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JOURNAL OF
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SECRETARY: E. WALTER MAUNDER, F.R.A.S.

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1915.

567TH ORDINARY GENERAL MEETING,
HELD IN THE SMALL HALL, THE CENTRAL HALL,
WESTMINSTER, ON MONDAY, APRIL 12TH, 1915,
AT 4.30 P.M.

PROFESSOR D. S. MARGOLIOUTH, D.LITT., IN THE CHAIR.

The Minutes of the preceding Meeting were read and confirmed.

The SECRETARY announced the election of the Rev. D. H. D. Wilkin-son as an Associate of the Institute.

The CHAIRMAN called upon the Secretary to read the paper for the Meeting on "Astronomical Allusions in Sacred Books of the East," on behalf of the authoress, Mrs. Walter Maunder.

*ASTRONOMICAL ALLUSIONS IN SACRED BOOKS OF
THE EAST.* By Mrs. WALTER MAUNDER.

I AM no Oriental scholar, and of the books with which I deal I can read no one in the language in which it was written. Nevertheless, within the narrow limits that I have set myself, this disability may even be a recommendation; for, since I accept the best translations available and cannot amend them, they will not be affected by any bias and preconceived notion on my part. Further, I leave on one side all issues, no matter what their interest and importance, which do not depend on astronomy or on considerations of time and place deduced from astronomy.

The heavenly bodies were the same for our forefathers as they are for us; we can make the self-same simple first observations of the sun, moon and stars as they did; so far there is no difference between the astronomy of primitive times and that of to-day. But there is a great difference between our deductive powers and those of the first observers. The laws governing the relations between the earth and the heavenly bodies are far-reaching and precise, and we have gradually

gained some knowledge of them; so that, astronomically, we can both postdict and predict these relations, and if we alter our time and place we can restate with very considerable accuracy the corresponding changes in the sky.

But the ancients had not our experience and knowledge, and therefore had not our power of accurate astronomical computation. What they themselves had seen, that they could describe; but they could not deduce what their ancestors should have seen in different circumstances of time and place. Unless then their ancestors had handed down positive records of their experiences, their descendants could not infer what those must have been.

The first observations of astronomy were very simple, and were for the purpose of determining direction or of measuring time. They consisted in noting the positions of the sun, moon and stars with respect to each other, and especially with respect to the earth, that is to the horizon. The mean place of rising for the sun marks the east; its mean place of setting, the west; the south is indicated by the direction in which it "culminates," that is reaches its greatest height; the north by the point in the heavens round which the circumpolar stars circle unceasingly. In time, the heavenly bodies measure off the day, the month, the year, and the succession of years—they furnish us with the calendar; but calendars may be devised to depend upon the sun alone, or upon the sun with the stars, or upon the sun with the moon. Calendars therefore differ in type, and even when of the same type, they may differ in detail. These differences constitute strong lines of demarcation between races and religions; indeed, the adoption of different calendars has brought about bitter schisms, even between men professing the same faith, or derived from the same stock. Therefore astronomy in this particular application to calendar-making frequently affords an all-important criterion as to the date, place, and circumstances of a document under examination.

The literature with which I deal comes under two heads—the Persian sacred books, and the Jewish extra-canonical books near the time of the Christian era. I have read and studied practically the whole of the Persian writings that have been translated under the editorship of Max Müller in the series of "The Sacred Books of the East," and such of the Jewish "pseudepigraphical" books as have been translated into English. Of this great mass of literature, only a few books have yielded any appreciable amount of material for my purpose. These are:—in the Persian, the first two Fargards of

the Vendidad, and the Bundahis,* and for purposes of illustration or elucidation I have referred to later works, The Bahman Yast, Dina-i Mainog-i Khirad, or "The Opinions of the Spirit of Wisdom," and Manuskihar; in the Jewish Pseudepigrapha, IV Ezra, the Book of Jubilees and the Slavonic and Ethiopic Books of Enoch. Other books, both Jewish and Persian, do indeed yield a few slight astronomical references, but nothing of sufficient importance for my present purpose to warrant its inclusion within the narrow limits of this paper.

THE VENDIDAD.

The Vendidad, or the Anti-Demoniac Law, is part of the Avesta proper. It does not concern us here to discuss the date of it as a whole; its eminent editor, the late James Darmesteter, concludes that it has come down to us substantially from the Achæmænian† kings,—in round numbers its date may be put as about the 5th or 6th century B.C. The major part of it is concerned with ceremonial laws for the conduct of the faithful in the matters of their daily life or in their worship, sickness, cleansing, or death. Twenty out of its twenty-two Fargards or chapters may be likened indeed to a Mazdayasnian Leviticus, but in these there is little or no astronomical allusion, and they do not concern us here. But the first two Fargards might find

* The VIIIth Yast, known as the Tir or Tistar Yast, is of peculiar astronomical interest, but I have discussed it elsewhere. See *The Observatory*, vol. xxxv, pp. 393 and 438, and vol. xxxvi, p. 136, "The Zoroastrian Star Champions." Also *Journal of the British Astronomical Association*, vol. xxiii, p. 425, "The Four Star Champions of Iran."

† It may be convenient to note here that Cyrus the Great took Babylon 538 B.C.; Darius, the son of Hystaspes, who, like Cyrus, was of the Achæmænian race, acceded to the throne of Persia, 521 B.C. Alexander the Great overthrew Darius Codomannus, the last of the Achæmænian kings, 330 B.C. Alexander died 323 B.C., and one of his generals, Seleucus Nicator, founded the Seleucid dynasty and established his authority over all the eastern conquests of Alexander, 312 B.C. During the reign of Antiochus II., the third of the Seleucid line, a Parthian prince Arsaces made himself independent, and was succeeded by his brother, Arsaces II., who about 248 B.C. founded the Askanian or Arsacid monarchy of independent Parthia. The Parthian Empire increased in power until it had absorbed the whole of the ancient Persian Empire east of the Euphrates, and was strong enough to oppose successfully the power of Rome. About A.D. 225, the Persians threw off the Parthian yoke, and the second Persian Empire was founded under the Sassanian Dynasty. This last was overthrown by the Arabs at the battle of Nahavend in A.D. 639.

their analogy rather in the early chapters of Genesis. Darmesteter says of them: "The first two chapters deal with mythical matter, without any direct connection with the general object of the Vendidad, and are remnants of an old epic and cosmogonic literature. . . . Although there was no particular reason for placing them in the Vendidad, as soon as they were admitted into it, they were put at the beginning, because they referred to the first ages of the world." It is in these two chapters that we find certain astronomical data that, in my opinion, preclude the appropriateness of the word "mythical" in connection with them.

The first Fargard of the Vendidad gives a description of the sixteen good lands created by Ahura Mazda: for

"(1) Ahura Mazda spake unto Spitama Zarathustra, saying:

(2) I have made every land dear to its dwellers, even though it had no charms whatever in it: had I not made every land dear to its dwellers, even though it had no charms whatever in it, then the whole living world would have invaded the Airyana Vaego."

The following is a list of these sixteen good lands:—

1. Airyana Vaego, by the good river Daitya.
2. Sughdha. That is Sogdiana.
3. "Strong, holy Mauru." That is Merv.
4. "Beautiful Bakhdhi with high-lifted banners." That is Balkh.
5. Nisaya that lies between Mouru and Bakhdhi." Unidentified.
6. Haroyu. That is Herat.
7. "Vaekereta, of the evil shadows." Unidentified but possibly Kabul.
8. "Urva of the rich pastures." Unidentified.
9. "Khventa in Vehrkana." That is the river Gorgan in Hyrcania.
10. "The beautiful Harahvaiti." That is Harut.
11. "Bright glorious Haetumant." That is Helمند.
12. "Ragha of the three Races." Raï or Rhaghés.
13. "Strong, holy Kakhra." Unidentified.
14. "The four-cornered Varena." Unidentified.
15. "The Seven Rivers." That is the Panjab.
16. "The land by the floods of the Rangha, where people live without a head." Unidentified, though the Commentary says Roman Mesopotamia.

Darmesteter says:—

"Of these sixteen lands there are certainly nine which have really existed, and of which we know of the geographical position, as we

are able to follow their names from the records of the Achæmenian kings or the works of classical writers down to the map of modern Iran."

Of five of the remaining six, the Pahlavi commentary suggests identifications; but, without discussing these, we may note that the complete region indicated extends from Sogdiana by the Aral Sea on the north to the Arabian Sea on the south, and from the river Euphrates on the west to the river Sutlej on the east. This was the region wherein the Zoroastrian faith attained its widest diffusion; it was the region occupied by the Parthian Empire at its greatest extent.

But the first of the sixteen good lands, "the best of all," does not lie within it. Darmesteter says:—

"The first land, the *Airyana Vaëgo* by the *Vanguhi Daitya*, remained to the last a mythical region. It was originally the abode of Yima and of the righteous, that is to say, a particular form of Paradise."

I hope to be able to convince you that *Iran-veg* is no "mythical" region; that its position on the earth is, of all the sixteen "good lands," the best defined astronomically; that its place is at least as sure as the Panjab.

The description of *Iran-veg* in the *Fargard* is as follows:—

"(3) The first of the good land and countries which I, Ahura Mazda, created, was the *Airyana Vaëgo*, by the good river *Daitya*.

"Thereupon came *Angra Mainyu*, who is all death, and he counter-created by his witchcraft the serpent in the river and winter, a work of the *Daevas*.

"(4) There are ten winter months there, two summer months; and those are cold for the waters, cold for the earth, cold for the trees. Winter falls there, with the worst of its plagues."

And the *Vendidad Sadah*, or Liturgy, adds here: "There reigns the core and heart of winter."

Late tradition, in the time of the Sassanians, placed *Iran-Veg* in the mountains of Georgia, and identified the good river *Daitya* with the *Araxes*. But it is quite evident to everyone that nowhere in Georgia is it true that there are "ten winter months there, two summer months;" it is evident to-day, it was quite as evident to the Persians under the Achæmenians or the *Arsacides*, for the *Vendidad Sadah* comments that:

"It is known that there are seven months of summer and five of winter."

and the Bundahis elaborates the same proportion of the seasons in its XXVth chapter. But this proportion of the winter to summer does hold good for the region within the Arctic Circle; the records of Nansen and Peary will bear me out here. And the Persians, as I hope I have made clear, could neither guess nor calculate the climatic conditions of regions so far removed from them in latitude. Since then, they could neither imagine nor calculate the conditions of the polar regions: because they had themselves no experience of them: it must be a true record that has been handed down to them from their remote ancestors, and Iran-Veg, the first and best of the good lands of Ahura Mazda, was a real land, placed somewhere between the latitudes of 67° and 90° north.

But this is not the only information that we are given in the Vendidad about Iran-Veg. In the Second Fargard, Zarathustra asked Ahura Mazda:—

“Who was the first mortal before myself, Zarathustra, with whom thou, Ahura Mazda, didst converse? And Ahura Mazda answered:

“The fair Yima, the great Shepherd . . . unto him, O Zarathustra, I, Ahura Mazda, spake, saying: ‘Well, fair Yima, son of Vivanghat, be thou the preacher and the bearer of my law!’”

This Yima is the Yama of the Vedas; his name and parentage are the same; he himself therefore dates from before the fission of the Japhetic† race into Iranian and Indian; he is among the common ancestors of both. His father’s name is Vivanghat

* This is the form in which the name of this great teacher is given in the Avesta, and scholars interpret it as meaning “old white camel.” The Greeks wrote the name Zoroaster, and explained it as meaning “living star.” The later Persian writers contract it to Zaratust or Zirdaust. I am not concerned in this paper with the tenets of Zoroastrianism, and where these differed from the Magianism which preceded his mission. Therefore when I speak of Magian doctrines, I am using the term loosely, not as distinguishing between the doctrine of Zoroaster and that which preceded it. I refer to the Magi, originally a Median tribe, as representing the priestly caste, just as we speak of the Chaldeans, sometimes as a distinct nation, sometimes as the priestly caste of Babylon. Just as Zaratust is a later form of Zarathustra, so Iran-Veg is a later form of the Avestan Airyano Vaego.

