

I Sidersky - Astronom. Origin. 4th Series. 1898

The SPIRAL

STENOGRAPHER'S NOTE BOOK

A SUPERIOR NOTEBOOK WITH LEAVES
THAT TURN FAST AND LIE FLAT.

No. HG-620



*Sidersky
on
Jews*



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CHART OF BRIEF FORMS

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1/
Translation from French

P.C. A.S. 162 P. 312 - Smithsonian Deposit

"Mémoires présentés par divers savants à l'Académie
des Inscriptions et belles-lettres de l'Institut de France."

Vol. X^{II}, part 2. Paris, 1913.

"Étude sur l'origine astronomique
de la chronologie juive."

pp 595-683. - M. D. Sidorsky:

Study on the Astronomical Origin of the
Jewish Chronology.

Introduction: Among the first astronomical
manifestations of ancient nations an important
place is occupied by the different systems of
chronology based on the periodical rotations
of the stars the first observations of which
go back into most ancient times. //

The oldest form of a regular time
period was no doubt the lunar month, beginning
with the first appearance of the new moon after
a short period of invisibility. The astral
religions of ancient times, and above all the
worship of the moon which had her main
focus (hearth-stone) in Chaldea, have especially
contributed to the observation of the various phases
of the moon. The lunar year was no doubt the
result of the rudimentary observations of the

2/ return of the seasons at the end of twelve lunations. But the precise form of the solar year was established later in Egypt by (through) the heliacal rising of Sirius and its coinciding with the ^{rising} growth of the Nile, a phenomenon of chief importance for the fertility of the Egyptian soil. The ^{arithmetical} division of the solar year in twelve ^{months} of 30 and 596 31 days substituted for the lunar months is of a later period since the particular denominations of the successive days of the lunar month are found in the hieroglyphical inscriptions.^①

[Note 1, p. 596: See Ed. Mahler, *Études sur le calendrier Égyptien* (*Annales du Musée Guimet*, t. XXIV) Paris, 1907. p. 4-6.] //

The form of the luni-solar year which regulates the months after the course of the moon and the whole of the year after the course of the sun, though of less ancient origin, was known in China as early as the 20th century B.C. It was in use among the tribes of western Asia, by the Babylonians, the Greek, and the Hebrew. It is very likely that this system was not formed only after it was found out that synodic rotation of the moon took place

3 on an average in $29\frac{1}{2}$ days, and that the solar year was 364 or 365 days or 10 or 11 days in excess of the period of the 12 lunations. At the end of 3 years the difference amounted to one month and the beginning of the solar year, marked by the return of a (cardinal) chief phase - equinox or solstice - coincided with the new moon. //

For a very long time the ancient peoples regularly ^{on} observed the evening of the 29th or 30th day of the month the appearance of a very ^(thin) fine (bright) luminous crescent in the sky which marked the beginning of a new month and became often the object of religious ceremonies, the origin of which probably was worship of the stars. These observations were continued even long after the knowledge of astronomy made it possible to them to figure out in advance the date of the new moon. The methods of observation and the astronomical calculations both were improved until the latter were substituted entirely for the first. In the Babylonian astronomical ephemeris dated the IVth and 3rd century B.C., deciphered by Strassmaier and published by Epping and Kugler, ⁽¹⁾ [Note 1, p. 597: See Kugler, Die Babylonische Mondrechnung, Freiberg, 1900.]

4/ are given found the results of the calculations for the visibility of the moon and the conjunctions. "With the Jews these calculations were in use since the IInd century B.C.

until the end of the IInd century A.D. according to the testimony of several ancient authors.

But it is ^(possible) probable that these calculations go back much farther." ~~SS 1/2~~ Sidersky, Idem, p. 597.

The computation^s of the Jews defined by Scaliger as being "the most ingenious and most elegant of all systems of chronology" (Joseph Scaliger, *De Emendatione Temporum*, Lutetiae, MDLXXXIII, p. 194) in ^{its} ~~its~~ their present form goes back to the IVth century A.D. It comes more or less directly from the ancient system based on the direct observation of the ^{new} moon, ^{or} ~~also~~ on the astronomical calculation of the visibility, combined with the observation (or the cyclic calculation) of the vernal equinox, of which traces are found in the Rabbinical literature. But it is not easy to follow the successive transformations the ancient system had to undergo ~~to~~ in order to put on finally the definitive form conserved until our days, and the numerous papers ex professo on the modern Jewish computation

5/ explaining its wheel-work in all details are reserved in information on the historical question.

This question, however, is especially interesting because the formation and development of this system of chronology are the results of the progress of ancient astronomy. Thus, ^{the} origin of the

X Jewish computation forms a very interesting chapter in the history of the first applications of astronomy.

It is from this point of view that we have undertaken this study searching in the
(p. 598) ancient texts ^① [Note 1, p. 598: We have studied the original texts of the ancient ^{texts} texts; the published translations not always being could be utilized.] and in ^{the} concord (agreement) of certain historical facts the verification of some hypothesis which we have formulated. ^② [Note 2, p. 598: The confusion between the modern Jewish computation and the calendar system which preceded it, a confusion which you still meet sufficiently often in the professional (?) literature has recently led a Greek author to doubt the authenticity of the "Papyri araméens d'Elephantine", published by MM. Sayce and Cowley (London 1900). M. L. Belleli, after examining the double Semitic and Egyptian

by dates in these valuable documents and finding them not in agreement with the modern Jewish computation drew from this the very simple conclusion that these documents are not authentic - completely forgetting that in the 5th century B.C. the modern Jewish computation was not yet invented. We mention here the erroneous opinion of this author, the unsoundness (invalidity?) of which M. J.-B Chabot (*Journal asiatique*, novembre-décembre, 1909, p 315) has proven.]//

In the literature of that period we have found sufficient (proves) facts in order to reconstruct synthetically the ancient Jewish calendar during the 1st century of our era, and this restoration led us to the origins of the ennea-deca-eteride cycle which is the base of the modern computation. It was the same with the value of the average (mean?) synodic month the origin of which we shall discuss.

But the fact which seemed to us most interesting to know, the one the authors have left completely in the dark, is the physical instant (moment?) which served as starting-point to for the modern Jewish computation

2 an instant doubtless determined by an
astronomical observation. This starting point
is the key stone (pierre) of the whole system since
its exact knowledge indicates, with the date
of the observation, the meridian to which it is referred.

In formulating the hypothesis that the
starting point of the computation should be
an eclipse of the sun visible in western
Asia, say a true astronomical conjunction
established (determined) for sure, we endeavored
to determine with the aid of certain publications
of an ^{p. 599} authority above reproach (indiscutable) the
initial date of the system and its concord
(agreement) with the historical facts of that
period. //

We have been led to study this
question following another work of a more
practical than scientific character to be
published elsewhere. It is a special system
of conversion tables of Jewish, Julian and Gregorian
dates for the use of chronologists and for
rapid verification of historical dates, which we
have worked out with the help of a method
we shall expose farther down. In when writing
the introduction for said work we became

8/ aware of the complete absence of informat-
ions with regard to the origin of the Jewish
computation, the mechanism of which,
however, is explained in a rather detailed
way in works going back as far as the Xth
century A.D. This strange fact caused us to
engage in original research work, the results
of which is this present Memorial. //

To facilitate the presentation of this
somewhat arid (discussion) (thesis) paper, we begin
the results of our researches are preceded by a
brief explanation on the functioning of the
modern Jewish computation known only to
the initiated. We shall make use of some
conventional formulas easy to remember and we
shall ^{annex to appendix} supplement it with two small ^{charts} pictures(?)
destined to facilitate all calculations. We shall
then present our special researches in their natural
order referring to the ^{appendix} ~~annex~~ for the proofs. The
first of ^{appendix} ~~annex~~ is made up of excerpts of
Rabbinical literature the Hebrew-Aramean texts
of which, followed ^{by the} french translation, have
explanatory notes (rules). In the 2nd annex
we give a short summary of the method
described by Maimonides (XIIth century) for the

9/ astronomical calculation of the visibility of the moon. In the 3rd Annex we reproduce a passage of Al-Biruni (10th century) according to the English edition of of ^{P 600} Sachau. In the fourth Annex we present the principle of our methode for the conversion of Jewish, Julian and Gregorian dates, and the fifth annex represents a general bibliography of works in manuscript form and printed dealing with the Jewish computation in order to facilitate research work for scholars to whom the question might be of interest. //

Chapter 1.

Mechanism of the Modern Jewish Computation

1. The modern Jewish calendar includes a series of ^{fixed} regulations as well as a somewhat original method of computation which we shall briefly describe before we start on our particular researches, in order to facilitate the discussion. //

The Jewish year being luni-solar, the months have 29 and 30 days, and the year which begins in autumn is made up of the twelve following months: Tishri (30 days), Mareschwan or Heshwan (29 or 30 days), Kislev (29 or 30),

10/ Têbeth (29 days), Schebath (30 days), Adar (29 days),
Nissan (30 days), Iyar (29 days), Sivan (30 days),
Tamuz (29 days), Ab (30 days) Elul (29 days).

In the embolismic year a thirteenth month
was inserted between Adar and Nissan, and
it received the name of Adar II or Veadar
(29 days) while the one preceding it is named
Adar I (30 days). Thus 30 days are added,
increasing by one day the preceding month
and giving the intercalary month a length
of 29 days. It will be more exact to say
that the thirteenth month has 30 days and
that it is inserted between Schebat and Adar,
this latter then becomes Adar II or Veadar;
Thus it will be avoided, ^(p 60) to vary its length
unnecessarily. As the six summer months
have 30 and 29 days alternately there is
nothing against starting the year with Nissan
putting new year's day 177 days ahead, the
fixed interval between 1st Nissan and the
1st Tishri. //

A cycle of 19 years or 235 months
makes it possible to harmonize the respective
courses of the sun and the moon, and the 7
embolismic years in the cycle come in the

11/ following order: 3, 6, 8, 11, 14, 17 and 19, while the ordinary years are: 1, 2, 4, 5, 7, 9, 10, 12, 13, 15, 16 and 18.

The civil day is counted as from the ~~equinox~~ sunset, thus preceding our civil day by 6 hours (which is counted as from midnight) or by 18 hours the astronomical day which starts at midday. The hour is divided in 1080 scruples the unity of which is equal to $3\frac{1}{3}$ seconds = $\frac{1}{18}$ of a minut. The years - common as well as leap years - are of variable length: 353, 354 and 355 days for the common (ordinary!) year and 383, 384 and 385 days for the embolismic (leap-) year. Thus every kind of year has ^{is of} three different lengths signified in the following manner:

The regular ^{common} ordinary year (r) has 354 days and its months are ~~plain~~ ⁽³⁰⁾ alternately and short (30) plain (30) and short? (29). The regular leap-year (R) has 30 days more, or 384 days. The ordinary abundant (r) has one year day more than the common year, or 355 days and the abundant leap-year (P) 385 days; in both the additional extra day is added to the month Marheshvan which counts 30 instead of 29 days. Finally, the deficient common (m) year is one day short, or 353 days, and the deficient leap year (M), 383 days; the lacking day is taken off the

12/ month Kislev ⁽¹⁶⁰²⁾ which counts but 29 instead of 30.

We have adopted convenient signs easy to remember to designate the different lengths of the year: r and R for the regular years, p and P for the abundant having one day in excess, m and M for the short years being one ^{day} year short; the small letters stand for the common years while the capital letters stand for the leap-years. //

In the following ^{chart?} Table the distribution of the days in the different forms of the year is given:

Month:	Common years			Leap-years		
	m .	r	p	M	R	P
Tishri	30	30	30	30	30	30
Mascheshwan	29	29	30	29	29	30
Kislev	29	30	30	29	30	30
Tebeth	29	29	29	29	29	29
Shebat	30	30	30	30	30	30
Adar	29	29	29	30	30	30
Keadar (Adar II)	-	-	-	29	29	29
Nisan	30	30	30	30	30	30
Iyar	29	29	29	29	29	29
Sivan	30	30	30	30	30	30
Tammuz	29	29	29	29	29	29
Ab	30	30	30	30	30	30
Elul	29	29	29	29	29	29
Total days.	353	354	355	383	384	385

2/ The fixation of the calendar every year depends on a series of regulations some of which are of astronomical nature, and the others are motivated by ritual propriety. This being lunar months, the whole computation as far as possible tends

13 to make the beginning of the month coincide with
the first physical appearance of the new moon. The
calculation ^(p. 603) of the lunations is based on the average
length of the synodic month, figured at 29 days,
12 hours 793 scruples (~~terties~~) (29 d. 12 h. 44 m. 3 s. $\frac{1}{3}$).

The era mundi (^{era} of creation) is taken as the
starting point, the first mean¹ conjunction of which
is fixed at¹ Sunday, October 6 of the proleptic year
3761 (or 953rd of the Julian period) at 11 h. 11 m. 20 s. of the
evening, or according to the Jewish computations to
Monday, (Oct. 7), 5 h. 204 scruples (~~terties~~) The instant
(moment¹) thus defined represents the "initial Moled" ^(a.p. 14)
i.e., the ^{mean¹} average conjunction of Tishri of the first
year in the first cycle of the Jewish era since creation.
To find the Moled Tishri of a given year of this era,
it is necessary ^{first} to divide this date by 19 in order to find
^{then} the quotient the number of full cycles elapsed since
the beginning of the era and to know from the remainder
of the division the ~~rank~~ of the given year in the
started cycle, a division without a remainder (~~rest~~) giving
the last year of the cycle. Knowing that each full
cycle contains 235 lunations, that the years of the
cycle in its course each represents 12 lunations plus one
lunation for a leap year, it is easy to find the total
number of lunations since the beginning of the era

14/ until the beginning of the given year. By multiplying the number of the lunations by 29 days 12 hours 793 ~~scrupels~~ (~~torties~~!), in transforming further the ~~scrupels~~ (~~torties~~) into hours (of 1.080 ser.), the hours into days (of 24 h.) and the days in weeks (of 7 d.), and by adding to it the value of expressing the initial moled, or Monday 5 h. 204 ser., leaving them off (~~suppressing~~!) the figure representing complete weeks, you finally get to know the week day (reckoned as from Sunday), hours and ~~torties~~ (~~scrupels~~) defining the instant of the looked for moled. //

[Note 1, p. 603: The Hebrew word (יָדָה) moled meaning "nat's birth" designates the mean³ conjunction and not the physical appearance of the new moon, as Ideler has stated erroneously.]

3. In order to simplify these calculations and to render them more practical, a special method has been adopted based on the principle of eliminating whole weeks. The value length of one lunation being 29 days, 12 hours, 793 ~~torties~~ (~~scrupels~~) 28 days have been cut off, or 4 whole weeks (leaving) keeping retaining only the remainder = 1 day, 12 hours, 793 ~~torties~~ called the monthly ^{remainder} residu. Multiplying this by 12 you get, after eliminating whole weeks, the annual ^{remainder} residu.

$$\begin{array}{r}
 5670 \\
 19 \overline{) 3887} \\
 \underline{171} \\
 160 \\
 \underline{152} \\
 8
 \end{array}
 \begin{array}{l}
 298 \\
 1298
 \end{array}$$

15 of 4 days, 8 hours, 876 scruples ~~tecties~~, or multiplying it by 13 - the ^{remainder} residue of a leap-year, i. e. 5 days, 21 h., 589 tecties. The multiplication of the monthly ^{residu} remainder by 235 leads to the cyclic residu, which amounts to 2 days, 15 hours, 595 tecties. //

The practical advantage of this system of "residus" (remainders) will be easily understood. Let us say, for example, we have to determine the moment of the first lunation, i. e. the Moled Tishri of the Jewish year 5670 (1909-1910). Dividing 5670 by 19 we get the quotient 298 and 8 as a rest leaving 8; the given year will therefore be the 8th of 299th cycle of the ^{era} since creation.

