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## BEN MEIR AND THE ORIGIN OF THE JEWISH CALENDAR.

AMONG the "Egyptian Fragments" which Dr. Neubauer published in the October number of the *JEWISH QUARTERLY REVIEW* (IX, pp. 24-38), the most interesting is undoubtedly the portion of a letter directed against Ben Meir (pp. 36-38)<sup>1</sup>. Its writer<sup>2</sup> reports that he had heard at Aleppo that Ben Meir wished to declare the months Marcheshvan and Kislev defective (חסריים); whereupon he sent letters to Ben Meir and warned him not to do so, as these months were plenary (שלמים). After he had returned to Bagdad, he learnt that Ben Meir had, in spite of the warning, proclaimed, two months previously, both Marcheshvan and Kislev defective, in accordance with his own calculations. To counteract the effect of this step, Ben Meir's opponent sent epistles to all congregations, including those of the Exilarch and of the heads of the schools (probably Sura and Pumbeditha), informing them that the two months in question must, according to all authorities, be accepted as plenary, and that the coming Passover would therefore commence on a Tuesday. Once more he urgently appeals to the community to take the necessary measures to save the Jews from being misled by Ben Meir's calculation—which made Passover fall on a Sunday—into the desecration of that feast by eating leaven on it, and eating, drinking, and working on the day of Atonement.

Concerning the personality of this Ben Meir, his activity and the period in which he flourished, some information can be obtained from another fragment, published by Dr. Harkavy<sup>3</sup>. From this source, as well as indications in Saadiah's הגלוי, it appears

<sup>1</sup> This fragment calls for much textual criticism. On p. 37, l. 2, *לא נגור בניב* is not quite clear: *עני ומן עני* read *עני ומן*: l. 5, *ובתוך* read *ושלחתי מקץ שני חודשים* and *ובתוכה* (ep. the second line from the bottom of the page): instead of *אגרתיהם* read *אגרתיהם*: l. 7, after *להודיעו* add *לבחתי*, as in l. 13: l. 8, for *להודיעו* read *להודיעו*: last line, for *וקראום* read *וקראום*.

<sup>2</sup> Dr. Neubauer suggests that the writer was Saadiah. See below, p. 153, n. 1.

<sup>3</sup> *Studien und Mittheilungen*, V, 212-221.

that Ben Meir was a scion of the Hillelites, that he was head of a school in Palestine, lived at the beginning of the tenth century, and strove to re-assert the authority of Palestine in the appointment of the New Moons and Festivals. He sought to win converts for his views among the communities outside Palestine; and, with this object, sent his son on missions to various places, where he indeed seems to have found considerable support. The heads of the schools in Babylon feared a schism in Judaism, and commissioned Saadiah, who was at that time in Egypt, to issue an Epistle to the congregations denouncing Ben Meir's ideas and aims. Saadiah composed a charge of this character in the month of Tebeth, 1233 aer. contr. (end of 921). Ben Meir replied, in detail, in a letter he sent to the congregations in Babylon, and endeavoured afresh to establish the authority of Palestine. Saadiah replied to this with his ספר הכווערים<sup>1</sup>.

We may assume with some degree of certainty that the incident narrated in Dr. Neubauer's fragment really took place also in 921, and it is more than probable that only after Ben Meir had attempted to give an emphatic practical expression to his theory by attempting to dislocate the Festivals on two days, that the official representatives of the Judaism of those times took alarm, and felt it necessary to utter a note of warning. This account of the event receives weighty confirmation from the testimony of a Syrian historian. Elias of Nisibis (obit post 1046) tells us that the year of the Hegira 309 began on Saturday, the 22nd of Ijar, in the year 1232 of the Greek era; and that, in this year, a schism broke out between the Eastern and Western Jews in reference to the dates of the Feasts. The Western Hebrews began their year on a Tuesday, the Eastern on a Thursday<sup>2</sup>. Here we have clear evidence that the Eastern Jews, i. e. those of Babylon, celebrated the New Year's day in 1233 on a Thursday, and consequently the preceding Passover must have begun on a Tuesday, which corresponds with the narrative in the letter against Ben Meir. We see also that the Western Jews, i. e. those in Palestine, followed the head of their school and kept Passover—and consequently all the other feasts—two days

<sup>1</sup> My exposition is entirely based on Dr. Harkavy's views, in which, however, there is much that is uncertain. If Saadiah had really been invited to Babylon in the year 921 for the purpose of refuting Ben Meir, he might also have visited Aleppo; and the fragment edited by Dr. Neubauer may in fact be by him. Cp. also *Zeitschr. f. hebr. Bibliogr.*, II, 79, note 1.