† Throughout this paper, I use the terms “Japhetic,” “Semitic” and “Hamitic,” simply as a rough ethnological division. I am debarred from using the term “Aryan” in any wide sense, since this is the very name that the ancient Persians arrogated to their own race peculiarly.

in Iranian, *Vivasvat* in Indian, meaning "the bright one;" his own name *Yima* or *Yama* is supposed to mean "*twin*." It is often assumed that he and the legends about him are equally mythical, woven from the wonderings of primitive peoples about the dawn, the day, and the light. But of him, who became known throughout the ages as *Yima the Glorious*—or *Jamshed* as he is named by the later Persian poets—two things are told us, which are certainly not mythical, characteristic of the land in which he dwelt. None but an actual observer could have transmitted to his descendants the strange relations between summer and winter, between day and night, that prevailed in *Iran-Veg*.

Yima, then, is one of the very early heroes of the Japhetic race; he is common both to Indian and Iranian. It does not lie with me to speculate what relation he bears to *our* own branch of the Japhetic family, whether he was our direct ancestor, or only a collateral. But, as already quoted from the *Fargard*, he was charged by *Ahura Mazda* to be the preacher and bearer of his law. *Yima* refused, not in contempt, but because he had neither the calling nor the knowledge, and offered instead to nourish, rule, and watch over his world.

"There shall be, while I am king, neither cold wind nor hot wind, neither disease nor death."

So *Ahura Mazda* brought him a golden ring and a poniard inlaid with gold, and

"Behold here *Yima* bears royal sway"

"Thus under the sway of *Yima*, three hundred winters passed away, and the earth was replenished with flocks and herds, with men and dogs and birds and with red blazing fires, and there was no more room for flocks, herds and men"

"Then *Yima* stepped forward, towards the luminous space, southwards, to meet the sun, and he pressed the earth with the golden ring, and bored it with the poniard and *Yima* made the earth grow larger by one-third than it was before."

This was repeated twice at intervals of three hundred years, so that he enlarged his dominions threefold in his long reign.

Here we have described the three migrations of *Yima* from his farthest northerly camp, southward, though we have no indication given of what his southernmost limit was. The three indications of his direction—"towards the luminous space," "southwards," "to meet the sun"—are but three ways

of saying the same thing; for a traveller in the polar regions, moving away from the pole, must move southward, "towards the luminous space" "to meet the sun."

The Fargard then goes on to tell of the meeting in Iran-Veg of the celestial gods, called by Ahura Mazda, and the meeting of the excellent mortals, summoned by Yima the good Shepherd, when Ahura Mazda said:—

"O fair Yima, son of Vivanghat! Upon the material world the fatal winters are going to fall, that shall bring the fierce foul frost; upon the material world the fatal winters are going to fall, that shall make snow-flakes fall thick, even an *aredvi* deep on the highest tops of mountains. And all the three sorts of beasts shall perish, those that live in the wilderness, and those that live on the tops of the mountains, and those that live in the bosom of the dale under the shelter of the stables."

To guard against these fatal winters,* Ahura Mazda directed Yim to make a *Var* or enclosure, known in late mythology as the *Var-Gam-kard*, or the "Var made by Yim." This *Var* was to be a square, long as a riding ground on every side, to be an abode for men and a fold for flocks; and to it were brought the seeds of men and women, of the greatest, best and finest kinds, and of cattle and of every kind of tree and fruit. Then "that *Var* he sealed up with the golden ring, and he made a door, and a window, self-shining within."

Then:—

"O Maker of the material world, thou Holy One! What (lights are there to give light) in the *Vara* which Yima made?"

"Ahura Mazda answered: 'There are uncreated lights and created lights. There, the stars, the moon, and the sun are only once (a year) seen to rise and set, and a year seems only as a day.'"

Here is the second great peculiarity of Iran-Veg, and it is significant that in the description given in a later source, the *Mainyo-i-khard*, whose author quoted freely from the *Vendidad*, there is no mention of this condition of the year and the day

* The Pahlavi Commentary gives as its version for the word "*winters*," "*Malkosan*," which is the plural of the Aramaic word "*Malkos*," *rain*. This *Malkos* entered the Iranian mythology and became naturalised there, but being mistaken for a proper name, became that of a demon, who by witchcraft will let loose a furious winter on the earth to destroy it.

being the same—a condition peculiar to the polar regions. As we have seen, the Vendidad Sadah or Liturgy pointed out that the proportion of ten months winter to two months summer was incorrect, as far as they knew, for their own climate. But the proportion was, as they knew, dependent, to some extent, on the latitude or the surroundings of a locality, and so might hold good for Iran-Veg within the limits of permissible exaggeration. But nowhere between Sogdiana and the Arabian Sea was there to be perceived any difference in the number of days in a year, in the number of times that the sun and moon and stars rise and set. It was so wholly unintelligible to later writers that we know of no comment or explanation, even where the passage from the Vendidad is freely paraphrased.

But it cannot be mere chance, mere invention, which gives two independent astronomical conditions, true for the polar regions, and true only for them.*

Two deductions, therefore, we must make:—

First, that Iran-Veg was a real and not a mythical place. Primarily it was situated within the Arctic Circle of the earth.

“They say the Lion and the Lizard keep

The courts where Jamshyd gloried and drank deep,”

but in this, they say wrong. The present guardians of the Var of Jamshed are most certainly not the lion or the lizard, but perhaps the seal and the polar bear.

And secondly, if Iran-Veg was an actual place, so Jamshed or Yim was really a man, for some man must have observed these astronomical facts thus preserved by his successors. How he or his ancestors reached a spot so far north as to be within the

* Of course it is only at the very pole itself that the year and the day coincide in length, and even for the pole the description of the stars and moon rising and setting once in the year is not correct, for the moon rises thirteen times, the stars not at all. But the mis-statement is after all, from the observer's point of view, but slight. That which must have greatly impressed the wanderers who first penetrated far within the Arctic Circle was the fact that the number of the days in the year varied. Till they reached that region, from one sunrise to the next, or from one sunset to the next, was an invariable measure of time. After they passed the Arctic Circle, the further they got north, the more monstrous became the length of the midsummer day, the more monstrous the length of the midwinter night, until it would require no great imagination to conclude that a place might be reached where the summer was all day, the winter all night, each of them half the year. Latitudes of 25° to 45° would never suggest that such a condition of things could occur anywhere.

polar regions, no record has come down to us; but there he was most assuredly, some thousands of years ago, at a date before the Iranian people split off from their Indian brothers. From that far northern spot, he migrated south, and the record of the peculiar astronomical conditions of his home in the far north were embodied in the first two Fargards of the Vendidad, which took its present form probably about the time of Darius Hystaspis. The southern limit of his migrations was probably to the north of Sogdiana, which lies between the Sir and Amu Darias, rivers flowing westward into the Aral Sea.

Forgive me if I labour this point, for it is of the utmost importance. We have in these two Fargards two independent astronomical conditions recorded, conditions that hold good only for the polar regions, conditions which, in that early state of society, it was not possible for the rude dwellers in temperate and tropical zones to have inferred from their own experiences. Here we have preserved in these Fargards something that was by no means mythical; actual men must have penetrated far towards the pole, and have for themselves observed the two months summer and the ten months winter, the six months day and the six months night, which prevailed there and nowhere else, and have handed them down to their posterity. No doubt, as the tradition was handed down from generation to generation, it received elaboration and ornament, but its nucleus was an actual fact of experience by real men, and was preserved unaltered. But by Zarathustra's time, upon the actual Iran-Veg, "the best of the good lands," not one alone but two or more thousands of fierce, foul winters had fallen; it was buried under snow and ice; no danger now that "the whole living world would invade the Airyana Vaego." Nevertheless, men remembered that it was in the direction of Ataropatakan, that is, towards the north. Yim's enclosure was the abode of the righteous, and since obviously the righteous in the flesh were not living there, they must be the righteous dead. Yim's enclosure became a heaven; it was in the heavens,—in the northern heavens.

Now the Magi would not, of themselves, have conceived that the northern heavens were the abode of the righteous, for the north, to them, was essentially evil, the home of the wicked Daevas, in other words, hell. One of the later writers, Manuskihar, is very explicit:

"Three places, collectively, are called hell, which is northerly, descending, and underneath this earth, even unto the utmost

declivity of the sky ; and its gate is in the earth, a place of the northern quarter, and is called the *Arezur* ridge."

and the *Bundahis* says :

"The *Arezur* ridge (of the *Alburz* mountains) is a summit at the gate of hell where they always hold the concourse of the demons."*

By piecing together the various information given from the time of *Zarathustra* onward, the conception presented to my mind is this :—When *Iran-Veg* was no longer recognized as on this earth, it was believed to be that circular portion of the sky defined by the circumpolar stars, namely those that never rise or set. The rampart of this enclosure was *Haptok*-ring, the Persian name for the seven stars of the *Plough*. The rampart of the earth was *Mt. Alburz*, lying all round its horizon, and the sweep of the seven *Plough* stars at their lowest touched *Mt. Alburz* at its most northerly point—the ridge of *Arezur*, which was the gate of hell. Hell was, I judge, a reflection of the circumpolar heavens, but hanging below the northern horizon of the earth. Earth, heaven and hell, all touched at the *Arezur* ridge in the extreme north.

But there is a very pretty astronomical idea brought out in connection with the function of the seven *Plough* stars as a bulwark against an invasion from hell, for in the "*Opinions of the Spirit of Wisdom*" (written, perhaps, about the fifth or sixth century A.D.) it says that *Haptok*-ring,

"with 99,999 guardian spirits of the righteous, is intrusted with the gate and passage of hell, for the keeping back of those 99,999 demons and fiends, witches and wizards, who are in opposition to the sphere and constellations. Its motion also is round about hell ; and its special business is this, as it holds the twelve signs of the zodiac by the hand, in *their* proper going and coming. And those twelve constellations also proceed in like manner by the power and help of *Haptok*-ring ; and every single constellation when it comes in at *Alburz* holds to *Haptok*-ring by the hand, and begs protection from *Haptok*-ring" (*Mkh. XLIX. 15-21*).

It is evident that the *Plough* stars do indicate to any careful observer whereabouts the various signs of the zodiac are, even

* I should like here to point out that the fourfold heaven idea, current in the time of the *Bundahis* and later was, astronomically, faulty. For the faithful, on death, were escorted, first to the star station, then to the moon station, then to the sun station, and lastly to the endless light, so that the stars were supposed to be closer to the earth than the sun ; closer indeed than the moon.

when these are below the horizon. The heavens move in one piece, and Haptok-ring, above the horizon always, is an index to the revolution of the whole sphere.

But I beg you to bear in mind these Iranian ideas that, not only the primeval "best land of all" with its "enclosure," but also heaven and hell are both in the extreme north, and that the seven Plough stars rule there in the heavens above.

The proverb has it: "There is more life in a single grain of wheat than in a whole bushel of chaff"; and though my grain of wheat is very small, it has real life in it. And the reality is this: sometime in the long past a hero of the Japhetic branch of the human family did establish his encampment somewhere within the polar regions, and so described the peculiar polar conditions of summer and winter, of day and night, that it precludes their being the product of imagination. From that encampment in the far north the Indian and Iranian branches (not yet separated) of the Japhetic family came south, but the memory of the lost good land in the far north remained with the Iranians, and gave rise to their peculiar and inconsistent ideas of the location of heaven and hell.

And these traditions are Japhetic, and Japhetic only. When Zarathustra, or someone in Zarathustra's name, sang the Far-gards, he was neither inventing his tale nor borrowing it from Assyria, Babylon, Israel, or Egypt. These traditions came through the family of Japhet, not from those of Shem or Ham. Neither of these two great families has traditions that I know of, which point back to a home within the polar regions.

There is yet another tradition of a particular latitude in that trek from the far north before the Iranians entered known lands. In the XXVth chapter of the Bundahis it says:

"The summer day is as much as two of the shortest winter days, and the winter night is as much as two of the shortest summer nights. The summer day is twelve Hasars, the night six Hasars, the winter night is twelve Hasars, the day six; a Hasar *being* a measure of time *and*, in like manner, of land."

