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*A suggested explanation of the ancient Jewish Calendar Dates in
the Aramaic Papyri translated by Professor A. H. Sayce
and Mr. A. E. Cowley.* By E. B. Knobel.

The Aramaic papyri discovered at Assuan, on the site of the
ancient Syene, which have been recently translated and published
by Professor Sayce and Mr. Cowley, are of unique interest and
importance owing to the duplicate dates given to each document.
These documents cover a large part of the fifth century B.C.,
extending from B.C. 471, nine years only after the battle of Salamis,
to B.C. 410. The papyri all relate to a Hebrew colony established
at that period at Syene, and deal with rights of property, conveyance
of land and buildings, marriage portions, and legal processes. They
are all deeds most carefully drawn, signed, sealed, and witnessed,
and they are dated according to both the Egyptian and Hebrew
calendars, in the regnal years of the kings of Persia.

The Egyptian year and calendar are well understood. The year
was a vague solar year, and consisted of 365 days without inter-
calation or correction, consequently the Julian date of the com-
mencement of the Egyptian year recedes one day every four years.
The year consisted of twelve months, each of thirty days, and five
additional days, called *epagomenæ*, were added after the last month.
There is consequently no difficulty with this calendar in determining
the corresponding Julian date.

Very little, however, is known of the Jewish calendar in use at
the period under consideration. The present reformed calendar
dates only from the time of Hillel in the fourth century A.D.,
though it was probably not finally settled until after the fifth
century. It is known that in olden times the year was a lunar
year, and certain months, and ordinances connected with the
months and seasons, are mentioned in the Old Testament. There
is no mention of an intercalary month in the Bible, and it is not

known whether the correction to the solar year was applied in ancient times by the addition of one month in three years, or by the adding of ten or eleven days at the end of each year. No information appears to exist that there was anything like a settled Jewish calendar so far back as the fifth century B.C.

It is very generally stated that prior to the adoption of the reformed calendar the Jews employed the era of the Seleucidæ, the years of which were Julian of 365 days, but this could not have been the case at the period under discussion. Burnaby's work on the Jewish calendar gives little assistance in the present investigation.

Mr. Margoliouth—a high authority—writes : " No lists of pre-Christian Jewish dates reconciled with Egyptian or other dates are so far available to throw light on the exact form of the calendar used for the dating of the Aramaic documents published by Professor Sayce and Mr. Cowley. In the fifth century B.C. the Jewish calendar depended entirely on the observation of the Sun and the Moon, particularly the latter. The decisions must have been made by a central court, as was practically the case down to 359 A.D., so that great uncertainty would be caused in distant parts (such as Syene in Upper Egypt, to which the papyri belong) by the delay in transmitting the announcements.

"It is also uncertain whether the Jewish lunar year was in ancient times harmonised with the solar year by the addition of one month in three years, or by lengthening the last month in each year. The difficulties connected with the dates given in the recently published papyri may possibly have to be ascribed to the uncertainties mentioned."

Professor Schürer has discussed the subject in the *Theologische Literaturzeitung* for February 1907, in which he claims that the papyri confirm the fact that the Jews began their months with the *appearance* of the new moon, and further that they show that "it was far from the case that any definite system had been adopted."

Dr. Lidzbarski has also reviewed these papyri in the *Deutsche Literaturzeitung* for 1906, but his discussion is more particularly philological, and contributes little towards the question of the ancient calendar of the Jews.

The object of the present paper is to inquire whether more definite information on the subject cannot be derived from the Aramaic papyri themselves.

The dates of each papyrus, as given by the translators, are as follows. The figures in brackets indicate possible alternative dates according as a certain slanting mark in the writing is considered as forming part of the numeral or not. The present opinion is that it should do so, and that the higher number is the correct one, which I have accordingly adopted.*

A. On the 17th (18th?) of Elul, that is the 27th (28th?) day of Pachons, the 14th (15th?) year of Xerxes the king . . . .

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* An exception may probably be made in the day of Thoth in B.

B. On the 18th (?) of Chisleu, that is the 6th (7th ?) day of Thoth, the 20th (21st ?) year (of Xerxes), the beginning of the reign when Artaxerxes the king ascended his throne . . . .

C. Mutilated as to the dates.

D. On the 21st Chisleu, that is the 1st of Mesore, the 6th year of Artaxerxes the king . . . .

E. On the 3rd of Chisleu, that is the 10th day of the month Mesore, the 19th year of Artaxerxes the king . . . .

F. On the 13th (14th ?) of Ab, that is the 19th day of Pachons, the 25th year of Artaxerxes the king . . . .

G. On the 26th (?) of Tishri . . . . the 6th (day) of the month Epiphi [the 25th year of Artaxerxes the king] . . . .

H. In the month Elul, that is Payni, the 3rd (4th ?) year of Darius the king.

J. On the 3rd of Chisleu, the 7th (8th ?) year, that is the 11th (12th ?) day of Thoth, the 7th (8th ?) year of Darius the king . . . .

K. On the 23rd (24th ?) of Shebat, the 13th year, that is the 8th (9th ?) day of Athyr, the 13th (14th ?) year of Darius the king . . . .

The dates definitely adopted from the translation are as follows:—

A.	15th year of Xerxes,		28th Pachons	=	18th Elul.
B.	1st	,, Artaxerxes,	6th Thoth	=	18th Chisleu.
E.	19th	,, ,,	10th Mesore	=	3rd Chisleu.
F.	25th	,, ,,	19th Pachons	=	14th Ab.
J.	8th	,, Darius,	12th Thoth	=	3rd Chisleu.
K.	14th	,, ,,	9th Athyr	=	24th Shebat.

For the regnal years of the kings I have adopted the dates given by Ricard in his edition of Plutarch, thus:—

Cambyses,	1st year B.C.	529
Smerdis (7 months),*	,, ,,	522
Darius Hystaspes,	,, ,,	521
Xerxes the Great,	,, ,,	485
Artabanus (7 months),	,, ,,	464
Artaxerxes Longimanus,	,, ,,	464
Xerxes II. (a month),	,, ,,	425
Sogdianus (7 months),	,, ,,	424
Darius II. (nothus)	,, ,,	423

The order of the Egyptian and Hebrew months is as follows:—

Egyptian Months.	Days.	Hebrew Months.	Days.
Thoth.	30	Tishri.	30
Phaophi.	30	Marheshvan.	29 or 30
Athyr.	30	Chisleu.	30 or 29
Choiak.	30	Tebeth.	29
Tybi.	30	Shebat.	30
Mechir.	30	Adar.	29

* Oppert.

Egyptian Months.	Days.	Hebrew Months.	Days.
Phamenoth.	30	Ve-Adar.	30
Pharmuthi	30	Nisan.	30
Pachons.	30	Iyyar.	29
Payni.	30	Sivan.	30
Epiphi.	30	Tammuz.	29
Mesore.	30	Ab.	30
5 Epagomenæ.		Elul.	29

In the papyri the Julian dates corresponding to the Egyptian dates are all known, and the problem, in the absence of all information on the subject, is to construct a reasonable and probable Jewish calendar which shall satisfy all the Jewish dates.

Fortunately the papyri E. and J. offer some assistance towards the solution of this difficult question. The Egyptian dates in Julian reckoning are as follows:—

> E. B.C. 446 ... 10th Mesore = November 17,
> J. B.C. 416 ... 12th Thoth = December 16,

but the Jewish date of both documents is the same, viz. 3rd Chisleu; consequently the period B.C. 446 November 17 to B.C. 416 December 16 should be an *exact number* of Jewish years.

It has been assumed by writers generally that the commencement of each month was determined by observation and announcement, and this was no doubt the common practice in the ecclesiastical year, which began with the 1st Nisan. The Jewish civil year, however, began unquestionably with the 1st Tishri ; and with such a practical business people as the Jews, who, as we should infer from the papyri under consideration, enjoyed at this period a high state of civilisation, it is almost inconceivable that they should not have had in current use some calendar upon which they could base their business negotiations.

The reformed Jewish calendar is based upon the Lunar cycle of nineteen years—the so-called Metonic cycle—and it is not unreasonable to assume that this cycle was in use with the Jews long before the time of Hillel. With one exception, that of the French Revolution calendar, history does not record the *creation* of any calendar, but only the correction, reformation, or amendment of pre-existing calendars. Dr. Mahler pointed out in a paper read to the Oriental Congress of 1892 ("Das Kalenderwesen der Babylonier") that the Lunar cycle was in use by the Jews at Babylon before it was adopted by the Greeks, and that it was really of Babylonian origin. In discussing the order of the intercalary months, Al Biruni (A.D. 973–1048) (*The Chronology of Ancient Nations*) mentions one particular order which he says is preferred by the Jews, because they attribute its invention to the Babylonians.*

In this attempt to explain the Jewish calendar dates in the

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* The period we are dealing with was only about sixty years after the Captivity, and it is reasonable to suppose that some of the colonists at Syene may have migrated from Babylon, as Professor Sayce particularly indicates Babylonish names among those mentioned in the documents.

papyri, it may therefore be justifiable to assume that the nineteen-year Lunar cycle was in current use. I have accordingly adopted the cycle with the same intercalations as are to be found in the present Jewish calendar, which is unchanged since the fourth century A.D., and upon this basis I have constructed a table for the whole period covered by the MSS., the intercalary months disposed according to Scaliger's rule, " ter, ter, bis, ter, ter, ter, bis." *

Normal Lunar Cycle.

No of Year.		Days.
1		354
2		354
3	Emb.	384
4		354
5		355
6	Emb.	384
7		354
8	Emb.	384
9		354
10		355
11	Emb.	384
12		354
13		354
14	Emb.	384
15		355
16		354
17	Emb.	384
18		354
19	Emb.	384

Applying this tentative calendar to the cases of papyri E., B.C. 446, and J., B.C. 416, it will be seen that there is *only one possible* position for those years in this Lunar cycle, and that B.C. 446 was the 17th and B.C. 416 the 9th year of that cycle, for this is the only position in which twelve intercalary years can be brought into a period of thirty years.

This gives coincidence between the number of days from B.C. 446 November 17 to B.C. 416 December 16, and the number of days in thirty Jewish years beginning with cycle No. 17 and ending with cycle No. 8 inclusive. On any other calculation there would be a difference of a month, and both deeds could not be dated in the same month Chisleu.

B.C. 446 Nov. 17 to B.C. 416 Dec. 15 inclusive   = 10,987 days
30 Jewish years, cycle No. 17 to cycle No. 8 inclusive = 10,986   „

* In the old Chinese and Japanese calendar the intercalary months are disposed in this order.

It should be mentioned in explanation that were Dr. Mahler's Babylonian cycle employed, then B.C. 446 would be the 6th and B.C. 416 the 17th year of that particular cycle. So again in the cycle which Al Biruni says was preferred by the Jews, B.C. 446 would be the 14th and B.C. 416 the 6th year.

The table appended to this paper of the 1st day of Tishri from B.C. 523 to B.C. 406 has been constructed in the following manner :— The Lunar cycle numbers are laid down for the whole period from the numbers fixed for B.C. 446 and B.C. 416, and the days of each Jewish year appended. The Jewish astronomical computation of the length of a Lunar cycle is 6939 days 16 hours and 595 chalakim.* As the table extends over six cycles, an empirical correction had to be made making some cycles 6940 days, so that the mean length of the six cycles is 6939 days 16 hours.†

It was then necessary to find reliable data for determining the 1st day of Tishri for any year, so that a calendar could be constructed so far on a sound basis. Fortunately this was afforded by the most interesting discovery a few years ago by Father Strassmeier of a Babylonian tablet recording a partial lunar eclipse at Babylon in the 7th year of Cambyses. This cuneiform tablet has been fully translated and discussed by Oppert (*Zeitschrift für Assyriologie*, vol. vi.). It has an entirely unique interest, as it is an account of one of the eclipses recorded by Ptolemy in the Almagest.

Ptolemy states that the eclipse occurred in the 7th year of Cambyses, in the 225th year of Nabonassar, on the night of the 17th and 18th of the Egyptian month Phamenoth. Strassmeier's Babylonian tablet gives the date as the 7th year of Cambyses, on the 14th day of the Jewish month Tammuz. The Julian date of the eclipse is determined by Pingré and Oppolzer as B.C. 523 July 16.

From this it is easy to calculate the date of the 1st Tishri as September 29 ; and as the 7th year of Cambyses is well identified as B.C. 523, the table appended is calculated entirely from this date—from B.C. 523 to B.C. 406. It gives the Year B.C.—Julian period — No. in Lunar cycle—Days in each year— Julian date of 1st Thoth—Julian date of the 1st Tishri; and Greenwich Mean Time of New Moon nearest to the 1st Tishri taken from Ginzel's *Handbuch der Mathematischen und Technischen Chronologie.*

In considering the coincidence of Julian and Jewish dates, it should be remembered that the Jewish day is defined in Genesis : "And there was evening and there was morning, one day,"—that is to say, the day begins at 6 o'clock in the evening and goes on to 6 o'clock the next evening, consequently one Jewish date extends over part of two Julian days.

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* 1080 chalakim equal 1 hour.

† I have avoided complicating the question by reference to the "regular," "deficient," and "abundant" years, as exactitude is impossible, and it seemed sufficient to secure the correctness of the mean Lunar cycle.

Discussion of Dates.

A.

15th year of Xerxes	... B.C. 471 ...	1st Thoth	... Dec. 19
		28th Pachons	... Sept. 12
		1st Tishri	... Sept. 24
		18th Elul	... Sept. 12

B.

1st year of Artaxerxes	... B.C. 464 ...	1st Thoth	... Dec. 17
		6th Thoth	... Dec. 22
		1st Tishri	... Oct. 6
		18th Chisleu	... Dec. 21

C.

This papyrus is too much injured for the dates to be deciphered. The authors state that it is written by the same scribe as D., and that there is strong evidence for considering both C. and D. as of the same date.

D.

The MS. states : " On the 21st Chisleu, that is the 1st Mesore, the 6th year of Artaxerxes the king." By no possibility can these dates—21st Chisleu and 1st Mesore—be harmonised. But there is a crease in the papyrus just before the words " 1 Mesore," and in this crease there is an indication of a character which cannot be deciphered until the crease is flattened out. It is probable that the Egyptian date has not been correctly deciphered. Mesore is the last month of the Egyptian year, and it is followed by the five Epagomenæ, which were kept as feast days. The question may be asked, whether in dating deeds such as those under consideration the five Epagomenæ were not treated as continuous dates of the previous month, Mesore? Dr. Budge informs me that he has no experience of such a case, but he sees no reason why it should not be suggested. I venture to hazard the suggestion that the first Epagomene was designated as the 31st Mesore. Upon this pure assumption we should have, as the best that can be done for D.,—

B.C. 460 ...	1st Thoth ...	Dec. 16
	31st Mesore ...	Dec. 11
	1st Tishri ...	Sept. 21
	21st Chisleu ...	Dec. 9

E

19th year of Artaxerxes	... B.C. 446 ...	1st Thoth	... Dec. 13
		10th Mesore	... Nov. 17
		1st Tishri	... Sept. 17
		3rd Chisleu	... Nov. 17

F.

25th year of Artaxerxes ... B.C. 440 ...	1st Thoth	... Dec. 11
	19th Pachons	... Aug. 26
	1st Tishri	... Oct. 10
	14th Ab	... Aug. 25

G.

The papyrus is very mutilated. The dates 26th Tishri and 6th Epiphi are fairly certain, but the regnal year of Artaxerxes is conjecture. The authors state that the date of this deed cannot be earlier than 446, and hardly later than 440. We have to find coincidence between 6th Epiphi and 26th Tishri. The table gives the following dates :—

B.C. 446	6th Epiphi ... Oct. 14	26th Tishri ... Oct. 12
445	,, 13	,, 30
444	,, 13	,, 19
443	,, 13	Nov. 7
442	,, 13	Oct. 28
441	,, 12	,, 16
440	,, 12	Nov. 4

From this it is probable that the year is B.C. 446, and this conclusion is supported by the fact that the scribe of G. is also the scribe of E., which is clearly B.C. 446. The regnal year would thus be the 19th of Artaxerxes.

H.

The papyrus states, "in the month Elul, that is Payni, the 3rd (4th ?) year of Darius."

3rd year of Darius	Payni began Sept. 2	ended Oct. 1
B.C. 421	Elul ,, Sept. 11	,, Oct. 9
4th year of Darius	Payni began Sept. 2	ended Oct. 1
B.C. 420	Elul ,, Aug. 31	,, Sept. 28

Clearly the 4th year of Darius, B.C. 420, suits the case best.

J.

8th year of Darius ... B.C. 416 ...	1st Thoth	... Dec. 5
	12th Thoth	... Dec. 16
	1st Tishri	... Oct. 15
	3rd Chisleu	... Dec. 15

K.

14th year of Darius ... B.C. 410 ...	1st Thoth	... Dec. 4 ... B.C. 411
	9th Athyr	... Feb. 10 ... B.C. 410
	1st Tishri	... Sept. 20 ... B.C. 411
	24th Shebat	... Feb. 8 ... B.C. 410

The final results are as follows :—

		Julian Date from Egyptian.	Computed Date from Table.
A.		Sept. 12	Sept. 12
B.		Dec. 22	Dec. 21
C.	Mutilated.		
D.	Uncertain.	Dec. 11 ?	Dec. 9 ?
E.		Nov. 17	Nov. 17
F.		Aug. 26	Aug. 25
G.		Oct. 14	Oct. 12
H.	B.C. 420		
J.		Dec. 16	Dec. 15
K.		Feb. 10	Feb. 8

The above results are too near coincidence to be fortuitous, and, so far as the civil year is concerned, they refute the opinion that the commencement of the month was determined by the appearance of the new moon.

Two conclusions from the foregoing investigation may be safely hazarded : first, that the Lunar cycle of 19 years was in use in the Jewish calendar at this remote period, which, as Professor Sayce says, was little more than a century after the grandfathers and great-grandfathers of the parties mentioned in the papyri had fled into Egypt with Jeremiah ; and secondly, that the order of intercalation at that time was not dissimilar to that in use to-day.

In drawing any conclusions, one may put aside possible errors of the scribe. It is highly improbable that in the first line of original and important deeds like these papyri the scribe would make such errors as would be common in copies.

These deductions do not harmonise with the views of the late distinguished chronologist M. Oppert. It may be assumed that what was current with the Jews at Babylon during the Captivity would have been continued by them in their subsequent migration. M. Oppert states that the apparition of the crescent moon signalised the commencement of the month, and in a paper "Sur l'ancien Calendrier Perse," * he claims to have proved that the Babylonians had no fixed system for their calendar until after the year B.C. 367; that prior to that period the 19-year cycle was in use, but the intercalary months were inserted without any order, and solely on astrological grounds ; and that it was the Greek influence which gave to Babylon a fixed system, assigning to each year of the cycle its particular character, whether common or embolismic, and he denies the correctness of Dr. Mahler's conclusions.