Our mathematical operation at first includes the multiplication of the ^{cyclic} remainder (2 d. 16 h. 595 ^{scr.} ~~tecties~~) by 298 which leaves after eliminating whole years, a remainder of 3 d. 10 h. 190 ^{scr.} ~~tecties~~; adding to it the value of the initial moled we get:

$$(3 \text{ d. } 12 \text{ h. } 190 \text{ scr.}) + (2 \text{ d. } 5 \text{ h. } 204 \text{ scr.}) = 5 \text{ d. } 17 \text{ h. } 394 \text{ scr.},$$

defining the first moled of the current cycle (the 299th). The given year being the 8th of the cycle, 7 years have passed, 5 of which ordinary years (1, 2, 4, 5 and 7) and two leap-years (3 and 6); p. 605 thus we shall have $5 \times (4 - 8 - 876) = 0 - 20 - 60$ and $2 \times (5 - 21 - 589) = 4 - 19 - 98$, or altogether:

16 Moled of the 299th cycle 5d. 17h. 394 ser.
 Residu of the 5 common years 0 - 20 - 60
 " of the 2 leap-years 4 - 19 - 98
 Total (moled Tishri of the given year) 4 d. 8 h. 552 ser.
 which is to say Wednesday 8 h. 552 ser. (2 h 30 m. 40 s. in the morning). //

4 These calculations will be considerably simplified by the help of the table on opposite page giving in three distinct parts the multiples of the residus (remainders?) for the month, year and cycle. In the case quoted looking for the Moled Tishri of the year 5670 the way to proceed is as follows:

5670 : 19 = 298, leaving 8; the given year thus is the 8th of the 299 cycle.

Moled The initial Moled	2 d. 5 h. 204 ser.
200 cycles	5 - 22 - 200
90 cycles	4 - 1 - 630
8 cycles	0 - 12 - 440
7 years of the current cycle	5 - 15 - 158
Total	16 d. 58 h. 1632 ser.
Respectively	4 - 8 - 552.

p. 606

Table on the Residu
 (was to be photostated)

Sometimes (it is wished) the desire is expressed to know the moled of a certain month for a given year; this will be found without difficulty with the help of our table simply by addition. Let us note, however, that the ^{takes on the residue} monthly and cyclic residue remainders do not include but the ordinary multiples of the units leaving off the entire weeks. But the table of the 19 residue annual remainders follows the order of common years and leap-years of the cycle. For instance, the residue of the 4th year is not exactly the same ^{as} of the 2nd year because in 4 years there are 49 lunations instead of $2 \times 24 = 48$. //

5. New moon of Tishri. — The fixation of the first new moon  of a year, i.e. the designation of the day with which the month Tishri begins, the day named in Hebrew Rosh hashchanah or "head of the year" is subject to the following regulations:

1st If the moled in question comes before noon, the Tishri new moon is fixed on the very day of moled, except in the case of a postponement to be discussed later. //

2nd If the moled comes at noon in the afternoon (or until 18 o'clock) or later, the new moon is

18 is fixed on the day after the moled or, in case of the postponement on the day after the next.

3rd. The newmoon of Tishri must never coincide with a Sunday, a Wednesday or a Friday. If the moled comes on one of these three days before noon or the eve of the afternoon, the new moon is postponed to the next day.

^(Hence) The 1st Tishri can come on no other day but Monday, Tuesday, Thursday or Saturday. Inasmuch as the 1st Nisan precedes the 1st Tishri with an interval of exactly 177 days, there are again three days which exclude ^{p. 608} the new moon in Nisan: Monday, Wednesday and Friday.

[Note 1, p. 607: The new moon is the festival of the first day of the month, often coinciding with the next day ^{after} of the physical appearance of the new moon.]

4th If the Tishri Moled of an ordinary year comes on a Tuesday at 9 h. 204 scr., or above that, the new moon is postponed to Thursday.

This regulation like the one that follows it is motivated by the limitations strict boundaries within which the length of the year oscillates (varies!). If the Tishri Moled of an ordinary year reaches the limit of 3 d. 9 h. 204 scr., the moled

Nisan
to Tishri
177 d.

19 of the following year will reach Saturday noon, because $(3-9-204) + (4-8-876) = 7d 18h. 0 scr.$ by fixing the new moon of the given year on Tuesday in accordance with regulation #1, and by postponing ~~it~~ to Monday (according to regulations 2 and 3 combined) the corresponding new moon of the following year an interval of 6 days is obtained, or an ordinary year of 356 days which is not admissible (see §1). //

5th. If in a common year succeeding a leap year the moled of Tishri comes on a Monday at 15 h. 589 scr., the new moon is fixed on the next day, Tuesday. It is by taking off the given moled the remainder of a leap-year, you get $(2-15-589) - (5-21-589) = (3-18-0)$ or Tuesday noon, as the moled of Tishri of the preceding year, the new moon of which was postponed to Thursday (regulations 2 and 3 combined). By fixing the new moon of Tishri of the given year on Monday, the interval with the preceding will be but 4 days, or a length of 382 days for a leap-year which length is not sufficient. //

6th Knowing the moled Tishri of a given year, and thus the days by which ~~the~~ the year begins, add ^{to} the given moled the annual residu

20/ (4-8-876) for 12 months or (5-21-579) for 13 months and you get in this way the ⁶⁶⁰⁹moled Tishri of the following year; this will make it possible to know the feria day when it will begin in its turn. The interval between these two days will give you the length of the given year. The ordinary regular year (r) of 354 days (50 full weeks + 4 days) will leave an interval of 4 days between the two ^{successive} new moons of Tishri; the abundant year (p) of 355 days will form an interval of 5 days; the deficient year (m) of 353 days - 3 days. Likewise the regular leap-year (R) counts 384 days (54 whole weeks + 6 days) and will leave an interval of 6 days between the two new moons of Tishri; the deficient year (M) has but 383 days and will leave an interval of 5 days; but in the abundant (P) year which has 385 days or 55 whole weeks, the two successive new moons of Tishri will fall on the same day. As is seen, all the calculations concentrate on the day of 1st Tishri. //

7th Following the example of the authors of the middle ages we shall designate by simple formulae the different forms of the year. For instance:

21/ 2p indicates an ordinary abundant year (of 355 days), beginning on a Monday, the figure (cipher) designating the day and the letter - the length and space of the year; 3R, the regular leap-year (384 days) beginning with a Tuesday; 5r, the ordinary regular year (354 days) beginning on a Thursday; 7m, the ordinary deficient year (353 days) starting on a Saturday. //

The formula expressing the form of the year summarizes its whole calendar. //

The four days of the new moon of Tishri and the six lengths of the Jewish years do not at all form $4 \times 6 = 24$ varieties of distinct years but merely 14, 7 for the ordinary years and the same for the leap-years, setting out again in the following manner, in the order of the days:

Monday 2m, 2p, 2M, 2P

Tuesday 3r 3R

Thursday 5r, 5p 5M, 5P;

Saturday 7m. 7p. 7M. 7P

The year beginning on a Monday cannot be regular, ^{neither} nor of 354 nor of 384 days, because of regulation 3rd given above. Likewise, the year which begins on a ~~Th~~ Tuesday cannot be ~~neither~~

22/ an abundant nor a deficient^{one}, for the same reasons, and so on. //

8th Thus, in order to know the form of the year, it is necessary to calculate its Tishri Moled and the one of the following year in order to establish the interval. To simplify the calculations the ancient authors have divided the 19 years of the cycle in four distinct categories, i.e.:

1. Ordinary years preceded by leap-years (1, 4, 9, 12, 15);
2. " " followed " - " (2, 5, 10, 13, 16);
3. " " preceded & followed by - " (7, 18)
4. Leap-years (3, 6, 8, 11, 14, 17, 19).

For each of these four categories have been established the extreme limits within which the Tishri moled can vary (oscillate) without causing a change in the form of the year. These limits are indicated in the following table named "Four gates", invented in the course of the Saonite period. It suffices to know the Tishri moled of a given year and its rank (order) of the year in the cycle to find in this table its form represented by its two elements: day (feria) and length. This chart, or rather the indications it contains have

23 have always served as base for the fixation of the Jewish calendar for each year. //

Table of the Four Gates (Arba Schearim) p. 611

Indicating the form of each year according to its Rank in the Cycle and its Tishri new moon, Established according to the Jewish Computation.

Monday. Tuesday Thursday Saturday.

$\frac{2}{3}$ see p. 22 of these notes

Note. The values given in this (chart) table represent the extreme limits (in order to) maintaining the form of the year. So the form of an ordinary year of group I which will be 2m as long as the new moon (the mean conjunction) of Tishri will fall between 6d. 0h. 409scr. and 7d. 18h; between 7d 18h 1scr and 1d 9h 204scr. the year will have the form of 2p.; between 1d. 9h 205scr. the form of the year becomes 3r. etc. //

(p. 612) In this table the whole system proceeds from the new moon of Tishri considered as the head of the year, according to the designation of the religious festival of this day. But, as ^{stated} observed (made to observe) above, the six months preceding the one of Tishri are alternately full and hollow; thus its fixation, respectively,

24/ is (bound with the whole) dependent on the day with which the ^{following} 1st Tishri is to coincide, of which what length the year is to be. These six months form 177 days or 25 whole weeks plus 2 days; therefore the day of the 1st Nisan will precede the one of 1st Tishri by two days. So one can start the year just as well with the 1st Nisan, as it has been practised earlier, before the captivity of the Jews in Babylon and even^a long time after and it will be possible to fix the form of each year through the position of the Nisan Moled which precedes the one of Tishri by 2d. 4h. 438 scr. //

It is interesting to know these details, because ^{back in} at the (long ago) period of the establishment of the modern Jewish calendar and even^a long time after, the Babylonian Jews counted the years beginning with 1st Tishri while their coreligionists of Palestine continued to begin start the years 1st Nisan in conformity with the direction of the Bible (Deuteron. XVI:1.) //

Chapter II.

Origins of the Semi-Solar Year. Hebrew

9. Like all Semitic ~~people~~ nations of old ancient times, ^{with} the ancient Hebrews the time unit

25 was the lunar month beginning with the first physical appearance of the crescent and designated with the Hebrew word hodesch (חֹדֶשׁ) which means ^(p. 613) "renewing". That is why this word signifies the new moon and - by extending it - the whole lunar month. The Hebrew form of the year had to be the one of the tribes in the midst of whom they lived. ~~Yet~~ But we have no precise indication on this form of the year. //

During the Hebrew sojourn in Egypt under the rule of the Pharaohs it could take them the form of the solar year still retaining the lunar months in which the Egyptians, too, were interested for the numerous hieroglyphic inscriptions which H. Brugsch has reproduced in his Thesaurus Inscriptionum Aegyptiacarum (the astronom. and astrolog. part of it, p. 49 and on) contain the successive names of the 30 days of the lunar month. //

10. Several authors have stated that the ancient Hebrew had solar months and in support of their thesis they point to the five months of the flood amounting to 150 days (Gen. VII: 11. 24; VIII: 3. 4) or months of 30 days. Without insisting on the frailty (weakness) of this demonstration

26 we shall point out that L. Ideler (*Handbuch der Chronologie*, Vol. I, Berlin, 1825) has shown that there was nothing to this. //

11. But the form of the luni-solar year was adopted by the Hebrew immediately after the Exodus, following the institution of the Passah festival decreed by Moses, which feast was to be celebrated at evening of the fourteenth day of the lunar month coinciding with spring, in memory of their departure from Egypt. This fact is ^{clearly} evident from the following Biblical texts: (Exod. 12:2, 6, 14, (Levit. 23:5) (Deuteron. 16:1) ^{p. 614} [Note 1, p. 614: See Schiaparelli (Giovanni), "L'Astronomia nell'Antico Testamento" (Milan, 1903) ch. VIII, §89, who explains there the Hebrew luni-solar year.] //

The words *hodesch ha-abib* (.....) usually are translated by "month of the new grain" or "month of the ears", because the Hebrew word abib is synonymous with "maturity of the corn" and, on the other hand on the day following the Passah festival, i.e. on the 16th of the month the first-fruits of the barley harvest had to be offered in the temple of Jerusalem. (Lev. 23:10, 11). //

27 / Some modern scholars (scientists) ⁽²⁾

[Note 2, p. 614: See Ed. Mahler, Study on the Egyptian Calendar (Annales du Musée Guimet, Vol. XXIV) Paris, 1907, p. 58.] consider "the month of Shib" to mean the Egyptian solar month "epiphi", called Shib by the Arabs and the Copts (see Biot, Résumé de Chronologie astronomique, Mémoires de l'Académie des Sciences, Vol. XX, p. 335). We do not have to discuss here this original interpretation of a Biblical text ⁽³⁾, which will in no wise influence our thesis. [Note 3, p. 614: The article ha meaning "the" placed before the word shib (month of Shib) however will be inexplicable if it concerns a proper name, and Moses should have written in this case, Hodesch-Shib sans without the article, like Hodesch Nisan (Nehemia 11:1).] //

Whether the hodesch ha-shib indicated by Moses be the month of the ears or the ^{solar} month epiphi of the natural Egyptian year, which terminates with the maturity of the fruits, it is always the same month which coincides with the vernal equinox. Thus the ^{aim of the} Mosaic ^(p. 615) command was to regulate the months according to the course of the moon and the whole year in accordance with the course of the sun - by assigning as a

28 starting point the lunar month coinciding with the beginning of a determined solar season, be that, if necessary by inserting a thirteenth month instead of following the Egyptian system of the epagomenes. (see Appendix A, I). //

12. To determine the month of Abib, the more or less imminent (near) maturity of the barley was being observed, the first-fruits of which had to be offered in the temple the 16th day of the month; or rather, they made use of the solar year of 365.25 days which the Hebrew^{no} doubtless knew since their sojourn in Egypt. Due to lack of explanatory documents, we cannot affirm anything with regard to this. Whatever it may ^{have} be, the form of the luni-solar year was established with the Hebrew by Moses (i.e. in the course of the XIVth century B.C.) and the year began with ^{the moon of the} spring equinox. //

13. This fact passed by until now almost unnoticed, however, is worth to be especially retained because it implies the supposition that the institution of the luni-solar year (with the Hebrew) was the starting point of astronomical observations and chronological calculations ⁽¹⁾ [Note 1, p 615: According to the

29 book "Sapience" king Salomon (1017-997 B.C.) had a conception (knowledge?) of astronomy and astrology because he has said (Sapience, VIII, 17, 18 and 19): "It was (God) himself who gave me the true knowledge of what there is (exists), who taught me to know the ^{arrangement?} disposition of the ^{universe} (world), the power of the elements, the beginning, the end and the middle of time, the changes caused by the going away and returning, of the sun, the vicissitudes of the seasons, the rotation (revolutions) of the years, the disposition of the stars."] which in the first half of the XIth century B.C. led to a calendar system making it possible to know in advance the new moons ^(p. 616) customary to celebrate with official meals, according to the Biblical text (I Sam. 20:5).

A few years later, in the beginning of David's reign, they had official men for computations, charged (commissioned?) to regulate the calendar, a fact clearly ^{affirmed} confirmed by the following Biblical text: I Chron. 12:32. //

It is to be remarked that the children of Issachar² are named in the midst of the enumeration of the chiefs of the army gathered at Hebron to proclaim David as king

30 in place of Saul. //

These children of Isachar, the Hebrew astronomers of the period no doubt had determined (fixed) regulations to fix the luni-solar year which no exterior circumstance was allowed to influence. It was because of this that King Hezekiah² in the course of special events decided (in 724 B.C.) to celebrate Passah in the second month of the year instead of decreeing the intercalation of a thirteenth month of the year at the end of the preceding year and commencing the current year with the month in which Passah had to be celebrated. One century later, king Josias, after learning of the precepts of ⁱⁿ Deuteronomy gathered his people to Jerusalem (in 621 B.C.) in order to celebrate Passah there in the first month, the one of Nisan (Deut. xvii:1). The Biblical chronicler relates this facts in following terms:
II Chron. ^(p. 617) 30:2,3; 24:29,30; 25:1; II Kings 23:21.

