$  breaks off, and also by supplanting the faulty readings of  $\kappa$  for the preceding portion of the work.

In many instances Mayhoff lists two readings of m in his apparatus criticus. Usually these are instances in which  $\alpha\beta$  have one reading and  $\gamma$  another. It will be found that in most such cases RV both support  $\gamma$ , thus providing manuscript evidence which outweighs the evidence of  $\alpha\beta$ , especially since the latter two documents, by reason of their extensive omissions, are obviously inferior to RV $\gamma$  for this portion of the excerpts. In such instances the RV readings deserve to be accepted as the readings of m. In some cases  $\alpha\beta\kappa$  agree against RV $\gamma$ . But in such instances the agreement of  $\alpha\beta$  with  $\kappa$  against R (its source) means

<sup>&</sup>lt;sup>25</sup> Mayhoff (above, notes 2 and 3) uses "m" to indicate the text of the York excerpts.

only that some intermediary between R and  $\kappa$  may very well have had some of its readings altered on the basis of  $\alpha$  or  $\beta$  or some related manuscript. R's evidence obviously negates that of  $\kappa$  in such situations.

In the following cases the consensus of RV $\gamma$  indicates the reading which should be attributed to m (I have noted those places in which Mayhoff's reading of m needs correction):

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18.342.6 aut orientis RVγ, aut occidentis αβ
18.343.1 (2) et futuri RVγ, futuri αβ
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(err. Mayhoff)

18.343.2 (3) spargentur RV $\gamma$ , sparguntur  $\alpha\beta\kappa$ 

18.344.5 circumcludent RVγ, circumcludunt αβκ (err. Mayhoff)

18.344.6 relinquent RVγ, relinquunt αβκ (err. Mayhoff)

18.351.6 sine refrigerio Rγ, sine frigore αβ, om. V (along with two lines of surrounding text)

18.352.7 orbis RVγ, morbus αβ

18.353.4 desiit RVγ, desinit κ, om. αβ

18.359.3 resonabunt RV $\gamma$ , sonabunt  $\alpha\beta$ 

18.361.5 (6) sonitum RVγ, solitum αβ (err. Mayhoff)

18.361.6 clangore RVγ, clangore significant tempestatem αβ

18.362.4 fugientes RVγ, fugientes tempestatem αβ || sicut RVγ, sic αβ

18.362.5 (6) aut RV $\gamma$ ,  $\bar{a} \alpha \beta$ 

18.362.6 (7) continuabunt RVγ, continuabunt serenum αβ

18.363.5 (6) nidis suis RVγ, nidus suos αβ

There are two cases in which RV, by supporting  $\alpha\beta$  against  $\gamma$ , indicate that the reading so supported is to be accepted as the m reading: 18.354.7 serena] sereno RV $\alpha\beta$ , serena  $\gamma$ ; and 18.359.2 murmurabitve] murmuravitve RV $\alpha\beta$ , murmurabitve  $\gamma$ . A case of special interest is 18.359.7 soliti (solito 358.8 May.)] solito RV, soliti  $\gamma$ , om.  $\alpha\beta$  (as part of a larger lacuna). Here Mayhoff has designated soliti as the reading of m on the basis of the  $\gamma$  text alone; but since RV both have the correct solito, it is obvious that this was the original reading in the York excerpts. It will be noted that the general effect of the evidence of RV in many of the instances above is to suggest that the manuscript which served as the source of the York excerpts was more accurate, at least in the portion containing "De praesagiis tempestatum," than has previously been considered the case.