<sup>2</sup> *Fragmente syrischer und arabischer Historiker*, edited by Prof. Baethgen, text, p. 84, translation, p. 141 (cp. also the JEWISH QUARTERLY REVIEW, II, p. 107). Elias of Nisibis always gives his authority, with unfortunately this exception (and a few others).

earlier than their Eastern co-religionists. Ben Meir's injunctions had, accordingly, been obeyed; and this it was which threatened a serious danger to the religious leaders of the Babylonian communities.

The events here related we have also rediscovered in a Hebrew source, viz. in Sahl b. Mazliach's polemic against Jacob b. Samuel, Saadiah's pupil. The former, a Karaite zealot, says that in the time of the Fajjumite (Saadiah) a dispute broke out concerning the Feasts which the Palestinians kept on different days to the Babylonians. The two parties indulged in mutual recriminations and excommunications, and even went so far as to charge one another with fraud and deception. Several Babylonians, however, sided with the Palestinians, and vice versa<sup>1</sup>. Frankl, who subjected Sahl's story to a severe critical examination<sup>2</sup>, tried to demonstrate that the New Year is here meant, and that the point about which the controversy turned was whether the Palestinian Jews were to keep New Year two days or only one day—a question which engaged the attention of such late authorities as Alfāsi and his literary antagonist, Zerachiah Hallevi Gerundi. Before Saadiah, according to Frankl, the Jews of Palestine only kept Rosh hash-shanah on one day; but the Gaon prevailed on many penetrating minds in the Holy Land to adopt the Babylonian rule and celebrate the beginning of the year on two days. Saadiah believed that this would restore uniformity of religious practice, and effectively parry the attack of the Karaites who made capital out of the differences between Palestinian and Babylonian usages. After Saadiah's death, the result of his labours was undone. The Babylonian party in Palestine reverted to the prevalent customs, and hence the well-known inquiry which Nissim b. Jacob addressed to Hai Gaon as to Saadiah's Response to the inhabitants of Kafsa (קאפסא)<sup>3</sup>. Sahl, according to Frankl, wrote with a distinct bias and was guilty of exaggeration, partiality, and perversion of the truth.

Frankl's arguments will, however, not stand the test of examination. Even if Saadiah had succeeded in persuading the Jews of Palestine to keep the New Year two days, complete religious unity would by no means have been secured, as the same difference with regard

<sup>1</sup> Pinsker, *Likkute Kadmonioth*, p. 36: ולפני מזה בימי הפיתומי אשר פתח אנשים ונחלקו במועדים ויעשו אנשי ארץ ישראל יום והבבלים וההולכים אחריהם עשאוהו יום אחר ואמרו (הבבלים) כי אנשי ארץ ישראל חשאו ואנשי ארץ ישראל אמרו כי הם חשאו וקללו אלו לאלו ונרו אלו לאלו ברוב עונת ויעשו אנשי ארץ ישראל המועד ביום הזה ואנשי בבל עשאוהו ביום מוזר (אחר ז). והיו מנונים אלה לאלה יש אנשים משוכני ארץ ישראל שהלכו אחרי הבבלים וגם השוכנים בארץ שנער הלכו אחרי אנשי ארץ ישראל.

<sup>2</sup> *Monatsschrift*, XX, (1871), pp. 355–360.

<sup>3</sup> *Responses of the Geonim*, ed. Lyck, no. I.

to the other Feasts would continue to divide Palestine from the rest of the world. Saadiah, moreover, does not condemn the difference of practice, as fostering disunion; for he asserts that God had, from the beginning, commanded Moses that the Feasts should, in Palestine, be kept one day, and outside it two days<sup>1</sup>—a view which he maintains against the Karaites. Finally, Sahl would not have said that the Palestinians celebrated the Festival—precisely the Festivals—on one day, and the Babylonians on another, or on the morrow<sup>2</sup>, but that the former keep the Feast on a certain day and the Babylonians kept it on the morrow *also*. Again, what is the meaning of the statement that some of the Babylonians followed the practice of Palestine? The former in any case kept two days. I, therefore, do not doubt that Sahl had in mind the affair with Ben Meir, and we learn that a portion of the Palestinians, at least, refused to follow the lead of the head of their school, while, on the other hand, he counted many Babylonians among his adherents. The last circumstance appears from several passages in Ben Meir's epistle to the Babylonian communities which Dr. Harkavy has published<sup>3</sup>.