14. Designation of the months: During the whole duration of the dynasty of David's descendants and until the beginning of the Babylonian exile, the months of the year as well as the days of the week had no other names (denominations) than the number.

31 There are found in the story of the construction of the temple of Salomon (I King VI, 1, 37, 38; VIII, 2) some significant names given to certain months: Ziv (blossoms) for the second; Etanim (growth of the rivers) for the seventh; and Bul (rains) for the eighth, names ^{with} which ^{are} ~~are~~ ^{analogous to some in} ~~similar~~, our republican calendar has certain ~~analogies~~. These are perhaps rather agricultural epithets rather than fixed names since there is no trace left of other names, in case they ever existed. ^① [Note, p. 617: This explains the article placed before the word etanim (I King 8:2): Derah ha-etanim... which is the seventh Hodesch. See p 614, note 3 regarding the article of the word abib.] //

Some authors think that these names, like the one of Abib (ripeness of the grain) of the first month, designate the solar months, and they conclude from this the existence of the simple solar year with the ancient Hebrew.

This opinion has been refuted by M. Dilmann in a remarkable memoir on the Hebrew calendar ^(prior to) before the exile (Comptes rendus mensuels de l'Académie des Sciences de Berlin, séance ^{p. 618} du 27 octobre 1881). The learned professor proves

32/ the Cananean origin of these names which have been found in the Phenico-Cypriotic inscriptions ^① [Note 1, p. 618: In these inscriptions the five Epagomenes days are (mentioned) discussed.] (Corpus Insc. Semit. I, 1, n^o 3, 18, 86 and 90; Schrader, Die Keilinschriften und d. Alte Testament, 3rd edition, Berlin, 1903, p. 329) and J. Derenbourg, (Revue des Etudes juives, 1881, Vol. II, p. 124) holds that these names were given by the Phenician workers employed at the construction of the temple of Salomon. //

M. Dillmann states that the Hebrew word Jerah (month) which precedes the names mentioned, is of Aramaean origin, and that it is used but in poetry in the Bible, and that the Phenicians used it to designate the month, reserving the word Hodesch for the new moon. Only the Jews extended the meaning of hodesch to the lunar month so as to differentiate the solar Jerah of the Phenicians with which it did not agree. //

15. Analogous denominations are found in a strange Hebrew inscription in Phenician characters dating back at least to the 6th century B.C. discovered recently (^{end of} 1908) by

M. Macalister in the archaeological excavations made at Bezer (Palestine), and deciphered by M. M. Lidzbarski, Gray, Pilcher and H. Vincent. ⁽²⁾

[Note 2, p. 618: See Macalister, Quarterly Statement of the Palestine Exploration Fund, Jan. 1909, p. 26-34; Vincent, Revue Biblique, Apr. 1909, p. 243-269; Sidersky, Bulletin de la Société nationale d'Agriculture, June 1909, p. 515-517.] This table contains the enumeration of the agricultural months: Jerah Asif (Harvest month), Jerah Zira (month of seed-time), Jerah Lekeseke (month of grass, herbs')...., Jerah Zomir (month of vintage), and so on.

^(p. 619) The inscription proves that sometimes the months were designated by according to the agricultural works, same as the seasons were designated (Gen. 8:22); nothing proves the existence of solar months or ~~an~~ solar year independent of the lunar phases. ⁽¹⁾ [Note 1, p. 619:

This is also the opinion of G. Schiaparelli in his book: "L'Astronomia nell'Antico Testamento" (Milan, 1903) chap. VII § 73-84.]. //

16. It is certain that prior to the Babylonian exile the Jews did not yet have the names of the months in use since. Even Jeremiah does not designate them other

34 than by their number. Only in texts dated from the period of the Babylonian captivity the months are designated by their proper names⁽²⁾
[Note 2, p. 619: See Sidersky, Le Calendrier semi-tique des papyrus arameens d'Assuan (Journal asiatique, nov.-dec. 1910, p. 587).] preceded by their respective number (Zacharia, Esther), or without number (Nehemia). These names are of Babylonian origin and have been identified with those of the of cuneiform inscriptions deciphered by Hinks; they are of mythological origin and represent Assyrian divinities about which M. Ginzel has given detailed information in his remarkable Manual (Ginzel, Handbuch der Chronologie, vol. I, Leipzig, 1906, p. 117-118), which we cannot reproduce here. ||

17. Here are the ^{names} months of the Jewish months some of which are in the Old Testament; we give also those of the Assyrian inscriptions. The year begins with the first moon in spring:

1. Nisan = Nisanu - (Nehemia I, 1; Esther III, 7);
2. Iyar = Iru
3. Sivan = Sivanna - (Esther 8:9);

- { 4 Tammuz = Tammuz;
 { 5 Ab. = Ab.
 { 6 Elul = Ululu - (Nehemia VI, 16; 1 Macc. XIV, 30)
 { 7 Tishri = Tashritu
 { 8 Marheshwan = Arak-Samnah;
 { 9 Kislev = Kisliu - (Zach. VI, 1; Neh. I, 1; Macc. I, 53; IV, 57);
 { 10 Tebeth = Thebitu - (Esth. II, 16);
 { 11 Schebath = Sabatu - (Zach. I, 7);
 { 12 Adar = Adaru (Esth. III, 7; 1 Macc. VII, 46; II ibid VIV, 43).

The word Tammuz is found in the old Testament (Heg. III, 14) as the name of a Phenician divinity.

It is also found in the calendar of the Syrian; the people of Palmyra replaced it by the name Kirian.

The complete enumeration of the Jewish months in the indicated order indicated above is found ~~in~~ the first time in the "Meghilath Taanith" (Rouleau des Jeunes) the revised Aramaic calendar, enumerating the days ^{on which, when} it is prohibited to fast because they are to remind happy events. According to M. Schwab (XI Congrès des Orientalistes, 1897), this (editing) document ^{must have been} ~~was~~ written and introduced (released?) ^{the years} ~~in~~ towards between 1 or 2 of Caponius, the procurator of Judea, i.e. about 6 or 7 A.D.

18. The name Marheshwan of the her eighth

36 / month is the only one the origin of which is not shown in the cuneiform inscriptions and some scientists (scholars) explain as a transformation of the name Arah-Samnah of the Babylonians. ⁽¹⁾

[Note 1, p 620: In the famous trilingual (three languages) inscription of Behistoun of the period of Darius I. the name Marheshwan is found in its Persian form Markazana. See Rawlinson, Record of the Past, Vol. 1, p. 125. ^{p 621}] It is not (no more) found in the Old Testament but there is no doubt that it is of the same origin as the other names. It is ~~so~~ found in the "Aramaic Papyrus of Aruan" having referring to the destruction of a Jewish temple at Elephantine (an island in the Nile) by Egyptian priests, published by M. Eduard Sachau (Memoires de l'Academie des Sciences de Berlin, section hist. phil., séance of the 25th July 1907).

This papyrus is dated the 20 of the month Marheshwan of the 17th year of the king Darius (405/404 B.C.); consequently it is contemporary with the events related told in the books of Ezra and Nehemiah, with which it has with several points of contact. ⁽¹⁾

[Note 1, p 621: This document like the fine collection published by M. M. Sayce and Cowley (Aramaic Papyri discovered at Aruan, London, 1906)

37 and the fragments published by M. E. Marguerie (Comptes rendus des séances de l'Académie des Inscriptions et Belle-Lettres, 1903, p. 269), come from a Jewish colony established at Elephantine, near the Nubian frontier under the protection of a Persian garrison. Merit is due to M. Clermont-Banneau for having recognized as early 1878 that the Aramaic papyri coming from Egypt pertained to the Persian administration. The excavations carried out by the same scholar scientist in Elephantine in 1907 and 1908 have produced a collection of "Ostraka" still not yet published, of the same period and in the same language.] //

19. Fixation of the new moons and the leap-years. With the return of the Jews to Jerusalem, under the reign of Cyrus, towards the end of the V the century B.C. and the reorganisation of their religious units by Ezra and Nehemiah, the fixation of the calendar has undergone a series of improvements marked above all by the institution of special tribunal commissioned to listen to (hear) the persons having observed the appearance of the new moon and by it to control the depositions, as well as of a special commission to declare

38 / certain years as leap-years by inserting a thirteenth month between Adar and Nisan⁽²⁾.

[Note³ p. 621; The intercalary month of the ^{Jewish} calendar like the one of the Greek calendar did not have a special name.] Observations and calculations ^(p 622)

both improved until astronomical knowledge allowed the Jews to relegate to the second plan the direct visibility of the crescent which was calculated in advance with great precision

[see Appendix B]. // See p. 98 of 2nd note book

At Jerusalem, the Sanhedrin, this great council having in hand the direction of all questions regulating the Jewish religious life, have printed in celebration of the new moons, a ceremony ^(?) unknown before and organized fire signals on the mountain-tops to announce the new moons to all Jewish communities of Palestine and Babylon (see Appendix I, IX). This system of optical telegraphy has functioned during^a very long time, until the moment when the Samaritans (a schismatic sect hostile to the cult of Jerusalem) have imitated the signals in order to ^{(to lead (induce) into error)} (mislead) the distant Jews.⁽¹⁾ [Note! p 622:

[The Samaritans of whom there still exists a small number living at Naplouse (in Syria) have separated

39 from the Jews following the severe measures taken by Nehemia against the mist marriages and founded (started?) a concurrent cult on the mount of Garzim, distancing themselves as much as possible from the religious interpretations of the Jews, among which is the calendar question.] The Sanhedrin then replaced the five signals by sending messengers into the various Jewish communities to let them know above all the new moons of Nisan and Tishri in order to enable them to celebrate the festivals on the same days with their coreligionists of Jerusalem. ^{it results}

20. Let us note now, that ^{it results} from the total facts on the calendar scattered in the Rabbinical literature, that ^{for} all the efforts of the Sanhedrin as well as the authority exercised by the patriarch in matters of the calendar, the starting point was their great anxiety (solicitude) to assure the unity of the Jews by celebrating on the same days their religious festivals, and this preoccupation is found again and again, as a leading thread, throughout all periods of Jewish history. The different schismatic sects which (were formed) came up within Judaism, (like) as: Sadducees, Bethusees, and the Essenes in the

40 2nd century B.C. and the Karaites in the 8th century A.D. have all fought the calendar regulations established by the Sanhedrin ⁽¹⁾ without that their members could reconcile themselves to unify them. Thus until this day the Karaites in the Orient, and in the Crimea, are seen to have their religious festivals celebrated on different days by different communities.

21. With regard to the system of calculating a thirteenth month, the Sanhedrin is not content itself to observe the maturity of the barley, but added to it the observation and calculation of the equinox called tekupha, a Hebrew word which means p624 "revolution, or periodical time", and which then was adopted to designate each of the four cardinal phases of the solar year.

[Note 1, p. 623: In the book of Henoch which is of Exenian origin is an astronomical outline on the ~~as~~ movements of the sun and the moon, respectively, preconising a solar year of 364 days composed of 8 months of 30 and 4 months of 31 days placed at the four cardinal phases. It criticizes the octaeteride cycle

41/ which no doubt was used in that period (end of the 2nd century B.C.) as not being susceptible to make the two kinds of years agree. The book of Jubilees which ^{too} also seems to be of Eusebian origin, also refers (names) (chap. V₆, 23)⁶ the year of 364 days and its division in 12 solar months of 30 and 31 days which are engraved in the sky (the 12 zodiacal signs), and he adds (chap. VI, 36): "And there will be people who will observe the moon, those who detract from the times and retrograde by 10 days all the years, and thus the festivals will no more be celebrated at the prescribed periods." // - "The Ecclesiastic" of Jesus, son of Sirach (XLIII, 6, 7), making himself the advocat of the lunar calendar, probably to answer to the attacks of the author of "Jubilees", expresses himself in the following termes: "Similarly, the moon shines at periodical times, to preside over time and as an eternal sign. Through this the festivals and the legal dates determine itself and by its revolution the desire of the creator." (See Israel Lévi, *L'Ecclesiastique*, Paris, 1898, p 67-69 the original Hebrew text according to the papyri of M. Schechter, and the above French version.)]

42 It was the year of Sothis (Egyptian) of 365 days, 6 hours which has served for a long time as basis for calculating the Tekuphat-Nisan (the vernal equinox). But the special commission ^{appointed} (instituted) for this purpose by the Sanhedrin, named by the latter Sod-haibon or "Secret Council of Intercalation" whose deliberations always took place behind closed doors, having pursued its investigations still further, found, in the end, the Egyptian solar year too long, and that this latter rather should be equal to that of $12\frac{7}{12}$ average synodic months of 29 days, 12 hours 44 minutes $3\frac{1}{3}$ seconds each, or approximately equal to 365d. 5h. 55m. 12s. indicated by Hipparch (see Append. A, II and III). But the Council kept this measure secret leaving to the commons (profanes-uninitiated) the measure of the Julian year. //

Thus, the Jews earlier had two systems of the Tekupoth: one approximate known to all, the other more exact kept secret. This detail is told by Al-Biruni (1000 A.D.) by Abraham Hanassi (1120 A.D.) and by Maimonides (1178 A.D.). The two Jewish authors probably did not know the work of Al-Biruni.

43/ who got his information from other sources. //

Chapter III.

(p. 625)

On the Transfer of the Jewish Calendar

During the 1st Century of the Christian Era.

22. During the century preceding the destruction of Jerusalem, the Sod- haibour or "Secret Council for Intercalation" appointed by the Sanhedrin fixed each year of the Jewish calendar by means of astronomical calculations based on certain regulations kept secret for a long time which in the end transpired to the outer world. The direct observation of the new moon on the evening of the 29th day of the month and the statements of witnesses - observers to be received ^{with the customary formalities} by a tribunal designated by said Council were used merely to confirm the astronomical calculations, and, above all, in order to surround with mystery the deliberations of the Council behind closed doors. ⁽¹⁾ [Note 1, p. 625: See Dr. B. Zuckermann, "Mater. for the Development of the Ancient Jewish Time Calculations in the Talmud (Breslau, 1882), p. 21.]. //

The main question, naturally,

44 was the intercalation of a thirteenth month, between Adar and Nisan. In order to decide, whether the year should be proclaimed embolismic or not, they began by figuring out the day of the Tekufa i.e. the vernal equinox; in case this day did not come before the 16th of the month^[adar], the year was declared a leap-year and the month in question became the 13th of the past year^{and} was named Adar II (or Ve'adar); but if the equinox preceded the 16th day of the month, there was no intercalation and the month in question became the first of the new year, under the name Nisan (see Appendix A, passage of the Talmud VII). Thus the Jewish Passah, always coincided with the first full moon following the equinox (see "Fragments of Saint Anatole" given in Eusebius, Hist. eccl., VII, 32, 16-19; see also Philon, Vita Moysis, I, III, p 686, and Josephus, Jewish Antiquities, III, 15).

23 With regard to the proclamation of the new moons, first the true astronomical conjunction was figured out with the aid of a method identical with the one exposed

45 by Maimonides in his "Treatise on the sanctification of the new moons" (see Appendix B); in case this came 20 or more hours before sunset of the 29th day of the month, this latter was declared "hollow" and the 30th day became the 29th day of the following month; if the interval between the true conjunction and sunset did not attain 20 hours, then the new moon could not be seen the evening of the 29th day, (and) the month passed was declared full the new month began with the 31st day (see Appendix A, passage from Talmud V).