This relation of day to night at the solstices defines the latitude with some particularity, but it is a latitude farther north than any Iranian land, farther north than Sogdiana, the second of the "good lands." The man who recorded this astronomical relation must have lived as far north as 49° latitude; he must have lived before the Iranian trek had reached Sogdiana; perhaps it may represent the southern limit of Yim's migrations. But this tradition of the relation of day to night in north lati-

tude 49° is—like that of the polar regions—a Japhetic experience and record, not a Semitic nor a Hamitic one. The Iranian derived it from his own ancestry; he borrowed it neither from Jew, Babylonian, Egyptian nor Greek. Further, the division of the day is a peculiar one; it is neither into twelve parts, as with the Babylonians, nor into twenty-four, as with the Egyptians, but into eighteen.

THE BUNDAHIS.

I can find the date, neither of the sojourn of Yim within the polar regions, handed down in the Vendidad, nor of the sojourn in latitude 49° north, embodied in the Bundahis; both belong to Iranian pre-history. But of the date when the Bundahis itself was compiled, the evidence is clear and unmistakable, for its framework is connected with the constellations, and the references to these are consistent throughout its 34 chapters.

Thus in Chapter II, *Varak*, the Ram, is given as the first of the signs, and in Chapter V the summer solstice is placed at the first degree of the Crab (*Kalakang*), showing that it is later than Hipparchus. Chapter VII, verse 2, states that:

“Every single month is the owner of one constellation: the month *Tir* is the fourth month of the year, and Cancer the fourth constellation from Aries.”

The solar year is therefore the one in use, as its months are arbitrary and conventional months, not natural months or lunations, as with the Jews and Babylonians. But Chapter XXXIV allows us to date the book more precisely. It gives the chronology of the world, stating that “Time was 12,000 years,” and that each millennium was placed under the rule of a sign of the zodiac.* For the first 3,000 years under the reigns of Aries,

* This is evidently a misrendering and misunderstanding of the great discovery of Hipparchus, made 128 B.C., who found that the equinoctial point moved backwards through the signs at a rate which, according to his determination, would complete the revolution in 36,000 years. The writer of the Bundahis (*circa* A.D. 40) evidently supposed that the movement was a forward one, and was three times as rapid as Hipparchus had computed. But it is evident that, in spite of these mistakes, the compiler was attempting to place the Magian revealed religion on a sound scientific basis—a basis of science up-to-date. But before this astronomical discovery of Hipparchus could have thus been accepted as a part of divine revelation, not only by his own, but by other nations, some long period of time must have elapsed. For it was accepted so

Taurus and Gemini, there was negation. The second period of 3,000 years under the rule of Cancer, Leo, and Virgo, was "the duration of Gayomard, with the ox, in the world," that is to say, the world was under the active dominance of the Good Spirit. The reigns of Libra, Scorpio, and Sagittarius were those when "the adversary wrought his evil work," and his dominance came to an end "at the coming of the religion," that is to say, when Zoroaster brought in his faith.* In the most complete copy of the Bundahis that we have, Sagittarius is the last millennial reign mentioned by name of the sign, and its events are given in detail, these adding up to 1,000 years precisely. Then come a number of details referring to the following millennium, that of Capricornus, mentioning various kings who have been identified with Persian monarchs, and also "Alexander the Ruman," and giving the length of the Askanian dynasty as 284 years, another MS. giving it as 290 years. The record of this millennium is not rounded off as were those of the millenniums preceding it, but a few words follow, evidently written much later, assigning the rest of the 1,000 years to the Sassanian dynasty. In this addition the writer of it, whoever he may have been, went wrong, for the Askanian dynasty lasted, not for about 300 years, but for about 500, but the error would lead us to conclude that the original compiler wrote about the 284th year of the Askanian dynasty, that is about A.D. 40, and that his original

fully that it was neither studied nor questioned, and it followed that it was misunderstood and misrepresented. At that period the process would have required a considerable time. Now-a-days we can pass through the same stages of accepting, misunderstanding and misrendering scientific facts more rapidly than at the beginning of the Christian era. Printing, steam and electricity in these times speed up the propagation of error as well as of truth.

* The *traditional* date of the birth of Zoroaster is about 660 B.C. "The Coming of the Religion," when King Vishtasp accepted Zoroaster's preaching and became his patron and protector, must therefore be put not long before the beginning of the sixth century before the Christian era. King Vishtasp—Hystaspes in the Greek—is supposed by some to have been the Hystaspes who was the cousin of Cyrus the Great, and the father of Darius. In any case he must have been of the same family. If he were, indeed, this Hystaspes, the traditional dates must be a few years too early.

It is true that the tendency of scholars is now to place Zoroaster many centuries earlier, but this is not borne out by the Persian tradition, by the Bundahis, or by the fact that Darius Hystaspis is the first great monarch whose monuments show that he was himself an ardent Zoroastrian.

work ended with the statement that the dynasty had then lasted for 284 years.

In this connection there is a Parsi tradition which is of great significance. Alexander the Great is accused of having destroyed many of the Avestan books, and it is recorded of a certain Askanian king, Valkash, that he caused the scattered fragments of the remnant tradition to be collected together. This Valkash is identified with Vologeses I., king of Parthia, a contemporary of Nero, and though a Greek by birth, a convert to Zoroastrianism. Since the Bundahis was collated at this very time, and bears traces of the system of Hipparchus in its astronomical framework, I think the probability is great that it was compiled by this very king Vologeses.

At this time, in the middle of the first century of our era, there was great interchange of religious thought. Many men were changing their faiths in their earnest searching after God. This Vologeses was king of Parthia, and his father, Artabanus, was under deep obligations to Izates, the king of Adiabene, the very centre and home of the Magi. Perhaps it was through this connection that Vologeses and his brother Tiridates adopted the Magian faith. Izates was the son of Monobasus, king of Adiabene, and of Helena, his queen and sister; that is to say, Monobasus and Helena had performed one of the most sacred rites of the Magi, a next-of-kin marriage. Izates was therefore divinely king, through his father, through his mother, and through their fulfilment of this rite. Nevertheless, after the death of Monobasus both Queen Helena and Izates, her son, embraced Judaism through the teaching of certain Jews, Ananias and Eleazer; and his Magian nobles, objecting to the rule of a king of the Jewish faith, called in Vologeses to depose him. Josephus slurs over the subsequent events, so that they are scarcely intelligible, for though he makes out that Izates was victorious in the struggle, yet he and his mother and his many children retired to Jerusalem, and Monobasus, his brother, reigned in his stead, first as regent, and then after the death of Izates (about A.D. 50) as king. The tomb of Queen Helena is at Jerusalem to this day, and indeed it is but a few years since M. De Sauley opened her sarcophagus and found her very form, and on the sarcophagus was an Aramaic text beginning with the legend "Elen Malkatha," or "Helena the Queen." The children of Izates were in Jerusalem during the siege by Titus, and were carried as hostages to Rome.

When kings change their faith, there are many converts also among their subjects. Here, then, we have Greeks becoming

Zoroastrians and Zoroastrians becoming Jews. The Greek and Zoroastrian religions were very different, but the Zoroastrian was the higher in ethics and in spiritual ideals. Was there anything common to the Zoroastrian and the Jewish faiths to lead the former to look for the fulfilment of its hopes in the latter?

In the XXXth chapter of the Bundahis, found in all its MS., we read:—

“On the nature of the resurrection and future existence it says in revelation that . . . After Soshyans comes they prepare the raising of the dead.”

Soshyans is the son of Zoroaster, miraculously to be born at the end of the age, and the meaning of the name is Saviour or Deliverer; it could be translated into Hebrew as Joshua, or in the Greek form of this as Jesus. And this doctrine of a coming Saviour is not found for the first time in the Bundahis. It is plainly indicated in the Gathas, the very earliest Zoroastrian literature extant. And this hope we must believe came from God, for about the 600th year of the millennium of Zoroaster, some 40 or 50 years before the Bundahis was compiled, Magi, that is to say men of the Magian race and Magian faith, came, not improbably from Adiabene, the Magian land, the kingdom of Monobasus and Helena, to Herod the Great and said: “Where is He that is born King of the Jews? For we have seen His star in the east and are come to worship Him.” That their journey to find the King of the Jews was undertaken by direct divine guidance we may be sure, for of their return journey we are expressly told that they were “warned of God.”

And as the Magi knelt before the infant King and made their offerings of gold, frankincense and myrrh, there is one question which we may be sure that they asked:—“What is His name?” And there is but one answer which Joseph could give to them: “His name is Jesus, for He shall save His people from their sins.”

IV EZRA.

It is obvious that Greek astronomy left a strong impression on the Bundahis; here the Magian traditions are incased in a Greek astronomical framework, and we may trace this to the Askanian training of the compilers that King Valkash set to work. Can we trace in any similar fashion the influence on Jewish literature of the Magian training of Persian converts to Judaism?

For traces of such influence we turn to the Apocrypha and to the Apocalyptic books in particular. It does not concern me here whether one author or many went to the writing of each of these pseudo-prophecies; I deal only with the astronomy wherever it is present, though questions of date and of interpolations are sometimes involved.*

There is no question as to the date of that Salathiel who assumed to himself the name of the great Scribe of the Return from the first Exile. He himself said he wrote the book in "the thirtieth year after the ruin of the city," that is after the destruction of Jerusalem by Titus in A.D. 70. All scholars agree on dates close to this, even when they divide iv Ezra into a Salathiel-Apocalypse and an Ezra-Apocalypse. But the book is not, as Dr. Sanday says, "a pure product of Judaism," for a Jew untainted by Græco-Magian traditions would have divided all time into seven millenniums, based on the seven days of Creation, but Pseudo-Ezra, in chapter xiv, 10-12, writes:

"For the world hath lost its youth and the times begin to wax old. For the world is divided into twelve parts, and ten parts of it are gone already, even the half of the tenth part, and there remain of it two parts after the middle of the tenth part."

This is manifestly a direct reproduction of the Bundahis "Time was for 12,000 years," and like the Bundahis, he places the writing of his book in the tenth millennium, after the middle of it. A "pure" Jew would have dated the fall of Jerusalem

* I have found no important material for my present purpose in the Apocalypse of Baruch, the Assumption of Moses, the Ascension of Isaiah, or the Testaments of the Twelve Patriarchs. But for the fact that I have been able to search these books for astronomical allusions, and not only these, but the more fruitful fields of the Enoch literature and the Book of Jubilees, I am entirely indebted to the long series of magnificent works produced by Canon Charles. I am deeply indebted to him, not for the mere rendering into English only, but for the fullness and the particularity of the translation and his notes, by which he has placed the immense resources of his scholarship freely at the disposal of a student quite unlearned in Oriental languages. My only clue in the interpretation of these books is the astronomical one, and it has happened in more than one instance that where Dr. Charles himself has deemed the text to be so corrupt as to be unintelligible, I have been able to grasp what was the astronomical meaning that the author had desired to convey; for though he had expressed himself confusedly, he had not been wholly without intelligence, and Dr. Charles placed the details of the problem so completely before me that I was able to arrive at a probable solution of the enigma.

in the world-calendar as half-way through the fourth millennium from the Creation, or perhaps at the beginning of the fifth millennium, or in the third century of that millennium,* according to the particular chronology that he adopted. Actually the fall of Jerusalem was near the end of the seventh century of the millennium of Zoroaster, the tenth of the Magian world-calendar.†

Here, the Magian tradition has prevailed over the Jewish, but in Chapter vii, 28–30, the two traditions are blended. The angel Uriel is represented as speaking to the prophet :

“For my son Jesus shall be revealed with those that be with him, and shall rejoice them that remain four hundred years. After these years shall my son Christ die, and all that have the breath of life. And the world shall be turned into the old silence seven days, like as in the first beginning : so that no man shall remain.”

The “old silence” which here is to prevail for seven days “like as in the first beginning,” is adopted from the Magian description of the first quarter of the 12,000 years :—

“It says in revelation that three thousand years was the duration of the spiritual *state*, where the creatures were unthinking, unmoving and intangible.” (S.B.E., Vol. V, Chapter xxxiv.)

It is objected to the 28th verse of this passage that :

“The word Jesus in II Esdras, vii, 28, is also absent from the Oriental versions ; it is only found in the Latin and is no doubt a late Christian gloss.”

* “Rav Chanan Ben Tachlepha reported to Rav Joseph : ‘I met a man who had a roll in his hand, written in the Assyrian characters, but in the sacred tongue. I asked him, Where hast thou got it ? He replied, I had enlisted in the armies of Persia, and I found it among the treasures of Persia. In it was written : The world will come to an end in the year 4291 from the creation of the world. Some of these years will be noted for wars among the sea monsters, and others for the wars of Gog and Magog, and the rest will be the days of the Messiah ; though the Holy One, Blessed be He ! only renews the world after seven thousand years.’” (*Sanhedrin*, fol. 97, col. 2.)