Frankl has cast suspicion upon Sahl's account as tainted with a pronounced bias. His reason is that, if accepted, it would involve the assumption that the Rabbanites were still disputing about the dates of the Festivals as late as the tenth century, and that, even in the time of Saadiah, the rules of the Calendar had not yet been unalterably fixed. This, says Frankl, is impossible. But what appeared to him, in 1871, an impossibility, has been proved by Dr. Harkavy's and Dr. Neubauer's publications to have been a plain fact. *As late as the tenth century there were differences of opinion as to the institution of a fixed and constant Calendar.* And this presents an opportunity for a word concerning the time and place in which the present fixed Calendar originated. Though this theme has had the benefit of frequent and varied treatment, yet it will be generally admitted that several complicated questions still await solution, and that much of what has hitherto been advanced is hypothetical<sup>4</sup>.

<sup>1</sup> Ibidem : כי רבנו סעדיה ז"ל אמר בפירושו כי אין ספק מעיקרא אלא הקב"ה צוה : את משה עברו והוא אמר להם לישראל כי בארץ יהיה להם יום אחר ובחור"ל שני ימים וכן יהיה מצולם כל ישראל עושין וכו'.

<sup>2</sup> עשאודו יום אחר and the second time מחר ביום עשאודו. Frankl would read in the first passage יום מחר. According to my opinion, it is more correct to read in both cases יום אחר.

<sup>3</sup> See especially Dr. Harkavy, p. 215.

<sup>4</sup> Herr Epstein (מקדמונית היהודים), for example, counts six periods in the evolution of the Jewish Calendar. His demonstrations, particularly in regard to the earliest period, are mostly hypothetical.

A well-known Response of Hai Gaon, preserved for us by Abraham b. Chija, is extant, which states that our present Calendar was fixed by the patriarch Hillel II in Palestine, in the year 670 (= 368 or 369 c. E.)<sup>1</sup>. This is accepted by most authorities, e. g. Zerachiah Gerundi<sup>2</sup>, Nachmanides<sup>3</sup>, &c.; Isaac Israeli<sup>4</sup> alone asserts that this Hillel belonged to the last Talmudic period, and lived about 500 c. E.; an obvious error, for nothing is known of a patriarch of that name in that era; his statement, moreover, is uncorroborated by any other authority. Hai's account bristles, however, with difficulties. On the question of *date*, Slonimski<sup>5</sup> has rightly pointed out that several passages in the Talmud show that even in the days of the last Amoraim, the new moon was fixed by observation, though since Gamliel II, astronomical rules were also brought into requisition—a view which is accepted by no less an authority than Dr. Steinschneider, who differs from Graetz and Pineles. As to the *place of origin*, M. Theodore Reinach<sup>6</sup> has drawn attention to a fact which makes it improbable that our Calendar was fixed in Palestine. In that country, he points out, the Greek eight-year cycle (Oktaeteris) at first in vogue, was succeeded by the solar cycle under the Roman rule. Sextus Julius Africanus (beginning of the third century) also notes that the Greeks as well as the Jews observe the Oktaeteris, i. e. in every eight years they have three leap years<sup>7</sup>. The *Book of Enoch*, § 74, vv. 13–16, likewise refers to an eight-year cycle<sup>8</sup>. The Metonic nineteen years' cycle was used in Babylon. Reinach accordingly assumes that Babylon is the original home of our Calendar. He ascribes the authorship, on the ground of his astronomical knowledge, to the Amora Samuel. Though this is a mistake, Samuel's era being far too early a date, yet Reinach's hypothesis as regards the *place of origin* must command assent. It may be added that Mahler, in a series of investigations, has shown that the ancient Babylonians already had the nineteen years' cycle; and he also therefore believes that our Calendar is of Babylonian

<sup>1</sup> ספר העבור, p. 97.

<sup>2</sup> מאור on Rosh hash-shanah, I.

<sup>3</sup> השגות על ס' המצות, § 153. According to Maimonides (הלכות קה"ח, V, 2) it was an הלכה לשיטה מסיני that, as soon as the Synhedrion ceases to exist, the new moons and festivals were to be fixed according to the present Calendar. This view is impugned already by Nachmanides and others.

<sup>4</sup> יסוד עולם, IV, 9.