24. As the vernal equinox^① in the 1st century took place on the 23rd of March Julian cal. (or on the 22nd of March in a leap-year), it is easy to establish with the above given regulations, the Julian dates limits of the 1st Nisan. [Note 1, p. 626: The tables of Largeteau for the calculation of the equinoxes and solstices (Knowledge of the Times, 1847) give (for Jerusalem) the vernal equinox of the year 0 (leap-year), on March 22, 18 hours, 35 min. 21 seconds, and the one of the year 80 (leap-year) on March 22, 3 hours 38 min., 16 seconds.]

46/ As a matter of fact, as 1st Nisan must come on March 23 at the earliest, the 1st Nisan is placed between March 8 and April 7, (7th March and April 6, respectively, in a leap-year). — Under these conditions the limits of the true astronomical conjunction of Nisan was from March 5, 22 h to April 4, 22 hours, and the limits of the ^{p. 627} visibility of the new moon was March 7 and April 5 in an ordinary year. ¶

Proceeding from these limits we have made up the following calendar for the periode of 80 years (going out) starting with the year preceding our era until the year 80 giving for each year the Julian date of the 1st Nisan. For this purpose we have worked out with the aid of the "Tables des syzygies de Largeteau" (Memoires de l'Académie des Sciences, Vol XXII, 1850, p. 491) the true astronomical conjunctions of Nisan for this period, the visibility of the new moon which follows the conjunction with an interval of at least 20 hours, and the next days of these new moons which make the 1st Nisan and the new years' days. The difference between two successive 1st Nisans will give the length

47 of the year (common or leap-year). In this table the days (ferias) are designated with Roman figures. //

Table

(Hours as from 0 to 24, beginning at midnight, Jerus. time)

p. 627 - 630.

p 630 Let us state here that in the years 5, 6, 7, 14, 15, 24, 25, 32, 33, 34, 43, 51, 52, 53, 61, 70, 71, 72, 79 and 80, the conjunctions of Nisan were ecliptic, and Theodore Oppolzer has indicated these in his Canon des Eclipses ("Mémoires de l'Académie des Sciences de Vienne", section mathem., vol. II, 1887); so we did not have to calculate these directly, and we have merely transferred the conjunctions calculated for Greenwich to the meridian of Jerusalem.

We did not think we should prolong beyond the year 80 the table reconstructing the Jewish calendar because after the destruction of Jerusalem (70 AD.) the seat of the Sanhedrin was transferred to Jamina (near Jaffa) and it is difficult to know to what meridian the Secret Council of Intercalation related its calculations. //

48/131 25. Our synthetical table representing the Jewish calendar during the first century AD. offers an item of special interest. As a natural ^{result} (consequence) of the regulations followed by the Sanhedrin in order to fix the limits for ~~the~~ the falling due of Passah, the enneadecaeteride cycle will be noted especially which is the result and not their cause, for the regulations mentioned were imposed on the Jews by their rites, the origine of which is older than the cyclic system.

This cyclic system of the Jews, however, is very old, perhaps taken over from the Babylonians who had it since long C. [Note 1, p. 631:

The astronomical tables (with cuneiform inscriptions) of the palace of Assurbanipal, deciphered by Strassmaier (see Epping, *Astronom. from Babylon*, Freiburg 1889) indicate the existence of an enneadecaeteride cycle in the 3rd century B.C. while M. Eduard Mahler traces it back to the VIIIth century B.C. (in his memoir "On the Chronology of the Babylonians" published by the imperial Academy of Sciences in Vienna, section mathemat. Vol. LXII, 1895). - See Henri Martin, *The lunisolar Chaldeo-*

49 Macedonian Calendar (Revue archeologique Vol. X, 1, Paris 1853, p 193, 257 and 321).]

Perhaps these latter were brought had come by it through regulations analogous to those of the Sanhedrin, having their origin in the fixation of certain religious festivals attached from one side to the new moons or full moons and having to coincide on the other side with certain agricultural seasons regulated by the course of the sun. //

26. In reality, the system in use during the 1st century A.D., the period for which the Mishnah, etc., has given us valuable indications was then in use since long, and it was established about 200 of the Seleucides era (112-111 B.C.), according to the exact indication given by Al-Biruni in his "Chronology of Oriental (peoples) Nations" (see Sachau, Engl. transl., London, 1879, chap. V, p 68), no doubt according to certain authentic documents he had under his eyes (in hand?). ^{P 632} As this Arab author of the Xth century has proved himself one of the best informed (founded) in the various systems of chronology in use

50/ with the ancient nations and ^{had} particularly good documents with regard to the Jews, we therefore are authorized to depend on the date he indicated, the year 200 of Sel. era, or 112-111 B.C. At this period the Jews had a new era established since about 30 years by the Maccabees, under the name of "Jerusalem era". It began with the year 170 of the Sel. era (143-143 B.C.), the date of the recognition of the ^{Jewish} political independence by Demetrius, and beginning with said year all public acts and ^{official} documents were marked: the first year of ^(under) Simon, the high-priest, governor and prince of the Jews (I Macc. xiii, 42). //

This era is found engraved on the coins dated the fifth year of Simon's reign, reproduced by Benzing (Hebr. Archäologie, Leipzig, 1904, p 196). //

27. Proceeding from Nisan 143 B.C. which is the beginning of this era (the kingdoms ^{regnes} always being counted as from Nisan), the year 10-11 A.D. becomes the first of the 9th cycle ennea-deca-eteride. Referring to our syntetical table, we find there the leap-years 12-13, 15-16, 17-18, 20-21, 23-24, 26-27 and 28-29,

57 following the order III , VI , VIII , XI , XIV , XVII and XIX indicated by Pétau (see Biot, *Resumé de Chronologie Astronomique*, *Memoires de l'Académie des Sciences*, t. XXII , 1850, p422-423) which will explain its origin. Proceeding from the Jewish era of creation (established in a later period) a slight difference with the system of P. Pétau is found, according to which the XVI^{th} year is a common and the XVII^{th} an embolismic, while in ^{p. 633} our calendar the XVI^{th} year of the cycle is a leap-year and the XVII^{th} is not. This is the order of the leap-years: III , VI , VIII , XI , XIV , XVI , and XIX is precisely the one M. Mahler (ascribes) attributes to the Babylonians (in his tables published in the *Memoires de l'Académie des Sciences de Vienne*, class of mathem., vol. LXII). /

28. On the other side it will be noticed in our synthetic calendar that the ordinary year counts 354 or 355 days and the ^{embolismic} ~~(leap)~~ year 383 and 384 days, representing exactly - expressed in whole days - the average length of 12 and 13 synodical months, i. e.:

$$12 \times 29 \text{ d. } 12 \text{ h } 44 \text{ m. } 3 \frac{1}{3} \text{ s.} = 354 \text{ d. } 8 \text{ h. } 48 \text{ m. } 40 \text{ s.} \quad \text{and} \\ 13 \times 29 \text{ d. } 12 \text{ h } 44 \text{ m. } 3 \frac{1}{3} \text{ s.} = 383 \frac{1}{2} \text{ d. } 21 \text{ h. } 32 \text{ m. } 43 \frac{1}{3} \text{ s.}$$

355 -

384 -

52 "In the modern Jewish calendar greater variations are found in the ~~respective~~ lengths of the ordinary and embolismic years, respectively, especially the ordinary short (deficient) year of 353 days and the abundant embolismic year of 385 days, issues of the system of ~~postponements~~ ^{adjustments} inaugurated (introduced?) later by the Jewish doctors of Babylon, but which did not yet exist in the 1st century."

29 The objection could well be raised that our synthetical calendar, established according to the regulations of intercalation of the Sanhedrin indicated by the Talmud for the period considered, supposes that the astronomical calculations of the secret council of Jerusalem, the details of which we shall find so much harder, having always been surrounded with the greatest mystery, - necessarily must lead to the same results ~~than~~ ^{as} those of our modern calculations, which is not true, because the ancient

2 (people) ignored the secular, perturbations, and accelerations, ^{or respectively} in the movements of the stars to take them into consideration in the calculations of the conjunctions. But this natural objection (questionable!)

53/ would influence merely the length respectively of the two successive years respectively by the possible displacing of one new moon of the Nisan; ^(6c. it) or that in a determined year the 1. Nisan ^(given!) could be fixed by the Sanhedrin on the next day of the one we have found for it increasing thus the year passed by one day and diminishing that much the length of the year begun with this new moon. In any case, our ignorance of the ancient method of calculation and the necessity to make this up with modern calculations leave intact the system of intercalation and the whole (ensemble) of the calendar. //

30. Verification of a historical date.

Our synthetical calendar of the 1st century A.D., will ^{enable} us to verify a historical date which formerly was the object of numerous and ardent controversies. This is the date of the famous Jewish Passah mentioned in the New Testament in connection with the story of the death of Christ, which took place on a Friday, the day of the Parasceve of the Jews, i.e. the 14. Nisan, according to the gospel of St. John. (XIX, 41), or rather the first day of Passah, i.e.

54 the 15 Nisan, according to the gospel of St. Matthew (xxvi, 17). This apparent contradiction between the two texts of the gospels has been the object of numerous historical contradictions on the part of various scholars, ^{on} which the eminent Russian academic D. Chvolson has written an authoritative study entitled: The last Passover meal and the death of Jesus Christ (Memoires de l'Academie des sciences of St. Petersburg, section of History, 1892) proving that the Friday, the supposed day of Christ's death, really was the 14. Nisan in (agreement) conformity with the text of St. John, and that the ^{(p. 635) the Lord's supper - holy communion} scene of the evening before mentioned in the gospel of St. Matthew, took place the evening of 13. Nisan in accordance with a special interpretation of the Biblical text with regard to the Passah taught in certain school of the time of Jesus and his disciples - an interpretation which ^{tending} tends to separate by one day the Passah from the feast of the Azymes. //

Without entering into the details of a question, of which solely the chronological question should ^{concern} (occupy) us here, we merely

55 recall that the Church sets the death of Christ ^(1st 56) in the year 33 for the following reason: Supposing by mistake that the modern Jewish calendar with its system of postponements (see chap. 1, § 5) has functioned (since) as early as the 1st century, they could find there easily an ^{an} explanation for the contradiction referred to by saying that Friday, the day of Christ's death, really was the 15th day since the appearance of the new moon of Nisan but that the Pharisees applying their famous regulation excluding the Mondays, Wednesdays and Fridays as days of Passah, have postponed it to the next Saturday, making Friday the day of the Parascève, according to the gospel of St John, while Christ and his disciples not disapproving of the Pharisees with their system of postponements considered Friday as the 15 of Nisan and had their Passah the evening before (in order) to conform with the command of the Bible.

As a matter of fact, in the year 33 the mean conjunction of Nisan (the Nihil of the modern Jewish calendar) comes on Thursday March 19, 13h, 5m., 16.2. $\frac{2}{3}$ (or 5d. 19h. 95^{sec}. according to the Jewish computation); the

Has it a month too early?

56, the new moon of a Moled coming in the afternoon is set customarily the next day but this being a Thursday, ^{p. 636} it must be postponed to Saturday (Regulation 2 and 3, explained in chap 1, 55) i. e. March 21.

Thus, Friday, April 3, the supposed day of
X Christ's death, becomes the 14 Nisan of the
X Pharisees in accordance with the text of St. John, while it should have been the 15
X Nisan for those who do not accept the regulation on the postponing. //

[Note 1, p. 635: The story of the gospels cannot be placed other than between 30 and 33 A.D. because of the presence of Pontius Pilate who was Roman governor in the province of Judaea from 25 to 36 A.D. The year 33 is the only one in this short interval in which the first day of Passah coincided with a Saturday.] //

31. This ensnaring explanation of the contradiction referred to, briefly exposed (outlined) in ancient ecclesiastical literature ^①

[Note 1, p. 636: See "The Art to Verify Dates" (French) by a religious benedictin (Dom d'Antin, 3rd edition (Paris, 1783). p. 82 and on.] accepts the application

57 / of the regulation on the postponements of the modern calendar to the first century of the Christian era and some authors have drawn from this source an hypothesis contradicted by the ensemble of facts mentioned in the Talmud². [Note 2, p 636: See Zuckerman, Materialien etc., Breslau, 1882, p 60-61.]

But it will be easy for us to show irrefutably that in the year 33 A.D. the 15 Nisan did coincide with Saturday April 4, in accordance with our synthetical calendar and not with Friday, April 3, the supposed day of Christ's death.² Indeed, we know, that the evening of the Jewish Passah must coincide with the full moon (according to the texts quoted above from Josephus and from Philon) and in no case could it precede this physical phenomenon.

^{which evening}
²
③. [Note 3, p. 636: Sometimes it can happen ^(probably in ~~more~~ ~~years~~) that due to certain circumstances the new moon is fixed on the day after the next day of the conjunction and that the Passover is celebrated 24 hours after the full moon but the contrary (opposite?) is impossible.]

^{not of M.}
Now, Theodore Oppolzer's Canon of Eclipses quoted above teaches us that in the year

33 AD. a partial eclipse of the moon
(visible in the Orient) took place precisely
Friday April 3, at 15 h. 6 m. Greenwich meridian
or 17 h. 26 m. Jerusalem meridian (4). ^{note 4, p. 636.}
[See P.R.]

312
319
25
176
Ginzler, Special Canon of Sun and Moon Eclipses
(Spezieller Kanon der Sonnen- und Mondfinsternisse)
(Berlin, 1899) p 202-201. According to this scientist
the lunar eclipse mentioned lasted since
14 h. 44,4 m until 18 h 37 m. (Jerusalem time).]

(13)
P The opposition having ^{taking place!} come about about
half an hour before sunset, the full moon
should appear even on the evening of Friday
April 3, after sunset and not the day
evening before, thus the 15 Nisan began,
according to Jewish custom, with sunset
Thursday April 3rd, which day really was
the 14 Nisan, the Parascieve of St. John. //

In this year 33, the true astronomical
conjunction was in Jerusalem, according
to our table, Thursday, March 19, at 13 h.
11 m., or 6 minutes after the ^{mean} average con-
junction of the modern computation
(same day, 13 h. 5 m.) a coincidence which
that no doubt contributed to confound
the ancient system based on the visibility

29 of the crescent at the seat of the Sanhedrin, i.e. the calculations based on the true astronomical conjunctions with the modern computation based on the calculation of the average conjunctions. //

Good!

Our digression will prove to the historian that the calculation of a lunar syzygie sometimes can become the most sure means to verify a chronological date. //

Chapter IV

Origin of the Constitutive Elements of the Jewish Computation.

32. For a very long time the fixation fixing of the new moons in the ancient Jewish calendar remained subordinate to the visibility of the crescent on the evening of the 29th or 30th day of the month passed, a visibility determined materially (physically?) or calculated in advance ^{through} by astronomical methods, of which Maimonides has left us a peculiar specimen in his "Traite de Sanctification des neomenies" (see Appendix B). Due to special circumstances, which we shall have to investigate, the

60 astronomical calculations have been replaced by a more simple system of computation, based on the value (L) of the average synodic month: ①

$L = 29 \text{ d. } 12 \text{ h. } 793 \text{ sec.} = 29 \text{ d. } 12 \text{ h. } 44 \text{ m. } 30 \frac{1}{3} = 29 \text{ d. } 5305941358$, which is identical with the one indicated by Ptolemy expressed in sexagesimal fractions:

$$L = 29 \text{ d. } 31' 50'' 8''' 20'''' = 29 \text{ d. } 5305941358.$$

[Note 1, p 638: A value exceeding the actual value by about $\frac{1}{2}$ s. owing to the secular acceleration of the average movement.]