† It is significant that the Ethiopic version of Pseudo-Ezra reads “For the world is divided into *ten* parts, and is come unto the tenth, and half the tenth remaineth.” I think that this points to the Ethiopic version having been made so late that the translator, not understanding the Magian twelve-fold division of world-time, substituted the Ptolemaic ten-sphere division of the heavens as being more correct.

The explanation raises greater difficulties than does the passage. Omit the name Jesus, and what is there in the passage that should lead any Christian, whether late or early, to connect it with our Lord and to interpolate His Name in it? Neither Christian nor Jew look back to an era of negation, and assuredly they do not look forward to such as the end of all things; the "old silence" is wholly a Magian tenet. It is not now, nor has it ever been, the Christian belief or hope that the Lord Jesus Christ should come to remain four hundred years and that after these years He and all that have the breath of man should die. The Christian faith is now, and always has been, "Christ being raised from the dead, dieth no more, death hath no more dominion over Him." There is no sect, however ignorant or heretical, that has abjured this. Further, no Christians have ever held that our Lord was the son of Uriel, the Angel of Light.

Had the insertion of the words "Jesus" and "Christ" been a "late gloss," then whoever inserted them was no orthodox Christian, though possibly he may have been a follower of some Gnostic heresy.

Can we trace elsewhere, late or early, a reference to such a final four hundred years in any world-period? Can we find any reason why the name Jesus should be inserted in connection with it?

Apocalypses and Pseudo-Apocalypses were not peculiar to the Jewish and Christian faiths. There is a Magian Apocalypse, the Bahman Yast,* which in beauty of language

* E. W. West writes as follows in his Introduction to the Bahman Yast:—

"Whether this text, as now extant, be the original commentary or *zand* of the Vohuman Yast, admits of doubt, since it appears to quote that commentary (chap. ii, 1) as an authority for its statements; it is therefore most probably only an epitome of the original commentary. Such an epitome would naturally quote many passages verbatim from the original work, which ought to bear traces of translation from an Avesta text, as its title *zand* implies a Pahlavi translation from the Avesta. There are in fact many such traces in this epitome . . . In speculating therefore upon the contents of the Bahman Yast, it is necessary to remember that we are most probably dealing with a composite work, whose statements may be referred to the three different ages of the Avesta original, the Pahlavi translation and commentary, and the Pahlavi epitome of the latter; and that this last form of the text is the only old version now extant . . . Perhaps the most reasonable hypotheses that can be founded on these facts are, first, that the original *zand* or commentary of the Bahman Yast was written and translated from the Avesta in the latter part of the reign of Khusro Noshirvan

and sublimity of thought and aspiration, compares by no means unfavourably with even the best of the Pseudo-Apocalypses.

In the third chapter of this Bahman Yast we read :

43. "Auharmazd said to Zaratust the Spitaman . . . This is what I foretell, when it is the end of thy millennium it is the beginning of *that* of Hushedar. 44. Regarding Hushedar it is declared that he will be born in 1600, and at thirty years of age he comes to a conference with me, Auharmazd, and receives the religion. 45. When he comes away from the conference, he cries to the sun with the swift horse, thus: 'Stand still.'" (Bahman Yast, III, 43-45.)

E. W. West's comment on this passage is as follows:

"There seems to be no other rational way of understanding this number (1600) than by supposing that it represents the date of Hushedar's birth, counting from the beginning of Zaratust's millennium. According to this view, Hushedar was to be born in the 600th year of his own millennium.

Zaratust, according to tradition at least as early as the Bundahis, was to have three sons, born miraculously after many centuries had passed. These three, Hushedar, Hushedar-Mah and Soshiyans were respectively to rule over the last three millenniums of the great twelve-fold world time. Here in the Bahman Yast we have it declared that the first of these three sons is to be born in the 600th year of his own millennium; that is to say, he is "to be revealed" only during the last four hundred years of it.

The division, then, of the world-millenniums into 600 years and 400 years—600 before the coming of the Saviour, 400 during which He is revealed—is a Magian tradition, and is a sufficient explanation of the 400 years during which, according to iv Ezra, "My son, Jesus, shall rejoice them that remain." Clearly it is neither the Jewish Messiah nor the Christian Jesus who is here described by Pseudo-Ezra, but the Magian Soshiyans.

(A.D. 531-579), or very shortly afterwards, which would account for no later king being mentioned by name; and secondly, that the epitome now extant was compiled by some writer who lived so long after the Arabic invasion that the details of their inroad had become obscured by the more recent successes of Turanian rulers. . . . The Avesta of the Bahman Yast was probably compiled from older sources (like the rest of the Avesta) during the reigns of the earlier Sassanian monarchs."

But when could this Magian tradition of the coming of the Saviour in the 600th year of a world-millennium have arisen? May it not have been that it is an echo and an effect of that wondrous journey, undertaken about the time of the 600th year of the millennium of Zoroaster, when, guided by a star, the Magi set forth to find Him Who was born King of the Jews, and to lay at the feet of the Infant Saviour their princely offerings of gold, frankincense and myrrh?

“IV Ezra is an apocalyptic book; it professes to give a forecast of the times of the end; it claims to be a work of the same order as the book of Daniel, which book the author avowedly had in his hand, and of the Johannine Revelation, with which work he was clearly acquainted, though without acknowledging it; as of course such acknowledgment would have been incompatible with the use of his adopted *nom de plume*. We are at present only concerned with the astronomical allusions in it, or it would be a matter of interest to trace the points of contact and difference between IV Ezra, and its two great models. Nevertheless the astronomical allusions will suffice for illustration.

“St. John has seen two visions; with his bodily eyes he has seen certain phenomena in the material heavens; an eclipse of the sun, an eclipse of the moon, a magnificent meteor shower, a dazzling aerolite. And he has seen with his spiritual sight certain spiritual happenings in the spiritual heavens. And the two visions are alike; as is the one, so is the other; the man who has seen both says so, and the simplicity of his assertion carries conviction with it. He has no astronomical interest in what he has seen; he has no astronomical theories about it; he describes what he saw as it appeared to him; and so doing, he makes no astronomical mistakes.

“Not so with the author of IV Ezra. There is no vision; he is labouring to build up a vision from that which he has read of what other men have seen. He would carve the revelation made to Daniel or to St. John to suit his own desires or hopes, and he works in the astronomical imagery to fit a pre-conceived ideal. Thus in IV Ezra v, 4-5, we read:

But if the Most High grant thee to live, thou shalt see that which is after the third kingdom to be troubled; and the sun shall suddenly shine forth in the night, and the moon in the day; and blood shall drop out of wood, and the stone shall give his voice, and the peoples shall be troubled, and their goings shall be changed.

“The writer wished to express that everything would be

turned upside-down, and out of its ordinary course, and in accordance with the precedents of Isaiah, Daniel, and St. John, he took the two great lights as representative of all creation. But he forgot that these two great lights have their natural use as well as their use as types; that indeed their typical quality depends on their natural use. Now it is the shining of the sun that makes the day, and the shining of the moon is apparent only when the brighter shining of the sun is not there to overpower it; so that when he says that the sun shall suddenly shine forth in the night, and the moon in the day, he is not expressing, as he desires to do, that the actuality of day and night has been changed, but only that the terms by which these are designated have been altered.

“ Elsewhere also the attempt is marked in IV Ezra to show forth in detail, after this manner, the mind and working of God by exhibiting the details of the working of some symbol or emblem, which God has used through His prophets to declare His will. It is, so to speak, a mechanical method of prophecy, and is not very far removed from mere fortune-telling or divination.

“ Thus both the prophets Isaiah and St. John use the simile of a shower of shooting stars, describing it by the terrestrial analogy of a fig-tree shedding its leaves or untimely fruit. In both cases, the description evidently comes from a man who has actually seen such a star shower, but no cause or theory is given for it; it is simply given as a picture of how the high and bright ones should be cast down. So too, St. John when he uses the imagery of a fireball, ‘Wormwood,’ gives no explanation as to what such fireballs are, and whence they come. Not so in IV Ezra. In the xvth chapter, there are many references to a ‘terrible star’ which strongly suggest that the author had read Rev. viii, 10. In verses 34–35, he says:

Behold clouds from the east and from the north unto the south, and they are very horrible to look upon, full of wrath and storm. They shall dash one against another, and shall pour out a plentiful storm (Latin, star) upon the earth, even their own star. . . . (verse 40.) And great clouds and mighty and full of wrath shall be lifted up, and the star, that they may destroy all the earth, and them that dwell therein: and they shall pour out over every high and eminent one a terrible star, fire, and hail, and flying swords, and many waters, that all plains may be full, and all rivers, with the abundance of those waters.

“ The author here is giving expression to the theory, held,

indeed, up to a hundred years ago, that these aerolites are the products of storm-clouds, and are generated, along with lightning and hail, in the upper atmosphere.

"The above are instances of the mechanical use that the author of IV Ezra makes of astronomical imagery to elaborate his thought. In a similar fashion he makes use of number. In his day—and indeed in most ages, even in our own—it is thought that there is a mystery of number; that in certain abstract numbers there resides a concrete virtue or malignity. Some numbers are perfect; perfect, it is implied in themselves, so that even God is bound to employ them, for otherwise He would fall short of perfection. This belief in the holiness and power of certain given numbers is a superstition at the base of many incantations and magical formulæ in all races."*

IV Ezra is an apocalyptic book, written by a faithful Jew, one who turns to God in almost passionate reproach for the disasters which have fallen upon His chosen and peculiar people, but, at the same time, in unshaken faith that in the end God will again be favourable and restore and exalt them. Of all the numerous apocalyptic books which have attracted the attention of scholars in recent years, it is the only one that has attained semi-canonical estimation; if the simile may be allowed, it has gained admission to the Court of the Gentiles. And not quite unworthily, for with all its many and conspicuous faults, it was at least the expression of a man of intense earnestness, who felt to the quick the destruction of the Temple, the dispersion and sufferings of his people, the downfall of his hopes and of the Messianic Empire.

But many of the other apocalypses, and in particular the two bearing the name of Enoch have, of late, had conferred upon them a position which, if confirmed, would raise them far above IV Ezra in importance. IV Ezra was written at the end of the first or the beginning of the second century of our era, long after the initiation of Christianity. These other books are alleged, on the contrary, to have been written before our Lord's Ministry, and therefore to reveal to us the religious views current at that time. It is said that they represent, even if they did not themselves actually form, the background which

* *The International Journal of Apocrypha* for July, 1912, pp. 46-52, "The Astronomy of the Apocrypha," by E. Walter Maunder.

gives to His work its true perspective, and that it was from them that He and His Apostles drew their doctrines for the present and the future life, and their ideas of the final judgment—in a word, their eschatological teaching.*

SLAVONIC ENOCH (*The Secrets of Enoch*).

The two books of Enoch show considerable points of similarity, but they come to us from different sources, different dates are assigned to them, and they are not attributed to the same authors. The one of later date is known solely through Slavonic manuscripts, translations of a presumed Greek original, and for this reason is usually termed the "Slavonic Enoch." The other comes in the main through Ethiopic manuscripts, though fragments of it have also been found in Greek; it is therefore known as the "Ethiopic Enoch."

The Slavonic redaction of the text of the Book of the Secrets of Enoch, translated for the first time into English in 1896 by Professor W. R. Morfill, and edited by Dr. R. H. Charles, has come down to us mainly in two versions:—A, which is a South Russian recension, and B, a short and incomplete redaction of a Serbian text. Canon Charles says, "as regards the relative merits of A and B, though the former is very corrupt, it is nevertheless a truer representative of the original than B. B is really a short *résumé* of the work, being about half the length of A."†

Professor Sokolov, of Moscow, had previously brought out an edition of the work, having not only A and B, but three other similar manuscripts upon which to base a text, but in his editing he does not discriminate between the various sources which he employs. This Dr. Charles does invariably, to the great benefit of the student. Professor Morfill's text is chiefly based upon A, for B leaves out much of what is found in A,

* Canon E. McClure, in his paper read before the Victoria Institute on "Modernism and Traditional Christianity" (January 18th, 1915), drew special attention to the part which has been played in the Modernist movement by this claim as to the importance of the apocalyptic literature and has given in a footnote an admirable summary of the principal works composing this literature.