<sup>5</sup> היורה, p. 4, &c.; יסודי העבור, § 29, &c.

<sup>6</sup> *Revue des Études Juives*, XVIII, 90, &c.

<sup>7</sup> Africanus' remarks are found in Georgius Syncellus' *Chronography*, p. 611 (cited by Reinach, l. c.), and read as follows: *διὰ τοῦτο καὶ Ἕλληνες καὶ Ἰουδαῖοι τρεῖς μῆνας ἐμβολίμους ἔτεσιν ὀκτὼ παρεμβάλλουσιν.*

<sup>8</sup> Cp. Rev. R. Charles, *The Book of Enoch*, pp. 201–202.

origin<sup>1</sup>. It does not necessarily follow that it was first adopted by the Jews resident in Babylon; they might have learnt it and brought the knowledge with them to Palestine, as indeed was the case with the names of the months. The Babylonian cycle does not follow quite the same order as ours. Its mnemonic would be not  $\text{זוּחַ אֲרֻזָּב}$  but  $\text{זוּחַ אֲרֻזָּב}$ . Instead of the seventeenth, the sixteenth year of the cycle is embolismic. Such a variation might easily, however, have developed in the course of centuries, nay millenniums<sup>2</sup>. It is curious that Albêrûni, who wrote about the year 1000, and who is the earliest authority for the systematic exposition of our Calendar, reports a difference between the Palestinian and Babylonian Jews in regard to the sequence of leap years<sup>3</sup>. He says that there are three series of intercalation (*ordines intercalationis*), viz. :—

(1)  $\text{בְּהַיְיָנוּחַ}$ , i. e. the second, fifth, seventh, tenth, thirteenth, sixteenth, and eighteenth years.

(2)  $\text{אֲרֻזָּבֵהוּ}$ , i. e. the first, fourth, sixth, ninth, twelfth, fifteenth, and seventeenth years.

(3)  $\text{זָבֻטְבֻז}$  (properly  $\text{זָבֻטְבֻזֵב}$ ), i. e. the third, fifth ( $3+2=5$ ), eighth, eleventh, fourteenth, sixteenth, and nineteenth years.

The first two series, Albêrûni tells us, were adopted by the Syrian Jews; the last, by their co-religionists generally, who preferred it to the others, because it was invented by the Babylonians. The first two series are identical with  $\text{זוּחַ אֲרֻזָּב}$ . The first need only be increased by the numeral one, the second series by two, and the identity will become apparent. The third, however,  $\text{זוּחַ אֲרֻזָּב}$ , differs from the ancient Babylonian series as well as from our system; and yet Albêrûni testifies that it was the most widely disseminated among the Jews, by which last term he refers, of course, to the

<sup>1</sup> See *Zeitschrift für Assyriologie*, VI, 457-464; IX, 42-61; XI, 41-46; *Sitzungsberichte d. Wiener Akademie, Mathem.-naturw. Classe*, 1892; *Transactions of the IX Congr. of Oriental.*, II, 209-217. Strassmaier and Oppert, however, refuted the opinion of Mahler, see *Zeitschr. f. Assyriol.*, VIII, 173-178; X, 64-69; *Zeitschr. d. Deutsch. Morgenl. Gesellsch.*, L, 138-165.

<sup>2</sup> Another difference was that the Babylonians had, besides the intercalary Adar, an intercalary Ellul. Mahler has, however, shown that the latter was only introduced after Babylon had come under Syrian domination, when the year began, as in the Graeco-Syrian calendar, with autumn instead of spring. According to 'Anan, the embolismic month must be intercalated after Shebat, for which, in my opinion, there is no analogy. See Qirqisâni's *Kitâb al-Anwâr*, I, 13 (ed. Harkavy, p. 313, line 7); Albêrûni's *Chronology of Ancient Nations*, edited by Sachau, text, p. 59, translation, p. 69.

<sup>3</sup> Loc. cit., text, p. 56, translation, pp. 64-65.

Babylonian Jews, who are contrasted with their Syrian brethren and of whom Albêrûni, living in the same country with them, was in a position to obtain accurate knowledge<sup>1</sup>. However that may be, Hai's account is certainly inadmissible.