As a matter of fact, in chapter II of the book IV of Almageste (Edition Halma, Vol. I, Paris, 1813, p. 217) the famous Greek astronomer reports that Hipparch^{after}, by examining the intervals of time between two ^{very distant} eclipses of the moon has established that 4,267 synodic revolutions are made in a number of solar days equal to $126,007 \frac{1}{24}$, from which fact he deduced the value of the ^{average} synodic month (indicated) given above. //

It is proper, however, to note that in dividing $126,007 \text{ d. } \frac{1}{24}$ by 4,267 you get slightly less for value L , or:

$$L = \frac{126007 \frac{1}{24}}{4267} = 29 \text{ d. } 31' 50'' 8''' 9'''' 20'''' = 29 \text{ d. } 5305933130,$$

61/ differing from the one indicated by Ptolemy
by Od. 0000008228. //

The last expression (figure) for L is
the one reproduced in the various versions
(arabic and latin) of the Almagest which
earlier were in the hands of the astronomers
before the abbot Halma had edited the
original Greek (accompanied) together with a
French version (Paris, 1813 and 1816), in which
is found the fraction 20^{IV} in agreement with
(the majority) most of the manuscripts
preserved. //

To the discrepancy (difference) of these
two values attention was called as early as 1850
by Biot in his "Résumé de Chronologie astro-
nomique (Mémoires de l'Académie des Sciences,
XXII, p 401) with the special remark that he
did not know whether this ^{fact} should be
attributed to an error committed by Ptolemy
or to an intentional rectification but
that, in every case, it cannot be a question
of a simple mistake of the copyst because
Ptolemy uses the fraction 20^{IV} as an element
of his ^{further} (later) calculations. M. Biot no doubt
has ignored the value of L given in the

$$\begin{array}{r} 859 \\ 38 \\ \hline 342 \\ 18 \\ \hline 31 \end{array}$$

$$\begin{array}{r} 1080 \\ 4 \\ \hline 432 \\ 12 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 3880 \\ 2 \\ \hline 7760 \\ 45 \\ \hline 72 \end{array}$$

$$\begin{array}{r} 1080 \\ 1080 \end{array}$$

$$\begin{array}{r} 1080 \\ 1080 \end{array}$$

$$\begin{array}{r} 1080 \\ 1080 \end{array}$$

$$\begin{array}{r} 1080 \\ 1080 \end{array}$$

$$\begin{array}{r} 1080 \\ 1080 \end{array}$$

$$\begin{array}{r} 31 \\ 52 \\ 8 \\ \hline 809 \\ 60 \\ \hline 869 \end{array}$$

$$\begin{array}{r} 1080 \\ 1080 \end{array}$$

$$\begin{array}{r} 1080 \\ 1080 \end{array}$$

$$\begin{array}{r} 1080 \\ 1080 \end{array}$$

$$\begin{array}{r} 1080 \\ 1080 \end{array}$$

62 arabic and latin versions of the Almageste, which agrees with the one expressed by Hipparch. //

33. This little detail is of certain importance for the Jewish computation. As a matter of fact, the division of the hour in 1080 scruples, which is very old, must have as its origin the conversion of the fractions sexagesimal of the ^{average} synodical month in ordinary fractions of which 1080 was the common denominator, or: 18.

2840 940 760 33
 $\left(\frac{31}{60} + \frac{50}{60^2} + \frac{8}{60^3} + \frac{20}{60^4} \right) \text{ day} = 12 \text{ hours } \frac{793}{1080},$
in striking harmony with the value reported by Ptolemaeus as found in the original Greek of the Almageste. //

Struck by this harmony, I hastened to affirm without looking any further that the authors of the modern Jewish computation have borrowed (taken?) the various astronomical facts from the Almageste making them substantial (essential) parts elements of their system, especially the value of the synodic ^{average} month, and the ennea-dekateride cycle of Meton. //

34. We have seen above with

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63 regard to the cyclic system of the inter-
calation that the authors of the modern
Jewish computation ^(p 640) have but utilized an
ancient system, in use with them since
several centuries and the origin of which
is found in the ritual conditions of the luni-
solar year. The same is true of the value of the
average synodic month indicated above,
which was used already by the Sanhedrin³
of the 1st century A.D. at a time when the
fixation of the new moons was yet sub-
ordinated to the true conjunctions (see Append.
A, II and III) as one of the elements of the
astronomical calculation. Indeed, the Talmud
reports of a declaration made by Rabbi²
Gamaliel (who was chief of the Sanhedrin
about the middle of the 1st century A.D.)
of having learned in the house of his
grandfather that the synodical rotation
of the moon represents 29 days, 12 hours,
 $\frac{2}{3}$ of an hour and 73 scrupels (see Appendix
A, II). Now, the Almagest of Ptolemy (written
about the middle of the IInd century A.D.) is
later by one century than Rab. Gamaliel, and
as the value of average synodic month as

64 indicated by this latter ^① does not agree completely with the one given by Hipparch it must be admitted necessarily that this value has been drawn from another source the investigation of which will be facilitated by the very declaration of R. Samualiel. As a matter of fact, the grandfather of R. Samualiel was Hillel the Babylonian (born about 75 B.C., died about 5 A.D.) a man of vast learning (erudition), founder of the famous Palestinian school bearing the name "House of Hillel", ^{to} certain teachings of which ~~are~~ reference is made in the New Testament (St. Paul, etc.) It is possible that this scholar had brought from his native country, Babylon, certain astronomical facts ⁱⁿ which he was interested from the point of view of fixing the new moons, among others the value of the average synodical month:

$L = 29 \text{ d. } 12 \text{ h. } 44 \text{ m. } 3 \frac{1}{3} = 29 \text{ d. } 5305941358,$
 known there as from the IV century B.C.
 as proven by M. Kugler (Die Babylonische Mondrechnung, Freiberg, 1900, p. 24) with the help by means of astronomical tables deciphered by the Assyriologist J. N. Strassmaier. //

It is even permitted ^{with} to suppose that Ptolemy has rectified the value of the average synodical month resulting from the one ^{broken} of by Hipparchus in order to identify it found prior earlier by the Babylonian astronomers of which he doubtless had knowledge. //

35. In the foregoing chapter we have indicated that the value of the average synodical month was used by the Sanhedrin as an element of astronomical calculation of the true conjunctions and the appearance of the crescent (see Appendix A, V), because the proclamation of the new moons has always been one of his attribut prerogatives.

Even after the destruction of Jerusalem (70 A.D.) the Sanhedrin, though stripped of ^{its} ~~his~~ ancient prestige, remained as before, establishing its seat first at Jabné (Jamnia) near Jaffa, later in various localities of Galilee and finally at Tiberiad; it was always presided by a patriarch, a dignity that fell to the descendants of Hillel I of the Babylonian. But following the rebellion of Bar Kokhba (135 A.D.) under the reign of Hadrian and its bloody suppression, ^(re) where about six hundred thousand persons perished

66/ through iron and through fire, the deliberations of the Sanhedrin with regard to the calendar were disturbed many a time and it even happened that two consecutive years were declared embolismic, ^{P. 642} according to the council of a chief (R. Skibba) who was consulted in the dungeon where he was cast by the Romans. //

36. During this time the Jewish communities of Babylon where a certain number of doctors had found refuge, began to manifest some slight inclination of independence toward the Sanhedrin of Palestine in the matter of fixing the religious festivals. A young Palestine scholar ^{by the} named of Hananiah, nephew of an influential member of the Sanhedrin (R. Josué) who went to Babylon according to the counsel of his uncle and founded a school there one day decided to improvise a special college charged to fix the new moons and the religious festivals in order to emancipate the Babylonian communities. But this attempt was promptly reprimanded through the energetical intervention of the patriarch Simon ben-Samuel who threatened his

67 Babylonian coreligionists with excommunication if they persist in their tracks...

since the fixing of the calendar cannot be done other than in Palestine (see the details in Graetz, History of the Jews, transl. Wogue and Bloch, Vol. III, Paris 1888, p 117 and 118). //

37.) But, in the course of the IIIrd century the glory of the Jewish schools of Palestine was waning while those which had formed in Babylon gained by it and the efforts for independance in matters of ^{the} calendar were renewed in a more accentuated form. One of the more outstanding scholars, Samuel, the computer, famous through his vast-theological knowledge in theology, medicine and astronomy, declared one day to be able to establish the calendar for all communities of the Jewish in dispersion (Diaspora) (see Appendix A, V) and to prove it, he made up a calendar for a period of 60 year which he submitted to R. Johanan ^(p 643), one of the most learned members of the Sanhedrin of Palestine. (This one) He declared the calendar proposed by Samuel unacceptable, qualifying it as 'general calculation', no doubt finding

68/ the year of 365 days 6 hours too long; the Babylonian computer having used it for calculating the vernal equinox (see chapter II). //

38/ From this moment on the system of fixing the new moons in Babylon underwent a profound modification of astronomical nature (~~form~~). As a matter of fact, the system employed by the Sanhedrin in Palestine was based, as stated already, on a calculation of the true conjunction and the interval of time elapsing between this instant and the appearance of the first outlines of the crescent. But these material facts had to be brought in relationship to a fixed meridian, i.e. the one of Jerusalem, same as the clocks of France are all regulated by the one of the observatory of Paris. As soon as the Babylonian Jews took the initiative to regulate ~~themselves~~ the calendar, they found themselves compelled to substitute ~~to~~ the true conjunction, which is in relation to a determined geographical spot, (~~place~~?), the average fictitious conjunction, which - existing merely in the imagination -

69 is kind of independent of a fixed meridian. This substitution offering an analogous advantage ^(over) to the one resulting from the use of the average ^{meridian} south and the equinoctial hour, however, was not free of inconveniences. Indeed, above everything it was most important to make the festivals coincide with those of Palestine, on the same days, so as not to destroy the religious unity of the Jews after the loss of their political unity. Well, there is no correlationship whatever between the average ^(festivals) conjunction and the appearance of the new moon, and the interval sometimes can exceed 48 hours; that it is then that the ⁶⁶⁴⁴ system of postponements has been put into practice excluding from the new moons three special days; the details of on this we have explained in the first chapter, a system the purpose of which is to retard by one or two days the official new moons in such a way as to make them coincide as often as possible with the evenings of the appearance of the crescent in Palestine (explanation given by Maimonides in his 'Traité de la

70 Sanctification des Néménies, Chap. VII, 8 and 9.
version latine de Blaise Agolin dans son
Thesaurus, vol. XVIII, Venise, 1755

39. Nothing very precise is known
of the period of this importante innovation,
nor do we have better information on the
manners of these authors, though two Babylonian
scholars have been put to the fore: Samuel
de of Nahardia, and R. Ada ^{of} de Soura, to whom
the authors attribute the two different values
of the solar year mentioned in the second
chapter, serving as a base for the calculation
of the vernal equinox. ⁽¹⁾ [Note 1, p. 644:

See note of M. Theodore Reinach on "The
calendar of the Babylonian Greek and the
origine of the Jewish calendar" (Revue des
Etudes Juives, Vol. XVIII, Paris, 1889).] //

These historical questions are closely
bound with another question completely
abandoned by the authors in spite of its
great scientific interest. We mean the
physical moment which served as starting
point in the modern computation established
by the Babylonians on the base of the
average conjunctions and later brought in

II relation to the initial moled of creation by retrograd computation (see chapt. 1.). It is evident that the exact knowledge of starting point of the computation will give us at the same time the meridian to which it was related and it is possible to deduce the name of the author of the presumable geographical place in combination with the period found. //

(p. 45) 40. In By adopting the average conjunction as basis of a system of computation the authors had to take as starting point the very moment of a true conjunction carefully observed at a solar eclipse; and since the religious year of the Jews begins with the equinoxial moon it is extremely likely that they proceeded from a conjunction of ~~the~~ Nisan. We will soon see that this hypothesis is confirmed by the facts. //

In the supposition that the physical instant looked for was a solar eclipse - total or partial - visible in the region inhabited by the Jews between the longitudes 30° to 50° to the east of Paris and the latitudes 28° to 38°

72 (Palestine, Babylonia etc.) we shall try to find it with the aid of modern astronomical works. For this purpose we have made a list from the "Canon des éclipses" of Th Oppolzer (Memoires de l'Académie Impériale des Sciences de Vienne, cl. de mathémat. Vol. LII, 1887), ⁴all solar eclipses visible in eastern Asia having taken place during the long period of six centuries, beginning with the one of the proleptic year 10 (- 9 astronomic) during the period when the Sanhedrin of Jerusalem was headed by Hillel I, the Babylonian, and continuing until the middle of the VI century, long after the publication and ^{general} adoption of the modern computation. These eclipses amount to 19 in number; we have given them in the following table which contains in the first column the indications of Th Oppolzer in relation to the meridian O of Greenwich and which we have corrected according to the special cor. indications by F. K. Ginzel in his "Canon spécial des éclipses historiques" (Berlin, 1899). With regard to these indications completed by us by the days marked in

73/ Roman figures (ciphers?), we have transcribed the same indications brought in relations to the respective meridian of ^{p. 647} Jerusalem and Babylon respectively; in a column next to it we have placed the corresponding average conjunctions, calculated according to the modern Jewish computation and transcribed into the civil time reckoned as from midnight, in order to make all facts of the table uniform; finally, the last two columns mark the differences between the true conjunctions (eclipses) and the average (moeds) for the meridians of Jerusalem and Babylon respectively (see table on opposite page 646.).

p. 646 table

Table

Eclipses of the sun visible in Palestine and Babylon
Indicated by Oppolzer and K.F. Hingel ...

Compared with the new moons (Average conjunctions) calculated according to the Jewish computation.

(Equinoxial hours reckoned from 0 to 24 beginning at midnight)

The nature of the eclipse is indicated by T (total) and A (annular) according to M. Oppolzer.

| | | | | | |

74 Note ^{pl 47} The Jewish new moons habitually are calculated in equinoctial hours counted as from sunset, and the fractions of the hour are expressed in scrupels (at $\frac{1}{18}$ of a minute). We have transformed them into hours and minutes of the civil day in order to compare with the eclipses. //

pl 47 cont'd 41. ^{of} One glance is sufficient to see that the 19 solar eclipses mentioned 17 show that the average conjunctions differ by several hours sometimes in one, sometimes in another direction, one eclipse (of May 19, 486) is 16 minutes (at Jerusalem) behind the computation and the harmony cannot be established but for a more western meridian which is found in the sea; Only one - of April 2, 219 - agrees concords sufficiently with the computation though not with the meridian of Jerusalem but at least with the more eastern of Babylon, being 6 minutes ahead of the computation. It deserves to be taken into consideration all the more so because it happens to be the only eclipse of Nisan among the 19 given in our table. //

The average conjunction or the

75 Moled Nisan calculated with the aid of the auxiliary table of the first chapter, is 6 days, 16 hours, 668 scrupels, or according to civil time reckoning (2 Apr. 219) Friday, 10 hours 37,1 minutes. //

The total eclipse indicated by Th. Oppolzer ^{had?} was in the middle part at 7 h. 31,6 m. of Greenwich meridian, resp. at 7 h. 34,1 m. ^{at} of the same meridian according to the correction of F.R. Kinkel, a difference of 2,5 minutes.