In the present paper I am concerned only with those books which supply astronomical allusions of importance.

† §3 of the *Introduction*.

though in the remainder it differs for the most part slightly or not at all; in one or two cases it transposes or paraphrases the subject matter of A. Titles to the chapters are found in A, but not, as a rule, in B, and Professor Sokolov does not include them in his text, though he had A before him. Dr. Charles also believes that these titles have no claim to antiquity. It is evident that both A and B are translations from the same Greek original; almost certainly one is a copy and the other a *précis* of the same Slavonic translation—as translations they are not independent.

Dr. Charles says that the main part of the book was written for the first time in Greek; he concludes this from the fact that the writer follows the Septuagint, both in his chronology, and in his quotation from Deuteronomy xxxii, 35. Also from the statement in Slav. Enoch XXX, 13: "And I gave him (that is Adam) a name from the four substances: the East, the West, the North, and the South"; Adam's name being here derived from the initial letters of the Greek names of the four cardinal points. This argument is not, however, conclusive, since not only does the writer (in A) make a mistake in the order of the cardinal points, thus transposing Adam into Adma, but, though the conceit is undoubtedly only possible in Greek, it is frequently used by writers of other languages, as by the Venerable Bede in his Latin work *In Genesim Expositio*. More cogent evidence to the fact of a Greek original is, I think, afforded by the third verse of the same chapter, where the names of the "Seven Planets" are given in their Greek form (but here B omits the passage).

We may take it, then, that A, B, and the other Slavonic manuscripts are copies—more or less complete and correct—of a single translation which we will call T, from a single original Greek manuscript which we will call O. From the evidence in hand we cannot allow that there were several Greek manuscripts differing from each other substantially, or that translations, differing essentially from each other, were made from them. When was T made?

T could not have been made at an earlier date than the ninth century A.D., for it was only in the latter half of this century that St. Cyril devised the Slavonic alphabet, and in conjunction with St. Methodius translated parts of the Bible into Slavonic. Therefore the Greek manuscript O, from which T was made, must have been in existence as late as the ninth century A.D. When, then, was O, or the original of O, first written?

Dr. Charles writes of it* :—

“This must be set down as earlier than A.D. 70. For (1) the Temple is still standing—see lix, 2.† (2) Our text was probably known to some of the writers of the New Testament.‡ (3) It was known and used by the writers of the Epistle of Barnabas, and of the latter half of the Ascension of Isaiah. We may, therefore, with reasonable certainty assign the composition of our text to the period A.D. 1–50.”

But assuming with Dr. Charles that Slav. Enoch was composed in the first half of the first century of our era, we are brought up against this amazing proposition. Here is a Greek manuscript of such great import that it served as the basis of our Lord's great discourse, that it coloured His spiritual outlook and that of His disciples, that it inspired many writers in the first five centuries, that it remained as an actual document throughout nearly a thousand years, that it was then translated into the newly written Slavonic language, yet of all the many Greek transcriptions that must have been made of this original Greek work of such transcendent importance, not one single vestige remains—we are indebted for our knowledge of its very existence to a single translation into Slavonic, or rather to a few copies of that single translation.

In view of the difficulties inherent in this proposition, it is worth while to examine whether the astronomy in the book bears out its early date, for they were astronomical “secrets” that formed “the Secret Books of God which were shown to Enoch.”

The first twenty-two chapters of Slav. Enoch give a detailed description of his journey through the “seven heavens.” In the first heaven are the elders and rulers of the stars; the second heaven is its counterpart hell, for here are confined the angels who fell “awaiting the eternal judgment.” With the

* §7 of the *Introduction*.

† This is argued from the passage in chap. lix, 2: “For a man offers clean animals and makes his sacrifice that he may preserve his soul. And if he offer as a sacrifice from clean beasts and birds, he preserves his soul.” It is assumed that no Jew would refer to sacrifice unless such was actually being offered in the Temple at Jerusalem. But see *Taanith*, fol. 27, col. 2, on this very matter.

‡ This is because of the “striking parallelisms in diction and thought.” The particular instance adduced is the supposed adoption by our Lord, in His Sermon on the Mount, of the beatitude: “Blessed are the peacemakers” as from the passage in Slav. Enoch, “Blessed is he who establishes peace”!

third heaven the astronomical interest begins, for Enoch was brought there and

“I looked below and I saw gardens such as has never been known for goodliness . . . and in the midst the tree of life in that place, on which God rests, when He comes into Paradise . . . From its root in the garden, in the going out towards earth, Paradise is between corruptibility and incorruptibility. There go forth two streams which pour honey and milk, oil and wine, and are separated in four directions, and go about with a soft course. And they go down to the Paradise of Eden between corruptibility and incorruptibility. And thence they go along the earth and have a revolution in their circle like also the other elements.”

So reads A; B omits some of the details, and for “two streams” reads “four.”* It is evident from this passage that the “third heaven” and the Garden of Eden have an intimate geographical relationship to each other, something like that between the heavenly Iran-Veg of the Iranians and the Enclosure of Yim. A similar, but not the same, relationship, for B recollected—though perhaps A did not—that the Garden lay “eastward in Eden,” and in Chapter XLII, B inserts, though A omits:—

“I went out to the East, to the Paradise of Eden, where rest has been prepared for the just, and it is open to the third heaven, and shut from this world. And guards are placed at the very great gates of the East of the Sun, *i.e.*, fiery angels, singing triumphant songs that never cease rejoicing in the presence of the just. At the last coming they will lead forth Adam with our forefathers, and conduct them there.”

It is evident that B considered that Adam and the forefathers were remaining in the third heaven until “the last coming,” when they will be conducted to Eden, “where rest has been prepared for the just.”

The further description of the “third heaven” removes any doubt that it was indeed the Iranian conception of heaven, hell and paradise that inspired the author of the “Secrets,” and not

* Not only does A omit any reference to the Garden of Eden being in the East, but it gives two streams, not four, as in the Bundahis XX: “1. On the nature of rivers it says in revelation that these two rivers flow forth from the north, part from Alburz and part from Alburz of Auharmazd . . . 4. Both of them continually circulate through the two extremities of the earth, and pass into the sea; and all the regions feast owing to the discharge (zahak).”

any account that he derived from Genesis, for while still in the third heaven, his conductors led him to hell :—

“to the northern region and showed me there a very terrible place. And there are all sorts of tortures in that place. Savage darkness and impenetrable gloom, and there is no light there, but a gloomy fire is always burning and a fiery river goes forth. And all that place has fire on all sides, and on all sides cold and ice, thus it burns and freezes.”*

Earlier in this paper, I have shown that this idea of a northern hell, a northern heaven, and a northern paradise for the righteous (displaced by B to the east of north) is peculiar to the Iranians; the Jewish writer of the “Secrets of Enoch” must, therefore, have derived it from an Iranian source, and, as we have seen, this stamps it as late, certainly later than A.D. 40.

The description of the fourth heaven contains many astronomical technicalities, and some are useful for the purpose of dating the passage. In Chapter XVI, Enoch is “placed at the East, at the course of the Moon.” The course of the moon is not given according to the lunar asterisms, or to the signs of the zodiac, or to lunations or phases, but as passing through “twelve great gates extending from the West to the East,” and the stay of the moon in each of these gates is given in days, and those days correspond to our present conventional months, beginning with one of thirty-one days, *i.e.*, March, and ending with one of twenty-eight days, *i.e.*, February.† Now the Jewish months were actual lunations; by the observation of the new moons the sacred feasts were regulated prior to the destruction of the Temple, and indeed for some time afterwards. But the months of the calendar we use were arranged primarily by Julius Cæsar, and, after a slight modification, established in general use by Augustus shortly before our era. Slav. Enoch represents these conventional months as being divinely instituted—shown to Enoch as if they were among the secrets of God. No

* Compare the description in “The Opinions of the Spirit of Wisdom,” VII, 26-28: “Of hell . . . they execute punishments and tortments. . . . There is a place where, as to cold, *it* is such as that of the coldest frozen snow. There is a place where, as to heat, *it* is such as that of the hottest and most blazing fires.”

† The text is somewhat corrupt. In two cases at least a wrong number of days is assigned to a month, and the sum of all the months does not agree with the total given.

orthodox Jew could so think of a calendar, the imposition of which, by a Gentile emperor, was fresh in his memory; indeed, no Jew, unless he were ignorant of the origin of the Julian calendar, could regard it as divine at all. Enoch is given in the same heaven an explanation of Leap Year, and this, too, was arranged by Julius Cæsar and established by Augustus. This section, therefore, must also belong to a late date, for the author of the "Secrets" must have lived long after the great Roman emperor for it to be possible for him to consider these arbitrary regulations of the calendar as divinely appointed, and as completely abrogating the calendar institutions of the Mosaic Law.

The fifth heaven was the home of the former companions of the fallen angels. In the sixth heaven, Enoch saw "seven bands of angels . . . and these orders arrange and study the revolutions of the stars," recalling the function of Haptokring, the seven stars in the Iranian heavens. In the seventh heaven the conductors showed Enoch "the Lord from afar sitting on His lofty throne," and A adds:—

"for it is that upon which God rests. In the tenth heaven, in the tenth heaven is God. In the Hebrew language it is called Avarat. And I saw the eighth heaven, which is called in the Hebrew language Muzaloth, changing in its seasons in dryness and moisture, with the twelve signs of the Zodiac, which are above the seventh heaven. And I saw . . . the ninth heaven, which in the Hebrew is called Kukhavim, where are the heavenly homes of the twelve signs of the Zodiac . . . In the tenth heaven Avaroth, I saw the vision of the face of the Lord."*

Dr. Charles urges that in A there are three notable interpolations. First, the mention of the great cycle of 532 years in Chapter XVI, 5, since this was first proposed by Victorius of Aquitaine about A.D. 457, and must therefore have been unknown to the author of the "Secrets," assumed to be writing between A.D. 1 and 50.†

Next, the titles to the chapters and divisions. For this

* This is a most distinct reference to the Ptolemaic system of ten spheres; *i.e.*, the seven spheres of the planets, the sphere of the Signs of the Zodiac, the sphere of the actual stars, and the sphere of the diurnal motion, the *primum mobile*. The passage is, therefore, not earlier than the latter part of the second century A.D.

† This line of argument is open to most serious objection. The date of a document (where unknown independently) ought to be derived from the information afforded by the text. It is doubly illegitimate to assume a date and reject all information given by the text where this is inconsistent with it.

Dr. Charles gives no reason except that they are not given universally in B, and that neither does Professor Sokelov give them in his text. Since Professor Sokelov had A before him, this last depends solely on Professor Sokelov's judgment.

Third, the references to the eighth, ninth and tenth heavens Dr. Charles says:

"This . . . is clearly an interpolation. It is not found either in B or Sok. Furthermore, throughout the rest of the book only seven heavens are mentioned or implied."

It is necessary to examine into these interpolations, since it is obvious that they affect seriously the question of the date of the book.

When could such interpolations have been introduced? They might be introduced in a Slavonic MS. by the scribe of A, and so, necessarily, not affect B or any other manuscript copy of T; or by the translator who produced T, or by a later copyist of O, the original Greek MS.

If they were introduced by the scribe of A, then they were made in the Slavonic language and by a Slavonic writer, and this implies that in the Middle Ages there was a Slavonic writer of considerable astronomical knowledge, who thought it worth while to rewrite a very sapless mystical tract for the sole purpose of introducing these astronomical interpolations.

It further implies that B—not A—best represents the original translation, T, into Slavonic; for it is clear that A and B, so far as they give the same details, do not represent independent translations, but a single one.

If the interpolations were introduced by the translator of T, then no weight can be given to their absence from B or other manuscripts, for these, equally with A, were ultimately derived from T. A, on this hypothesis, best represents T.

The same argument applies if the interpolations were introduced by the scribe of O. If there were two Greek MSS., one with the interpolations, the other without, it still remains certain, since A and B, so far as they cover the same ground, are not independent translations, but more or less faithful reproductions of a single translation, that it is the fuller Greek text that must have been in the translator's hands. Hence the deficiencies of B as compared with A represent omissions from the Greek original; they are no evidence as to interpolations. A, therefore, best represents O.