This view can hardly be sustained, for in making the Babylonian date B.C. 523, 14th Tammuz, the basis of the appended table, it is most improbable that we should arrive at such coincidence of the Egyptian and Jewish dates of the papyri if there had been no fixed system at all. The table connects in a systematic manner

* Oriental Congress, 1897. In this paper he calculates October 6th as the 1st day of Tishri, B.C. 521, as it is found in the present table.

Babylonian dates with the dates used by the Jews at Syene over a century later; and, notwithstanding M. Oppert's characteristic remark that " on fait l'histoire avec les livres historiques et non pas avec les éclipses," the rock upon which this investigation is built is the lunar eclipse at Babylon in the 7th year of Cambyses.

Table of the 1st Tishri from B.C. 523 *to* B.C. 406.

Year B.C.	Julian Period.	Lunar Cycle.	Days.	1st Thoth.	1st Tishri.	G.M.T. New ☾.
523	4191	16	354	Jan. 1	Sept. 29	Sept. 27·57
522	2	17	384		Sept. 18	17·05
521 β	3	18	354	Dec. 31	Oct. 6	5·13
520	4	19	384		Sept. 25	24·80
519	5	1	354		Oct. 14	13·85
518	6	2	354		Oct. 3	3·27
517 β	7	3	384	Dec. 30	Sept. 21	21·41
516	8	4	354		Oct. 10	10·16
515	9	5	355		Sept. 29	29·17
514	4200	6	384		Sept. 19	18·46
513 β	1	7	354	Dec. 29	Oct. 7	6·47
512	2	8	384		Sept. 26	26·11
511	3	9	354		Oct. 15	15·18
510	4	10	355		Oct. 4	4·77
509 β	5	11	384	Dec. 28	Sept. 23	23·13
508	6	12	354		Oct. 12	11·95
507	7	13	354		Oct. 1	30·93
506	8	14	384		Sept. 20	20·02
505 β	9	15	355	Dec. 27	Oct. 8	7·91
504	4210	16	354		Sept. 28	27·41
503	1	17	384		Sept. 17	17·07
502	2	18	354		Oct. 6	6·15
501 β	3	19	384	Dec. 26	Sept. 24	24·69
500	4	1	355		Oct. 13	13·61
499	5	2	354		Oct. 3	2·72
498	6	3	384		Sept. 22	21·72
497 β	7	4	354	Dec. 25	Oct. 10	9·50
496	8	5	355		Sept. 29	28·81
495	9	6	384		Sept. 19	18·38
494	4220	7	354		Oct. 8	7·47
493 β	1	8	384	Dec. 24	Sept. 26	26·10
492	2	9	354		Oct. 15	15·12
491	3	10	355		Oct. 4	4·45
490	4	11	384		Sept. 24	23·51
489 β	5	12	354	Dec. 23	Oct. 12	11·25
488	6	13	354		Oct. 1	30·34
487	7	14	384		Sept. 20	Sept. 19·72

Year B.C.	Julian Period.	Lunar Cycle.	Days.	1st Thoth.	1st Tishri.	G.M.T. New ☽.
486	4228	15	355	Dec. 23	Oct. 9	Sept. 8·77
485 β	9	16	354	Dec. 22	Sept. 28	27·42
484	4230	17	384		Sept. 17	17·06
483	1	18	354		Oct. 6	6·03
482	2	19	384		Sept. 25	25·26
481 β	3	1	355	Dec. 21	Oct. 13	13·04
480	4	2	354		Oct. 3	2·03
479	5	3	384		Sept. 22	21·21
478	6	4	354		Oct. 11	10·15
477 β	7	5	355	Dec. 20	Sept. 29	28·72
476	8	6	384		Sept. 19	18·41
475	9	7	354		Oct. 8	7·47
474	4240	8	384		Sept. 27	26·91
473 β	1	9	354	Dec. 19	Oct. 15	14·78
472	2	10	355		Oct. 4	3·81
471	3	11	384		Sept. 24	22·83
470	4	12	354		Oct. 13	11·67
469 β	5	13	354	Dec. 18	Oct. 1	30·08
468	6	14	384		Sept. 20	19·71
467	7	15	355		Oct. 9	8·78
466	8	16	354		Sept. 29	28·40
465 β	9	17	384	Dec. 17	Sept. 17	16·77
464	4250	18	354		Oct. 6	5·59
463	1	19	384		Sept. 25	24·59
462	2	1	354		Oct. 14	13·35
461 β	3	2	354	Dec. 16	Oct. 2	1·54
460	4	3	384		Sept. 21	21·02
459	5	4	354		Oct. 10	10·09
458	6	5	355		Sept. 29	29·76
457 β	7	6	384	Dec. 15	Sept. 18	18·33
456	8	7	354		Oct. 7	7·25
455	9	8	384		Sept. 26	26·39
454	4260	9	354		Oct. 15	15·15
453 β	1	10	355	Dec. 14	Oct. 3	3·15
452	2	11	384		Sept. 23	22·44
451	3	12	354		Oct. 12	11·44
450	4	13	354		Oct. 1	1·08
449 β	5	14	384	Dec. 13	Sept. 19	19·72
448	6	15	355		Oct. 8	8·75
447	7	16	354		Sept. 28	28·11
446	8	17	384		Sept. 17	17·18
445 β	9	18	354	Dec. 12	Oct. 5	4·91
444	4270	19	384		Sept. 24	23·99
443	1	1	355		Oct. 13	Sept. 12·89

Year B.C.	Julian Period.	Lunar Cycle.	Days.	1st Thoth.	1st Tishri.	G.M.T. New ☽.
442	4272	2	354	Dec. 12	Oct. 3	Sept. 2·38
441 β	3	3	384	Dec. 11	Sept. 21	21·04
440	4	4	354		Oct. 10	10·12
439	5	5	355		Sept. 29	29·66
438	6	6	384		Sept. 19	18·93
437 β	7	7	354	Dec. 10	Oct. 7	6·72
436	8	8	384		Sept. 26	25·70
435	·9	9	354		Oct. 15	14·49
434	4280	10	355		Oct. 4	3·78
433 β	1	11	384	Dec. 9	Sept. 23	22·35
432	2	12	354		Oct. 12	11·44
431	3	13	354		Oct. 1	1·07
430	4	14	384		Sept. 20	20·55
429 β	5	15	355	Dec. 8	Oct. 8	8·43
428	·6	16	354		Sept. 28	27·48
427	7	17	384		Sept. 17	16·48
426	8	18	354		Oct. 6	5·31
425 β	·9	19	384	Dec. 7	Sept. 24	23·70
424	4290	1	355		Oct. 13	12·74
423	1	2	354		Oct. 3	2·39
422	2	3	384		Sept. 22	22·03
421 β	3	4	354	Dec. 6	Oct. 10	10·01
420	4	5	355		Sept. 29	29·24
419	5	6	384		Sept. 19	18·26
418	6	7	354		Oct. 8	7·02
417 β	7	8	384	Dec. 5	Sept. 26	25·18
416	8	9	354		Oct. 15	14·12
415	9	10	355		Oct. 4	3·70
414	4300	11	384		Sept. 24	23·38
413 β	1	12	354	Dec. 4	Oct. 12	11·43
412	2	13	354		Oct. 1	30·45
411	3	14	384		Sept. 20	20·05
410	4	15	355		Oct. 9	8·81
409 β	5	16	354	Dec. 3	Sept. 28	26·80
408	6	17	384		Sept. 17	16·07
407	7	18	354		Oct. 6	5·04
406	8	19	384		Sept. 25	Sept. 24·67

CONTENTS.

Note on the Regnal Years in the Elephantine Papyri.
By J. K. Fotheringham, M.A.

(Communicated by E. B. Knobel.)

Mr. Knobel has attempted, in *Monthly Notices,* lxix. pp. 8–11, to discover historically the dates of accession of the Persian kings, and by a comparison of these dates with the regnal years recorded in the Elephantine papyri, to discover the system by which the regnal years were reckoned. He mentions three different systems on which it is supposed that regnal years were reckoned at the period in question (the fifth century B.C.),—(1) from the accession of the king; (2) from the 1st. Nisan following the accession; (3) from the 1st. Thoth preceding the accession. I doubt, however, whether it would be possible to produce tangible evidence of any system in use at that date which did not reckon from the New Year's day following the accession, though the New Year's day may have been different in different countries and in different calendars.

The historical data which Mr. Knobel uses are unfortunately very faulty. He quotes Oppert for evidence that Darius was living in September 485 B.C. But Oppert's dates for the reign of Darius have been shown to be one year too low, and this date should be corrected to September 486 B.C.* He next asserts that Xerxes was assassinated by Artabanus in the beginning of the archonship of Lysitheus, in the 4th. year of the 78th. Olympiad, from which he infers that the assassination of Xerxes was not earlier than July 465 B.C. The date is apparently derived from Diodorus,† who gives the name of the Athenian archon and the Roman consuls, but does not specify the time of year. Diodorus' reputation as a chronologist for the period between the Persian and Peloponnesian wars is unfortunately very low, and in any case we do not know that the authority from whom his date is derived reckoned the year from the entrance of the archon on office. Diodorus, in fact, always identifies the Athenian official year which began in summer with the Roman official year, which appears to have begun at very different seasons at different dates. I do not think any reliance can be placed on this date.

Mr. Knobel is even more unfortunate when he attempts to date the accession of Artaxerxes from Thucydides. According to him, "Thucydides records that in the 4th. year of the 78th. Olympiad, July 465 B.C. to June 464 B.C., Themistocles went up the country,"

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* See Professor Weissbach's article, " Über einige neuere Arbeiten zur babylonisch-persischen Chronologie," *Zeitschrift der deutschen morgenländischen Gesellschaft,* Band lv. (1901), pp. 195–220, especially p. 220 ; also his article, " Zur neubabylonischen und achämenidischen Chronologie," *ibid.,* Band lxii. (1908), pp. 629–647.
† xi. 69.

etc. As it happens, Thucydides * does not assign a date to this event and knows nothing of the reckoning by Olympiads.

Mr. Knobel's next citation is happier. He asserts that "the death of Artaxerxes is recorded by Thucydides as occurring in the winter of the archonship of Stratocles—the 4th. year of the 88th. Olympiad, about December 425 B.C." Here, again, Thucydides † says nothing about archons and Olympiads, but places the event in question in the winter of the 7th. year of the Peloponnesian war, *i.e.* in the winter of 425–4 B.C. This is consistent either with my view that Darius Nothus, who followed after the short reigns of Xerxes II. and Sogdianus, began to reign between Nisan (March or April) and Thoth (December) 424 B.C., or with Mr. Knobel's view that he began to reign in December 424 B.C. Similarly, the treaty between Sparta and Tissaphanes, which is one of the last events mentioned by Thucydides ‡ in his full narrative of the winter 412–411 B.C., and which is dated in the 13th. year of Darius, might well fall within that regnal year, whether we reckon it with Mr. Knobel from December 412 B.C., from a spring New Year in 412 B.C., or from some other date which may have served as New Year's day in Caria or Lydia. Diodorus' date for the death of Artaxerxes and the accession and death of Darius Nothus would suit Mr. Knobel's dates and mine equally well.

Mr. Knobel briefly dismisses the theory that the regnal years are reckoned from 1st. Nisan after the accession by pointing out that in this case the date of Papyrus A, 12th. September 471 B.C., would not fall in the 15th. year of Xerxes, but this conclusion is based upon Oppert's date for the accession of Xerxes, which is, as has been seen, one year too low. There can be no doubt about the identification of the regnal years of Xerxes, because this period is covered by the eighteen years' list which extends into a period when astronomical dates are numerous. The 15th. year, according to the Babylonian reckoning, must have begun in Nisan 471 B.C., although the Babylonian regnal years are reckoned from 1st. Nisan. The earliest dated tablet in the reign of Xerxes belongs to 22nd. Arab-samma in the year of his accession, probably 1st. December 486 B.C. Ptolemy reckons his first year from 1st. Thoth = 23rd. December 486 B.C.

Mr. Knobel goes on to suggest that the years are reckoned from the 1st. Thoth preceding the accession, except where two different regnal years are given in the same papyrus, and here he admits that the lower regnal year is computed from Nisan. To this I should reply, that the papyri afford no evidence which would enable us to determine whether the dates reckoned from Thoth are computed from the Thoth preceding or the Thoth following the accession, though the latter theory is more consistent with the practice of the age. It is also easier to believe that the Jewish dates are reckoned from Nisan, and the Egyptian from Thoth. There are only three instances in the series where the two systems of reckoning would give different regnal years. In two of these

* i. 137.   † iv. 50.   ‡ viii. 58.

three (J and K) both regnal years are given. In the remaining
instance (B) two regnal years are given, but are not annexed to
the different calendar dates, and presumably belong to one system
of reckoning. Here we read "The 21st. year (of Xerxes), the
beginning of the reign when Artaxerxes the king ascended the
throne." Now there is no dispute that the 1st. year of Artaxerxes
was the year following the 21st. year of Xerxes; if, therefore,
Mr. Knobel were right in supposing that the 1st. year of Artaxerxes
was reckoned from the New Year's day preceding his accession, it
would follow that his accession would fall in the year after the
21st. of Xerxes, *i.e.* the 22nd. of Xerxes, continuing the enumeration
of his years after his death. It is clear, therefore, that this date is
not reckoned from a New Year's day preceding the actual accession.
If Professor Schürer's identification, which I have accepted, be
correct, the date (2nd. January 464 B.C.) falls into the 21st. year of
Xerxes reckoned from Nisan, which is also the accession year of
Artaxerxes. From this it would follow that the Jewish dates are
computed from the New Year's day (in this case 1st. of Nisan)
before the king's accession. Mr. Knobel's objection to Professor
Schürer's date is, as has been seen, based upon a precarious inter-
pretation of a historian chronologically untrustworthy. The date
which he himself suggests (23rd. December 464 B.C.) is incon-
sistent with his own chronology, according to which the 2nd. year
of Artaxerxes, corresponding to the 23rd. of Xerxes, should have
begun on the 17th. of December 464 B.C. The date on this
papyrus is interesting as being the earliest known date in the reign
of Artaxerxes.

Mr. Knobel even goes the length of suggesting that the regnal
years in Palestine in the time of Nehemiah were computed from the
1st. of Thoth, on the ground that Chisleu in the 20th. year of Arta-
xerxes preceded Nisan in the same year. Surely it would be easier
to suppose that these years are reckoned, according to the Syrian
and modern Jewish practice, from the autumn New Year's day, the
1st. of Tishri.

On the whole, I see no reason for abandoning the opinion that
the Jewish dates on the Elephantine papyri are certainly, and the
Egyptian probably, reckoned from the New Year's day preceding
the actual accession of each king: in the case of the Jewish dates
this New Year's day would be the 1st. of Nisan, and in the case of
the Egyptian dates the 1st. of Thoth.

12 *Holywell, Oxford :*
1909 *March 6.*

On the Relation between Period and Density of Algol-Variables.
By the Rev. J. Stein, S.J., Sc.D.

(*Communicated by Prof. H. H. Turner, D.Sc., F.R.S.*)

1. As is well known, a maximum value of the mean density of an Algol-system can be derived from the period (P) and the total duration of eclipse $(2t_0)$.* If the orbit is supposed to be circular, this maximum-value D is given by

$$D = \frac{K}{P^2 \sin^3 nt_0}; \quad n = \frac{2\pi}{P}, \quad . \quad . \quad . \quad (1)$$

where P and t_0 may be expressed in hours, D in the mean density of the Sun as unity.

This value is identical with the *real* mean density (δ) if the two stars are of the same size, and if the inclination of the line of sight to the orbit is zero.

In order to determine the constant K we put—

P = one year = $365 \cdot 25 \times 24^h$; $nt_0 = 32' \; 3''\cdot 64$ = mean apparent diameter of the Sun ; consequently $D = \frac{1}{2}$ and $K = 31 \cdot 17$.
Thus

$$D = \frac{31 \cdot 17}{P^2 \sin^3 nt_0} \quad . \quad . \quad . \quad (2)$$

and $31 \cdot 17$ being $= 1 \cdot 005 \; \pi^3$, we can bring this into the simple form—

$$D = \frac{P}{(2t_0)^3} \left(\frac{nt_0}{\sin nt_0}\right)^3 \quad . \quad . \quad . \quad (3)$$

Mériau has shown that D is not very different from δ, if one star is not considerably larger in size than the other.

2. In the *Mitteilungen der Hamburger Sternwarte*, No. 11, Dr. Graff has deduced from his own observations the elements of the orbits of 10 Algol-variables. A slight extension was given to these by Professor Ristenpart (*Ast. Nach.*, No. 4250), who derived from the elements the mean density of the systems by the formula

$$\delta = \frac{a^3 C}{P^2 (1 + \kappa^3)} \quad . \quad . \quad . \quad (4)$$

where a is the radius of the relative orbit, κ the radius of the dark satellite, both expressed in the radius of the bright star as unity. If P is given in hours, then $C = \frac{1}{4} K$.

Arranging the stars according to decreasing periods, Ristenpart finds a nearly progressive increase of density ; and he adds that this might be expected with regard to formula (4) : " Natürlich

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* M. Mériau, " Densité des étoiles variables du type d'Algol," *Comptes Rendus de l'Acad. d. Sciences,* vol. 122 (1896), p. 1254.

MONTHLY NOTICES

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Calendar Dates in the Aramaic Papyri from Assuan.
By J. K. Fotheringham.

(*Communicated by E. B. Knobel.*)

Those who are interested in ancient calendars and their astronomical significance will be grateful to Mr. Knobel for the close examination that he has given the dates in the Assuan papyri in the *Monthly Notices* of March 1908. Mr. Knobel's verification of these dates is in the majority of cases beyond controversy, and is a marked improvement on the dates given by Mr. Cowley from a mere reckoning by the years of Persian kings without reference to astronomical data. There are, however, two instances where it seems to me that Mr. Knobel's dates are capable of emendation, and I think it is also doubtful whether he is right in the calendar principles by which he attempts to explain them.