## Collation of RV with the Text of Rück

2.32.2 ambire] abire RV
2.32.3 ac tricesimo] atricesimo RV ||
regredi (4)] egredi V
2.34.2 celeriorem (celeriore 3)] celiorirem
R, celiorem V
2.34.3 binis (5)] bonis R, binis R<sup>2</sup>

2.35.2 partium] quartum R<sup>2</sup> in rasura || observatio] servatio R, observatio R<sup>2</sup>

2.35.3 superque (4)] super\*\*\* R<sup>2</sup>

2.35.4 diei] die V

2.36.2 veneris (1)] venus R<sup>2</sup> (R apparently has veneris)

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2.64.8 quia] qua R
2.40.1 eae et] et eae et V
2.42.3 maculosa (4) maculosum R<sup>2</sup> ||
                                                  2.62.2 septentriones (septentrionem 3)]
                                                   septentrionem V (altered to septentriones
  eademque] eadem V
2.42.4 inmensa] inmenso R2
                                                   by V1)
2.42.5 lucem (6)] lucens V
                                                  2.66.2 nec] ne R
2.43.1 iam vero (2)] modo R^2
                                                  2.66.3 stella (4)] stellae R
2.44.3 saturni sidus] satur nidus R,
                                                  2.68-9.2 scandere (scandi 2.69.3)]
                                                   scandescere RV || incipiunt (not in Pl.)
  saturni sidus R<sup>2</sup>
                                                   om. RV
2.44.4 tricesima (5)] tricerima R,
  tricesimali R2
                                                  2.71.1 vespertino] matutino V
2.83.1 multi] multa V || indagare (2)]
                                                 2.71.3 vi (4)] III R
  indigare V (corr. V1)
                                                 2.75.1 matutino] matituno R
2.83.2 quantum (3)] quam V
                                                 2.76 (1st pt.).3 quot (4)] quod RV
                                                 2.76(1st pt.).5 duplicato] duplato RV ||
2.83.3 phitagoras (Pythagoras)] pitha-
                                                   ascenderant (not in Pl.)] descenderant R
  goras R, pytagoras V
                                                 2.77(1st pt.).3 raro (4)] rato R
2.83.4 ad] a R, ad R<sup>2</sup>
                                                 2.77(1st pt.).4 leone (leonis (7)] leonem V
2.84.2 ab ea ad] ab ea vero ad R2
2.84.6 eo ad iovem (5)] eo vero ad iovem
                                                 2.77(1st pt.).5 vespertinos (8)] vespertino
  R2, eo V (om. ad iovem)
2.59.1 quas] quasi V
                                                 2.77(1st pt.).6 creberrimos (8)] creberrimus
2.59.2-3 discedente sole (discedentes)]
                                                  2.78(1st pt.).2 facere (1)] fa R
  discendente sole R
                                                  2.78(1st pt.).3 coire (2)] ire R, coire R2
2.59.3 postea (4)] postea autem R<sup>2</sup>
2.59.4 triquetro] utroque V
                                                  2.80.1 quidem (not in Pl.) om. V
2.59.8 secundas] secundus V
                                                  2.78(2nd pt.).1 conparere (6)] parere R
2.60.2 radios om. V || XC om. R
                                                 2.78(2nd pt.).3 diebus (8)] diebus
                                                   R || LXXVIIII ] LXVIIII RV
2.60.3 eadem (4)] eadem vero R<sup>2</sup> || senis]
  binis R<sup>2</sup> || moratur (commoratur (5)]
                                                  2.79.4 locis (not in Pl.)] in locis RV
                                                  2.76(2nd pt.).2 egre (not in Pl.)]
  moraretur R, moratur R2
2.60.4-5 alioqui bimenstris cum cetere
                                                   agere V
  utraque statione quaternos menses non
                                                18.342.1 non fervens] confervens V
                                                18.342.5 rubescunt] rube**scunt V
  impleant (5-6)] alioqui bimenstris cum
                                                18.342.6 radii | radi R