It was visible in all western Asia. By accepting Kinkel's correction, ^{it follows that} the moment of the middle of the eclipse, i.e. of the conjunction, establishes itself for Jerusalem (which is at $35^{\circ}13'6''$ to the east of Greenwich):
 $7 \text{ h. } 34,1 \text{ m} + 2 \text{ h. } 20,95 \text{ m.} = 9 \text{ h. } 55,05 \text{ m.}$ or 42 minutes before the Moled, and for Babylon (which is at $43^{\circ}11'14''$ to the east of Greenwich):
 $7 \text{ h. } 34,1 \text{ m.} + 2 \text{ h. } 52,75 \text{ m.} = 10 \text{ h. } 26,85 \text{ m.}$ or 10 h. 25 m. before the moled. //

42. However, the Jewish fireside (home?) was not in Babylon proper but in several places situated farther to the east especially in a city named Soura on the Euphrates where during the period in

The question was a great intellectual fermentation which led to the establishment of the first Jewish Academy, opened exactly in 219 A.D. with more than 1200 students from the very beginning start (see Graetz, *Histoire des Juifs*, transl. Woog and Bloch, Vol. III, Paris 1888, p 170). Now, this city of Sura¹

[Note 1, p 648: See the judicious observations made by de Goeje in his study (German: "Zur histor. Geographie Babylonien") (*Zeitschrift der Deutschen Morgenländischen Gesellschaft*, Vol. XXXIX, 1885, p 10-13) according to which the city of Sura which became the seat of the famous Jewish Academy (not to be confounded with another, ^{smaller} locality of the same name, farther to the north) was situated at the confluent of the canal Bedet and the canal Sura at a longitude of $44^{\circ}50'$ to the east of Greenwich and the ^{longitude} latitude $31^{\circ}45'$. The two ~~and~~ other ^{Jewish} centers - Pumbedita and Nehardea where later two new academies were established, were more to the north.] which is marked on the geographical map (edit. Stieler) of Mesopotamia is situated at $44^{\circ}50'$ longitude east of

13.2

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280
19

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512
176

77 Greenwich. The middle of the eclipse given by Oppelger-Gingel for 7h 34.1 m. (Greenwich time) will come at Soura: $7 \text{ h. } 34.1 \text{ m.} + 2 \text{ h. } 59.3 \text{ m.} = 10 \text{ h. } 33.4 \text{ m.}$, or 3.7 m. before the moled, this slight ⁶⁵⁴⁹ difference is easily explained if you note that the observation of the eclipse, made with the naked eye, could not begin but after a few moments after the start of the phenomenon. Perhaps only the end of the eclipse could be seen coinciding with the moment of the return of the light. //

43. This total eclipse of April 2, 219 A.D. was for the Jewish computers of Soura an excellent occasion to verify their astronomical calculations of a true conjunction which must have interested them all the more since it concerned the moon of Nisan of a year which began an enneadecasteride cycle (the 20th of the Maccab. era). There is nothing surprising in the fact that it was carefully observed and that later it was ^{then} taken as a starting point for a

78/ computation which later was adopted by Judaism the world over (universal). These scholars knew the two great scientific principles used by the Sanhedrin of Palestine: the average synodic month and the enneadecaeterid cycle; having found materially a true conjunction, they took this as the starting point for their calculations in order to establish the religious festivals independently from the Palestinian Sanhedrin whose communications by messengers often were disturbed through by Roman persecutions. It was not until later that the computation thus sketched and little by little improved (by the system of postponements, see chapter I) spread without giving much thought to its starting point. //

44. As to the author of the system, everything leads to ~~the~~ believe that it was R. Ada who a few years later became rector of the Academy of Saura, and to whom ^{was attributed} the principle of absolute equality, supposed at that time between the 19 solar years and 235 average

79 ⁽¹⁶⁵⁰⁾ Synodic months of 29 days, 12 hours,
44 minutes 3 seconds $\frac{1}{3}$, or one solar year
equal to 365 d. 5 h. 55 m. 26 s. (14 seconds
longer than the solar year of Ptolemy,
365 d. 5 h. 55 m. 12 s.) a principle mentioned
by the authors of the XIIth century under
the name of Tekoufa of R Ada, according
to a memoir of this doctor found in
the hands of Abraham bar Hiya Hanassi,
author of a treatise on Jewish astronomy
and chronology, written in Hebrew
in 1120, the oldest known. //

45.

finished

(2)

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1582 Mar. 21

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mar. 22

Mar. 21

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u	u	l	g	u	2	l	c	r	o	u
u	u	f	l	g	e	r	o	l	l	m
u	l	l	g	u	l	g	c	m	e	d
u	l	g	g	u	l	g	c	r	l	u
7	g	l	g	e	l	r	s	g	e	m
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o	u	l	g	g	u	l	o	o	o	"
7	l	l	u	u	u	l	c	l	o	u

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IV. Chapter

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I. ChapterChronological Experiments Hitherto
and Their Right.

The first task of the studies of a recognized difficult complex of questions ^{dealing with} (as to) the manner of reckoning in Hebrew sources and the ascertainment of the chronology of the kings of Israel & Juda, for practical reasons would be a critical contemplation (consideration?) of the hitherto most important experiment in this sphere (domain?). Your own venture only profits by it. It profits insofar as here the weaknesses & mistakes of the earlier compilations (statements) are shown which he has to avoid.

He also gains because - if he can make his own (absorb) our criticism of the predecessors - from ^(him as) the critical judge (analyst?) objections against our views are ^{taken} _(disproved) which he might be inclined to raise as to one or the

other hypothesis presented.

1. We begin with the presentation which until lately has had a determining influence on the handling of the Israelitic-Judaic chronology, [Note 1, p. 1: Comp. B. Stade, Geschichte des Volkes Israel 1887, I p. 88 ff. H. Euthe, Geschichte des Volkes Israel² 1914, p. 172. R. Kittel, Geschichte des Volkes Israel³ 1917, Vol. II, 339 ff. ⁶⁺⁷p. 210, E. Sellin, Geschichte des israelitisch-jüdischen Volkes 1924, I p. 264. S. Mowinkel, Den Israelitisk-Judeiske Kongekronologi (Svensk Teologisk Kvartalskrift Årgang I 1925).]

Wellhausen's article of only 33 pages published 1875 "Die Zeitrechnung des Buches der Könige seit der Theilung des Reiches"²) [Note 2, p. 1: Jahrbücher f. deutsche Theologie, Jahrgang XX, 1875, p. 607-640.]

For our purposes essentially (mainly)

p.1 - cont'd (3)

its first part ³⁾ comes under consideration, which deals with the uncovering of the method of calculation in the Books of Kings.

p.2

As is known, the Books of Kings give two kinds of dates for the Israelitic as for the Judaic Kings, once the simple year totals of the absolute reigning figures of each ruler, and then the so-called synchronisms which take into consideration with the Israelitic simultaneously the Judaic, and vice versa, by always stating the corresponding year of reign of the other row with the accession of a ruler of one row. Inasmuch (Since ⁴⁾ both kinds of dates lead to varying

p. 2 - cont'd (2)

results, the question arises as to the relationship of both to each other. Wellhausen formulates and solves the problem thus: "The question is... whether these two dates are of equal value and independent of each other, both alike based on historical tradition or whether not rather there is that difference between them that merely the year totals belong with the given material of the tradition while the synchronisms were derived from them by calculation."

Ewald takes it for granted that the latter is the case, and in my opinion he is right". [Note 1, p 2: A. a. O.

(= Am angeführten Ort - as cited above) p. 608.]

The proof for the value of the year totals and the worthlessness of the synchronisms W. tries to bring in two ways, a) by general considerations, b) by uncovering the method according to which the synchronist is to have calculated the simultaneities from the year totals. The main power of proof he ascribes to the reasons named under a). With b) the uncalculable factors of individual arbitrariness and mistakes on the part of the synchronist and tradition could detract from the clarity of the proof. Want of clearness under b) However, would mean nothing as against the reasons under a).

which in themselves could altogether, ^{even} save the synchronist the task of check in detail.

a) W. connects the development of his general reasons (of general character?) with the literary-historical finding of those places, in ^{combination} connection with which the dates are found and all of which combine into a unit because of their homogeneous construction. the so-called epitome.

At the beginning stand the dates (date of accession according to the other row, length of reign), at the end, the notice about the death of the King and the reference to the source in extenso. In the center is the proper nucleus, the analysis of the King in question (each respective king) according to the deuteronomical ideal. "The interest of the epitomator is

ecclesiastical, his main aim (intention?) to establish the relationship of the king to the cult?." [Note 1, p. 3: A. a. O. p. 609.]

Thus the epitome represents a combination of tradition and personal opinion of the ^{critic or contributor on deuteronomy} (deuteronomical analyst). The point is to segregate the two. Here for W. it is important that with the religious criticism of the epitomator (?) the comparison of the Kings among themselves & toward both rows be organically connected. This knowledge he believes to have to apply also to the chronological domain (^{side?} sphere?) & concludes: "It is understood that the year totals must be given objectively; but ^{for} the synchronisms

We are indebted to the combining by the one who in this way collocated the rows of the Kings of Israel and Judah and brought them into constant correlation."²⁾

[Note 2, p. 3: A. a. O. p. 610.]

This result is strengthened with him by a historical consideration & an observation on the text. The historical consideration regards (affects) the improbability of synchronistic reckoning during the history of Israel & Judah. "It would indeed be surprising if in Israel itself the accession to the throne (of?) by the Kings were dated after the simultaneous reign of an insignificant neighboring state on which they generally looked down with pity and scorn contempt.

Such would be easier to imagine of Judah; yet here, too, political envy jealousy would hardly have admitted it 3). "[Note 3, p. 3: A.A.L. p 610.]

It is a different matter with the Judaic-Babylonian double dates.

For one ^{thing} at that time half or even all of Judah was already swallowed by the Chaldaic empire, besides, they originated in a period which could have figured only according to the Chaldaic reckoning. Yet every trace is lacking of a parallel reckoning according to the years of Assyrian Kings. "According to all this there can be no thought that that synchronistic reckoning of the Book of Kings was in practical use during the existence of the two Kingdoms, neither in general (use) nor in the special case at a change of government when

only it is being applied there. In that case the only thing that remains is to regard it as a personal addition of the Epitomator. ⁴
 [Note 4, p. 3; A. a. C. p. 611.]

p. 4
 According to W. the observation (scrutiny?) of the text points in the same direction. He calls attention to the remarkable fact that with 5 exceptions ¹
 [Note 1, p. 4; I Reg. 15:25; 16:29; 22:52;
 II Reg. 3:1, 15:13.]

the introductory remarks on the Kings of Israel are so formulated that for the perfect ⁷⁷² proceeding from the beginning of the sentence where the dative stands the meaning is conveyed: "he became king", but from the end where the duration of the reign is stated, the meaning is, "he was king".

"he ruled". Comp. as an example II. Reg. 14:23: "In the 15th year of Amazaja's ben Joas, the king of Juda 7 1/2 Jerobeam ben Joas 'over' Israel in Samaria 41 years". This hardship which can be avoided at the five places mentioned by dividing the two dates down to two sentences, W. explains to himself by the epitomators addition to the original tradition. This is merely to state that the king ruled such and such ^{length of} a time. But the accession date he is to have added of his own accord ^(only) 4, thus created the linguistic hardship.

Do these reasons assure what W. thereby wants to make certain? In our opinion: No.

10

[Note 2, p 4: Compare as an
example I Reg. 15, 25. "And Nadab
ben Jeroboam 7^{th} over Israel
in the second year of Asa,
the King of Judah, 2^{d} over
Israel two years.]

It is a pure postulation that the Israelitic accessions to the throne could not be dated according to the parallel Judaic Kings' years and vice versa. In spite of the undeniable mutual dislike of the Kings of both states there are reasons which are stronger than contempt & jealousy, the needs (necessities?) of daily life. In spite of the political division the people remained a unit as to nationality, religion, and language. The political boundary was no barrier excluding the intercourse of the population of both states. Suffice it to point out that tho Jeroboam I, in order to dissolve the connection of the ten tribes with Juda, established (founded?) his national (state) sanctuaries (holy shrines?) at Bethel & Dan, yet later - almost at the

close of the Israelitic state -
pilgrimages of the Israelites
to Beersheba are still customary³⁾,
a proof how badly (little) the
division succeeded (how far from
a success the division was). [Note 3, p. 4:
Amos 5:5.] For the relationships
of Juda to Israel the figure of
the prophet Amos is a demonstrat^{raf}
ive proof.

Thus it can hardly be
doubted that the Israelites
on this and the other side
of the boundary associated with
each other, were making con-
tracts etc. Yet if so (if doubted!)
one should know, for reasons
of establishing dates, how the
Israelitic & Judaic years of the
Kings - the official reckoning -
were related to each other 1).
(In what relationships they stood...)

[Note 1, p. 5: The fact that the Ostraka (?) of Samaria dated the deliveries according to the Kings' years points to the dating of contracts. Comp. the handy edition by H. Gressmann, ZAW, Neue Folge 2 (1925) p. 148 ff.] How otherwise could it be established when a contract was concluded from which probably years later one expected some benefit as with an inheritance etc.?

If now a reason for synchronistic dating during the existence of the states of Israel + Judah is conceivable, then it is hardly probable that the epitomator only invented (brought up) the ^{adjustment?} comparison of the rows of Kings as to time, and just as improbable that the synchronisms were computed (calculated?) later from the

tradition of the year totals of the kings handed down by tradition. Add to this that the conclusion about the secondary ^(equalisation, compromise?) comparison and criticism of the kings as to their ^{attitude} position with regard to the cult (worship?) as ^{being} of a secondary character of the chronological ^{adjustment} (comparison) does not seem binding. Such a one represents a μεταβασις εις ἄλλο γένος. Since the interest of the epitomator is purely ecclesiastical, his main object, to establish the position attitude of the Kings to the cult, the dates and the death notices forming merely the shell for this nucleus, it is not very comprehensible why the epitomator should have ^{- in relation to the former -} condescended to a rather external and ^{dilettantish, dilettant} (playful) chronological compromise? equalisation?

Of much heavier weight than these considerations is the fact that in the land of the Euphrates synchronistic chronics were kept. Since long the Babylonian Chronicle is known which covers 745-668²⁾. [Note 2, p. 5: Published in transcription and translation by E. Schrader, Keilinschriftliche Bibliothek, Vol. II, p. 272 ff. H. Winckler, Keilinschriftliches Textbuch zum AT³⁾, 1909, p. 58 ff. Translation only, by H. Gressmann, Altorientalische Texte + Bilder zum AT I, 1909, p. 124 ff.; I², 1926, p. 359 ff.] More recent findings from Assur have shown that the synchronistic equalization (comparison?) is older & can be traced back into the 12th century B.C. Weidner has worked on six synchronistic lists of kings³⁾.

[Note 3, p. 5: E. F. Weidner, Die Könige von Assyrien. Neue Chronologische Dokumente aus Assur. Leipzig 1921. (MVAÄG 26. Jahrg. Heft 2) p. 2.]

While five of them merely place (are content to place) with the Assyrian Kings the simultaneously reigning Babylonian rulers without close regard on the relationship of the beginnings of the rule, Fragment VAT II 338, as seen by Ungnad (Jb. M. B. LXXII 1918, p. 313-316) carefully arranges the Babylonian & Assyrian Kings according to the accessions to the throne. ¹⁰ [Note 1, p. 6:

p. 6 Comp. Weidner a. a. O. p. 2 f.; 9, 10 ff.]
It is important to emphasize that it concerns here purely lists of synchronisms without chronological notes. ~~As~~ Their purpose one will have to assume to be similar to the one we deduced (unlocked *) above for the Israelitic-Judaic synchronisms. It is also worthy of note that Assur & Babel,

very similar to Israel + Judah,
belong together as to language,
religion + cult.

But with regard to the
synchronistic Babylonian chronicle,
their stilistic tangency, contiguity,
contact with the dating in
the books of Kings is striking.
Several samples may prove this:

"In the 3rd year of Nabonassar,
the king of Babel, Tiglatpileser in
Assur acceded to the throne" (Kol. I. 1).

"In the 5th year of Nabonassar,
Ummanigas in Elam acceded to the
throne" (Kol. I. 9).