I think I am justified in supposing that our Calendar was finally fixed after the close of the Talmud in the sixth or seventh centuries, and in the Babylonian schools. Palestine was not, indeed, the scene for an event of such moment. Spiritual life in that country had been strangled by terrible persecutions. The Jews of Babylon, on the other hand, particularly after the rise of Islam, enjoyed comparative rest, and were endowed with the requisite spirit and courage for so incisive a reform. That no account of the origin of the Calendar has come down to us need not occasion surprise. The origin of the system of Punctuation is similarly wrapped in impenetrable obscurity<sup>2</sup>. The authority of the Babylonian schools was so great that they were able to secure universal acceptance for their Calendar, even in the Holy Land. And thus not only was Judaism emancipated, in regard to its almanac, from dependence on Palestine, an object which Gamliel's contemporaries already strove to attain<sup>3</sup>; but the relation between the two countries was reversed. Babylon now became the authority to which the Holy Land had to bow. In the latter country they never forgot that the Calendar had not originated in their midst, and that it had been fixed at a late period. Hence we see in the tenth century an attempt to overthrow its authority, an attempt which is partly successful in and also outside Palestine. If it had been generally believed that the Calendar was fixed by Hillel II, it would have been not merely idle and futile, but positively foolish on the part of Ben Meir, who, rightly or wrongly, styled himself a descendant of the Patriarch, to revolt against the Calendar, of which his own ancestor had been the author, and in regard to which Palestine had laid down the law for all Israel.

<sup>1</sup> A Boraitha cited by Israeli (*loc. cit.*, IV, 2) contains the following passage: *כי הא דהנניא שנה העבור שלש שהים שלש שלש שהים שלש דברי ר' אליעזר וחכ"א שלש שלש שהים שלש שלש ר"ג אומר שלש שהים שלש שלש שהים וכו'.* Thus we have here, too, three systems of intercalation. The first is *נהח ארוש*, and corresponds to Albêrûni's third series; the second is *נוח ארוש*, like the Babylonian; the third is identical with the one at present in use. Cp. Dr. Steinschneider, in *דחינה*, pp. 28, 29.

<sup>2</sup> Here, too, Babylon takes precedence over Palestine, the Babylonian system of punctuation being older than that of Tiberias. See Prof. Bacher's *Die Anfänge der hebräischen Grammatik*, p. 15 et sqq.

<sup>3</sup> See Berachoth, 63, concerning the nephew of R. Joshua b. Chananja.



The consciousness, however, that the Calendar was of comparatively late origin induced not only the Karaites, but also the other sects, to reject and denounce it. Characteristic is the following narrative of al-Qirqisāni, one of Saadiah's contemporaries<sup>1</sup>: "I once said to the Palestinian, Jacob b. Ephraim<sup>2</sup>, 'You have intercourse with the Isawites (i. e. followers of Isa or Obadiah al Isfahāni), you even intermarry with them. But they acknowledge as prophets those whom you do not recognize<sup>3</sup>.' The reply was 'They have not seceded from us (the Rabbanites) in regard to the Feasts.' This shows that the Rabbanites tolerated open unbelief rather than a schism in the dates of the Feasts which they themselves permanently fixed." The Sectaries, especially the Karaites, by their attacks on the Calendar, misled so illustrious a genius as Saadiah into anachronisms, logical fallacies, and egregious blunders. The Gaon claims that the Calendar is of Sinaitic origin, and that its rules existed in the days of Moses. It was easy for his opponent to demonstrate the utter absurdity of this contention. And Hai Gaon had to admit that Saadiah did not really intend the assertion to be taken seriously. His object was to snatch a momentary triumph in the verbal combat<sup>4</sup>.

Thus we observe seething among the Jews in the tenth century an agitation that was far from superficial, but, on the contrary, stirred men's minds to their depths. The Karaites sought their profit in this ferment, and won many waverers over to their camp. Possibly to this dispute about the Calendar we may trace the fact recorded by Sahl, that some Rabbanites in Palestine kept two days of the Festival—one, according to the observation of the moon; and one according to the fixed Calendar, and that many of them renounced the latter (and thus were converted to Karaism)<sup>5</sup>. The last statement may be merely an unwarranted, idle rumour.

These suggestions I have here offered are, of course, purely hypothetical. It would be a subject for congratulation if this publica-

<sup>1</sup> Loc. cit., I, 11 (ed. Harkavy, p. 312).

<sup>2</sup> Concerning this Jacob b. Ephraim, who is undoubtedly identical with the one cited by Salmon b. Jerucham (Pinsker, p. 14), see my Essay in the *Steinschneider-Festschrift*, pp. 201-202.