  cerae utraque statione quaternus menses
  non impleant R, expunged by R2
                                                18.343.1 futuri (et futuri 2)] et futuri RV
                                                18.343.5 pluet (6) om. R
2.61.3 longissimis (4)] longissimus R
2.61.7 delitiscunt (8)] delitis R, delites-
                                                18.344.4 ab ortu] ad ortu R || ad occasum]
  cunt R2V
                                                   ab occasum V
                                                18.344.7 eo] co RV
2.61.8 ab utroque (9) om. V
2.61.9 momento (11)] memento R,
                                                18.345.3 ostendetur (2)] ostenderetur R
                                                18.346.2 significabit (3)] significavit RV
  momento R2
                                                18.346.4 tempestatem (5)] tempestatum R
2.61.10 possint (11)] possunt V (correc-
                                                18.347.5 significant] significat R
  ted by erasure)
                                                18.347.6 rigidum (7)] regidum R
2.69.3 levantur (8)] leantur R
                                                18.348.1 varronem (2)] vassonem R
2.70.5 habsidas (absidas)] absidas RV
                                                18.348.5 nigrescens (8)] si nigrescens V
  (and so elsewhere)
                                                18.349.4 abatrato (5)] abatro V
2.63.2 hii (hi 4)] hii R, om. R<sup>2</sup>, hi V ||
                                                18.349.5 plenilunium (6)] plenilunum V
  aliique (4)] alii R<sup>2</sup>
                                                18.349.7 ex qua parte (9)] ex quarta parte V
2.63.3 vertices (verticibus 5)] vestices R
                                                18.349.10 XVI a. (XVI 13)] XVI V
2.63.5 exsurgere (exsurgunt 8)] exurgere R
2.64.3 marti (2)] martis R, marti R<sup>2</sup> ||
                                                18.350.4 XI] XII V
  veneri] veneris R, veneri R2
                                                18.351.2-3 hae videntur] evidentur V
                                                18.351.5-7 autumnum . . . transierint om. V
2.64.4 e om. R
                                                18.352.1 hiemem] hiemen V
2.64.7 feruntur (6)] feriuntur R, feruntur R<sup>2</sup>
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18.352.2 fulgor ] fulgur RV
18.352.4 ferentur] feruntur RV
18.353.3 nubeculam (nubecula)] nubiculam
   R. nubicula V
18.353.4 hiems | hiemps RV
18.353.7 circulus circulis V
18.354.5 posterum] postremum R
18.354.7 favonio | fabonio V | serena
   sereno RV
18.354.8 isdem | hasdem V | demonstrabit |
   demonstravit RV
18.355.3 expectentur (2)] exspectentur R ||
   adpropinguantique (adpropinguanteque)]
   adpropinguatique RV
18.355.7 oriente (6)] orentem V
18.356.2 aquam om. R
18.356.5 a (om. May.)] ad R
18.357.1 nebule] nabulae R<sup>2</sup>
18.357.2 descendentes (1)] discendentes
   RV || a caelo (aut caelo 1)] aut caelo RV
18.357.5 fungi ] fingi V
18.358.2 aeno] anno R
18.358.4 cum] com R, cum R2 || contentus
   (contectus)] contentibus V
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18.359.2 murmurabitve | murmuravitve
   RV || si id (3)] si ad R, si id
18.359.7 soliti (solito 8)] solito RV
18.60.1 sonitus nemorumque] sonitus nequ
   nemorumque V
18.360.4 atque etiam written twice RV
18.361.2 lascivientes | lasciviantes R | ex
   aqua (ex qua)] ex qua RV
18.361.4 sese] se V
18.361.5 solitum (6)] sonitum RV
18.362.2 caeteraeque] caeteraque R
18.362.4 sic (sicut 5)] sicut RV
18.362.5 ā( at 6)] aut RV
18.362.7 resorbebunt (8)] resordebunt R,
   respondebunt V
18.363.5 fugiantes | fugitantes R<sup>2</sup> || nidus
   suos (nidos suos 6)] nidis suis RV
18.363.6 arenis (harenis 7)] harenis V
18.364.5 segniterve et (segniter vel 6)]
   segeniterve et V
18.364.6 concursantes (7)] conversantes V
18.365.1 tripholium (trifolium) trifolium
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R, trium folium V.