But, since O (afterwards rendered into Slavonic) must have been in existence about the 9th century A.D., some pertinent

evidence on the subject of its style and matter may be got from an astronomical treatise, written just about that time and also rendered subsequently into other languages.

In the March of 1914, there was published by the Irish Texts Society, an English translation made by Maura Power of an Irish Astronomical Tract. This tract is part paraphrase and part translation of a Latin version of an Arabic treatise by Messahalāh, a Jewish astronomer of Alexandria, who flourished shortly before A.D. 800. This Arabic work was translated into Latin by Gerard of Sabionetta in the thirteenth century, and of Gerard's translation there were several editions during the succeeding centuries, but it is probable that the Irish Tract is not based on any of those we now possess.

If we compare the Irish Tract and the "Secrets of Enoch," we find them of about the same total length, divided into short chapters having, in the Irish text, Latin headings, and in the Slavonic, headings which may or may not have been translated from the Greek. The Irish Tract is known to derive its origin from a Jew of Alexandria; Dr. Charles derives the Greek original of the "Secrets of Enoch" also from a Jew of Alexandria living, as he avers, at a much earlier date than Messahalāh. The Irish Tract is strictly a scientific one—an astronomical educational text-book for use in the Irish schools of the fourteenth or fifteenth centuries. The Slavonic Tract purports to be a theological one, but its theology is based on a mystical astronomy. Nevertheless, in Chapter I of the strictly scientific Irish treatise, the author speaks of "the seven spheres of the firmament" as if there were seven and seven only, and yet in Chapter XXIX he says:

"As Ptolemy and the other philosophers declare, there are ten large spheres, and the largest sphere of those, which is called the very great sphere, possesses the same motions as the sphere of the signs, since both move westward."

Now neither of these is an "interpolation," and the author's scientific mind received no jar by the inconsistency; he knew the meaning of both conceptions.

"The very great sphere" and the tenth sphere of which Slav. Enoch says, "In the tenth heaven, in the tenth heaven is God;—in the Hebrew language it is called Avarat," are the same. But the author of the Irish Tract continues in Chapter XXX:—

"Be it known unto you that the very great sphere is the straight sphere. Ill-informed persons have given many erroneous opinions

concerning it, for they declared that, since it is the highest and loftiest and swiftest of the spheres, it is the origin of the universe. . . . The ill-informed have said that it has life, and that everything receives life from it."

It might almost seem as if one of the "ill-informed persons" referred to was the author of the Slavonic Enoch, since he confines the Deity so decidedly to the tenth heaven, that there might almost be an identification between Him and it.

Since, then, the original author of Slavonic Enoch could not have lived at so early a date as Dr. Charles has given him; since, by comparison with the Irish Tract, there is no reason to judge the reference to the three outer heavens as interpolations; and since both books were written by Jews of Alexandria and—if we might so term it—published in the same style; is there really any serious objection to the conclusion that the author of the originals of Slavonic Enoch and Messahalal were practically contemporaries, and that they were representatives of two opposing lines of thought, of two opposing purposes?

The purpose of the Irish Tract is not in doubt. It was a clear and scientific text-book, expressed in simple and unaffected language, for use in schools. It speaks well for the Irish schools in the Middle Ages that it was such a treatise that they caused to be translated into their vulgar tongue. It does not speak well for early Slavonic writers that they brought it about that the "Secrets of Enoch," with its mystic and perverted astrology, was translated into Slavonic, and—as far as we know—into Slavonic only.

The purpose of the "Secrets of Enoch" is no less clear. It is no genuine apocalyptic work, but over and over again we read such passages as:

"The Lord contemplated the world for the sake of man and made all creation for his sake, and divided it into time. And from the times He made years, and from the years He made months, and from the months He made days, and of the days He made seven. And in these He made the hours and divided them into small portions, that a man should understand the seasons, and compute years and months and hours, their alternations and beginnings and ends: and that he should compute his life from the beginning till death, and should meditate upon his sin, and should write down his evil and good deeds. . . . Let each man know his deeds, and not transgress the commandments, and let him keep my writings securely . . . every man shall come to the great judgment of the Lord. . . . Blessed are the just who shall escape the great judg-

ment! And they shall be seven times brighter than the sun, for in this age altogether the seventh part is separated."

And the author adds that he has

"laid down the four seasons, and from the seasons made four circles, and in the circles placed the years. . . . Concerning the years I have calculated each hour. . . . I have ascertained all their differences. As one year is more honourable than another, so is one man more honourable than another. . . . There have been many books . . . but none shall make things known to you like my writings."*

until the reader turns instinctively to see if, at the end of the paragraph, there is an (ADVT.) inserted, such as would appear in our newspaper press to-day after a similar article from a "Zadkiel" or a "Raphael." For this pseudo-prophet was simply a maker of horoscopes, doubtless for a price, as his analogues do to-day, and both the theology and the astronomy in his book were but the padding to attract his clients, and to clothe his self-advertisement. It is worthy of note that B leaves out the more technical details of astronomy; he was, perhaps, more interested in the mystical patter which describes the serpents at the northern gate of hell, or the window open between the northern heaven and the Garden in the East. Probably the 366 astrological tables themselves never reached Little Russia. Let us hope that they were heaved overboard to lighten the ship that took O from Alexandria.

ETHIOPIC ENOCH.

But Slavonic Enoch is of small importance. Of the other Book of Enoch or "Ethiopic Enoch," Professor Burkitt says in the Schweich Lectures of 1913 (p. 17):—

"It is best to begin at once with the prime reason that gives the book interest to us, and this is, its influence on the Christian Movement. 'Wandering Stars,' we read in the Canonical Epistle of Jude, 'to these Enoch also, the seventh from Adam, prophesied, saying "Behold the Lord came with ten thousands of His Holy Ones to execute judgment upon all, and to convict all the ungodly of all their works of ungodliness which they have ungodly wrought, and of all the hard things which ungodly sinners have spoken against Him.'" This is a definite quotation which cannot be gainsaid. As

* These he does not give away; they were doubtless contained in the 366 books which he wrote in heaven with a reed for speedy writing, given him by the Archangel Vretil—unknown except in this connection. Doubtless these 366 books were astrological tables.

a matter of fact, the words quoted are the last sentence of the opening paragraph of the Book of Enoch. It is no mere illustration, no coincidence of ideas. 'Enoch' is quoted by name as inspired prophecy. This famous passage is very far from being the only trace of the influence of Enoch upon the New Testament, but it is the clearest and best known."

Professor Burkitt voices the (almost) unanimous opinion that St. Jude quoted from the Book of Enoch, and, be it noted, from the actual Book of Enoch,—Ethiopic Enoch—which we have in our hands now. It is unanimously agreed that Ethiopic Enoch is a collection of writings by various authors, but if so the compiler used discrimination in the collecting; he chose here and there what fitted in with his purpose, and Ethiopic Enoch has a certain unity. It is alleged that it was this same unity which was in existence and influenced the teaching and doctrine of our Lord and His Apostles, that it was this book as we have it now that received this *imprimatur* in the Canon of New Testament Scriptures from the pen of St. Jude.

Ethiopic Enoch is an apocalypse, that is, it is a "revelation to shew things which must shortly come to pass"; and to this, all of its five sections (into which Dr. Charles divides it) conform, either fully or in some measure. If it was written by a Jew;—when and where did he live, and what was his motive in compiling it?

The compiler's motive is clear. He recognized that the Jewish nation had suffered terribly. He also recognized that it had, as a nation, deserved punishment for its sins, but he felt that the sufferings it had actually experienced greatly outweighed the punishment which was justly due to it, and the purpose of his book is to explain the apparent anomaly.

He finds it here. God had placed the care of the nation in the hands of a number of angelic spirits who had been false to their trust, had led the nation into evil, and had destroyed them more than their commission allowed. For his argument he adduced the case of the fallen angels in the days before the Flood. These had been appointed to be the Watchers over mankind, but they had led men astray and ruined them. It was his belief also that the spirits controlling the heavenly bodies had sinned in the like manner; for in his view, sun, moon and stars did not perform their revolutions according to the laws which God must have laid down.*

* "I saw there seven stars like great burning mountains, and to me, when I inquired regarding them, 14. The angel said: 'This place is

The author represents Enoch as having received the true ordinances of heaven by a divine revelation, and these ordinances are presented in this book. In vision Enoch saw the coming of a man* to whom his brethren would listen, and who would open their eyes to the truth. Then the true ordinances would be restored, Messiah would appear, and the faithful would be received into the kingdom, while the blind and disobedient, whether luminaries, angels or men, would be punished.

The Book of Enoch then gives us clearly to understand some negative facts about its author. He was neither orthodox Jew nor orthodox Christian, nor even a scientific heathen. Neither Hillel, nor St. Paul, nor Hipparchus could have conceived of the heavenly bodies as possessing independent volition and wandering from their divinely-appointed paths in accordance with their own self-will. The XIXth Psalm expresses at once the Jewish, the Christian, and the scientific attitude. The movements of the heavenly bodies are the material expression of perfect and divine order. The attitude of Pseudo-Enoch cannot be put down to that of a pious but ignorant Jew, pious and learned in the law, but ignorant, necessarily, of the principles of science, because he had the misfortune to be born before our own time, which is the age of sweet reasonableness in all matters scientific. He was not an ignorant Jew, nor a pious one; he had the Hebrew Scriptures before him. He even quotes the Tersanctus from Isaiah, and varies it to suit his purposes. His piety, had it been genuine, would have saved him from his crass violation of the principles of science.

the end of heaven and earth : this has become a prison for the stars and the host of heaven. 15. And the stars which roll over the fire are they which have transgressed the commandment of the Lord in the beginning of their rising, because they did not come forth at their appointed times. 16. And He was wroth with them, and bound them till the time when their guilt should be consummated (even) for ten thousand years."—Eth. En. xviii, 13-16.

4. "And the moon shall alter her order, and not appear at her time. 5. And in those days the sun shall be seen and he shall journey in the evening on the extremity of the great chariot in the west. And shall shine more brightly than accords with the order of light. 6. And many chiefs of the stars shall transgress the order (prescribed). And these shall alter their orbits and tasks, and not appear at the seasons prescribed to them. 7. And the whole order of the stars shall be concealed from the sinners, and the thoughts of those on the earth shall err concerning them. And they shall be altered from all their ways."—Eth. En. lxxx, 4-7.

* This is evidently Pseudo-Enoch himself, the actual writer of the book.

Since Pseudo-Enoch was a Jew, and assuredly had the Hebrew Scriptures before him, and assuredly did not derive from them his conception that the stars, of themselves or influenced by spirits, could stray from their appointed paths, whence did he derive the origin of this, his main, conception? In other words, who were his associates, the people with whom he came into immediate contact? Does he give any hint as to these?

Under various symbols, Pseudo-Enoch refers to many "kings and mighty" men who oppressed his people, but he cites only two nations by name, and these for destruction:

"And in those days the angels shall return
And hurl themselves to the east upon the Parthians
and Medes."—(Eth. En. LVI, 5.)

And evidence of Pseudo-Enoch's close acquaintance with Parthians and Medes can be found in his book.

A fundamental Græco-Magian tenet, as set forth in the Bundahis, is this:—

"The evil spirit with the confederate demons went towards the luminaries, and he saw the sky; and he led them up, fraught with malicious intentions. He stood upon one-third of the inside of the sky, and he sprang like a snake out of the sky down to the earth. The month Fravardin and the day Auharmazd he rushed in at noon, and thereby the sky was shattered and frightened by him, as a sheep by a wolf . . . he made the world quite injured and dark at midday as though it were dark night . . . the sphere was in revolution, and the sun and moon remained in motion; the world's struggle, owing to the clamour of the Mazinikan demons, was with the constellations . . . The planets, with many demons, dashed against the sphere, and they mixed the constellations; and ninety days *and* nights the heavenly angels were contending . . . and the rampart of the sky was formed so that the adversary should not be able to mingle with it. Hell is in the middle of the earth; there where the evil spirit pierced the earth and rushed upon it."—(Bd. III, 10-27.)