<sup>3</sup> This sectary had asserted that Jesus and Muhammed were prophets sent by God, not to the Jews but to the Gentiles.

<sup>4</sup> *Responses of the Geonim*, l. c. : ז"ל קנה הוא כן ראינו כי זה שאמרום שכתב ר"ם ז"ל קנה הוא שודתה את האשקורוס אלו הם דבריו (של ר' סעדיה) ז"ל והם לפי תשובת המינים ולדוחות נהג מנהג התשובה שאדם רשאי להשיב להם בכל התשובה שיראה לו שהוא שובר את דבריהם וכו'.

<sup>5</sup> Pinsker, loc. cit., p. 33.

tion stimulated experts and specialists to contribute, out of their rich stores, to the discussion and elucidation of the vexed question in this little known but absorbing branch of science.

SAMUEL POZNAŃSKI.

BERLIN, *November*, 1896.

POSTSCRIPT.

My learned friend, Herr H. Bornstein of Warsaw, has pointed out to me that the report quoted by Elias of Nisibis needs correction. First, the year of the Hegira 309 began on the 12th, and not on the 22nd of Ijar, 1233. Secondly, Ben Meir's contradiction related to Marcheshvan and Kisleb, 1233, not 1232, so that the difference of two days affected the Passover of 1233, and, consequently, the New Year of 1234 (not 1233). This may also be deduced from the following passage in the fragment in Harkavy (p. 218, l. 13 sqq.):—

... מפני שנולד תשרי בשנת תתנ"ג<sup>1</sup> לחשבון הבית לילי ד' י"א שעות  
תתקל"ב חלק' וראש השנה ביום ה' והחדשים חסיר' . . . והשנה הבאה  
שהיא שנת תתנד' לחשבון הבית פשוטה הוא נולד בליל ז' בט' שעות תמ"א  
חלק' והוא בגבול ז' והחד' כסדרן וכו'.

Ben Meir further maintains that in the year 853, after the destruction of the second Temple (=1233 of the era of contracts), the New Year should have fallen on a Thursday, and the months Marcheshvan and Kisleb should have been defective (חסרים), and that New Year's day of the following year, 854=1234 era of contracts, ought to be a Tuesday. Consequently, the Passover of 1233 fell, according to Ben Meir on a Sunday, but according to the common reckoning on a Tuesday, and the New Year of 1234 on a Thursday. In fact, the Molad of the year 1233 was ד' ו"א תתקל"ב, and the formula (קביעות) was ה"שג (according to Ben Meir, ה"חא). The letter published by Neubauer shows the conflict to have arisen in the summer, i. e. in 1232. The informant of Elias of Nisibis knew that in 1232 there had been a conflict between the eastern and western Jews about the fixing of the New Year's day, and related it erroneously to the New Year of 1233, instead of to that of 1234.

The same friend further points out that the third formula of intercalation of Albêrûni (זכב"ב) can also be reduced to our formula

<sup>1</sup> So correctly in the Oxford MS. The St. Petersburg MS. has wrongly תת"ג.

(גוֹחַ אֲרוֹזָה), if we begin to reckon the intercalary years from the third year of the cycle, for then we arrive at the series גַּבְוֹנָנְבֵּן. Hai Gaon also mentions, in Responsum cited by Abraham b. Chija (pp. 97, 98; cf. יסוד עולם iv, 14), the same three formulae of intercalation as Albêrûni, namely גוֹחַ בְּהוּי' גוֹחַ, אֲרוֹזָהּ, and גַּבְוֹנָנְבֵּן, and his words show that all three are identical. Vide also Steinschneider, l. c., pp. 34, 35.

Finally, the discrepancy between the Babylonian and the Jewish series of the intercalary years by no means proves the impossibility of the latter having originated from the former, for our nineteen years' cycle is supposed to have been borrowed from the Metonic, but even in the latter, the sequence of the intercalary years has not been satisfactorily established. The sequence was, according to Dodwell, Ideler, Boeckh, in the Metonic system, 3. 5. 8. 11. 13. 16. 19; and in that of Kallipos, 1. 4. 7. 10. 12. 15. 18. On the other hand, according to Scaliger, Em. Müller, and Aug. Mommsen, in both systems, 2. 5. 8. 10. 13. 16. 18. Cf. Unger, *Die Chronologie d. Griechen u. Römer*, in Iwan Müller's *Handbuch d. klass. Alterthums-Wissenschaften*, I.

S. P.

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