The papyri edited by Professor Sayce and Mr. Cowley * belong to a series of Aramaic papyri, which also includes three papyri edited by Professor Sachau † and translated into English by Canon Driver, ‡ and one papyrus edited by Professor Euting.§ All these papyri contain lunar dates with Aramaic month-names, but in those edited by Professor Sayce and Mr. Cowley these dates are accompanied by the corresponding dates of the Egyptian calendar, doubtless because they are all of the nature of contracts dealing with rights of property in Egypt, whereas the papyri edited by Professor Sachau and Professor Euting, which are of the nature of petitions to Persian authorities outside Egypt, contain none but the Aramaic month-names.

It has been assumed by all writers whose works have met my eye that the months with Aramaic names belong to the Jewish calendar, probably because the papyri belonged to a Jewish community. The argument does not appear to me to be conclusive. It is well known that these names are of Babylonian origin, and were not adopted by the Jews till the captivity, nor were they adopted by the Jews only, but also by the other peoples of Syria and Mesopotamia. ‖ It may therefore be better to call these month-names Aramaic until it is determined to what calendar they belong.

A very brief inspection of the papyri will show that these Aramaic dates belong to a lunar calendar; and since the Egyptian calendar is well known, each year consisting of 365 days, it should be possible by a comparison of a table of Egyptian dates with a table of new moons to date precisely each papyrus that bears a double date, and to fix accurately the regnal years of Persian kings to which they are referred. The papyri that bear only an Aramaic

* *Aramaic papyri discovered at Assuan,* 1906.
† *Abhandlungen der königl. preuss. Akademie der Wissenschaften,* 1907.
‡ *The Guardian,* Nov. 6, 1907, p. 1827 f.
§ *Notice sur un papyrus Égypto-Araméen de la Bibliothèque impériale de Strasbourg,* 1903.
‖ See Schiaparelli, *Astronomy in the Old Testament,* Oxford, 1905, p. 111.

date cannot by themselves be dated with the same precision, but as they too are assigned to definite regnal years, the other papyri do in effect enable us to date them also.

In Mr. Knobel's citations of the text of the papyri and his interpretation there is little which calls for criticism. I have examined each date in detail, and am inclined to accept Professor Schürer's conclusion in almost every case.* Professor Schürer and Mr. Knobel are, as will be seen, certainly right in accepting the higher numerals, bracketed by Mr. Cowley, as the only ones capable of bringing the chronology into any consistency. In papyrus B, where Mr. Knobel accepts Mr. Cowley's conjectural restoration of a lacuna with the date 6th. (7th.?) of Thoth, Professor Schürer prefers to read 17th. Again in papyrus J, where Mr. Knobel, following Mr. Cowley, reads 7th. (8th.?) for the year of Darius according to the Egyptian reckoning, Professor Schürer reads 9th. and Mr. Knobel has informed me that he now accepts this reading. In this case Mr. Cowley acknowledged that there seemed to be traces of an additional stroke, but preferred the reading 7th. (8th.?) in order to make the numeral agree with that in the Aramaic reckoning, not realising that the double insertion of the regnal year was due here, as in the following papyrus, to a difference between the Aramaic and the Egyptian reckoning.

To examine the dates more closely, we need, as I have suggested, a comparative table of the Julian and Egyptian calendars, such as is provided by Professor Mahler,† and also a table of new moons, such as is provided by Professor Ginzel.‡ Professor Ginzel gives the new moons in decimals of a day, reckoned from Greenwich mean noon. I have converted these into hours and minutes, reckoned from Assuan midnight. The addition of nine minutes more will convert these dates into Jerusalem time. Professor Ginzel's calculations are based upon Oppolzer's values for lunar and solar constants, and are made by means of Dr. Schram's Mondtafel.§ The method of calculation is far from exact, and the error may easily amount to the greater part of an hour. We have also to allow for possible errors in Oppolzer's values for the constants. By substituting Professor Newcomb's values‖ for Oppolzer's we obtain a date three minutes later for the mean new moon of Elul, 471 B.C., and by substituting Mr. Cowell's values ¶ we obtain a date thirty minutes later than Oppolzer's for the same mean new moon. On the other hand, by substituting

* See his article in *Theologische Literaturzeitung*, Feb. 2, 1907. In one case I propose a correction of two days, and in one case I date a papyrus which he leaves undated. Otherwise my dates are the same as his.

† *Chronologische Vergleichungstabellen*—I. *Ägypt etc. griech.* 1888.

‡ *Handbuch der Chronologie* (1906), I, 551-3.

§ *Denkschriften der kaiserlichen Akademie der Wissenschaften Math.-naturw. Klasse*, xlv. (Vienna, 1882), reprinted in Schram's *Kalendariographische und Chronologische Tafeln*, 1908, pp. 356-9.

‖ I take these from Mr Cowell's paper in *Monthly Notices*, lxv. (1905), p. 863.

¶ *Monthly Notices*, lxvi. (1906), p. 525.

Professor Ginzel's own values, we obtain a date twenty-three
minutes earlier than Oppolzer's. For the mean new moon of
Shebat, 410 B.C., these differences must be reduced to two minutes,
twenty-eight minutes, and twenty minutes respectively. For the
intervening new moons the corrections resulting from the substitu-
tion of these values will fall between the extremes just given. Mr.
Knobel's lunar cycle must, I am afraid, be set aside, partly because
we do not know that the calendar with which we are dealing is
Jewish, partly because we have no accurate information about the
Jewish calendar in the fifth century B.C., and partly because the
initial date from which his supposed Jewish calendar is calculated,
the eclipse of 14 Tammuz, 523 B.C., really belongs not to the
Jewish, but to the Babylonian calendar. We must be content to
assume in each case that the lunar month began near the new moon,
and see what results from this. Taking the papyrus dates one by
one, we get the following results :—

A. 17 (18) Elul = 27 (28) Pachons in 14 (15) Xerxes. The
only date that could possibly correspond to 14 (15) Xerxes in
which either the 27th. or 28th. of Pachons could be the 17th. or
18th. day of a lunar month is 471 B.C., when 27 (28) Pachons was
the Julian 11 (12) September ; so that we have 17 (18) Elul = 11
(12) September 471, 1 Elul = 26 August 471. Professor Ginzel
gives for the new moon August 24^d 18^h 45^m ; if this is later than
sunset, Elul would appear to have begun at the sunset after new
moon. We also get 14 (15) Xerxes = 472–1 or 471–0.

B. 18 Chisleu (18 appears to be the correct figure) = 6 (7) [17 ?]
Thoth in Xerxes 20 (21), beginning of Artaxerxes. Now if Xerxes
14 (15) is 472–1, Xerxes 20 (21), should be 466–5. 6 (7) Thoth
would then be 23 (24) Dec. 466, and 17 Thoth would be 3 Jan.
465, impossible dates for the 18th of a lunar month, and exceedingly
early for the accession of Artaxerxes. But if Xerxes 14 (15) is
471–0, Xerxes 20 (21) should be 465–4, the year beginning some-
where before Elul, presumably in Nisan, and 17 Thoth will be
2 Jan. 464. Mr. Knobel proposes to identify 6 (7) Thoth with 22
(23) Dec. 464, but Xerxes 20 (21) cannot be extended so late unless
we suppose, firstly, that Xerxes 14 (15) is an error for Xerxes 13
(14), and, secondly, that the accession year of Artaxerxes is
contrary to the Assyrian and Babylonian method of reckoning, the
same as his "first year" and also the same as the 21st. year, the
last regnal year, of his predecessor. These assumptions are, I
think, too violent to be maintained. We are therefore compelled
with Professor Schürer, to adopt the synchronism : 18 Chisleu = 17
Thoth = 2 Jan. 464. It will be observed that as 21 is always given
as the last regnal year of Xerxes, the lower numbers, where Mr.
Cowley gives us alternatives, already appear highly improbable ;
for if we were to accept them, the 20th. year of Xerxes would be
the accession year of Artaxerxes. We now have 1 Chisleu =
16 Dec. 465, Chisleu beginning at the sunset after the new moon
of Dec. 15^d 1^h 0^m.

C is too much injured for the dates to be deciphered, but Mr.

Cowley appears to be right in suggesting that it is of the same date as D.

D. 21 Chisleu = 1 Mesore in 6 Artaxerxes. Mr. Knobel explains this on the bold assumption that 1 Mesore ought to be read 31 Mesore, and that 31 Mesore is a name, found nowhere else, for the first Epagomene. He also assumes that 6 Artaxerxes is at latest 460-459, four years later than the year which he identifies as the accession year of Artaxerxes, and, as will be seen hereafter, fourteen years earlier than 19 Artaxerxes. If he had, with Professor Schürer, chosen a date only one lunar month earlier, the most difficult of these assumptions would have been obviated. We then have 21 Chisleu = 1 Mesore = 11 Nov. 460. 1 Chisleu is then = 22 Oct. 460, and Chisleu begins at the sunset following the new moon of Oct. 21^d 2^h 12^m. The 6th. year of Artaxerxes is, however, still 460-459, five years after his accession year, but 14 years before what we shall find enumerated as his 19th. year. On either Mr. Knobel's or Professor Schürer's assumption, it appears to be necessary to correct the 6th. year to the 5th., but Professor Schürer's hypothesis involves no further difficulty, and may be accepted as correct.

Hesvan

E. 3 Chisleu = 10 Mesore in 19 Artaxerxes. Both Professor Schürer and Mr. Knobel identify this with 17 Nov. 446. This would give us for 1 Chisleu 15 Nov. 446, and Chisleu would begin at the second sunset before the new moon of Nov. 16^d 6^h 2^m, a surprising result, which we should nevertheless be compelled to accept were there not other evidence, to be mentioned hereafter, pointing to an error in this date. For 19 Artaxerxes we get 446-5, agreeing with an accession year of 465-4, but not with a 6th. year of 460-59.

F. 13 (14) Ab = 19 Pachons in 25 Artaxerxes. This is indisputably = 26th August 440. 1 Ab is therefore 14 (13) August. The date of the new moon is given by Professor Ginzel as Aug. 12^d 19^h 28^m, so that if we accept the reading 14 Ab, as seems to follow from the regnal years of Xerxes above, Ab would appear to begin at a sunset almost simultaneous with new moon, if anything slightly preceding it. The difference between the two is apparently within the range of error of Professor Ginzel's tables, of ancient Babylonian computations, and even of modern theory. 25 Artaxerxes is clearly 440-39.

G. 26 Tishri = 6 Epiphi. The number of the year is lost here, but Mr. Cowley argues that it cannot be earlier than 446 or later than 440. He himself prefers 440. As his dates for papyri E and F are confirmed by our astronomical investigations, we may accept these dates as they stand. Professor Schürer abandons the attempt to date this papyrus. Mr. Knobel proposes 14 Oct. 446. The only dates astronomically possible appear to be 14 Oct. 446 and 13 Oct. 443. The former gives for 1 Tishri 19 Sept. 446, the month beginning at the sunset after the new moon of Sept. 17^d 18^h 31^m, and the latter gives 18 Sept. 443, the month beginning at the fourth sunset after the new moon of Sept. 13^d 22^h 48^m.

As nearly all the dates in the series involve a commencement
of the lunar month at the sunset immediately following the new
moon, I prefer to accept Mr. Knobel's date, in spite of a further
difficulty which it involves. We now have in 446 the two dates
26 Tishri and 3 Chisleu separated by only 34 days, but even if we
suppose that in this year both Tishri and Marheshvan were 29-day
months the interval ought to be 35. If either had 30 days, as was
probably the case, the interval should be 36. Now, Chisleu appears
in D to begin two days too soon, on the second evening before the
new moon instead of on the evening after the new moon. There
are therefore two independent reasons for assuming an error of two
days in the date of E, and for correcting either 3 Chisleu to 1
Chisleu or 10 Mesore to 12 Mesore. It will be observed that this
error is assumed as much by Mr. Knobel's theory as by my own, in
spite of Mr. Knobel's protestation against assuming any error in the
dates contained in these papyri. It may be remarked that errors
in other parts of the papyri are not uncommon.

H. Elul = Payni in 3 (4) Darius. Payni, as Mr. Knobel points
out, would in 420, which is the most probable date, run from 2
September to 1 October, and is almost conterminous with a lunar
month. This does not permit us to fix the beginning of the month
with certainty, but renders September 29 the probable date for the
new moon of Tishri.

J. 3 Chisleu, 7 (8) Darius = 11 (12) Thoth, 7 (8) [9 ?] Darius.
If, as Professor Schürer suggests, and as seems probable, 9 is the
correct reading in the Egyptian date, we have the regnal year
repeated, because it was different in the two calendars used. The
date is clearly 15 (16) Dec. 416, so that 1 Chisleu is 13 (14) Dec.
If we accept the higher figure, as seems to be indicated by the date
in B, and as will be seen by the date in K, Chisleu will begin at
the sunset following the new moon of Dec. $12^d 23^h 33^m$. The 8th.
year of Darius, according to the Aramaic reckoning, will be 416–5 ;
and if we accept Professor Schürer's reading, the 9th. according to
Egyptian reckoning will also be 416–5.

K. 23 (24) Shebat ; 13 Darius = 8 (9) Athyr, 13 (14) Darius.
The date here is clearly 10 Feb. 410, five years later than J.,
whether we begin the year in Nisan, in Tishri, or in Thoth. This
makes it clear that 8, not 7, was the correct figure for the Aramaic
year in J., so that the higher figures bracketed by Mr. Cowley are
to be preferred to the lower figures in his text. The Aramaic 13
Darius and the Egyptian 14 Darius must both be 411–0, the
former apparently beginning in Nisan,* the latter in Thoth.
If 24 Shebat = 10 Feb., 1 Shebat will be 18 Jan., the month
beginning at the sunset after the new moon of Jan. $17^d 3^h 9^m$.

This finishes the dates on the papyri edited by Professor
Sayce and Mr. Cowley, but the data thus obtained enable us to date
the remaining papyri more closely than would be otherwise possible.
Tammuz in the 14th year of Darius, mentioned in the papyrus

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* From the comment on B above, it appeared that the Aramaic years
began somewhere before Elul.

edited by Professor Euting, and in the first and third of those
edited by Professor Sachau, clearly belongs to 410 B.C., while
20 Marheshvan in the 17th year of Darius, on which the second and
third of Professor Sachau's papyri are dated, just as clearly belongs
to 407 B.C.

It may be well to arrange in parallel columns the dates pro-
posed by Mr. Cowley, and those supported in the present article, to
show how far the astronomical investigation affects the dates of the
papyri.

Papyrus.	Mr. Cowley's Date.	Date now proposed.
A	471	471 Sept. 12
B	465	464 Jan. 2
C	459	460 Nov. 11 (?)
D	459	460 ,, 11
E	446	446 ,, 17 (19 ?)
F	440	440 Aug. 26
G	440	446 Oct. 14
H	421	420 Sept.
J	417	416 Dec. 16
K	411	410 Feb. 10

The next problem is to determine how far the dates obtained in
the foregoing inquiry enable us to infer a theory of intercalation.
Professor Schürer has calculated the date of 14 Nisan from each of
the dates above. In order to compare better with Mr. Knobel's
table, I have preferred to compute the new moon of Tishri, assum-
ing in each case that Tishri is not preceded by an intercalary month,
as it sometimes is in the Babylonian calendar. The dates given
below are those of the astronomical new moon, as given in
Professor Ginzel's tables.

Year B.C.	New Moon of Tishri.
471	23 Sept.
465	16 Oct.
460	23 Aug.
446	17 Sept.
440	10 Oct.
420	29 Sept.
416	14 Oct.
411	20 Sept.

All these dates except 23 Aug. 460 are consistent with a
systematic intercalation. But even if we could abandon the August
date, it would not follow that the intercalations were actually
governed by rule, and not by the discretion of an authority pos-
sessing some astronomical knowledge. But the August date
suggests that the intercalations were not regular. Professor
Schürer thinks that they were determined on principles similar to

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those which guided the sanhedrim at a later date when the weather
and the state of the crops were considered as well as the course of
the sun. For my own part, I cannot but think of the irregular
intercalations of the Babylonian calendar, as proved by the contract
tablets used by the late M. Oppert.* M. Oppert believed that the
regular intercalations of the 19 years cycle were disturbed from
time to time by the natural desire to prevent important astrological
phenomena from falling on unlucky dates. Whatever the cause, the
fact appears to be certain ; and I should have inferred that the dates
in these papyri were Babylonian but for a difficulty that will be
mentioned later.

It will have been observed that, with two doubtful exceptions
(E and F), all the lunar months in these papyri begin with the
sunset following the new moon. The exception in E appears, as
has been seen, to be due to an error in the papyrus, and when
corrected, confirms the rule. If we substitute the mean new
moon for the true new moon, we get rid of the exception in F.
There we have 1 Ab = 13 August 440, with August 12^d 19^h 28^m
as the date of new moon. Dr. Guinness † gives for the mean new
moon August 12^d 14^h 7^m, Jerusalem mean time reckoned from mid-
night, so that if mean new moons were the basis of this calendar and
not true new moons, the exception would disappear. On the other
hand, the mean new moon in K might possibly be a little too early.
Dr. Guinness gives for this 410 January 16^d 17^h 23^m, whereas 1
Shebat is 18 January. The date given by Dr. Guinness falls just
after sunset at Jerusalem, but before sunset at Assuan ; it must,
however, be remembered that the modern Jewish calendar is cal-
culated on the basis of a mean sunset at 6 p.m., and a calendar
based on a mean new moon would probably also be based on a
mean sunset.

Most of the modern values for lunar and solar constants would
give a slightly earlier date. Reckoning by means of Oppolzer's
tables with Hansen's constants, I get 4^h 25^m p.m. Assuan mean
time ; with Professor Ginzel's constants I get 4^h 48^m, with
Oppolzer's 5^h 8^m, with Professor Newcomb's 5^h 10^m, and with Mr.
Cowell's 5^h 24^m. The last of these would give 5^h 33^m p.m. for
Jerusalem.

It is far from certain, however, how the compilers of an ancient
calendar would reckon the mean new moon. The modern Jewish
calendar would give 17^h 14^m (Jerusalem time) as the date of mean
new moon on 16 January 410 B.C., but it is not likely that the
mean new moons of the modern calendar are older than the great
calendar reform of the fourth century A.D., though it is surprising
that the date should be so accurate at such a distance of time.

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* See his article, "La fixation exacte de la chronologie des derniers rois
de Babylone," *Zeitschrift für Assyriologie,* 1893, pp. 56–74. Professor Ginzel
gives a list of all known intercalary years in the Babylonian calendar,
Handbuch der Chronologie, 1 pp. 133, 134. They clearly do not conform to a
nineteen years' cycle.

† *Creation centred in Christ,* Astronomical Appendix (1896).