As we have seen from the "Opinions of the Spirit of Wisdom," it is the seven stars of the Plough (Haptok-ring) which, with the guardian spirits of the righteous, circle round and guard the mouth of hell on the very northern border of the earth, and keep back the evil spirits that are in opposition to the sphere and constellations. These are the same ideas as inspired Pseudo-Enoch.

The IIIrd of Dr. Charles' Sections of Eth. En., that is, Chapters LXXII-LXXXII, is entirely concerned with the courses of the luminaries. Of it Dr. Charles says :

"We are not to regard it as anything more than the attempt of an individual to establish an essentially Hebrew calendar over against the heathen calendars in vogue around."

But it is a peculiar calendar which Pseudo-Enoch finds on the motions of the sun and moon, and, it may be added that, in the eyes of a practical astronomer, these motions attributed to the sun and moon are very peculiar. It is worth while to compare this "essentially Hebrew calendar" first with the one in use in Palestine, and next with that put forward by the Medes and Parthians with whom Pseudo-Enoch came in contact.

The calendar enjoined by the Law of Moses, and observed by faithful Jews, not only in their own land, but when dispersed over the whole world, was and is a luni-solar one. The months were regulated by the observation of the new moon; the first month of the year had the Passover at its full moon; the Feast of Trumpets was at the new moon of the seventh month; the Great Day of Atonement was ten days later; and the Feast of Tabernacles followed at the full of the moon in the same month. But the week, the month, and the year are not commensurable; no one of them, when multiplied, fits exactly into another; thus, four weeks and one or two days go to a lunation, fifty-two weeks and one day, or twelve lunations and eleven days, to a solar year. The great feast days, therefore, swing backwards and forwards over a period in the solar year, as do our Easter and Whitsuntide, and do not occur on a fixed day of the week. The faithful Jew recognized that, for him, God had "appointed the moon for seasons," and he was very careful to observe these seasons aright.

It is clear, then, that no faithful Jew could draw up a calendar that did not depend on the observation of the new moon, of the actual lunation; no "essentially Hebrew calendar" could be other than a luni-solar one.

But we find that Pseudo-Enoch lays down that

"the year is exactly as to its days 364,"*

that is fifty-two weeks precisely; or rather, later he leads us to infer that the year consists of 360 days and four intercalary

* Eth. Enoch, lxxii, 32.

days inserted at the beginning of each quarter, which consisted of thirteen weeks each. Certainly this is not the Jewish length of year, which varied from 353 days to 385.

More significant still, Pseudo-Enoch writes of the moon :—

“Her days are like the days of the sun, and when her light is uniform it amounts to the seventh part of the sun. And thus she rises. And her first phase in the east comes forth on the thirtieth morning; and on that day she becomes visible and constitutes for you the first phase of the moon on the thirtieth day, together with the sun in the portal where the sun rises.”

Most of this about the moon is unintelligible, but where any meaning can be got out, it is hopelessly and appallingly wrong. For a Jew to state that the new moon is first visible when rising in the east, shows that he knew nothing of the practical service of the Temple; it also shows that he knew nothing of practical astronomy. If what he meant was that the new moon *ought* to be visible in the east, he was not capable of becoming a practical astronomer. If the Temple were still standing, and he, a Jew, lived in Palestine or Parthia or elsewhere, he never attended at the feasts of the new moon, nor at any of the Great Feasts at which every male of the House of Israel should appear on pain of being cut off from the nation. Indeed, throughout the Book there is not a single reference to the Sabbath, or to any of the Great Feasts; the only reference to Temple worship is:

“They began again to place a table before the tower, but all the bread on it was polluted and not pure. And as touching all this the eyes of those sheep were blinded, so that they saw not, and their shepherds likewise . . . all the sheep were dispersed.”—(Eth. En., LXXXIX, 73-74.)

Pseudo-Enoch's calendar, therefore, was not a Hebrew one; he took no part of it from that in use in Palestine. Did he derive it from Parthia?

He did derive it from Parthia, but he modified it. Pseudo-Enoch gives 360 days with four intercalary days, one at each quarter, New Year's Day beginning at the spring equinox. The Bundahis gives 360 days together with five extra (Gatha) days, which are inserted all together immediately before the beginning of the new year, which is fixed at the spring equinox. This coincidence, in itself, would not be enough to prove the connection, but there is further that which can be no mere chance coincidence, for just as did the Bundahis, so does Pseudo-

Enoch divide the day into eighteen parts, and proceeds to lay down for the summer solstice :

“On that day the day becomes longer than the night, and the day becomes double the night, and the day becomes twelve parts, and the night is shortened and becomes six parts.”

This holds good for the Magian traditional latitude, a latitude so far north that the Iranians themselves had no experience of it, and kept only its tradition—their own tradition derived neither from Semite nor Hamite. How then did this Jew know of it? It is not the latitude of Jerusalem, why should he choose it? He had no experience of it himself, it lies hundreds of miles to his north, and if he had, he was not sufficiently a practical astronomer to make even this simple observation for himself. Nor was he mathematician enough* to work out the conditions, for he proceeds to elaborate on the proportion stated of summer day to summer night, and to elaborate wrongly by laying down equal monthly increments of day or night between the equinoxes and the solstices. Whence then did he get it? We are forced to conclude that he learned of this “traditional latitude” in Parthia and incorporated it (with erroneous additions of his own) in his Book of Enoch.

As we have seen, the Bundahis was compiled in the reign of King Valkash, the Magian convert, and owed its form to the setting of Magian religious tradition (“revelation” is the term used) in a Greek astronomical framework. I do not say that Pseudo-Enoch took his information straight from the Bundahis, though that was already in existence when he wrote, but I do affirm that he took it from some astrological work based on the Bundahis and by the same school of thought that produced it, for Pseudo-Enoch was not (mathematically) clever enough to work it out for himself. His Chapter LXXXII is a vague indication of the method in which he draws up a horoscope, based on a 364-day year and an 18-hour day.† He says:—

“Blessed are all the righteous . . . who walk in the way of righteousness, and sin not as the sinners, in the reckoning of all their

* Pseudo-Enoch was not capable of working out this mathematical problem for himself, but I do not wish that the inference should be drawn that Solomon, or Daniel, or Messahalal were incapable of doing so, if they had seen fit.

† No more than Slav. En. does Eth. En. give any actual methods by which he draws up a horoscope. The client has to come to the astrologer with a fee for the drawing up of the horoscope and for the interpretation thereof. The fees are not obscurely hinted at in Eth. En., c. 12.

days in which the sun traverses the heaven, entering into and departing from the portals for thirty days with the heads of thousands of the order of the stars, together with the four which are intercalated, which divide the four portions of the year which lead them and enter with them four days. Owing to them men shall be at fault and not reckon them in the reckoning of the whole world* ; yea men shall be at fault, and not recognize them accurately. For they belong to the reckoning of the year and are truly recorded (thereon) for ever, one in the first portal and one in the third, and one in the fourth, and one in the sixth, and the year is completed in 364 days.

“And the account thereof is accurate and the recorded reckoning thereof exact ; for the luminaries, and months and festivals, and years and days, has Uriel shown and revealed to me to whom the Lord of the whole creation of the world hath subjected the host of heaven. And he has power over night and day in the heaven to cause the light to give light to men—sun, moon, and stars, and all the powers of the heaven which revolve in their circular chariots. And these are the orders of the stars, which set in their places, and in their seasons and festivals and months.

“And these are the names of those who lead them, who watch and enter at their times, in their orders, in their seasons, in their months, in their periods of dominion, and in their positions. Their four leaders who divide the four parts of the year enter first ; and after them the twelve leaders of the orders who divide the months ; and for the 360 there are heads over thousands who divide the days ; and for the four intercalary days there are the leaders which under the four parts of the year. And these heads over thousands are intercalated between leader and leader, each behind a station, but their leaders make the divisions. And these are the names of the leaders who divide the four parts of the year which are ordained : Milki’el, Hel’emmelek, and Mel’ejal, and Narel. And the names of those who lead them : Adnar’el, and Ijasusa’el, and ’Elome’el—these three follow the leaders of the orders, and there is one that follows the three leaders of the orders which follow those leaders of stations that divide the four parts of the year.”

To divine means, in Hebrew, to cut, to divide, and the aim of diviners, astrologers, horoscope-makers has always been to get enough divisions in their plan of divination to enable them to get a sufficient choice of interpretation. At the beginning of our era all that astrologers could do was to divide up time amongst the deities supposed to preside over the various planets. To have simply given a planet to each day would have allowed

* I give here the unamended text.

the astrologer a very small scope in which to work his prophecies. The Alexandrian astrologers assigned a deity to each day of the 7-day week, and to each hour of the 24-hour day. Pseudo-Enoch and his Parthian colleagues have a different scheme, one which, so far as I know, is not found elsewhere. He assigns "leaders" (a pseudonym for angel or deity) to the four quarters of the year, to the twelve months and to the 18 divisions of the 360 days which in his opinion make up the complete year with an addition of 4 intercalary days. We know that this is a Parthian idea, for only in *Eth. En.* and in the *Bundahis* do we find an 18-fold division of the day.

For each of the 360 days there are heads over thousands of the order of the stars who divide the days; and there are 18 divisions of the day. This gives $360 \times 18 \times 1,000 = 6,480,000$. But if we turn again to the *Bundahis*, we find:

"As a specimen of a warlike army, which is destined for battle, they have ordained 6,480,000 small stars as assistance, and among those constellations for chieftains appointed on the four sides as leaders."

According to the *Bundahis* one of these four leaders is Haptok-ring, the seven Plough stars in the north. Pseudo-Enoch, remembering that a function of Haptok-ring was to guide the constellations and give them protection, makes these four leaders the four Wain stars, and not knowing what to do with the three Handle stars, asserts that these both "lead them" and "follow the leaders," and to identify them, mentions the little star, Alcor,* which is a close companion of Mizar, the middle star of the Handle.

Putting together the information derived from the *Bundahis* and from *Eth. En.*, I conclude that there was an attempt in Parthia to found a school of astrology in opposition to the famous one in Alexandria, based on a Græco-Magian scheme of the universe. The astrological plan, hinted at in *Eth. En.*, was a sub-variant of this.

It was not in his astrological scheming alone that Pseudo-Enoch was indebted to Greek science or Magian tradition:—

"And the first wind is called the east, because it is the first, and the second, the south, because the Most High will descend there, yea, there in quite a special sense will He Who is Blessed for ever,

* The "Test" star of the Arabs; "Jack on the Middle Horse" of English peasantry; 80 Ursæ Majoris of the astronomer.

descend. And the west wind is named the diminished, because there all the luminaries of the heaven wane and go down. And the fourth wind, named the north, is divided into three parts: the first of them is for the dwelling of men, and the second contains seas of water, and the abysses and forests and rivers, and darkness and clouds; and the third part contains the garden of righteousness."—(Eth. En., LXXVII, 1-3.)

Here we have the Iranian tradition of a threefold division of the north: "the dwelling of men" or the northern earth, the part containing "the abysses and darkness" or the northern hell, and the part containing "the garden of righteousness" or the northern heaven. From this passage alone, it is not clear how Pseudo-Enoch considered that these three divisions were disposed with regard to each other;—whether they constituted three divisions on the earth's surface, all co-planar, or whether, as with the Magi, they each occupied a plane,—heaven in the upper sky, hell hanging down into the abyss, and earth lying in between; all three planes joining on the northern horizon.

The Garden of Righteousness is in the north; the passage just quoted leaves no room for doubt on that score. But we have the same Book of Genesis before us that Pseudo-Enoch had, and that describes very particularly the garden as "eastward in Eden," and again, even more precisely, by the fact that "a river went out of Eden . . . and from thence it was parted, and became four heads," of which two were the Tigris and Euphrates. Scholars are not agreed as to whether the parting into "four heads" means the sources or the mouths of the river, that is whether Eden was situated among the mountains of Armenia or on the Persian Gulf, but the difference between these two localities is barely 10° of latitude; no such difference of opinion could justify anyone in placing it 50° or 60° to the north, within the polar regions. To Slav. En., in Alexandria or Little Russia, the Garden of Eden was still to his east, but to Eth. En., in Parthia or Media, the Euphrates and Tigris lay due west. Slav. En. had the crystal spheres of Ptolemy to aid his conception and he solved the difficulty by making a window in his third heaven open to the Garden of Eden in the east. But for Eth. En. there was no such way out.