"In the 5th year of Merodach-
baladan, Ummanigas, King of Elam,
died years reigned Ummanigas
in Elam. Istarhunder, the son of
his sister, ascended the throne
(1, 38-40). " Comp. further Kol. III 6-9,
13-15, 25-26 etc.

Compare with these samples,
say II Reg. 15, 17: "In the 39th year Azarjas,

the king of Juda, Menahem ben hadi became king over Israel for ten years in Samaria."

II. Reg. 15, 23: "In the 50th year, of Azarja, the king of Juda, Pekahja ben Menahem became king over Israel in Samaria for two years... And Pekah ben Remaljah, his נִסְכָּח , plotted against him and slew him in Samaria... and became king in his place."

These samples may suffice. The Babylonian and Hebrew chronics have in common:

1. Synchronistic dating,
2. Stating the governed territory,
3. Duration of the reign,
4. Stating death & succession.

The dates of the Books of Kings cited differ from the Babylonian only in that they give the total length of the rule immediately after the date of the accession to the throne,

While the Babylonian chronic combines it with the death notice, furthermore in that special events are introduced ^{not only by} ~~aside from~~ ^{giving the} exact date (I. Reg. 14, 25, II Reg. 18, 13) often in a general way (in his days II. Reg. 15, 29) or not at all (II Reg. 15, 19), while there p. 7 they are given with the exact date, comp. f. inst., Kol. I, 3, 19, 33 etc.

What can be proved with the land of the Euphrates & Tigris already before the time of the Israelitic & Judaic Kingdom, cannot be disavowed for Israel & Juda, especially since a tradition exists which seems to be related with to practice in the land of the Euphrates. Of how little use, the Weilhausen argument is as against the possibility of synchronistic dating in Israel & Juda

becomes plain immediately when one applies it to the Assyro-Babylonian territory. If indeed enmity & jealousy were a decisive (effectual) reason against the synchronistic method of reckoning, the Babylonians surely had no cause to take into consideration the Assyrian dates!

Thus of W's reasons there remains only the one which is built up on the observation of the text as mentioned. If we accept his interpretation of the text form as the most unfavorable for synchronisms, - anyway, it would merely follow that here two statements are merged together. As to the origin of the synchronisms or even their worthlessness after a disproof of the first reasons, nothing can be gotten out of it anymore.

Now it is very problematical whether synchronisms & absolute reigning figures should ^{really} be segregated in the way proposed by W. Does the combination of both in the form 750 really lie a hardship created by the epitomator? Is this combination not perhaps good Hebrew & ^{in that case} (then) to be translated as was done above? [Note 1, p. 7: W. himself seems to be of this opinion in his composition of the Hexateuch & the historical books of the OT, second edition 1889. For there he does not draw any critical conclusions from the text form but rather speaks of a somewhatzeugmatic sentence which seems to dissolve in five examples (p. 277). The commentaries on the Books of Kings by Benzinger, Kittel & Sanda, as well as the short annotations of Gressmann (Die Schriften des AT II, 1, 2) & Eissfeldt (by Kautzsch & Bertholet, Die Heilige Schrift

des AT) do not find fault with the text (-do not stumble over). They translate the above given examples in the same way.] Against the segregation of the two dates, in any case, speaks, too, the practice of the Babylonian chronic.

On the whole we are see ourselves compelled to the decision that the general proof of the worthlessness of the synchronisms is to be regarded as unsuccessful. This necessarily entails an important consequence for the method W. tried to disclose according to which the synchronisms be computed from the year totals. If (when^{As.}) his attempt meets with difficulties, we shall regard (the attempts^{them})—on the strength of our investigation (examination?) of his general reasons—not so much as due to the „incalculable factors.

p. 8

?

of individual arbitrary proceeding
+ error" but rather to a false
paralogism in the hypothesis of
the great critical investigator
(explorer, searcher?).

b) What does the attempt
look like to compute calculate
the synchronisms from the year
totals? For an illustration it
suffices to scrutinize the first
period from Jeroboam-Rehoboam
until the common death of Joram
of Israel & Atharja of Juda. If
one adds, with W., the year figures
in the Israelitic & Judaic row
by placing the year figures un-
changed as the quantities forming
a sum - the justification for
such a calculation cannot, ^{simply} be
regarded as self-evident - then
for Israel the total is 98, for Juda
95 years. Now W. believes, the syn-
chronist's purpose was to efface
(wipe out?) the difference.

[Note, p. 8: Comp. in this the detailed handling of the question, Chap. II, No. 4.]

W. in comparing the Israelitic accession dates with the Judaic row, he comes to the conclusion that the synchronist with the Israelitic kings always equated the last year of the predecessor to (with?) the first year of the successor, while, on the contrary, the reigning years of the Judaic kings he figured in full. As a matter of fact, in this way the Israelitic-Judaic synchronisms until Ahab can be understood.

Herein doubtless lies the allurements (attraction) in Wellhausen's way of reasoning, and thus is explained his far reaching influence.

However, from Ahab on down the reckoning does not tally (check?) any more. According to the synchronisms Ahab would rule but

intended to balance the difference

21 and not 22 years 2). [Note 2, p. 8:

To check the statements compare with the list of all dates for the Israelitic-Judaic period of the Kings handed down by tradition as compiled in chapter II, No. 1.]

Here W. considers it to be an error in the synchronism, ^{would be} what in itself is quite possible. More risky (precarious?) is the result the epitomator is to have attained with the described procedure:

"By all this ... the purpose to shorten the Israelitic sum total, is so well served that ⁱⁿ at the end Joram of Israel is left with but 12 years as against the 18-25 of Josaphat, 1-8 of Joram + 1 Ochoziah of Juda." 3)

in other words, that the Judaic now overtops the Israelitic by fully five years. Can one trust

p. 9 The synchronist that if he intended to balance the difference

in the year totals, he would artificially construct a surplus in the Judaic row while-in consideration of the common death of Joram & Athasja in the revolution of Jehu-in the equation 1. year of Athasja = last year of Joram had to come out?

Still more difficult becomes the result if one considers with W. the same period as from the accession dates of the Kings of Juda. Here W. himself has to admit that not everything tallies in detail. For instance, Athias years, oddly enough, are not to be reckoned in full. His last and Asas first are to correspond to the same Israelitic year. Furthermore, until the middle of the Israelitic row

the equating of the last year of the predecessor + the first year of the successor was to be the rule, as from then on every reigning figure (fig. on the reign?) is to be used like in the Judaic row (with the exception of Abia).

Nevertheless here, too, in spite of the complicated method of equating (equation?) the necessary synchronism: first year of Ahasja (Ahasja?) = last year of Joram, is not attained (reached, realized).

Ahasja's (Ahasja?) reign would fall (come?) after the one of Joram. Can it really be assumed that this complicated, in part rather contradictory calculation is to be expected of a synchronist who

wanted to balance (equalize?) the differences of the Kings rows, since this equation evidently cannot be established? Against W. speaks furthermore the fact that for the synchronism: 1 year of Amri = 31. of Aa he has to assume a special synchronist. For in order to realize attain this equation one would have had to figure the years in full in both rows. Finally, W. does not know what to do with the synchronism II Reg 1, 17: accession of Joram of Israel in the 2. year of Joram of Juda.

For the time from the death of Aharja (Aharaja?) and Joram until the end of the northern state W. does not succeed to prove (improving?) from the year totals the calculation of the simultaneity. The excess (surplus)

W. not identical with the
"synchronist" ?

of over 20 years in the Judaic row is not removed whether one looks at the period from the Judaic or the Israelitic dates of accession.

W. derives his confidence merely from the fact that the synchronist arranges his principles out of love for his harmonistic objective, and from the deduction that in that case it will not be easy for the modern calculator to follow ^{all} his jumps altho he does not claim to have succeeded to produce the proof everywhere.

p. 10 Decisive above all are for him the general reasons discussed in detail under a) which to us do not seem to be tenable. We therefore see ourselves compelled to discard the hypothesis on the calculation of the synchronisms from the year totals of the Kings in order to

efface the differences in the rows of the Kings, to accept the independent existence of the synchronisms and to look for its solution (understanding) from a different angle (side) than W. has done it.

2. After Wellhausen had made the attempt to push the synchronisms aside as worthless, the next chronological investigations now were directed against the so far not essentially touched figures of the reigns (reigning periods?) themselves. A small article, covering but $4\frac{1}{4}$ pages, by E Krey started the thing it. [Note 1 p 10: E. Krey, Zur Zeitrechnung der Könige. Ztschr. f. wissenschaftl. Theologie 1877, Vol. XX, 1, p. 404 ff.] The movement thus started to gain in importance because Wellhausen²⁾ and Stade³⁾ took up his ideas albeit modified.

[Note 2, p. 10: In the postscript to Krey's article referred to and in the 4th edition of Bleek's introduction to the O.T.] [Note 3, p. 10: B. Stade, History of Israel, Vol I, p. 88 ff.]

Krey proceeds from some observations which concern the different reigning figures as well as the total period of the Israelitic Kings. He calls attention to the following points 4. [Note 4, p. 10: Merely Only the essential are given here.]

a) In the period from Jeroboam I until Joram appear (most?) peculiarly regular figures: Twice the figure 22 (Jeroboam I and Abah), twice the figure 12 (Omri & Joram), thrice, two (Nadab, Ela & Athasja), twice 22 + 2 follows each other (Jeroboam I - Nadab

p. 10 - cont'd

(4)

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and Shab-shasja), twiceⁱⁿ the order
2 + 12 (Ela - Omri and Shasja -
Joram).

b) The sum total of
the last six kings divided evenly
equally gives seven years for
each one (reckoned at full years!).

c) The sum total from
Jehu to Hosea amounts to 144
or 12×12 years.

p. 11 d) Figuring for Ela
0 years, for the first four kings
fall 48 years (apportioned share - 12)
for the house of Omri, consisting
of four kings, again 48 years,
or on an average 12 years to
every king from Jeroboam to
Joram.

e) The sum total
of the kings is - assuming for

Elas reign 0 years - 240 years and would correspond to half as temple period, i. e. half the time which is to have passed by according to I. Reg. 6, 1 from the departure from Egypt until the building of Salomon's temple. Furthermore, if all members of the row were treated according to the same principle which applies from Jeroboam ~~I~~ to Joram, the total would be 18 (number of the kings) $\times$ 12 (average length of reign) = 216. The row of actually 18 members to have been handled as one of 20. Thus explaining the total period of $20 \times 12 = 240$ years.

Krey believes to have to conclude from these observations that the absolute figures for the reign were not based on tradition but on constructive calcul-

ation. Otherwise (or in no other way?) the noteworthy regularity of the observations compiled under a) the appearance of the figures divisible by 12 could not be understood.

The objections he had to make himself concern the 22 years of Jeroboam I and Ahab respectively, as also the exclusion of Ela to whom tradition ^{ascribes} apporitions 2 years, which is rather awkward for the ^{so-called} would-be intended reckoning of 2×4 kings at 12 years each. To what Krey refers as the foundation (justification?) is hair-splitting & not convincing. He has to assume a double method of calculation (reckoning?) which results from the double aim (goal?). One to refer to the sum total of the two states (Israel 240, Judah 480 years),

the other to aim at the important inner arrangement (construction) of the row. For the manner in which Key supposes this to be it is best to quote his presentations verbatim: "The sum total is to become $\frac{480}{2} = 240 = 20 \times 12$; but there were but 18 kings, and their row divided itself, thru the epochal usurpation of Jehu, into two rows, one of 8, the other of 10 members. This given division (arrangement?) our chronologist could not discard set aside; but 18×12 would have given only 216; in order to reach the aim there was nothing else left than to treat the row of 10 members as tho they were 12; but since 12 was a significant number

it would have been annoying to our chronologist if not the first row, too, had shown a similar significance; therefore

p. 12 he quickly dealt with the 8 as tho it were a 7, divided the 8×12 by 7 and let the 8th go empty-handed) get nothing. For this he chose, in order to complete the important (significant) arrangement (division?), the 4th king of the row. For thus the 7 represented two significant groups - one of three, the other - which simultaneously ended as a special dynasty worthy of distinction - of 4. But inasmuch as after all it was now impossible to ^{actually} figure Ela as 0, he gave him ^{a two-} because in this way the deviation from the

intended 240 became as low as possible, and simultaneously thereby resulted a symmetrical sum total.

a2. Simultaneously therefrom resulted that thus the 2 appears most mysteriously three times in the short row from Jeroboam I to Joram, and that at very mysterious intervals). "[Note 1, p. 12: A.A.O. p. 406/07].

It is a great question whether one can see in these trends of thought a real unveiling (uncovering?) of the the circumstances, and whether one should not rather seek (look for?) the "most mysterious" with the author instead of with the Biblical chronologist.

This argumentation has hardly worked (made impression), but the observations given under a-c have done so all the more.

Wellhausen has drawn from them the following conclusions: "If one pays no attention to Elas. 2 years,

then to the north Israelitic kings come altogether $96 + 144$ years = 240 years, i. e. half of the period from the building of the temple to the foundation of the 2. Theocracy.

All in all there are 20 Kings if Zimri, Tibni and Sallum are included, at an even distribution (evenly distributed), 12 years to each one. However, they are actually divided: in the first period 2 times 48 years to 4 and 4 Kings, in the 2nd period 144 to 9 Kings. Thus for the first period 12, for the second, 16 is the radix (base of the numerical figure). The only difficulty in this calculation which Dr Krey did not completely eliminate are the 2 years of Ela. Instead of 24 Baesa and 2 Ela one would (should?) expect 22 Baesa

and 2 Ela². "[Wellhausen in the concluding remarks (epilogue?) to Krey's article ~~a.a.c.~~ quoted above p. 408.] For then the following picture presents itself which Wellhausen has given in the 4th edition of Bleek's introduction to the OT ^(worked over by him) on p. 264, and which indeed shows a startling schematism:

Judeoam 22	Baera 22	Omri 12	Shab 22	Joram 12
Nadab 2	Ela 2		Shasha 2	

While Krey at first considered the Judaic figures as being free of aprioristic numerical construction, he found in 1878 according to Wellhausen's word)

p. 13 [Note 1, p. 13: Bleek^v p. 265, Note 1.] in the Judaic row, too, such a play with figures. To be sure, the figure 40 is to play the role here which in the Israelitic

row is taken by the 12 (and according to Wellhausen, the 16). This opinion (assumption?), too, is taken up favorably by Wellhausen and Stade²⁾. If the period from the division of the kingdom until the fall of the northern state is considered which according to II Reg 18, 10 is the 6th year of Hiskia, then Rehabeam's & Abias time of rule ^{into} amounts to $2 = \frac{40}{2}$ years; Asa to have 41 years; Josaphat - Joram - Athasfa - Atalja again 40 years; Joas, 40; Amasja - Uzzia, 81; the time of Jotam - Athas to the 6th year of Hiskia (Hisekia?), 38 years. The 2 years of which the 40 are short, Asa & the group of Amasja - Uzzia are over (to have in excess). From the 6th year of Hiskia until the death of Amon there are again 80 years. The

[Note 2, p 13: Comp. Wellhausen, as quoted; Stade, *Bevolk. d. Volk. Israel*, 1887, I p. 95.]

time from Josiah to Jojakim, i. e. until the end of his 37th year, amount to $79\frac{1}{4}$. Stade together with Krey sees in this play of numbers a special purpose of the Chronologer, recognizes artificial ingenious factitious made-up reckoning and thinks the basic number 40 which comes to light nakedly with David and Salomon, then again with Joas, elsewhere is covered by a stratagem (practise, shift?). It consists partly in dividing several reigns to a 40, partly by artificially creating a plus with a ruler or ruling group to which fall (come?) 40 or double that; this plus to be balanced by a minus on another place. This stratagem was supposed to be chosen with the intention to cover the schematism & (not to let ^{prevent} rise) a suspicion in the dependability of the statements: data.