The question then arises whether it is possible to fix the mean new moon later than 6 p.m. on 16 January 410, without moving any of the other mean new moons from one day to the next, and, if so, what value the authors of this calendar used for the mean lunation. Of all the other mean new moons in the series earlier than 6 p.m., the one that comes nearest to that hour is the mean new moon of 21 October 460, which Dr. Guinness gives as $14^h\ 14^m$, and which the modern Jewish calendar dates $14^h\ 16^m$. This mean new moon need only be transferred to $15^h\ 2^m$, still well before sunset, if the mean new moon of 16 January 410 is to be transferred to 6 p.m. There is, therefore, no difficulty in supposing that the Aramaic months began at the sunset following mean new moon; and it is, of course, easier to suppose that those who had control of the calendar calculated the mean new moon than the true new moon. I have made a further investigation to see what duration of the synodical month is involved in these dates, on the supposition that no month begins before the mean new moon, and none more than twenty-four hours after the mean new moon. I find that these dates can only be reconciled with such a principle on the supposition that the synodical month was reckoned at not less than $29^d\ 12^h\ 43^m\ 53^s{\cdot}50$, and not more than $29^d\ 12^h\ 44^m\ 51^s{\cdot}15$. This calendar implies, therefore, a more exact value for the lunation than that adopted by the Greek astronomer Meton in 432 B.C. No such exact calculation seems to have been propounded in Greece before the time of Callippus, whose first cycle began in 330 B.C. But a value for the synodical month falling within the limits mentioned could be inferred at once from the eighteen years cycle of eclipses, and must have been known wherever that cycle was used. The knowledge necessary for the prediction of eclipses was possessed by Thales in 585 B.C., and must have existed at Babylon at an earlier date.

But this calendar is not Babylonian. All our evidence seems to show that the Babylonian months began with the first appearance of the crescent, though whether at the calculated or at the empirical date of the appearance is not so certain. In the Babylonian tables of appearances of the moon published by Epping,* the interval between new moon and the first appearance of the crescent varies from 18·8 hours to 52·2 hours, and only on two occasions out of thirty-three does the moon appear at the first sunset after the new moon. It follows that the months on these papyri generally began one day earlier than the Babylonian months. But if the calendar was not Babylonian, neither was it the same as that used by the Jews in the age preceding the Mishna. The Jews of that period found the beginning of the month by simple observation, and therefore this theory, though maintained by Professor Schürer, is open to the same objection as that which would regard the dates as Babylonian. The calendar rules suggested by Mr. Knobel will not hold, because in only two instances do they give exactly the same dates as those of the papyri. I have tested the modern

* *Astronomisches aus Babylon* (1889), pp. 18–24.

Jewish rules, by which each day of the year can only fall on one
or other of certain days of the week, and by which the different
months, with the exception of Marheshvan and Chisleu have fixed
durations, Tishri alone being computed directly from the mean new
moon; and I find that neither of these rules will apply to the
calendar dates before us. It remains that these dates belong to a
hitherto unknown calendar, where intercalation appears to be more
or less arbitrary, but where the length of each month is rigidly
fixed by the rule that each begins at the sunset after the mean
new moon. The mean new moon may have been simply calcu-
lated from an astronomical value, or a cycle may have been framed
which would give effect to the rule. The shortest such cycle,
consistent with the length found above for the synodical month,
would be one of 49 months, based on a value (as it happens, a very
accurate value) of $29\frac{26}{49}$ days for the lunation. Such a cycle would
be composed of two periods of 17 months and one of 15. If we
arrange each of these periods with months of 29 and 30 days
alternately, beginning each period with a 29-day month, and giving
the last month of each period 30 days instead of 29, and if we
place the 15-month period last of the three, the calendar dates of these
papyri will be found to accord with such a cycle, on the assumption
that the first month mentioned on our papyri, Elul 471 B.C., is
the 6th, 8th, 23rd, 25th, 38th, 40th, or 42nd of the cycle.
Working with such a cycle, and assuming that the new moon of
Tishri 407 B.C., like all but one of the Aramaic Tishris that we have
been able to date, falls not earlier than 17 September, nor later than
16 October, we find that 20 Marheshvan 407 in the second and
third of Professor Sachau's papyri, the one exact Aramaic date
which is given without a corresponding Egyptian date, will be
either 24 November or 25 November 407 B.C.

This calendar, whether its dates were computed by direct astro-
nomical calculation or by a lunar cycle, is clearly much more
scientific than the merely empirical rules used by the Jews of the
first and second centuries of our era. If this was the calendar of
the Jews of Palestine, their calendar must have afterwards devel-
oped in a retrograde direction. It seems easier to suppose that as
the Jews of Elephantine had a temple of their own, they had their
own council of priests or elders who regulated the beginning of
the month by strict rules and the beginning of the year according
to their own discretion. Whether the astronomical knowledge
involved was acquired from Egypt or from Babylon, I cannot say.
We have not, so far as I know, any evidence as to the Egyptian
value for the synodical month at the date to which these papyri
belong.

12 *Holywell, Oxford* :
    1908 *July* 25.

Oppolzer's and Ginzel's Corrections to Hansen.
By J. K. Fotheringham.

Oppolzer, in his *Syzygientafeln* (1881), p. 15, proposes certain corrections to Hansen's values for the mean motions and accelerations of the Moon. As these corrections have been applied in the calculation of Oppolzer's *Canon der Finsternisse* (1887), it is important that they should be correctly interpreted by those who have occasion to use the *Canon der Finsternisse*.

Oppolzer gives his corrections in the form—

$$\Delta T = + 0\cdot0006\,s \quad + 0\cdot00009\,s^2 \quad + 0\cdot000 \quad 00009\,s^3$$
$$\Delta(g + \omega) = - 0\cdot019\,s \quad - 0\cdot0004\,s^2 \quad - 0\cdot000 \quad 0004\,s^3$$
$$\Delta g = \quad\quad + 0\cdot003\,s^2 \quad + 0\cdot000 \quad 003\,s^3$$

where s is the interval in centuries since 1800·0,
T is the time of mean syzygy expressed in decimals of a day,
g is the mean anomaly of the Moon,
ω is the longitude of lunar perigee measured from the ascending node.

As Oppolzer's tables exist for the purpose of computing the elements of a syzygy, not of constructing an ephemeris, his corrections naturally apply to the moment of mean syzygy, not to a fixed moment of time; further, since his tables express g in centesimal degrees, and $g + \omega$ in sexagesimal degrees, it seems reasonable to suppose that the corrections are expressed in the same form. In order to make sure that these principles of interpretation are correct, I have computed the corrections for −101 and −462, and find that they only agree with the corrections actually applied if interpreted as described above. Unfortunately, Oppolzer gives no warning as to the interpretation of his corrections, and they have in consequence been frequently misunderstood. The misunderstanding is rendered the easier by the use of the symbol ° for centesimal degrees. I have not found any other passage in Oppolzer where that symbol is used for any but sexagesimal degrees.

Professor Ginzel, in his *Astronomische Untersuchungen über Finsternisse* in *Sitzungsberichte der kaiserlichen Akademie der Wissenschaften math. naturw. Classe*, lxxxix. (2). (1884), uses Oppolzer's *Syzygientafeln* as the basis of his corrections, and, while realising that the corrections are to be applied to the moment of mean syzygy, interprets Δg as if it were expressed in sexagesimal degrees. The corrections thus obtained are, however, tested by the eclipses used and made the basis of further corrections, which are not affected by the misunderstanding of Oppolzer's Δg. Dr. Schram, in his *Reductionstafeln* (*Denkschriften der k. Akademie der W. math. naturw. cl.*, lvi.) (1889), in reducing Professor Ginzel's

MONTHLY NOTICES

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j	j'	i	s'		j	j'	i	s'
2	0	−4	+0″02		0	2	−4	−0″02
		−2	− ·75				−2	− ·09
		−1	− ·01					
					0	−2	−2	+ ·02
−2	0	−4	+ ·02				2	+ ·02
		−2	+ ·38					
		0	− ·74		1	1	−4	− ·03
		2	− 1·14				−2	− ·35
		4	− ·02				0	+ ·02
3	0	−2	− ·07		−1	−1	−2	− ·02
		0	− ·04				0	+ ·31
		2	− ·02				2	− ·07
−3	0	−2	+ ·04		1	−1	−4	+ ·01
		0	− ·11				−2	+ ·07
		2	+ ·02				0	+ ·03
		4	− ·08				2	+ ·02
4	0	−2	+ ·01		−1	1	−4	− ·01
		0	+ ·02				−2	+ ·19
							0	− ·33
−4	0	0	− ·02					
					2	1	0	− ·02
0	1	−4	− ·17					
		−3	+ ·02		−2	−1	0	+ ·02
		−2	− 2·26				2	+ ·02
		0	+ ·10					
		2	− ·02		2	−1	−2	− ·01
							0	+ ·02
0	−1	−4	+ ·08					
		−2	+ 1·30		−2	1	−2	+ ·01
		−1	− ·06				0	− ·02
		0	+ ·16					
		2	+ ·04					

New Haven, Conn. :
1911 May 6.

A Reply to Professor Ginzel on the Calendar Dates in the Elephantine Papyri. By J. K. Fotheringham, Litt.D.

Professor Ginzel, in the second volume of his Chronological Manual,* discusses the calendar dates in the Elephantine papyri, which had been previously discussed by Mr. Knobel and myself in *Monthly Notices,* lxviii. 334–345 ; lxix. 12–20. The section devoted by Professor Ginzel to this subject is an expansion, with full references to the literature of the subject, of Schürer's article, *Der jüdische Kalender nach den aramäischen Papyri von Assuan,*† for which Professor Ginzel himself had supplied the chronological material. Professor Ginzel and I are in general agreement about the identification of the dates found in these papyri and about the irregularity of the intercalation, though he does not mention my correction of two days in the date of papyrus E and the date which I assign to papyrus G, which he had left undated. We differ, however, in our opinions about the method by which the beginning of each Jewish month was determined. According to Professor Ginzel, this was obtained by observation of the lunar crescent ; while I hold that it was obtained by calculation, each month beginning at the sunset following the mean new moon.

Professor Ginzel estimates that if we assume that the Moon made its first appearance at the age of $1\frac{1}{4}$ or $1\frac{1}{2}$ days, the dates of first appearance will satisfy the requirements of the papyri ; and in order to exemplify this, he gives a list of dates of the astronomical new moons in question, expressed in Aswan mean time reckoned from noon, and also of the assumed dates of the first appearance of the crescent. In order to make the relation of the two more clear, I have substituted for the latter the times of the sunsets at Aswan at which the different calendar months are shown by the papyri to have begun, *i.e.* the time of the sunset at the beginning of the first day of each month, and I have added the resultant interval between new moon and this initial sunset. I have added to the list the dates which I have obtained from papyrus G. I thus obtain—

	Date of New Moon.		Date of Initial Sunset.		Difference, Sunset – New Moon. d
A	− 470 August	24·28	August	25·27	0·99
B	− 464 December	14·54	December	15·22	0·68
D	− 459 October	20·59	October	21·23	0·64
G	− 445 September	17·27	September	18·25	0·98
E	− 445 November	15·75	November	14·22	− 1·53
F	− 439 August	12·31	August	12·27	− 0·04
J	− 415 December	12·48	December	13·22	0·74
K	− 409 January	16·63	January	17·23	0·60

* *Handbuch der mathematischen und technischen Chronologie,* ii. (1911), pp. 45–52.
† *Theologische Literaturzeitung,* Feb. 2, 1907.

As I mentioned in my previous paper, the date of E is not only unique in implying a calendar month beginning at the second sunset before new moon, but is inconsistent with the date of G, which suggests an error of two days in the date of E. If E is omitted from consideration, the calendar months will be seen to begin, with one exception, at the sunset following the astronomical new moon, but the interval falls far short of the $1\frac{1}{4}$ or $1\frac{1}{2}$ days which Professor Ginzel desiderates. The question, therefore, arises whether the Moon could possibly have been seen at the comparatively short intervals after conjunction, resulting from the above table. In order to test this, I have availed myself of the rule which I published in *Monthly Notices,* lxx. 530, and which Professor Ginzel has reprinted in his Manual,* and have computed the true altitude of the Moon and the true difference in azimuth of Sun and Moon at Elephantine for each of the sunsets above, except that of the erroneously dated papyrus E. Professor Ginzel remarks † that the result of my rule may be essentially modified by atmospheric conditions, and that the lunar places obtained from our tables for distant dates are only vaguely approximate. I think I may estimate the maximum error in my altitudes, resulting from the latter cause, at $\pm 0°·2$. I find in this way—

	Difference in Azimuth, Sun – Moon.	Altitude of Moon.	Altitude required to render Moon visible.
A	6·8	10·1	11·7
B	3·1	9·2	11·9
D	2·8	8·7	11·9
G	11·7	5·2	11·3
F	− 0·7	− 0·1	12·0
J	8·3	4·5	11·6
K	0·4	8·5	12·0

The difference between the figures in the second and third columns of this table is so striking that, when all allowance is made for the possibility of the air at Elephantine being clearer than at Athens, at which the observations which I used were made, and for the possibility of the Moon being occasionally seen at a lower altitude than would normally be possible in fair weather, it remains evident that in all or nearly all these instances the Moon would not be visible on the evening of the sunset with which the calendar month began.

I feel bound, therefore, to reject Professor Ginzel's opinion that the beginning of the month was determined by observation of the lunar crescent, and to hold to the view which I formerly expressed, that strict calendar rules were employed which aimed at making

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* ii. 318.   † *Ubi supra.*

each month begin at the sunset following mean new moon. As I stated in my former article, the dates in the papyri before us imply a value for the mean lunation of not less than $29^d \ 12^h \ 43^m \ 44^s \cdot 63$, and not more than $29^d \ 12^h \ 44^m \ 51^s \cdot 15$.*

Magdalen College, Oxford :
    1911 *June* 8.

On the Hartmann-Cornu Formula for the Reduction of Spectrograms. By F. J. M. Stratton, M.A.

§ 1. *The Hartmann-Cornu Formula.*—The method in most general use for the reduction of prismatic spectrograms is the very convenient one developed by Dr. Hartmann in No. 42 of the *Publicationen des Astrophysikalischen Observatoriums zu Potsdam* (appendix to vol. xii.). If n is the measured scale-reading of a line of wave-length λ, and if we plot the points (λ, n) corresponding to a given spectrogram, then the points obtained lie on a curve which can be very well represented by the formula

$$n - n_0 = \frac{c}{(\lambda - \lambda_0)^a} \qquad . \qquad . \qquad . \qquad . \qquad (1)$$

where a is a constant depending on the spectrograph employed ; n_0, c, λ_0 are constants determined for each plate by making the curve pass through three of the plotted points, *i.e.* by using three of the measured lines as standards.

§ 2. *Proposed modification of the method.*—This paper extends the use of the above formula so as to admit of more than three lines being used as standards in the reduction. The growing number of lines of accurately known wave-lengths, based on the international system, renders possible a wider choice of suitable standard lines in a comparison spectrum to a star photograph, while the use of a one-line comparison spectrum in the determination of radial velocities by an objective prism makes it desirable to find some method of using more than three star lines in order that sufficient accuracy may be obtained. Another reason for using a large number of lines in the reduction lies in the systematic difference found by Hartmann † and Newall in the behaviour of faint and and strong lines. Professor Newall suggests, as a probable explanation of this difference, varying refrangibility across the prism, which affects the strong lines due to light coming through the whole of the prism. In a star spectrum the lines measured frequently differ considerably in density. Errors arising from this fact might be to some extent smoothed out if numerous comparison lines could be chosen of varying density.

* See my paper in *Monthly Notices*, lxix. 19, and erratum.
† *Ast. Nach.*, Bd. 155, 93.

ARAMAIC PAPYRI

OF THE

FIFTH CENTURY B.C.

EDITED, WITH TRANSLATION AND NOTES,

BY

A. COWLEY

OXFORD

AT THE CLARENDON PRESS

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INTRODUCTION

THE present volume comprises all the legible pre-Christian Aramaic papyri known to me.[1] The best preserved and the most important are nos. 5, 6, 8, 9, 11, 13–15, 20, 25, 28, published by Sayce and Cowley in *Aramaic Papyri Discovered at Assuan* (London, 1906); no. 27 published by Euting in *Mémoires présentés ... à l'Académie des Inscriptions* (Paris, 1903); and many of those published by Sachau in *Aramäische Papyrus* ... (Leipzig, 1911). The rest are fragments from Sachau, some much mutilated texts from the *Corpus Inscriptionum Semiticarum* ii, 1, two others published by me in *PSBA* 1907, p. 263 (with notes by Sayce), and 1915, p. 217, and one fragment of accounts, not previously published, which was brought to my notice by Mr. F. Ll. Griffith, in the Harrow School museum.[2] The genuineness of the papyri published by Sayce-Cowley and Sachau has been questioned[3] on the ground that the double dates in some of them do not seem to be consistent. I do not propose to deal with the dates, because they have been discussed by such competent authorities as Mr. Knobel,[4] Dr. Fotheringham,[5] and Dr. Smyly,[6] and the possible errors are not a sufficient ground for condemning the texts. A more serious attack has been made by Prof. Margoliouth,[7] whose opinion deserves every consideration. His arguments however have not gained acceptance, and a careful study

[1] For a bibliography of the texts known up to 1906 see Seymour de Ricci in Sayce and Cowley, p. 25. Some post-Christian pieces were published in the *Jewish Quarterly Review*, xvi (1903), p. 1.

[2] The late Mr. B. P. Lascelles kindly procured photographs of this for me.

[3] By L. Belléli in *An Independent Examination* ... 1909, and by G. Jahn in *Die Elephantiner Papyri*, 1913; reviewed by Rothstein in *ZDMG* 1913, p. 718, to whom Jahn replied in *ZDMG* 1914, p. 142.

[4] *Monthly Notices of the R. Astron. Soc.*, March 1908, p. 334, and Nov. 1908, p. 8.

[5] Ibid., Nov. 1908, p. 12; March 1909, p. 446; June 1911, p. 661, against Ginzel's *Handbuch der ... Chronologie* ii (1911), p. 45.

[6] *Proc. R. Irish Academy* 1909, C, p. 235.

[7] *Expositor* 1912, p. 69.

of the texts will furnish the unprejudiced reader with answers to them.

The collection consists of letters, legal documents, lists of names, accounts, and three literary pieces. Some of these are complete, others are more or less fragmentary. A large proportion of them are dated, unmistakably, and these have been arranged here chronologically, so as to form an historical sequence. In many cases the date is given both in the Egyptian and the Jewish reckoning, and there may be errors in these equations (see above, p. xiii). Some texts which are not dated can be fitted into the sequence from their contents : others, which give no certain clue as to date, are put at the end. The dated texts cover practically the whole of the fifth century B.C., and on palaeographical grounds the undated texts (with a few exceptions) may be assigned to the same century. They thus confirm the brilliant discovery of Mr. Clermont-Ganneau[1] that the similar texts in the *CIS* (which were all he had to go upon) belong to the period of the Persian rule in Egypt. The exceptions are nos. 81–83, in a much later style of writing. Since, however, it is unlikely that Aramaic continued in popular use in Egypt long after the time of Alexander the Great, we may with some confidence date these before or about 300 B.C.

The interest of documents such as these is that they are contemporary with the events to which they relate. They present therefore a trustworthy picture of their surroundings, not distorted by lapse of time, nor obscured by textual corruption. These particular documents have the additional interest that they were written by Jews. They are therefore the earliest Jewish texts we possess, with the exception of the Siloam inscription and the ostraka from Samaria, and (with those exceptions) the only Jewish literature of so early a date, outside the Old Testament. The literary pieces, it is true, are evidently of non-Jewish origin, but they show nevertheless the kind of literature which was current in the community. And their interest consists not only in what they say but in what they omit : in

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[1] 'Origine perse des monuments araméens d'Égypte ', in the *Rev. Archéol.* New Series 36 (1878), p. 93, and 37 (1879), p. 21.

the light they give and in the darkness in which they leave us
(see below).

The language in which they are written is Aramaic, the same
(with some reservations) as that of parts of the book of Ezra.
Though there are Hebraisms in it and the names are Hebrew,
there is no document in Hebrew, nor any direct evidence that
Hebrew was used by the community for any purpose. (But see
p. 119). As long as the Oriental empires continued to dominate
the civilized world, Aramaic was the language of commerce and
diplomacy, succeeded in Ptolemaic times by Greek. We have
proof of its use in Assyria in the 'dockets' written in ink on the
edge of cuneiform tablets as early as the seventh century B.C.[1]
It was no doubt used even earlier, since Babylonian sculptures
show scribes writing on scrolls, which would not be used for
cuneiform, and it was not used only by Jews, nor (in this com-
munity) because it was in any sense a Jewish language. Assur-
banipal had Aramaean scribes in his employ, Darius apparently
sent abroad an Aramaic version of his great inscription at
Behistun, and (in no. 26) a Persian satrap sends his orders to an
Egyptian boat-builder in Aramaic.[2] It was evidently also an
official language in the law-courts. It was only in Egypt, how-
ever, that papyrus could survive. Early documents on any such
material inevitably perished in the climate of Mesopotamia or
Palestine. In Egypt Aramaic probably gave way to Greek by
about 300 B.C. In the East it continued, gradually becoming
more corrupt, among the Jewish schools down to mediaeval
times, and in some Christian communities to the present day.

The authors of most of these texts were Jews if names mean
anything — not Samaritans, as argued by Hoonacker [3]— nor
Israelites. They call themselves יהודיא 'the Jews', and their
community חילא יהודיא ' the Jewish force'. Sometimes the term
ארמי is used, but no other designation is found, and the name

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[1] See Clay, 'Aramaic Indorsements', in *O.T. Studies in Memory of W. R. Harper*
(1908), p. 285, and Delaporte, *Épigraphes araméens*, 1912, &c.
[2] In Ezra 6² the official record of the decree of Cyrus was on a מגלה (a scroll)
which probably implies Aramaic writing.
[3] In his Schweich Lectures for 1914 (*Une Communauté Judéo-Araméenne . . .*,
London, 1915).

Israel does not occur. These Jews seem to have been domiciled specially in Elephantine. Other western Asiatics were settled in Syene under the general name Aramaean. But 'Aramaean' might also include Jews,[1] so that we sometimes find a man described in one place (correctly) as a Jew of Elephantine, and in another (more loosely) as an Aramaean of Syene when he had in some way become connected with that station. Three times (25², &c.) we find an 'Aramaean of Elephantine', where the man is evidently a Jew, but the description may be due to mere carelessness. See on 5².

How did they get there? The Jewish force, or garrison, can only have been a military settlement, and there was no doubt likewise an Aramaean garrison at Syene. They were therefore mercenaries in the employment of the Persian king. This is corroborated by several indications. They were divided into דגלן 'companies' or 'regiments', each bearing a name, Babylonian or Persian, probably that of the commander.[2] Another division was מאתא 'centuria' (22¹⁹·²⁰), but whether larger or, more probably, smaller than the *degel* is not clear. They were under the supreme command of the רבחילא 'commander of the garrison', and they received rations (פתפא, see e.g. 24³⁰) and pay (פרס 11⁶, &c.) from the government.

The writer of the Letter of Aristeas mentions (§ 13) that Psammetichus used Jewish mercenaries in his campaign against Ethiopia. If this means Psammetichus ii (cf. Herodotus ii, 30) their employment would have begun between 595 and 590 B.C. —therefore just before the fall of Jerusalem and the beginning of the Exile. They were afterwards apparently put in charge of the fortresses of Elephantine and Syene as a defence of the southern frontier of Egypt against Ethiopia, for when Cambyses came into Egypt, in 525, they were already settled in Elephantine (30¹³). With the passing of the government of Egypt, these mercenaries must also have passed under Persian control.

When these papyri begin, early in the fifth century, the colony, while retaining its military organization, had become a settled community. Its members could buy and sell land and houses,

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[1] Cf. Deut. 26⁵ ארמי אבד אבי.
[2] But see note on ו[רית]ת. 28², and on דגל, 5².

they engaged in trade, they could go to law before the civil courts and they held civil posts under government. Moreover they had their wives and families, and the women could hold property and take legal action in their own right, and were even reckoned as belonging to the *degel*, whether through their relation to the men, or independently, does not appear. We have thus the outline of a picture of a Jewish community, its life and manners, in the fifth (and sixth) century B.C., which is the more valuable because it is not an intentional description, and therefore need not be discounted as *tendencieux*.

They lived on equal terms with the Egyptians, transacted business with people of various races, intermarried,[1] and sometimes bore alien names (cf. OT names in -baal). But they aroused anti-Jewish feeling, and suffered violence which they ascribed, as always, and probably with as little reason then as now, to hatred of their religion. No doubt their animal sacrifices offended Egyptian susceptibilities, but much is also to be ascribed to natural suspicion of a community with customs differing from those of its neighbours, holding aloof from the common pursuits of its fellow-citizens, and showing contempt or hostility to everything outside itself. The great pogrom described in nos. 27, 30–34 may have brought the colony to an end.

The internal affairs of the community were directed by a head-man with 'his colleagues the priests', very much as at the present day by the chief rabbi and his beth-din. In the latter part of the fifth century the chief man was Yedoniah b. Gemariah. It was to him that the edict of Darius (no. 21) was addressed in 419; it was he who received the contributions to the temple funds (22¹²⁰·¹²¹) in the same year; it was he who drew up the petition to the governor of Judaea (no. 30) in 408, and a similar petition (no. 33) about the same time, and he was one of the notable prisoners mentioned in no. 34 about 407 B.C. Whether he was a priest is not certain, but it is probable on general grounds, and also from his connexion with religious affairs (21, 22). At any rate he was politically recognized by the Persian government.

[1] But cf. introduction to no. 14.

But to most students of this dark period the papyri will be chiefly valuable for the indications they give as to the state of Jewish religion in the colony. It would no doubt be still more interesting to have similar documents relating to Jerusalem in the fifth century, or indeed any early century, but the state of things in the colony may to some extent be taken to represent what had been in Judaea before the days of Ezra. The colonists were not better than their fathers—nor perhaps much worse. To begin with, they regarded themselves as specially devoted to the worship of the national God, whom they call יהו. This name, as I have argued elsewhere,[1] is not an abbreviation of יהוה, but an earlier form, and only another way of writing the earliest form יו. As the ה seems to be a mere vowel-sign, or perhaps *hamza*, I have adopted here the transliteration *Ya'u*, as an approximate pronunciation, rather than the customary *Yahu* or *Yeho*, which are no forms. He is generally called, between Jews, simply 'Ya'u the God' (13[14], 22[1], 25[6]); in dealings with Persians, 'the God of heaven' or 'Ya'u the God of heaven' (30[2.15.27] [but cf. 30[6.24.26]], 32[3] [but cf. 33[8]]), and often in letters. Yet we also find other gods mentioned besides Ya'u. The most explicit case of this is in 22[123-125] where the temple-fund is to be divided between Ya'u and 'Anathbethel in nearly equal shares, and Ishumbethel who receives much less. In the lawcourts they swear usually by Ya'u, but in 44[3] an oath is recorded ' by the temple and by 'Anathya'u ', and in 7[7] a man is challenged to swear ' by Herembethel the god'. There are also personal names like Heremnathan and Bethelnathan (18[4]), formed like the orthodox Jonathan and Elnathan. Whether other gods were recognized besides these, whether these were all distinct or e.g. 'Anathbethel was the same as 'Anathya'u, what was the meaning of the various compounds, and what relation the different divinities bore to one another, the evidence does not show. It would seem that besides Ya'u they recognized 'Anath, Bethel, Ishum and Herem. There may have been others, but it is at least a coincidence that we have the names of five gods and that there were five gates to the temple (30[9]).

Of these names 'Anath is known as that of a goddess in Syria and elsewhere, so that it has been suggested that 'Anathya'u was intended as a consort of Ya'u—the Queen of heaven (Jer. 44¹⁷), as He was the God of heaven. Bethel has long been recognized as an early Canaanite god (cf. Gen. 31¹³). These two therefore may well have been brought by the colonists with them from Judaea. It was not a case of falling away from a monotheistic ideal, but a continuation of the pre-exilic popular beliefs. Ishum (if that is the pronunciation of אשם) may be the Babylonian demon of that name, but it is also worth while to remember the persistent tradition that the Samaritans worshipped a divinity called Ashima, to whom it has been thought reference is made in Amos 8¹⁴ by a play on the word אשמה. If this was true in the time of Amos, the tradition continued long after it had ceased to be so, perhaps encouraged by the later Samaritan pronunciation of שמה 'the name' (which they still read instead of יהוה) as ashma.¹ Lidzbarski also cites² from a late Syrian-Greek inscription a god Συμβέτυλος, whose name looks very like Ishumbethel. Thus it seems probable that a god אשם was worshipped in Syria and was brought by the colonists to Egypt with the others.

As to Ḥerem I have no suggestion to make.

Since these five gods are mentioned by name, there can be no question that the word אלהיא used in these texts, and sometimes as subject to a verb in the *plural*, is to be taken as 'gods' and not as God (אלהא) on the analogy of Hebrew. It is most often found in the beginnings of letters: note especially 39¹, and oddly enough 21² in the edict about the Passover, from one Jew to another. Further, in one place (14⁶) a Jewess swears by Sati the Egyptian goddess, in a transaction with an Egyptian.

It is thus evident that the description in Jeremiah (44⁵˙⁸ &c.) of the religious practices of the Jews in Egypt in his time is in the main corroborated by what we find in these texts a century later, and the explanation is supplied by Jeremiah himself (44¹⁷). It was no new heresy that they invented for themselves—people do not invent much—but they did 'as we have done, we and our fathers . . . in the cities of Judah.' They took with them in all

¹ See Cowley, *Samaritan Liturgy* (1909), p. xli.
² *Ephemeris* iii (1912), p. 247.

sincerity the old religion of pre-exilic Judah, and continued to practise it after the exile (and Ezra) had made it impossible in the mother-country. Thus, as a picture not only of their own time but also of pre-exilic Judaism—the religion against which all the prophets protested—these papyri are specially instructive.

Yet the national God was Ya'u. Whatever may have been their doctrine as to his relation to the other gods, there is no sort of doubt that he was pre-eminent. It was to him that the temple belonged, although it seems that other gods were also worshipped there. The temple of Elephantine was not a mere synagogue, but a considerable building, with an altar and all the appurtenances of sacrifice (30^{9-12}). It is called אגורא (meeting-place?) and מסגדא (place of worship), and is first mentioned (13^{14}) in 447. But it had been in existence at least as early as 525 ($30^{13\cdot14}$). This is a very surprising fact, quite contrary to the law of Deuteronomy ($12^{5\cdot6}$ &c.). The case of the Onias-temple, built at Leontopolis about 154 B.C., was on an altogether different footing. That was definitely schismatic, and in whatever way the supporters of it might defend their action, they knew at least that it required defence. The colonists of Elephantine had no such misgivings. After their temple was destroyed in a riot of the Egyptians (in 411), they sent a petition to the High Priest at Jerusalem, asking for help to rebuild it. When this was disregarded ($30^{18\cdot19}$), they appealed to the Persian governor at Jerusalem. There is no hint of any suspicion that the temple could be considered heretical, and they would surely not have appealed to the High Priest at Jerusalem if they had felt any doubt about it. On the contrary they give the impression of being proud of having a temple of their own, and as pious devotees of Ya'u (no other god is mentioned in the petition) seriously distressed at the loss of religious opportunities caused by its destruction.

The explanation seems to be that in this respect, as in the worship of strange gods, their practice was a continuation of that of pre-exilic Judaism. It is now generally held that the book of Deuteronomy was first promulgated under Josiah (about 621 B.C.). Previously, as we learn from e. g. the books of Samuel,

sacrifice was habitually offered at various places, and indeed until the reign of Solomon no temple existed at Jerusalem [1] to mark it out as the place which the Lord had chosen. It cannot be supposed that the book of Deuteronomy was at once accepted everywhere, even in Judaea, or that it at once put a stop to popular practices which it condemned. Still less should we expect these colonists if they left the country soon afterwards, or perhaps were already abroad, to feel bound by the new and stricter enactments. The exile followed in 588, breaking all continuity, and Judaea was left without religious direction. We need not wonder then that in the complete collapse of religious institutions, the colonists, deprived of any central authority and despairing of its restoration, decided to work out their own salvation and naturally on the lines with which they were familiar. What was their attitude towards the changes in Judaea, or whether they knew of them, we cannot tell. They may even have taken the view of Rabshakeh (2 Ki. 18[22]; cf. Elijah in 1 Ki. 19[10]), regarding the abolition of local sanctuaries as an act of disrespect to Ya'u. But it is quite intelligible that the High Priest took no notice of their appeal. We can also understand why they afterwards wrote to the Persian governor, who had no interest in Deuteronomy, and to the Samaritans, who interpreted it in their own way, and that they received a reply.

On the persons concerned with the petition, and the difficulty of reconciling various accounts of the history, see the introduction to no. 30.

Before leaving the subject of the temple a word must be said about the difficult passage in Isaiah 19[19+], 'In that day shall there be an altar to the Lord in the midst of the land of Egypt, and a pillar (מצבה) at the border thereof to the Lord', &c. This has generally been taken as a prophecy, before or after the event, of the Onias temple, that having been hitherto the only foreign temple known. It is dangerous to argue as if we knew all the facts, for the passage might equally well refer to the temple at Elephantine—on the border of Egypt. Then the date of the prophecy may be put considerably earlier than has been supposed. It is in fact not unreasonable to suggest that it was

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[1] It must be remembered that the name does not even occur in the Pentateuch.

written before the promulgation of Deuteronomy. If there was, say just before 621, any considerable migration of Jews to Egypt, the prophecy may have been intended as an encouragement to the emigrants. ' Though you are leaving your native land, you shall make a new home in Egypt and follow there the faith of your fathers (Is. 19²¹). It is a great opportunity for you '. Note also another strange coincidence, five gods, five gates of the temple, and five cities speaking the language of Canaan.

Thus there are several indications that the colonists in the fifth century B.C. remained at the same stage of religious development (if that is what we ought to call it) as their fathers in Judaea in the seventh century. It is consequently of particular interest to collect from these papyri all possible evidence as to their beliefs and practice, always remembering that in the course of two centuries some things may have changed for better or worse. Unfortunately the inquiry depends largely on an *argumentum e silentio*, which must not be unduly pressed, since we cannot be sure that what is not mentioned did not exist. Two thousand years hence if a part of English literature exists, it might well be a considerable part and yet contain no reference to King Alfred, or the Norman conquest, or the Reformation, or the doctrines of the Church, or to a number of questions which agitate us at the present day.

We have positive evidence that sacrifices, including animal sacrifices (מנחה ולבונה ועלוה) were offered (30²¹·²⁵·²⁸). This indeed was the express purpose of the temple with its altar (מדבחא), for when the temple was destroyed their chief complaint is that they can no longer offer sacrifice. One would suppose that such offerings would be the duty of the priests, the sons of Aaron, or at any rate of Levites. But although priests[1] are frequently mentioned, they are nowhere called sons of Aaron, nor does the name Aaron ever occur, nor that of Levi or the levitical order. It seems difficult to explain away this omission and at the same time to maintain that the 'house of Aaron ' and the levites were recognized in the seventh century in Judaea as they were later. The question is too large to be discussed here. I will only call

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[1] כהניא. For the priests of the Egyptians they use כמריא, as in the OT and elsewhere.

attention to the fact that apart from the Hexateuch (*de quo videant critici!*) the name Aaron occurs only in Psalms, Ezra, Nehemiah, Chronicles, and once in Judges, twice (really once) in Samuel, and once in Micah. The passage in Micah (6^4) is probably an addition, in 1 Sam. $12^{6,8}$ the name is certainly added as the natural accompaniment of Moses,[1] and in Judges (20^{28}) it is a gloss to complete the genealogy. That is to say, it does not occur for certain in any undoubtedly early writer, not even in Ezekiel! There is an explanation of this, which I leave the reader to discover. It certainly looks as if the house of Aaron were a late post-exilic invention, and if so, the colonists would naturally know nothing of it.

What precisely constituted a *kahen* at Elephantine does not appear. One of their prerogatives, we might suppose, would be to possess the Law of Moses and to administer it. Yet there is no hint of its existence. We should expect that in 30^{25} they would say ' offer sacrifice according to our law ', and that in other places they would make some allusion to it. But there is none. So far as we learn from these texts Moses might never have existed, there might have been no bondage in Egypt, no exodus, no monarchy, no prophets. There is no mention of other tribes and no claim to any heritage in the land of Judah. Among the numerous names of colonists, Abraham, Jacob, Joseph, Moses, Samuel, David, so common in later times, never occur (nor in Nehemiah), nor any other name derived from their past history as recorded in the Pentateuch and early literature. It is almost incredible, but it is true.