If the ^{reality of a} constructive play with numbers is accepted, there

indeed remains nothing else for the presentation of the history of Israel than to throw over board the yeartotals and to ^{accept} take the consequence of Wellhausen who in the paragraph on the time reckoning in his Israelitic-Judaic history ³⁾ [Note 3, p. 13: 8. Edition 1921, p. 8-9.] passes by with silence the tradition in numbers (figures?) and for ascertaining the reigns of the kings depends only on Assyrian dates, the time dates of the Mesa-inscription and on probable estimates.

p. 14

However, the question is whether the observations made by Krey are right. Here it is instructive that Stade, who fully accepts the statements of Krey, on the basis of historical considerations comes to the conclusion, the figures after all approximately ^{do} agree with historical reality (fact?) ¹⁾ [Note 1, p. 14: A. a. O. I, p. 97.]

Then the figures cannot simply be invented, and ^{the cause of} the remarkable figure repetitions would lie in irrational facts. The direct proof for the inconsistency of the belief in an intended play of figures was then undertaken by Kamphausen in a rather broad but very careful and circumspect essay ²⁾. [Note 2, p 14:
 A Kamphausen, Die Chronologie der hebräischen Könige, eine geschichtliche Untersuchung. Bonn 1883.]

We list the most important reasons which can be raised against Krey-Wellhausen-Stade theses.

a) The 480-year total period of Juda, the 240-year existence of the Israelitic state, the 48 year period of Jeroboam I until Ela, from Omri to Joram, the mysterious sum of 40 with Josaphat to Stalgia,

from the 6th year of Hezekiah until the death of Amos etc. can only be arrived at if the full year totals are added, i. e. not to equal the last year of the predecessor to the first year of the successor. The justification to such an addition, however, is not at all self evident. In the course of the investigation is to be proved that the older period of the kings did indeed add differently ³⁾. [Note 3, p. 14: Comp. Chapt. II, No. 4.]

b.) But if one overlooks this and for once accepts the method of addition taken over also by Kamphausen, that does not mean yet that the remarkable schematic looking figures really were constructed or at least systematized. In pp 7-15 of his very much worth reading work on

a row of historically fixed figures completely beyond doubt he shows the most interesting plays of figures which are so astounding that ^{one} would like to believe in construction if the reality of the figures were not above every doubt.

p. 15

C) The calculation of the period of Israel & Juda of 240 x 480 years has no support in tradition itself. The period (duration) of Israel from the division of the states until the conquest of Samaria, if one adds after the manner of Krey, Wellhausen, Stade and Kamphausen, amounts to but 241 years, 7 months, not 242. The "constructed" figure 240 which is not handed down by tradition is arrived at by the chronologists mentioned by the arbitrary cut ^{of} by 2 years in the

case of Ela or Baesa. Furthermore, the period of Juda does not amount to 480 years at all? [Note 1, p 15: Asserted by Krey, in work cited, p. 406, in these words: "The one interest is set on the sum total of the whole kingdoms"]

From Rehoboam until the 11th year of Zedekia according to the method of addition of the scholars (investigators?) mentioned, only 393 years?

[Comp. the survey on the reigning figures of the kings, chap. II, No. 4.]. 480 comes out if one adds 37 years of Solomon — in whose 4 $\frac{1}{2}$ year falls the building of the temple until when according to I Kings 6, 1 480 years have passed by since the departure from Egypt, from when on the next 480 years are to run — and 50 years of the exile.

Now if the single figures of the Books of Kings actually be determined by the period of 480 years, the necessary requisite would be that the presentation

of the Books of Kings covers the history until the end of this period, i. e. until the end of the exile. As is known, that is not the case, rather it reaches only until the 37th year of Jojakim. Yet dare one assume that the single figures are (dependend ^{decided by} on) a total if this latter is not given in Books of Kings at all?

But even if the presentation were to (go ^{include?} until) the end of the exile, 480×240 would still be two figures who factually materially really have nothing to do with each other. The first would concern the period (length, duration) of the whole state from the building of the temple until the division of the state, the period of the state of Judah & the time of the exile while the other would refer to the length of the state of Israel from the division of the state until its fall.

Both figures are so incommensurable according to importance — the first refers to a cultural era, the second to a politically important period — as well as starting point. Thus mostly according to Ramphausen.

p. 16 d) Very noteworthy is also Ramphausen's reference that this figure play astoundingly was discovered first in the figures of the northern state which for the time reckoning according to periods of the Jerusalem temple are rather immaterial (unimportant). One should rather expect that the for the post-exile Jews infinitely more important Judaic reigning figures should be affected by the systematic of the play with figures. He rightly emphasizes that if the figures, as intended by Krey & Wellhausen, are the latest in the Book of Kings, and thus Judaic

and post-exile, then the traces of systematizing should ^{have} been found in the first line in the Judaic not in the Israelitic figures, all the more ^{so} since the temple and the reckoning ^{joint} connected with it is connected with Judaea.

These fundamental objections should suffice and spare us the task of going still farther into the details after the example of Kamphausen. One can hardly do otherwise than to conclude: The hypothesis that the single figures are constructed with a view to a period of 480 years and to "significant" figures (7, 12, 16, 40) cannot be taken as proven. Even in the form that the historical figures were systematized it does not seem tenable. But with this also the conclusion that the figures are historically worthless or, to say the least, conspicuous, cannot be upheld on these premises.

3. In connection with his criticism of the play with figures Kamphausen presents his opinion (view) of the Hebrew chronology. It is built on the following suppositions:

a) The yeartotals on the whole deserve full confidence.

b) The synchronisms are to be regarded as secondary, or, on the whole, as historically worthless, on the basis of Wellhausen's argumentation of 1875.

c) As a correction (-ing factor?) of the mistakes here and in the Israelitic reigning figures the sure (made sure) Assyrian dates are to be used.

The comparison of the Israelitic data with the Assyrian dates and the historical fact that the death of Joram of Israel and Athasja of Juda coincide fall in the same year, compel Kamphausen to change some of the figures handed down by tradition, altogether 8 of them.

Since the addition of all Judaic years from Rehoboam until

the death of Ahasja - counting the years in full - amounts to 95, the total of the Israelitic years from Jeroboam I until the death of Joram on the other hand 98, ^{yet} both totals are bound to be equal considering the same starting and ending point, there must be, according to K., a mistake in the items. Since one could sooner credit the Judaic historian with a mistake in the Israelitic than in the Judaic figures, the mistake should be looked for in the Israelitic row. The 98 years have to be decreased by 3. K. applies the cut in the reigns of Nadab & Elah, who he figures with 1 & 0 instead of 2 and 2. His reasons are as follows: "There is less cause for a cut with Ahasja who because of the fall out of the window found a premature death whereupon his

brother Joram ascended the throne in peaceful succession than with (in the case of) Nadab & Elah who lost their life by force and who were less important than their energetic fathers Jeroboam & Baasha." "It is in the nature of things that sons of usurpators are easily removed by ambitious officers when the young ruler prove themselves not completely up to the inherited power." 1) [Note 1, p 17: In the work cited, p 26, 27.] To the question why he ascribes Nadab one year by assumption, and none to Elah, K. replies, "The answer is in the scanty remarks on these two rulers in the Book of Kings. According to it Nadab at least went out against the Philistines; of Elah we ^{after all} learn merely that he drank copiously (carousing?) and then was killed so that one could get the idea to regard the 2 years in I Kings 16, 8 as an error in writing for 2 months." 2) [Note 2, p 17: In the work referred to before, p. 27.]

The starting point for the

further correction of the figures is offered him by the difference between II. Reg. 18, 9-12 and 18, 13, of which ^{place} the first, Hezekia's (Hiskia's) 6th year is set simultaneously with the year of the conquest of Samaria, in the second the 14th year of Hezekia designates the date of Sennacherib's invasion. Proceeding from both dates, which Assyriology at the time fixed for the years 722 and 701 ³, one would arrive at the following dates for the first year of Hezekia: 727 and 714. Following Wellhausen K. decides for the date II. Reg. 18, 13, for the first is suspicious as Israelitic-Judaic synchronism. If one sets Hezekia's first year at 714, then the last year of his 29-year reign falls in 686.

But from this follows the necessity to make a change in the figures of Zedekia. Otherwise one would not arrive at the date of the capture

p.17- cont'd

(4)

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p.18

of Jerusalem in 586. R. here shortens (cuts!) the long reign of Manassa by 10 years, i. e. he reduces the traditional 55 years to 45.

The period of Israel's history from Jehu until the end of the state covers according to the Assyrian data only 121 years (842 Jehu's tribut, 722, conquest of Samaria according to ^(customary) conventional opinion). [Note 1, p.18: Comp. preceding note.] The total of the Israelitic Kings-years amounts to 143. The Israelitic total is by 22 years too long. The Judaic total for the same period again exceeds the Israelitic by 22 years. In both rows thus a reduction by 22 and 44 respectively would have to be made. R. succeeds as follows:

Israel: a) Pekahija is to

be given only one year instead of two. The assumption of an error in writing is not necessary. The 2 years to be explained by inexact interpretation of historical data by the epitomator. (The one year to include two calendar years: the end of one and beginning of the other.)

b.) Instead of 10 and 20 with Menahem & Pekah, 3 and 6 should be figured. The surplus of 1 for Pekahja, 7 for Menahem and 14 for Pekah amount to the surplus of 22 in the row.

Juda: The 44 years surplus in of this row R assumes as composed of:

a) 6 years of Hiskia (Hezekiah!) are to be taken off. For the capture of Samaria - figuring from the 1. year of Hiskia = 714 - did not fall in Hiskias reign. The year of the conquest rather was the 13. of Ahaz. However, he does not get this date from the calculation with the mazoretic figures on the basis

of which - Ahas reigned 16 years²) -
 he would have to come to the 9. of Ahas,
 but rather from a historical consider-
 ation that if Ahas, according to the
 Assyrian statement was already King
 in 734 while Hiskia did not accede
 to the throne until 714, the 16 years for
 Ahas as given in tradition could not
 be right. On the contrary, Ahas must
 have ruled 20 years. If now the 13th
 year of Ahas was the year of the
 conquest of Samaria, then the years
 14-16 of Ahas according to tradition
 i. e. 3 years, would also fall out.

b) Of the 16 years of
 Jotam who according to II Reg.
 15, 5 substituted for his sick father
 before his reign, at least 15 years
 can be considered as time of his
 regency. At least one year at least
 should remain for the independent
 rule after Uzzia's death since
 tradition recognizes this distinctly
 by the side of the regency. These

15 years thus coincide with the last years of Uzzia and should have been left out in establishing the total period of the Judaic Kings.

c) Finally he removes 10 years each of Amasja (Amazai?) and Uzzia.

The total of the years saved (gained?) in this manner: 6 of Hiskia, 3 of Ihas, 15 of Jotam, 10 of Uzzia, and 10 of Amasja, constitutes the surplus of the 44 years in the Judaic row.

On the basis of these changes and the thus produced result R. daves to recognize the other figures as genuine figures of the tradition + makes out the following table:

see p. 19 of photostat.

The R. deals with the figures ever so careful & considerate and tries to adhere closely to dependable historical traditions; yet the essential facts are too few in order to correct the figures of the Kings (according to them).

p. 20.

To this should be added the following partly weighty considerations:

a) The question, by how many years under certain circumstances should be cut, depends on the right of the method of summation. That this can be contested was already mentioned on the occasion of the discussion of Wellhausen's treatise (article?).

b) The change of the figures seems rather arbitrary. While with the figures that are cut by 10, one could assume an error as a reason (for doing it)

in the writing in the row of figures provided numeral signs (characters) were used'), a transposition of the disclosed? erschlossene 3 and 6 years for Menahem and Pekah in the 10 and 20 of the tradition is simply incomprehensible.

[Note 1, p 20: Comp. this with Chap II, No. 2.] The same applies to the disclosed (?) reigning figures of Ela & Nadab. It is informatory (pragmatic?) that K himself, on the occasion of dealing with them, senses (feels?) that one could accuse him here of arbitrariness, and (that he) thinks he could meet this by stating, it is impossible to get out of hypotheses.

If K. finally believes the remaining figures of the Kings have proved as based on good tradition, one ^{cannot but view} (must see in) this judgment^{as} a bad case of self-deception.

After having reduced the two rows of Rings, thanks to an eight-time change in the items, to the same figure, the figures not affected cannot but fit in smoothly in the totals. In other words,

the recognition of the remaining figures of the Rings, in K. setup, stand and fall with the changes in the figures, is altogether dependent on the shortened figures.

Whoever does not recognize K's cuts is not at all compelled to accept the authenticity of the figures not challenged by him.

c) In the treatment of the Judaic row there is also a bad mistake in the method; mixture of figures derived from tradition with one assumed by him which is supposed to be dependable.

It concerns the calculation of the conquest of Samaria in the year
(setting it)

13 of Ahas, a calculation which regards as Ahas' first year in consideration of Tiglat pileser's Annals 734, giving ascribing to him a period of 20 year, destitute (without) of every tradition. He proceeds from 734 for the cut..

p. 21 But instead of deducting the, according to him, historical years 14-20 of Ahas, he figures merely ^{with} 3, i.e. the 14-16 of the tradition. As the starting point he thus choses the accession year 734 arrived at as from 714 only by assuming a 20-year reign, but then he as from this date he figures on the reigning years of the tradition. If the object is to clear clarify the tradition of the figures, one dare not in any case mix with it other figures that are foreign to it.

of The identification of the time period of Israel from Jehu's first year until the conquest of Samaria with the period limited by the Assyrian dates of 842-722? = 121 years is depending on the (assumption?) that 842 was the first year of Jehu. Salmanassar's tribute report does not give any information on this. K. is of the opinion that Jehu very likely acceded to the throne as a friend of Assur, thus he seems to assume the new ruler sought to win Assur's friendship by the payment of the tribute immediately after the accession to the throne. That is not very likely. Jehu pays tribute like Tyros & Sidon when the Assyrian appears dangerously near. The cause for the payment of tribute thus lies with Assur, not with Jehu. It is the terror arousing campaign of 842 against Damascus. Should this now, of all times, coincide with

[Note 1, p. 21: Accord to earlier reckoning?]

Jehu's first year? That would be a great (lucky?) chance. If, however, Jehu started before 842, he had no occasion before 842, inasmuch as Sal-manassar did not appear in the West since 845, to creep to the cross before Assur's might, and so could not show up in a tribute list before 842.

e) Besides, K's fixing of (the time of) the kings does not tally with 2 Assyrian dates. Salmanassar

III Annals name for 854²⁾ among his opponents aside from the king of Damascus Shabnu Sirlaja, i.e.

according to the phonetical similarity and the historical situation Ahab of Israel. Since according to K's reconstruction of the reigning periods the King of Israel, Ahab, was already dead, 854 rather coinciding with Joram's year of rule, K. concludes with Well-hausen³⁾ that the Assyrian reporter erred in the name of the King, naming the father where the son should have been he named⁴⁾. [Note 2, p 21: According to earlier reckoning. Comp. with date

chap. II, No. 5.] [Note 3, p. 21: Jahrbücher
für deutsche Theologie xx, 1875, p. 628.]

[Note 4, p. 21: In the work cited, p. 80.]

That is in our opinion a down-
right impossible assumption!
p. 22 and would presuppose a legendary
(mythical?) knowledge of history
on the Assyrian side for a time
(period?) when Assur had not yet
at all come in direct contact with
Israel. For the father of the opposing
king is known! How. W. & K want
to trace back the supposedly erroneous
remark of the Assyrian to a good
deal of ignorance is beyond us.
incomprehensible to us.



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