Again, that essentially Jewish (though also Babylonian) institution, the Sabbath, is nowhere noticed. Even if there were no occasion for mentioning it explicitly, we should expect that it would sometimes interfere with the transaction of business when that involved the drawing up of a document. At the present day no practising orthodox Jew would write on the Sabbath. Dr. Fotheringham, in a note on the subject in *JTS* 14 (1913), p. 574, concludes from a calculation of the dates that ' they do not

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[1] The LXX in v. 8 has κατῴκισεν, ' He (i.e. God) made to dwell ', rightly, for Moses and Aaron did not go into the land. For ' brought forth ' Cod. A has the singular (ἐξήγαγεν) as if of Moses alone.

prove the existence of such a scruple, nor indeed the absence of it, for no document between Jews seems to be *certainly* dated on the Sabbath. There is in fact a complete silence on the subject. Another of these negative instances concerns the festivals. None of them is mentioned except, in one papyrus, the feast of Unleavened Bread and possibly the Passover. Even in the case of these it is difficult to explain the fact. No. 21 is an edict of Darius ordering [1] an observance of the feast of Unleavened Bread, and, if the proposed restoration is right, the Passover. This can only mean either that the festivals in question were unknown in the colony, or that they had fallen into desuetude. It might even be taken as an argument that Josiah's great celebration of the Passover ('Surely there was not kept such a passover from the days of the Judges' 2 Ki. 23^{22}) was the first institution of it, and that the colonists, having left their country before 621, knew no more of it than they knew of Deuteronomy. That, however, is not proved and is hardly probable. It is more likely that the Passover in early times was irregularly observed, that Josiah really revived it after a period of neglect, and that its yearly celebration was only established, like so much else, under Ezra. This would equally well account for the edict (no. 21). Though the colonists would have vaguely known of the institution, they would have been accustomed to neglect it, as their fathers did before Josiah's time. The issue of the edict thus again suggests that they may have already left Judaea before 621. The important thing however, about which there is no doubt, is that the order came from the Persian king. It was a curt command (if my restoration is approximately correct): ' In the month of Tybi (?) let there be a Passover for the Jewish garrison '. That is the whole of it—from the king to Arsames the governor of the province. The details are added by the messenger, who was clearly a Jew—' your brother Hananiah '. Various reasons may have induced the Great King to intervene in the religious affairs of an obscure settlement, but whatever they were, the case is exactly parallel to that of the letter of

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[1] Blau, in Magyar-zsidó Szemle 1921, p. 44, argues that it was only permissive, granting exemption from military duties during the festival.

Artaxerxes in Ezra 7[12+], and shows that we need not doubt the authenticity of the latter document. The similarity of the style of the letter in Ezra to that of texts in this collection is striking. No doubt in both cases the king was only responsible for the general order or permission. The details are due to his Jewish protégés. See further in the introduction to no. 21. Apparently they did keep the Passover on this occasion, as directed, for it is mentioned at least on two ostraca [1] (not included in this volume), of about the same date as no. 21, though of course these may refer to another celebration of it. It is worth noting also that the great list (no. 22) of subscriptions to the temple funds was drawn up in the same year (419) as the Passover edict, and it is difficult to believe that they are not connected. This again would seem to indicate that the Passover was an exceptional event. On the other hand, in no. 21 there cannot have been any directions for the ceremony, for there is no room on the papyrus, whereas the rules for the feast of Unleavened Bread occupy half the document. Did they know all about the one (choosing the lamb, bitter herbs, eating in haste, &c.) and not about the other? It will be seen that the conclusions to be drawn from no. 21 are not all certain. What is certain is that the celebration of the (Passover and) feast of Unleavened Bread was ordered by the Persian king, and that these are the only festivals [2] mentioned (and that exceptionally) in these papyri.

If the arguments here adduced are at all well-founded, it follows that the religious condition of Judaism before the exile, so far as we can draw deductions about it from these papyri, was very different from what has been usually assumed. To sum it up, we may picture the historical development somewhat as follows. From early times documents [3] which eventually formed part of the Tora, no doubt existed. They were partly historical, partly legal and theological, and were composed at various dates. But they were the possession of a priestly or learned class,

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[1] Ungnad no. 77 A 5 and *PSBA* 1915, p. 222, perhaps both by the same hand.

[2] In Ungnad no. 77 A 3 even if סביא = סכות, I cannot think that it refers to the feast of Tabernacles. In Neh. 8[17] we are practically told that the feast had never been kept before.

[3] I think there is no doubt that they were written in cuneiform and probably in the Babylonian language, though this is not necessary to the argument.

necessarily limited in number. In the earliest times, down to, say, the reign of Solomon, owing to the disunion of the inhabitants, the unsettled state of the country and the difficulty of communication, the possessors of these documents can have had little influence on the mass of the people, who lived in isolated groups, without knowledge of any Law, following the religious customs and beliefs with which they happened to be in contact. Later on we find the prophetic class becoming important and using its influence to promote the exclusive worship of Ya'u among the people, though still with little reference to a written Law or to the early history. Then came the exile, and we cannot know what ferment of mind and spirit took place in Babylon or in Judaea. No sooner is the exile ended and 'order to some extent restored in Jerusalem, than we find in Nehemiah frequent insistence on the Law of Moses, in striking contrast to the earlier literature, which ignores it. It had suddenly sprung into full existence, and a definite effort was made to spread among the people the knowledge of it, which had previously belonged to the few, by reading [1] it in public (Neh. $8^{8.13}$ &c.). Apparently such readings were made a regular institution, for we find them mentioned again in Neh. 9^3, 13^1. What was it they read? I believe it was the Tora very much as we have it to-day. The constant insistence, especially in the latter part of Nehemiah, on details required by the Pentateuch, seems certainly to point to this. Moreover, the existence of the Samaritan recension of the Pentateuch, practically identical with the Masoretic, can hardly be explained in any other way. If the Samaritan schism occurred, as tradition states, somewhere about 430 B.C. (Josephus makes it a century later), the hostile community was not likely to adopt a body of Jewish law compiled after that date. We can only suppose that, at the time, the Pentateuch was already in existence, and had gained such general acceptance that the deserting priest Menasseh felt it advisable to carry the Law with him. Who then was responsible for this fruitful innovation? I think the answer is given by the

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[1] The much-quoted passage, Neh. 8^8, is generally taken to mean that they translated it extempore into Aramaic—the beginning of Targum. There is no reason why it should not mean that they read a Hebrew translation from cuneiform Babylonian.

persistent rabbinical tradition [1] that the Law was lost and Ezra restored it. Only it would be more correct to say that the Law did not exist in its present form until Ezra drew it up, compiling it from existing separate sources, and completing it. He is described specially (Ezra 7[6]) as 'a ready scribe in the law of Moses', who 'had prepared his heart to seek the law of the Lord . . . and to teach' it (7[10]). Having been educated in Babylonia he must have been familiar with the difficult cuneiform writing, as well as with the Babylonian language, with Aramaic and, no doubt, with Hebrew. He was therefore able, with the help of ' his colleagues the priests' to put in order the [cuneiform] tablets containing the various sources of the Pentateuch, to translate them into Hebrew, to weld them together into a more or less consistent whole, and to write down the result in the simple Aramaic alphabet which he had learned in Assyria (אשורית). This would account alike for the general uniformity of language and for the idiosyncrasies of various parts, which were due partly to the diverse characteristics of the original documents, and partly to differences in the style of the various collaborators. In enforcing the Law, Ezra was helped by the powerful support of the Persian king (7[26]), without which it could never have obtained general and immediate acceptance.[2]

It may be objected that the above account is merely imaginary. It is true that many of the details of it are nowhere explicitly recorded. Nor should we expect that even the central fact of Ezra's redaction of the Law would be described. It was necessary to his success that the newly promulgated code should be represented as that which was originally revealed to Israel by the hand of Moses—which, in its essence, it may have been. The strength of Ezra's moral appeal (apart from the political support of the Persian king) lay in his insistence that the Law had hitherto been neglected, that this neglect was the cause of the national misfortunes, and that the only hope for the future was to be found in a return to the supposed faith of an ideal past. To have admitted that the Law was a new thing, invented even with the best objects, would have defeated his whole purpose.

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[1] c. g. in B. T. Sanhedrin, f. 21[b] and Sukka, f. 20[a].
[2] So too Ed. Meyer, *Die Entstehung des Judentums*, 1896.

And perhaps it was not new. Various documents, of different dates, must or may have been in existence, from which the complete work was produced very much in the manner on which modern criticism insists—only that previously the documents had not been generally accessible, and that the final redaction took place at one definite time, and not as a gradual and rather undefined process. This view, though many difficulties still remain, and though its details may require modification, does on the whole provide an intelligible explanation of the facts.

I have digressed at some length upon it, because the problems which it seeks to explain are the most important arising from a study of these papyri. Regarded without prejudice, these texts lead to the conclusion that the Pentateuch, both in its historical and legal aspects, was unknown in the fifth century to the Jews of Elephantine, and it is probable that the populace in Judaea in the seventh century was no better informed. But in the book of Nehemiah we find the Pentateuch being made known and accepted—and we are bound to seek an explanation. The importance of the new revelation is that in it we see the birth of modern Judaism, which could never have developed by natural process from pre-exilic Judaism. The subsequent development of it down to the present day is easily traced, in the gradual elaboration of halakha and the exaltation of it by the suppression of all else—its systematization in the Mishna— its discussion in the Talmud—its codification again by Maimonides—its extension by Jacob b. Asher and Joseph Karo—with its final reduction *ad impossibile* in the *pilpul* of the eighteenth century—the moderation of it by Moses Mendelssohn—and the revolt against it by the modern 'reformed' Jews. All this is the natural growth of the system born under Ezra : it could not have grown out of a religious system such as that of the colonists of Elephantine.

Now to return to our texts. The internal affairs of the colony, as mentioned above, were directed by 'the head man of the community, who was Yedoniah in 419. No reports of his court are preserved and no mention is made of his administering the Mosaic law. Even when both parties were Jews

they appeared before the Persian-Egyptian court (1^3, 25^2) though the composition of the court is usually not stated. Perhaps the head of the *degel* exercised magisterial functions, and this would account for the mention of the *degel* of the parties at issue ; see on no. 25^2. As a military body they were under the רבחילא ' the commander of the garrison ', who was in turn subordinate to the פרתרך, a Persian title. That the latter was superior to the former appears from $20^{4.5}$, where Waidrang is רבחילא, compared with 30^5, where he has become (twelve years later) *fratarak*, and his son (30^7) is רבחילא. The *fratarak* was no doubt governor of the province (of Tštrs). The governor-general of the country is usually called simply מראן ' our lord ', without any more specific title. In the latter part of the period he was named ארשם, O P Aršâma, Bab. Aršam (Ungnad), Arsames. He was directly responsible to the king.

Several minor officials are mentioned, as דיניא ($16^{4.5}$), ספרי מדינתא ($17^{1.6}$), אזדכריא ($17^{5.7}$), המדכריא ($26^{4.23}$), פרמנכריא ($26^{4.8}$), תיפתיא גושביא (27^9), on whom see the notes on the passages.

The courts over which the רבחילא and the פרתרך presided, with their assessors (דיניא), administered no doubt the law of the Persian empire, but this law, like so much else, was evidently taken over by the conquerors from the Babylonians, or was based on their system. Thus we find the enumeration of relatives of the parties, the fine for breach of contract (ינתן כסף, *kaspi iddin*), the definition of the boundaries of property : special phrases like דין ודבב (*dînu dabâbu*), טב לבב, באבני מלכא, with their variants : particular words, like גרי (Bab. *garu*) ' to bring an action ' and many more. See e.g. Meissner, *Beitr. zum altbab. Privatrecht* (1893). The method of preparing a document may be compared with that described by Jeremiah (32^{9+}) drawn up in 586. The money was weighed on the scales (pap. 15^{24}), the deed was written, signed by (or for) the witnesses, and sealed. One deed (no. 5) was actually found rolled up, tied with string and with the clay seal still intact. But Jeremiah's document was evidently on a clay tablet, placed in an envelope, and an ' open ' duplicate was also made. The same practice may have been followed at Elephantine, and this would account for the duplicate of no. 2. The deed was then delivered to the interested party (ספר זי כתב פלוני לאלמוני) in the presence of the witnesses, and was stored in

Line 17. חשבת no doubt to be so read, as in ll. 9, 10. There is a
mark before the ת which might be י if the form יתשבח were possible. It
is like that in בהטיחת 9⁵, so that both may be unintentional.
Lines 19, 20. Cf. 8²².
Line 20. The same scribe as in 13¹⁷, &c.
Line 23. דנה (not רבה). Ungnad says = זנה, but this is impossible.
In CIS ii, 1, 17 + דנת is explained as = Bab. *dannitu = duppu* 'docu-
ment'. Perhaps דנה is the abs. st. of this, in the special sense of
'contract' (loan or sale), and was borrowed by Greek as δάνος (for which
there is no satisfactory etymology); cf. ἀῤῥαβών from ערבון.

No. 11.

Contract for a Loan. About 455 B.C.

This was the first of the papyri brought from Elephantine and was
published in 1903 (see the account of it in *PSBA* 1903, p. 205) just after
no. 27 (ed. by Euting).

The writing is good, but the papyrus is badly broken, especially at the
beginning (the outside of the roll) so that some details are uncertain.
Several points, however, are cleared up by comparison with similar
documents in this collection. In general cf. no. 10. The date is lost
at the beginning, but there can be little doubt that it was written about
460–450 B.C. At that time Egypt was in revolt against the Persians,
and this may be the reason why the money is described as 'of the weight
of Ptah' (l. 2) instead of 'royal weight' as usually. The phrase would
equally well suit the time of the revolt about 400 B.C., but the earlier date
is required by the names. The scribe Gemariah b. Ahio is a witness in
6¹⁸ (465 B.C.) but is not mentioned in later dated documents, and one of
the witnesses here, Mahseiah b. Yedoniah, is a party to no. 5 (471 B.C.)
and no. 15, but must have died soon after that (441 B.C.). In 25¹⁸ the
witness Mahseiah b. Yedoniah is probably the grandson (416 B.C.). The
deed must have been dated somehow. In the present first line there is
just room for אמר פלוני בר אלמוני לפלוני and no more. Hence it seems
that there must originally have been a line before it containing the date.
[The small fragments at the top are merely loose scraps which were put
together there because they could not be fitted in anywhere. They do
not belong there and are not consecutive, so that it is useless to try to
make anything out of them.] In l. 8 the debt is to be paid by the
9th year (probably). As M. Clermont-Ganneau points out, this can
hardly be the year of a king, because he might die in the meantime. It

might be the 9th year 'of the freedom of Egypt', or the 9th year after
the deed was written. In the last case it implies a date at the beginning.
M. Clermont-Ganneau, who makes the shekel = 192 hallurin, remarks
that the interest would be 12½ per cent. per annum, and would therefore
in eight years amount to as much as the original capital. This would
give a meaning to the number 9, and to יעקף (l. 8), and it is possible that
the values here differ from those in the other documents. Comparing
no. 10, however, it is unlikely that the creditor would allow outstanding
interest to accumulate for eight years without distraining. See note on יעקף
(l. 8). If the values are the same as elsewhere and are rightly ascertained
in the Introduction (p. xxiii) the interest would be 60 per cent. per annum,
and the above argument does not hold.

Sayce and Cowley, L.   Ungnad, no. 88.

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.   .   .   .   .   .   .   .   .   .   .
ר בר יתמא [לאמר] נתנת לי כסף   .   .   .   .   .   .   .   .   .   .   1
[שקלן I||]ז [בא]בני פתח כסף ש א ל ר- וירבה עלי כסף חלרן II   2
לכסף ש א לירחא עד יום זי אשלמנהי ל[ד] .ותהוה מרבית   3
כספך חלרן ||| [|||| ||] לירח א וירחא זי לא אנתן לך בה   4
מרבית יהוה ראש וירבה ואשלמ[נה]ז לך ירח בירח   5
מן פרסי זי ינ[ת]נון לי מן אוצרא ותכתב לי נבז על כל   6
כסף ומרבי זי אהוה משלם לך והן לא שלמת לך כל   7
כספך ומרביתה עד ירח תחות שנת [|||] ||| א|| יעקף כספך   8
ומרביתה זי ישתאר עלי ויהוה רבה עלי ירח לירח   9
עד יום זי אשלמנהי לך   10
שהדיא   11
עקבן בר שמשנורי   12
קצרי בר יההדרי   13
מחסיה בר ידניה   14
מלכיה בר זכריה   15
כתב ספרא גמריה בר אחיו עלפם שהדיא זי על ספרא זנה   16
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[1] *Said X b. Y to Z* b. Yathma *as follows:* You have given me the sum
of [2] *4 shekels by the wei*ght of Ptah, at the rate of 1 shekel to 10, and
interest shall be due from me at the rate of 2 hallurin [3] for the sum
of 1 shekel per month, till the day when I repay it to *you*, so that the
interest on [4] your money shall be 8 hallurin each month. Any month in
which I do not give you [5] interest, it shall be (added to the) capital and
shall bear interest. I will pay it to you month by month [6] out of my

salary which they give me from the treasury, and you shall write me a receipt for all ⁷ money and interest which I pay to you. If I do not pay you all ⁸ your money and the interest thereon by the month of Thoth in the 9th year, your money shall be doubled (?) ⁹ and the interest on it which is outstanding against me, and interest shall be due from me month by month ¹⁰ until the day when I repay it to you. Witnesses: ¹¹ 'Uḳban b. Shemesh-nuri. ¹² Ḳoẓri b. Ya'hadari. ¹³ Mahseiah b. Yedoniah. ¹⁴ Malchiah b. Zechariah. ¹⁵ Gemariah b. Ahio wrote the deed before the witnesses who(se names) are upon this deed.

Line 1. [לאמר] can be restored with certainty from other deeds. There is perhaps a slight trace of ל.

Line 2. [שקל֖ן] must be restored, since the interest is in ḥallurin, but the number of them is less certain. Four is most likely. When the text was first published this seemed too small a sum for so formal a document, but no. 10 now removes that objection. [בא]בני פתח is right. Elsewhere always באבני מלכא. The 'weight of Ptaḥ' would be that used in his temple at Memphis and no doubt represents the Egyptian scale (of the revolt) as distinguished from the Royal (Persian) weight. (So in demotic documents frequently 'of the double house of Ptaḥ.)' The standard is here described as 1 shekel to 10, whereas the ordinary standard is 2 R to 10. If this means the proportion of alloy, the standard of the revolt had twice as much alloy as before. ש ו is not found in legal documents usually for 1 shekel.

Line 3. ותהוה i. e. 'so that it shall be'.

Line 4. The numeral must be under 10 and must be divisible by 2. Therefore either 4 or 6 or 8. The space best suits 8. Therefore the shekels in l. 2 must be 4.

Line 5. יהוה ראש. The grammar is inaccurate. It ought to be מרביתא(־ה) and תהוה as in l. 3. The verb is no doubt attracted to the gender of ראש (cf. ירבה in 10⁶). ראש is the Hebrew form.

Line 6. פרסי 'share' 'portion', i. e. wages. The debtor was still in the employment of the provisional government, as he had been under the Persian régime, and the same terms are used. Cf. 2¹⁶, but there is no mention here of בית מלכא or בי זי לבנן. נבו must mean a 'note', i. e. a receipt. As an Aramaic word it occurs in the Samaritan Targum Lev. 16⁸⁻¹⁰ for Heb. גורל, and is no doubt there a loan-word from Arab. نبذ. The meaning is hardly the same here, and I am still inclined to take it (against Halévy) as a Persian form from نوشتن (see *PSBA* 1903, p. 207), a 'written' receipt. Johns (*PSBA* 1905, p. 187) cites an Assyrian word *nibzu* in this sense, but with no Semitic etymology.

Line 7. מרבי should be מרביתה as in ll. 8, 9 and in no. 10.

אהוה משלם not common in this Aramaic (as later) for אישלם. Cf. l. 9 יהוה רבה for ירבה.

Line 8. The numeral is certain since units are always grouped in threes as far as they go. But the point of naming the 9th year is not clear. The 9th year from the date of writing is a long time for so small a loan. If the deed was dated in the *n*th year of the freedom of Egypt (cf. the Jewish coins of the revolt) the loan would only be for 9–*n* years. The nature of the penalty is not clear enough to help. It can hardly be the 9th year of a king, though the 9th year of Artaxerxes I (456 B.C.) would be a suitable date.   יעקף is very difficult. In ll. 4, 5 the outstanding interest is to be added to capital. Ll. 8, 9 are therefore unnecessary unless יעקף adds a further penalty. In no. 10 the outstanding interest in the first year is to be added to capital, but in the second year the creditor might distrain. Here distraint is not mentioned, but one would expect something corresponding. Perhaps עקף = ضعف in the sense of 'be doubled'.

Lines 11–16 are not arranged in the usual manner. L. 16 should complete l. 10, and the witnesses' names be written continuously. Cf. no. 1 and frequently.

Line 13. יההדרי. Probably for יהו הדרי 'Ya'u is my glory'.

Line 16. ספרא is 'document' not 'scribe' in both places.   עלפם שהדיא is unusual. It is generally עלפם or כפם of one of the parties 'according to (instructions from)'. The interested party said what he wanted written, and the scribe put it into formal language. The witnesses would hardly give such instructions, so that here perhaps עלפם means rather 'in presence of'. Why the name of the debtor is not given (as in no. 10), is not evident.

No. 12.
List of Names, undated.

There are several lists of names in the collection, but the purpose of them is not always apparent. Some are connected with accounts. In mediaeval Jewish communities lists of this kind were often drawn up to commemorate members of the congregation who had suffered for their religion.

It is undated. If it is a memorial list it may be related to no. 34 (about 407 B.C.), which is probably connected with no. 30. Sachau, however, points out that the sons of Menahem b. Posai (l. 7) are mentioned in 22[78,79]. As the name Posai occurs only in these two

broken place, but is fairly certain. לקח. The omission of the object is awkward.

Line 7. The construction is very awkward. אתי זי seems to mean 'they are things which are . . .' The following ב requires a noun, and פקדון is most likely. הפקדו is Lidzbarski's suggestion. S–C read הֹפֵק. If a Hophal is admissible it gives a sense, but the form is not found, I believe, elsewhere in these texts.

Line 8. שאילתם passive as in 16³.

Line 9. רחיקן 'we withdraw from you', i. e. renounce all claims. מנך an oversight for מנכם.

Line 13. After ובנתכם there is a faint א which has been erased. If the document were a forgery this would be evidence that it was written by an Arab who used the dual suffix ڪ—referring to two persons.

Line 14. וי as elsewhere for זי ומן. Probably subject, not object, of [ו]ירש, which I restore as plural, as at the end of the line, in spite of ינתן singular. The writer is confused by his own verbiage. עלא adverbially, cf. בנו. אבינרנא or דנא. A Persian term for 'fine', as in 25¹⁵, 28¹⁰, but the etymology is not clear.

Line 15. אפם, not אחר as S-C. רחֹיק too much obscured to read, but it is the word required. אלה is more probable than אלך (S-C).

Line 16. The same scribe as in no. 25.

Line 19. The second מנחם is a mistake for משלם.

No. 21.

Order to keep the (Passover and) Feast of Unleavened Bread. 419 B. C.

See Barth in *OLZ* 1912, 10, and Ed. Meyer in *Sitzb. Berl. Akad.* 1911, p. 1026.

This is one of the most interesting and important of these texts. See Introduction, p. xvi.

The date is the 5th year of Darius. This must be Darius II, since Yedoniah, who is addressed evidently as head of the community, holds the same position in no. 30 (408 B. C.). The year is therefore 419 B.C:

It is a letter from Hananiah, whose mission must have been official and important, since his arrival in Egypt is mentioned as a well-known event in 38⁷. Unfortunately the papyrus is very imperfect, half of the lines 4–10 being lost, but enough remains to show that it contains a direction to keep the festival of (Passover ? and) Unleavened bread, and gives instructions for doing so. What is still more remarkable is that this direction is

based on the authority of Darius himself. The question then arises, was this community, which possessed a temple and offered sacrifice to Ya'u, ignorant of the greatest of Jewish national festivals? Had they never celebrated it before? Was it a new institution? What had the Persian king to do with it? Something has already been said on these points in the Introduction, p. xvi+. A few remarks may be added here.

In the first place, we have no evidence that the Passover before this date was a regular annual ceremony. In the earliest documents (as estimated by the majority of critics) it is the seven days of Unleavened bread on which stress is laid. A national Passover-feast is unknown to J and E. The earliest mention of it is in Deut. 16, where it is closely related to the feast of Unleavened bread. Moreover in 2 Kings 23²² it is expressly stated of Josiah's Passover (which is usually believed to be closely connected with the ordinance in Deut.) that such a celebration had never been held ‏וכל ימי מלכי ישראל וג'‎ . . . ‏מימי השפטים‎ ‘ *in* the days of the Judges . . . and all the days of the kings’. If then the Passover, as a national (but not necessarily an annual) institution, was introduced only in 622 B. c., it is not surprising that this colony, which was probably (already or) soon afterwards established in Egypt, should either know nothing of it, or should regard it as intended only for residents in Palestine, to be celebrated at Jerusalem, which indeed is the natural meaning of Deut. 16⁶. No doubt the national festival was founded on primitive practices of some kind, but that is a totally different question. It is true that in the present broken condition of the papyrus the word Passover does not occur, but I think there is reason to believe that it was originally mentioned (see note below) and that the directions given here agree with Deut. 16 in connecting the Passover and Unleavened bread. If not, and if the papyrus refers only to the feast of Unleavened bread, then it is still remarkable that directions were necessary for the keeping of so old and, one would think, so well-established a festival.

In either case the explanation may be found perhaps in the rabbinical saying quoted in the Introduction, p. xix. That ‘Ezra gave the Law a second time’ is not a paradox but a statement of historical fact. Whatever parts of the Pentateuch were in existence before the fifth century B. c., it cannot be held that its provisions had any great influence on the people in general. The earlier parts of the O. T. and the prophets, if read without prejudice, seem to me to show quite the reverse. In fact the kings were too much occupied with politics and other mundane matters to enforce a ceremonial law, even if they had the desire to do so, and the times of the Judges were too anarchic to admit of it. Josiah's great

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DISSERTATION

ON THE

HEBREW LANGUAGE.

By the late Rev. *DAVID JENNINGS*, D.D.

VOL. II.

And this translation they noted with this abbreviation חי, that is, 18. becaufe of thofe eighteen hours which occafioned it.

The reafon of *Politick Tranflation*, was, that two *Sabbaths*, or feaft-days might not immediately follow each other : (*b*) becaufe, fay they, it was unlawful thofe two days to drefs meat, or bury the dead ; and it was likewife inconvenient to keep meat dreffed, or the dead unburied two days. Yet here two exceptions muft be remembred, when the meeting of two Sabbaths could not be avoided.

Firft, when the *Paffeover*, or the fifteenth day of *Nifan*, fell on *Saturday* ; for then the *Pentecoft* muft needs fall on *Sunday.*

Secondly, when the *Paffeover* fell on *Sunday* ; for then their *Paffeover* immediately followed their *weekly Sabbath;*

The firft (*i*) Author of this *Politick Tranflation* was a certain chief man amongft them, named *Eleazer* ; three hundred and fifty years before *Chrift His Nativity.*

The feveral fpecies or kinds of *Politick tranflation* were five. The firft, אדו *Adu.* The fecond, בדו *Badu.* The third, גהוז *Gahvz.* The fourth, זבו *Zabad.* The fifth, אוג *Agu.* For the underftanding of thefe abbreviatures, we muft know, that in thefe made words the letters only ftand for numbers, and are applied to the feven days of the week; thus א 1. *Sunday* ב 2. *Munday.* ג 3. *Tuefday.* ד 4. *Wednefday.* ה 5. *Thurfday.* ו 6. *Friday.* ז 7. *Saturday* : Which was the *Jews* Sabbath.

Their rules touching *Politick tranflation*, ftood thus. (*a*) Firft, that neither their *New-years-day* which was the firft of the month *Tifri* ; neither their

their *Feast of Tabernacles*, which was the fifteenth day of the same month, should be celebrated on *Adu*, that is on *Sunday*, or *Wednesday*, or *Friday*. Not on *Sunday*, or *Friday*, becaufe then the *weekly Sabbath* muft needs concur with it, either going immediately before or following after: not on *Wednesday*, becaufe then the *Feast of expiation*, which is the tenth of that month, would fall on *Friday*, the day going immediately before their *weekly Sabbath*. This inftance is only concerning the firft of *Tifri*, which is called the *Feast of Trumpets*: but it holdeth alfo, by way of confequence, in the *fifteenth day*, which is the *Feast of Tabernacles*, becaufe the fifteenth muft always neceffarily be the fame day of the week that the firft is. Therefore if the firft be not *Adu*, the fifteenth cannot be *Adu*.

The (*b*) fecond rule was, that the *Paffeover* fhould not be obferved on *Badu*; that is on *Munday*, *Wednesday*, or *Friday*.   b *Badu.*

The (*c*) third rule is, that *Pentecoft* was not obferved on *Gahaz*; that is, on *Tuefday*, *Thurfday*, or *Saturday*.   c *Gahaz.*

The (*d*) fourth rule is, that the *Feast of Purim*, or *cafting lots*, was not obferved on *Zabad*, that is, on *Munday*, *Wednesday*, or *Saturday*.   d *Labad.*

The (*e*) fifth rule is, that the *Feast of Expiation* was not obferved on *Agu*; that is, on *Sunday*, *Tuefday*, or *Friday*.   e *Agu.*

Mixt tranflation is, when both the *Lunary* and the *Politick* meet in the changing of days. And the *tranflation* occafioned by this mixture or meeting of both thefe two, is twofold. Firft, *Simple*. And Secondly, *Double*.

Simple tranflation is, when the Feaft is tranflated to

R 3   the

the next day following. For examples fake, If the *Moon* changed after noon-tide on *Sunday*, here the *Feast* muſt be tranſlated, for two reaſons: The firſt is *Lunary*, becauſe the point of the change was after *eighteen hours* ; the ſecond, *Politick*, becauſe the rule *Adu* forbids *Sunday* to be kept : Notwithſtanding, in as much as the very next day, namely *Monday* , was obſerved ; I term this tranſlation *ſimple*. Of this ſort was that tranſlation which they called *Batu takphat*.

u takphat. בטו תקפט (f) *Batu takphat*, is a word invented for help of memory ; each letter is a numeral, and may be thus reſolved, ב ‧ טו ‧5. תקפט 589. The meaning is, that in the year following *Annum Embolymænum* (wherein one whole month was ingrafted) if the point of the change happened upon the ſecond day of the week, that is, *Munday*, not before the fifteenth hour, and the 589 moment , the Feaſt of the *New Moon* was tranſlated unto *Tueſday*. How both the *Lunary* and *Politick* tranſlation work in this change, read *Scaliger* , *de emend. temp. lib.* 2. *pag.* 87.

Double Tranſlation, is, when the *Feaſt* is tranſlated not to the next, but to ſome further day : as if the firſt day of the month *Tiſri* ſhould happen upon *Saturday* ; here, if the Moon hath not overpaſt her conjunction before the afternoon, *Lunary tranſlation* removeth this *Feaſt* till *Sunday*, becauſe of תי, that is, the *eighteen hours*: *Politick tranſlation* removeth it till *Munday*, as appeareth by the rule *Adu*, forbidding *Sunday*: of this ſort is *Gatrad*.

גטרד *Gatrad*, is a made word, each letter is a numeral, and it may be thus reſolved, ג 3. ט 9. רד 204. The meaning thereof is thus : In their common year (when a whole month is not inſerted) if the point of the change happen upon the *third day* of the week, that

that is, *Tuesday*, not before the ninth hour, and the 204 moment of an hour, than the *New Moon* shall be translated to *Thursday*,

Note in the last place, (*k*) that 1080 *moments* make an *hour*.

k *Munst. Calend. pag. 45.*

The *Feast of Tabernacles* was observed in the month *Tisri*, and therefore that could not be observed the morrow after the *Sabbath*, as appeareth by the rule *Adu.* The *Passeover* was observed in the month *Nisan*, and therefore that might be observed the morrow after the *Sabbath*, as appeareth by the rule *Badu.* If any ask the reason why the *Passeover* might be observed the next day after the *Sabbath*, seeing the *Feast of Tabernacles* might not? I take it to be thus; All the *after translations* depended upon the *first translation* of the *first new Moon in Tisri*; but that could no be so changed, as to prevent all concurrence of two *Feasts*, and thus to have their *Passeover* sometimes to follow their *Sabbath*, they thought the most convenientest ordering of the year, because though not all meetings of two *Sabbaths*, yet most were hereby prevented.

This tract of translation of Feasts, it serveth partly to open the customs of the *Jews*: partly to give light for the understanding of that great dispute among *Divines*, whether our *Saviour* did anticipate the *Passeover*. The *Greek Church* (*l*) holds, that he kept a *Passeover* by himself with his *Disciples*, on the thirteenth day of the month, when *unleavened bread* was not yet to be used, and thence they do both use and urge a necessity (*m*) of *leavened bread in the Lords Supper*: But this opinion we reject. First, because it accordeth not with the truth of *Evangelical History*. Secondly, because it plainly maketh *Christ* to be a transgressor,

l *Epiph.l.2.Tom 1.c.51.p.147.* m *Usum fermentati panis in cæna Dominica Ecclesia Romana olim non damnavit. Casaubon. exercit. 16.p.465.*

gressor, not a fulfiller of the Law. (*n*)Others say,that
because that year their *Passeover* fell on *Friday*, hence
the feast was translated unto *Saturday* by the rule *Ba-*
du. Their inference is, that *Christ* kept the fourteenth
day of the month, which was *Friday*, and the *Jews*
kept *Saturday*. He kept Gods Command, they the

tradition of the Elders. (*o*) Lastly, others more pro-
baby hold, that both *Christ* and the *Jews* did eat the
Passeover the same day and hour ; namely, on *Friday*
or the fourteenth day of the month, if we count the
beginning of *Friday* according to the manner of the
Jews, from six a clock at night on *Thursday*. *Friday*
morning he was judged, and crucified ; and in the af-
ternoon, about three of the clock, when the *prepara-*
tion of the Sabbath began ; he was buried ; *There laid*
they Jesus, because of the Jews preparation, John 19.24.

For reconciling the *Evangelists* in this point, we
must note these particulars, which are more at large
proved in the *Chapter of the Passeover*. 1. The *four-*
teenth day of the month, on which the *Paschal Lamb*
was eaten , was called the first day of *unleavened*
bread ; the Feast of *unleavened bread* drew near, which
is called the *Passeover, Luke* 22.1.

The *fourteenth* day was not holy, but the *fifteenth*
was. In the *fourteenth* day of the first month is the
Passeover of the *Lord*, and in the *fifteenth* day of his
month is the Feast, *Numb.*28. 16,17. Some of them
thought, because *Judas* had the bag, that *Jesus* had
said unto him, buy those things that we have need
of against the Feast, *John* 13.29.

The *Sheep and Bullocks* offered upon this day, are
called the *Passeover, Deut* 16.2. And of this we are
to understand S. *John, Joh.*18.28. They themselves
went not into the common Hall, lest they should be
defiled,

defiled, but that they might eat the *Passeover.* So that this eating of the *Passeover* is not understood of the *Paschal Lamb.* But some may question, How they should have been defiled by entring into the common Hall? The answer is, that upon (*p*) *Holy day-Eves,* which they termed *days of preparation,* they held it unlawful for their *Judges to sit on life and death.* Hence it is, that they brought *Jesus* to *Pilate* the *Roman Deputy.* Secondly, they withdrew themselves out of the common Hall. *Thirdly,* for this reason they said, *It is not lawful for us to put any man to death, Joh.* 18.31. (*q*) that is upon this, or such like day ; for tho their high Court of *Sanedrim* were put down at this time, yet all power in cases of Life and death was not taken from them, as is implied in the words following. It was that the word of *Jesus* might be fulfilled, which he spake signifying what death he should die, *ver.* 32. Which text intimateth, that that unlawfulness was urged by the special providence of God, that he might be crucified, being judged by *Pilate:* for if the *Jews* had judged, they used no such kind of death towards Malefactors. Again, *Stephen* was condemned by them to be stoned, *Act.* 7. And they complained before *Felix,* that when they were about to proceed against *Paul* according to their own Law, the chief Captain *Lysias* with violence took him out of their hands, *Acts* 24. Which argueth, that all power in causes capital was not taken from them : But of this see the *Chapter Of their capital punishments.*

אין תרין
בתי נפשות
א ערב
שבת ולא
ערב יום
טוב

Moses-ben Maimon. lib.u. Iad. c. Sanediin. Sect. 11
q *Aug. tract.* 114. *in Joan Ita hunc locun exponunt etian Cyril. lib.* 12. *Joan.c. 6.Chr, hom.* 12. *in J an. Beda in c.* 18. *Joan.*

S   CHAP.

had refpect chiefly to the *negative Commandements*; but he that conformed for love, efpecially refpected the *Affirmative.*

CHAP. XI.

Of the Sadduces.

TO omit other *Etymologies* of the name, there are two only, which have fhew of probability. (*ſ*) Some derive it from *Sedek Jufticia* ; as if they had been *Jufticiaries*, fuch as would juftifie themfelves before *Gods* Tribunal. (*t*) There are that derive it, and that upon more warrantable grounds, from *Sadoc*, the firft Author of the herefie ; fo that the *Sadduces* were fo called from *Sadoc*, as the *Arrians* from *Arrius*, the *Pelagians* from *Pelagius*, the *Donatifts* from *Donatus, &c.*

This *Sadoc* lived under *Antigonus Sochæus*, who fucceeded *Simon* the *Juft.* He was *Antigonus* his fcholar, and by him brought up in the doctrine of the *Pharifees*, but afterward fell from him, and broacht the herefie of the *Sadduces* ; which herefie, becaufe it had much affinity with that which the Heretique *Dofitheus* taught, hence are the *Sadduces* faid to (*u*) be a branch or skirt of the *Dofitheans*, though in truth *Dofitheus* lived not till (*x*) after *Chrift* ; and although thefe two herefies did agree in many things ; yet in a main point they differed. (*y*) *Dofitheus* believed the Refurrection, the *Sadduces* denyed it ; and by confequence the *Dofitheans* believed all other points neceffarily flowing from this.

The occafion of this herefie was this.(z) When *Antigonus*

Marginal notes:

Epiphan. lib. I.
ap. 14.
᾿απο αἱρεσι-
᾿εχῦ Σα-
Δωκ ὁ
θυδζεται.
Theophylact.

u *Epiph. haref.*
14. It. *Tertul.*
de præfcript.
c. 45.
x *Origen contra*
Celfum. l. 2.
y *Epiph. haref.*
13.

z *Aboth.cap.* I.

gonus taught; that we muſt not ſerve God as ſervants ſerve their Maſters, for hope of reward, his ſcholars *Sadoc* and *Baithus* underſtood him, as if he had utterly denied all future rewards or recompence attending a godly life, and thence framed their hereſie, denying the *reſurrection*, the world to come, *Angels*, *Spirits*, &c.

Their *Dogmata,Canons*, or *Conſtitutions* were, 1 *They rejected* (a) *the Prophets, and all other Scripture ſave only the five Books of Moſes.* Therefore our *Saviour*, when he would confute their errour concerning the reſurrection of the dead, he proves it not out of the *Prophets*, but out of *Exod.* 3.6. *I am the God of Abraham, the God of Iſaac, and the God of Jacob, Mat.* 22.32.

a *Joſeph Ant lib.* 13.*c.*18.

2. *They rejected* (b) *all traditions.* Whence, as they were called רנעמ *Minæi*, i. *Heretiques*, in reſpect of the general oppoſition between them and the *Phariſees.* Firſt, becauſe the *Phariſees* were in repute the only *Catholicks.* Secondly, becauſe in their Doctrine, the *Phariſees* were much nearer the truth than the *Sadduces* : So in reſpect of this particular oppoſition, in the ones rejecting, the others urging of traditions, the *Sadduces* were (c) termed קראים *Karaim*, *Biblers*, or *Scripturiſts*.

b *Elias in* ערך

c *Druſius de trib. ſect. c.* 8 *l.* 3. *p.* 130.

3. *They ſaid there was no reward for good works, nor puniſhment for ill, in the world to come.* Hence Saint *Paul* perceiving that in the *Councel* the one part were *Sadduces*, the other *Phariſees*, he cried out, *Of the hope* i. *of the reward expected, and of the reſurrection of the dead, I am called in queſtion, Act.* 23.6.

4. *They denied the reſurrection of the body, Act.* 23.8. *Mat.* 22.23. Luke 20.27.

5. *They ſaid the ſouls of men are* (d) *annihilated at their death.*

d *Joſeph. de bello Judaic. lib.* 2.*c.*12.

6. *They denied Angels and ſpirits, Acts* 23.8.

        7. *They*

C A P. 8.

An Caræi hujus temporis dici poßint Saducæi.

DE *a)* Caræis non omnes idem fentiunt. Quidam eos diftinguunt à Saducæis. Liber annotationum in Aboth, *Sunt qui dicant Saducæos & Baithuſæos eſſe illos quos alii Caræos appellant. Sunt qui diſſentiant dicentes, Caræos eſſe aliud genus hæreticorum.* Concilio has fententias. Iam probatum eft veteres Saducæos appellari Caræos. Aliud

136 ftatuendum de Caræis noftri temporis. Nam hi refur-rectionem carnis fatentur: In titulo Iohafin, *Inde liquet Saducæos non eſſe Caræos, qui noſtris temporibus. Nam hi con-fitentur præmium & pœnam & reſurrectionem : quod non fa-ciunt Saducæi.* De Caræis aliquid Quæft l. 1. qu. 44. Qui-bus addo ex libro Iohafin fol. 15. *Temporibus horum regum* (de Ioh. Hyrcano ejufq; filio Alexandro loquitur) *cæpit ſecta Caræorum, qui etiam vocantur Saducæi & Baithuſæi.* Et fol. 118. b) *Anan & Saul ejus filius Caræi erant.* Ecce Ca-reos dicit Saducæos, de quorum inftitutis & legibus riti-bufque quidam librum compofuit. Ei nomen Achan, eft, עכן. Deleatur nomen ejus ut Achanis, ait commen-tator quidam fuper Aboth, à quo hæc habeo. Iterum dico, Caræi hodierni diverfi funt à Saducæis. Nam cre-dunt refurrectionem : item præmio affici juftos & pœna improbos. Alio fignificatu Caræus, id eft קראי vocatus eft R. Eliezer filius Simeonis, in Scriptura, quæ Cara dicitur, optime verfatus. Sic legimus in Iohafin fol. 69.

pag. 2. Rab. & Samuel & Rab. Iohanan Caræi, quia
verba eorum fimilia verbis Scripturæ, id eſt, מקרא.

ADDENDA.

a) *Caræi locum illum Mofis Levit. 18. 18. Non accipies mulierem ad fororem ejus expofuerunt de duabus uxoribus, pag. 3. ex Phefictha fol. 79. col. 1.* iie *læfum attritione* בצע רבא *& fpurum* ממזר, *confundunt Deut. 23. 1. & 2. Phefictha 80. 2.* והפותר של קראים שאמר וכולל. *Genus quoddam Saducæorum eft qui cenfent immundos effe qui tangunt corpora etiam viva, de quibus Levit. 11. Vide Abenezram ad verf. 24.* מולדת אביך *Levit. 18. 11. exponunt, qui nutrita aut educta eft a patre tuo. Vide Abenezram. Idem Levit. 7 10. Venit ad me Saducæus quidam interrogatum an cauda effet vetita ex lege &c. Vide fi placet. Ibi Saducæum vocat Caræum Levit. 11. 19. Dicunt Saducæi* דורים *gallum effe. Stult homines quu indicavit eis. Vide notas meas ad illum locum.*

b) *Dubito an hi Saducæi fuerint & eo labor ut credam autores fuiffe novæ fectæ Caræorum quæ tantum traditiones rejiciebat.* קראים *de Saducæu in Chron. T. S. ubi de Alexandro Ianæo. Inebriati funt cum eo magnates* הקראים *Caræorum fol. 40. col. 3. in principio. Paullo poft col. 4. de Ariftobulo Hyrcani* junioris *fratrê* והואהיה אוהבאת הקראים ובוהג מבהגם. *Et mox, erat imperium Pharifæorum fuper Caræos. Caræorum mentio apud Gerund. in Levit. 196. 2.* לסתום פיהם של *הקראים מחוקו שם.* Quippe *מחק delere. Anan & Saul quinam fuerint Iucha. 118. 2. De Saducæis i. Caræis Aben. Levit. 33. 40. ubi eos vocat* עורי לב *quod corde nihil videant. Sed vide fi placet.*

CAP. 9.
An prophetas rejecerint.

it is ſaid, "when thou ſhalt go up to appear
before the Lord thy God thrice in the year (a)."
This is, by the way, a very remarkable inſtance
of the ſovereign and abſolute power, which God
exerciſes over the hearts and ſpirits of men.
Accordingly we find not in the whole ſcripture
hiſtory, that any ſuch evil ever befell the Iſra-
elites on theſe occaſions; inſomuch that though
in many other caſes they were backward in be-
lieving God's promiſes; yet at theſe ſeaſons they
would leave their habitations and families with-
out the leaſt apprehenſion of danger.

Having thus conſidered a circumſtance, which
was common to the three grand anniverſary feaſts,
we are now to treat of the firſt of them, namely,
the paſſover.

Of the inſtitution of this feſtival we have an ac-
count in the twelfth chapter of the book of Exodus.
It is called in the hebrew אספּ paſcha, from פּסכּ
paſach, tranſiit. In the greek it is called πασχα,
but not from the verb πασχω, patior, to ſuffer,
on account of Chriſt's having ſuffered at the
time of this feaſt, according to the illiterate ſup-
poſition of Chryſoſtom, Irenæus and Tertul-
lian. Chryſoſtom ſaith, Πασχα λεγεται, οτι τοτε
επαθεν ο Χριςος υπερ ημων: Paſcha dicitur, quia
Chriſtus illo tempore pro nobis paſſus eſt *.
Irenæus ſaith, A Moyſe oſtenditur Filius Dei,
cujus et diem paſſionis non ignoravit, ſed figu-
ratim pronunciavit, eum paſcha nominans †.
Tertullian, Hanc ſolemnitatem——præcanebat
(ſc. Moyſes) et adjecit, Paſcha eſſe Domini, id
                                                  eſt,

_____

(a) Exod. xxxiv. 24.
* Homil. v. in 1 Tim.
† Iren. adverſus hær. lib. iv. cap. xxiii. p. 309 edit.
Grabii, Oxon. 1702.

eſt, paſſionem **Chriſti** *. But the greek word
πασχα is derived from the chaldee אספח paſ-
cha†, which anſwers to the hebrew פסח peſach;
and the feſtival was ſo called, not from its be-
ing prophetical or typical of Chriſt's ſufferings,
but from God's paſſing over, and leaving in
ſafety the houſes of the Iſraelites, on the door-
poſts of which the blood of the ſacrificed lamb
was ſprinkled, when he ſlew the firſt born in
all the houſes of the Egyptians. This etymo-
logy of the name is expreſsly given in the book
of Exodus, " It is the ſacrifice of the Lord's
paſſover," אשר פסח aſher paſach, who paſſed
by, or leaped over, the houſes of the Iſrael-
ites *(a)*. So that our engliſh word paſſover
well expreſſes the true import of the original
פסח peſach or אספח paſcha.

Concerning the paſſover we ſhall conſider,

1ſt. The time when it was to be kept.

2dly, The rites with which it was to be cele-
brated.

3dly, The ſignification of theſe rites.

1ſt. The time, when this feaſt was to be ce-
lebrated, is very particularly expreſſed in Le-
viticus, " In the fourteenth day of the firſt
month, at even, is the Lord's paſſover *(b)* : "
Wherein is remarked the month, the day, and
the time of the day.

1ſt. The month. It is called the firſt month,
that is, of the eccleſiaſtical year, which com-
•   . menced

* Tertullian adverſus Judæos, cap. x. ſub fin. p. 197.
A. edit. Rigalt. Paris. 1675.

† Philo in vitâ Moſis, lib. iii. p. 531. A. edit. Colon.
•Allobr. 1613. το χαλδαιςι λεγομενον πασχα. In his treatiſe
de Decalogo he ſaith, ην (ſc. εορτην) Εβραιοι πατριω γλωττη
πασχα προσαγορευεσιν. p. 591. C.

(a) Exod. xii. 27.   *(b)* Lev. xxiii. 5.

Moses and Aaron:

CIVIL and ECCLESIASTICAL

R I T E S,

Used by the Ancient HEBREWS ; observed,
and at large opened, for the clearing of many obscure
TEXTS thorowout the whole SCRIPTURE.

Which Texts are now added at the end of the Book.

Wherein likewise is shewed what Customs
the HEBREWS borrowed from Heathen people : And
that many Heathenish Customs , originally, have
been unwarrantable imitation of the
H E B R E W S.

The twelfth Edition.

By *Thomas Godwyn*, B. D.

(m) days of this whole *feaft of Tabernacles* were termed *Hofannoth*, from the ufual acclamations of the people, whiles they carried the *Boughs* up and down. And this eighth day was called *Hofanna Rabba* ; the great *Hofanna*, or the *great day of the feaft, Joh. 7.37.* (n) Upon this day they did read the laft Section of the Law; and likewife began the firft, left they might otherwife feem more joyful in ending their Sections, than willing to begin them. (o) Upon this day alfo by the inftitution of the Prophet *Haggæus* and *Zachary*, and fuch like *Prophetical* men, they did with great folemnity and joy, bring great ftore of water from the River *Shiloah* to the Temple ; where it being delivered unto the *Priefts*, it was poured upon the Altar, together with Wine, and all the people fung that of the Prophet *Efay* 12.3. *With joy fhall ye draw water out of the Wells of Salvation.* Our Saviour is thought to have alluded unto this , in that fpeech which he ufed on this very day , *John 7.38. He that believeth in me, out of his belly fhall flow Rivers of waters of life.*

It is worth our noting alfo, that whereas God commanded the obfervation of this Feaft on the fifteenth of the feventh month *Tifri* ; *Jeroboam*, that he might work in the people a forgetfulnefs of the true

Worfhip of God, appointeth the Celebration of a Feaft in the eighth month, on the fifteenth day thereof, which is thought to be this very Feaft of *Tabernacles.*

CHAP. VII.

Of the Feaſt of Trumpets, and their New Moons.

FOr the underſtanding of the time when this Feaſt was to be obſerved, we muſt note, the month *Tiſri* was the *ſeventh month*, according to their *ſacred computation;* and therefore it is commanded to be celebrated the firſt day of the *ſeventh month*, *Levit.*23.24. But according to their *civil Computation* it was their *firſt month*, ſo that this Feaſt may be termed their *New-years-day.*

The firſt day of every month had its ſolemnities. Firſt, when they repaired to the *Prophets* for the hearing of the word, as on other *Sabbaths.* Wherefore wilt thou go to him to day? It is neither *New Moon,* nor *Sabbath day,* 2 *Kings* 4. 23. Secondly, it was then unlawful to buy and ſell: When will the *New Moon* be gone, that we may ſell corn? *Amos* 8.4. Thirdly They had then ſpecial ſacrifices over and above their daily ſacrifices.

Notwithſtanding, this Feaſt of *Trumpets* differed from other *New Moons.* Firſt, in reſpect of their ſacrifices; in their *ordinary New Moons* they offered (beſides the daily ſacrifice) *two Bullocks, one Ram, ſeven Lambs, for burnt offerings;* with their meat and drink-offerings, and a *Goat for a ſin offering, Num.*28.11, 15. But at this *New Moon,* which was the beginning of their year, they offered all the foreſaid ſacrifices, and over and beſides them, *one Bullock, one Ram, and ſeven Lambs, for burnt-offerings,* and a *Goat for a ſin-offering.*

R   *Numb.*

Numb. 29.1,6. Secondly, in *other New Moons* they blow-
ed no *Trumpets:* In this they blowed (*a*) from the Sun-
rifing till night: Whence we learn what *New Moon* it
is that *Daved* fpeaketh of. *Pfal.* 81.3. *Blow the Trumpet
in the New moon, in the time appointed, at our Feaft day.*

The reafon in general of this blowing, and great
noife of Trumpets, I take to have been, to make their
New-years day the more remarkable, becaufe from it
all their *Deeds* and *Contracts* bore date, and their
Sabbatical years and Jubilees were counted thence:
But why it fhould be made remarkable by the
found of *Trumpets,* or *Cornets,* there are three con-
jectures.

Firft, the (*b*) *Hebrews* think it was done in memory
of *Ifaac* his deliverance, and that they did there-
fore found *Rams horns,* becaufe a *Ram* was facrificed

inftead of him. *Secondly,* (*c*) *Bafil* is of opinion, that
the people were hereby put in mind of that day,
wherein they received the law in Mount *Sinai* with
blowing of Trumpets. Thirdly, others think it was to
put them in remembrance of the *Refurrection,* which
fhall be with the *found of Trumpets; He fhall fend his
Angels with a great found of a Trumpet,* Mat. 24.31.

There are (*d*) three things confiderable in *New
Moons.* Firft, Σύνοδ۟۟, the *conjunction of the Moon
with the Sun.* Secondly, ἐξαύγασμ۟, the *waxing of the
Moon.* Thirdly, χμα μηνοιδὴς, the *prime of the
Moon.* In the firft it was *quite dark;* in the fecond it
did open it felf to receive the *Sun-beams:* In the laft
it did appear, *corniculata, horned.*

Becaufe in all thefe three degrees of the change,
there was a kind of mutual participation both of
the *Old and New Moon:* (*e*) Hence the *Jews* obferve
two days, namely, the *laft of every Month,* and the
firft

first day of the next following. Now becaufe the *thir-tieth* was the laft in their longeft months; Hence *Horace* calleth thefe *laft days, Tricefima Sabbata:* The *firft days* they termed, *Neomenias, new Moons.*

For certain reafons the *Jews* ufed a kind of change, or *tranflation* of days; which *tranflation*, though it were of ufe in other months alfo, yet the greateft care was had in tranflating the beginning of their year, or their firft day in their month *Tifri* ; and he that fhall diligently calculate thefe changes, fhall find, that all other tranflations depended on this firft.

Tranflation of days was (f) threefold. *Firft, Lunary* : *Secondly, Politick* : *Thirdly, Mixt.*

f *Scalig. de emend.temp.l.1 p. 85.*

The reafon of *Lunary Tranflation*, was, that they might not obferve the Feaft of the *New Moon*, until the old were quite over-paft. For the underftanding of this Note, thefe three rules.

Firft, The *Hebrews* counted their Holy-days from night to night, beginning at fix of the Clock, fo that from fix of the clock the firft night, till the next noon were juft eighteen hours.

Secondly, Always before the *New Moon*, there is a *conjunction* between the *Sun* and the *Moon*, during this *conjunction* fhe is called *Luna filens*, by reafon of her darknefs, and all this time there is a participation of the *Old Moon.*

Thirdly, When the conjunction was over-paft, before noon tide, namely, in any of thofe firft 18 hours, then the *New Moon* was celebrated the fame day. But if it continued but one minute after twelve of the clock at noon, then the feaft was *tranflated* to the day following, becaufe otherwife they fhould begin their Holy-day in the time of the old Moon.

Munfter. Calend.Heb.p.46