The IIIrd Section of Eth. En. is not the only one that refers to the Garden of Righteousness, and in terms that leave no doubt that it is northerly. In the Ist, IIInd, and IVth Sections, there is such a blending of Magian and Jewish traditions on this point, that if we put it all down to the credit of the

final editor alone, we ought to acknowledge that he has woven it in so deftly that we could not take it out without dismembering,—and mangling,—the whole.

In Genesis, the Garden of Eden contained two trees,—the Tree of Life and the Tree of the Knowledge of Good and Evil.

But Pseudo-Enoch describes two Gardens of Righteousness, placed symmetrically in the north ;* one to the west, the other to the east ; one containing the Tree of Life, the other the Tree of Knowledge ; and each possessing seven holy mountains, unless, for the descriptions are not quite clear, the seven mountains are put as representing seven holy stars which sweep above both Gardens, in their perpetual circuit round the northern pole of the heavens. This would correspond to the “seven burning mountains,” which were seven wicked stars imprisoned in the abyss.†

It will be evident from the foregoing that a Græco-Magian influence permeates the whole Book of Enoch. I do not think it was the only influence ; I see traces here and there of what I believe to be purely Greek tradition, but I am not conversant enough with Greek literature to track them to their sources. But this combination of Greek and Magian thought took its rise under King Valkash of Parthia, and the Bundahis was its product near the middle of the first century of our era. This Book of Enoch must then be later than the Bundahis ; how much later, I do not know, but if it were the contemporary of the Bundahis it would still be too late to have done the work ascribed to it, for ten years after our Lord's crucifixion it could not have influenced His teaching and His thought. It took its rise, moreover, in a region remote from Palestine, in Parthia or Media, and throughout the whole book I cannot find any influence that is distinctly Palestinian in its origin.

But it will be urged that St. Jude quoted from it : the quotation is undeniable. And Chapters I-V (which include that quoted prophecy) depend for their date to some extent on another apocryphal book, whose date—it is averred—is known.

* It is interesting to note that this curious superstition that the Garden of Eden was placed at the North Pole of the earth, still lingers among ourselves at the present day. In the last few years, I have come across the idea in the writings of three men of learning, belonging respectively to England, the United States and Canada. I think all would have been astonished if they had known by what route that idea had come to them.

† For these details, compare Eth. En., chapters xxv, 4 ; lx, 8 ; lxi, 4 and 12 ; lxx, 2 ; lxx, 3-4 ; xviii, 12-14 (for the seven burning mountains which were seven wicked stars) ; xxxii, 1-3.

THE BOOK OF JUBILEES.

It is undeniable that St. Jude and Pseudo-Enoch quoted the same prophecy, but it by no means follows that either took the prophecy from the other. St. Jude seems to infer that the prophecy is known to all Jews. Of Pseudo-Enoch it cannot be gainsaid that he did not scruple to adopt without acknowledgment, for his own astrological purposes, the Iranian traditional latitude; have we then any reason to expect, that for theological purposes—to clothe himself with orthodoxy in the eyes of his Jewish clients—he would refrain from adopting in the forefront of his Book a well-known prophecy which had come down from the Patriarch who “walked with God.”

With regard to the date of the Book of Jubilees, Dr. Charles says:—

“The Book of Jubilees was written in Hebrew by a Pharisee between the year of the accession of Hyrcanus to the high priesthood in 135 and his breach with the Pharisees some years before his death in 105 B.C. . . . His object was to defend Judaism against the attacks of the Hellenistic spirit . . . and to prove that the law was of everlasting validity.”—(Book of Jubilees, Introduction.)

But that Law enjoined solemn feasts celebrated in the Tabernacle or Temple, dependent on the observation of the new moon and of a luni-solar year. Yet the writer of Jubilees ordains, not the feasts as commanded through Moses, but four feasts on the 1st, 4th, 7th, and 10th “new moons” as “days of remembrance, the days of the seasons for the four divisions of the year.” But these “new moons” had no connection whatever with the moon, they were simply the “quarter-days,” for each division had thirteen weeks, and there :

“were 52 weeks also exactly in the year:—Command thou the Children of Israel that they observe the years according to this reckoning—364 days. . . . For there will be those who will assuredly make observations of the moon—now (it) disturbs seasons and comes in from year to year ten days too soon. . . . They will confound all the days, the holy with the unclean, and the unclean day with the holy; for they will go wrong as to the months and sabbaths and feasts and jubilees.”—(Jubilees, VI.)*

* How little a pious and learned Jew of the very period to which Dr. Charles assigns the Book of Jubilees would have been inclined to

Such a "commandment" could never have passed current in Palestine and while the Temple was still standing. It could never have been written or accepted by a Pharisee; it must have been written by a Jew out of all sympathy with the faithful remnant; a Jew gone mad on the mystic sacredness of the number 7.

Will you, for a moment, place yourselves in mind and thought in the position of a Jew, faithful or unfaithful, but learned in the history of his people, in the first two centuries of our era? Since the days of Malachi, that had fallen which was spoken in the LXXIVth Psalm:—

"We see not our signs:

There is no more any prophet,

Neither is there among us any that knoweth how long." (v. 9.)

Neither in Temple nor Synagogue, in King's Chapel or King's Court, was there any more the word of Prophecy. If the High Priest so spoke, it was not recognized.*

When Mary and Elizabeth, Zachariah and Simeon prophesied, it was, as it were, privately, and the fact could only be known by a very few.

Then in a certain year,† on the great Day of Pentecost, when not only the Jews of Palestine, but also those of the Dispersion, "out of every nation under heaven," were gathered in the Temple at the Feast, the Apostles were "all filled with the Holy Ghost, and began to speak with other tongues; as the Spirit gave them utterance."

join in its condemnation of the month as determined from observation, may be inferred from the beautiful passage in the Wisdom of the Son of Sirach:—

The moon is also in all things for her season,

For a declaration of times, and a sign of the world

From the moon is the sign of the feast day;

A light that waneth when she is come to the full.

The month is called after her name,

Increasing wonderfully in her changing;

An instrument of the hosts on high,

Shining forth in the firmament of heaven;

The beauty of heaven, the glory of the stars,

An ornament giving light in the highest places of the Lord.

At the word of the Holy One they will stand in due order,

And they will not faint in their watches.

(Ecclus. xliii, 6-10.)

* "This spake he not of himself: but being High Priest that year, he prophesied that Jesus should die for that nation."—(John xii, 51.)

† Whether this year was A.D. 29, 30 or 33 we do not know certainly.

The report that prophecy had once again been heard in the Temple of the Lord was carried back by "the Parthians and Medes and Elamites and the dwellers in Mesopotamia"; and, so far as we know, this was the last time that prophecy was uttered in the Temple; but the Jews of the Dispersion must have known that it continued to be spoken in the Christian Churches which arose in all the nations, though they knew they themselves had it not in their own synagogues.

Then came the great catastrophe which destroyed the Holy Temple, and has made them, since then, a nation without Temple or priest. Then, and afterwards, arose, I think, the great mass of apocalyptic literature. For the Jew, it was still

"Is there among us any that knoweth how long?"

but the faithful Jew devoted himself to the study of the Law and the Mishna and the Talmud was the result; the unfaithful Jew sought for the answer "in the signs of the heavens," or in pseudo-prophecy.

For one inevitable result of this restoration of prophecy to the Christian Church was the uprising of a fraudulent imitation of it. Just as Saul, when he found that "the Lord answered him not, neither by dreams, nor by Urim, nor by prophets," sought for a woman that had a familiar spirit, so was it with unbelieving Jews and heretics amongst the Christians; having lost the true, they manufactured the false.

It is a very slight thread which I have been able to follow through these "sacred books of the East," the thread of the astronomical allusions; but a thread may be as effective a guide through a labyrinth as a cable, and this thread has proved most important. It has shown that it was in Parthia, not in Palestine, that these apocalyptic books had their source, and that they were written under Magian, not Maccabæan, influences. It has shown also that they were not pre-Christian, but post-Christian—in one case, at least, many centuries post-Christian. They could not, therefore, have influenced in any way the origin of Christianity, nor do they represent the background of the Ministry of our Lord or of His Apostles.

DISCUSSION.

The CHAIRMAN expressed his appreciation of the value of the paper and general sympathy with its results. He pointed out that an example of a purely lunar calendar was to be found in that

introduced by Mohammed, who held that the divinely appointed year was of twelve lunar months; naturally this year bore no relation to the seasons. He observed that the phenomenon of an Arctic day must somehow have been known to Homer, according to whom (*Odyssey* x, 84) in the land of the Laestrygonians "a sleepless man might earn a double wage," owing to the proximity of the paths of day and night, *i.e.*, because day followed upon day without interval. The same author in the story of the Planctae (xii, 61) seems to display acquaintance with icebergs; whence we gather that various fragments of knowledge must have reached the ancients in ways of which there is no record. With regard to the quotation from the Book of Enoch in the Epistle of St. Jude, he observed that when the Ethiopic text was first discovered the identity of the book with that cited by the Apostle was doubted. The occurrence of the quotation on the first page was itself a suspicious sign, since the forger of such a book would endeavour to win credit for it by introducing any familiar quotation. He compared the case of the *De Consolatione* ascribed to Cicero. The original work was lost, but some quotations were preserved. These were introduced by one Sigonius into a treatise which he fabricated and issued as Cicero's; the fabrication was in part detected by the fact that he introduced these quotations in the same order as that wherein they had been arranged in a collection of fragments, thereby violating the theory of probability.

Mr. M. L. ROUSE drew attention to the correspondence between the chronology of the Bundahis, and the Hebrew chronology; the 3,000 years of negation and the 3,000 years of the reign of the good spirit might be supposed to last to the time of the Fall when the enemy came in. From the Fall until the time when the Bundahis was written would, in the Hebrew chronology, be between three and four thousand years. From the Fall until the time of the coming of Zoroaster would be about 3,000 years, and he believed that Zoroaster was a pupil of Daniel.

The SECRETARY then read letters from Professor F. C. Burkitt and Dr. J. L. E. Dreyer.

Professor LANGHORNE ORCHARD, in seconding a vote of thanks to the lecturer, said that he had been specially struck with the originality and force of two suggestions which Mrs. Maunder had made; the first, the argument which was developed on p. 187, that Yima had migrated southward from within the Polar circle; the second that

the tradition of the date when the promised Deliverer should come, was derived from the visit of the Magi to the Infant Jesus in the 600th year after Zoroaster. He himself heartily agreed with both suggestions.

Mrs. MAUNDER thanked the Meeting for the very kind reception that had been given to her paper, and would especially thank the Chairman for the illustrations which he had given, which threw great light upon several points of interest.

She was sorry that Mr. Rouse had seemed to connect the chronology of the Bundahis with that of the Hebrew Scriptures. She had hoped that she had made it quite clear that she held the chronology of the Bundahis in very light esteem; on the face of it, it was mythical.

In reading the four Apocryphal books, she had come to rather a vivid idea of the personalities of their authors. Pseudo-Ezra was a scholar and a gentleman, an intensely patriotic Jew with whom one could be in great sympathy, even while we condemned the form in which he gave expression to his patriotic feeling, namely by the manufacture of spurious prophecy. The author of Jubilees was an arithmetical "crank"; we have many such at the present time; his idea was to work all chronology into multiples of 7; he assumed that our manners and our morals would be reformed if we could make the year an exact number of weeks. The author of Slavonic Enoch was simply an astrologer; he followed a trade, and the pious patter which he interpolates into his advertisements is exactly the kind of thing which many astrologers do at the present time; he was neither moral, nor immoral, he was simply without morals. But the author of Ethiopic Enoch stood on a different, on a lower, level from any of these: he was an ungodly man. His book was manifestly a piece of patchwork: he worked with the scissors and the pastepot. But he was ill-advised to borrow the prophecy of the patriarch who walked with God, for he was himself one of the ungodly men condemned in it.

The Meeting adjourned at 6.15 p.m.

WRITTEN COMMUNICATIONS.

Professor F. C. BURKITT, M.A., D.D., Norrisian Professor of Divinity. (1) Your argument about the land Airyana Vaego is most ingenious. But I do not know that it quite proves the historicity of "Jamshyd," or that this knowledge of the Arctic day and night came from tradition. Might it not equally well have come from what

I might call "travellers' tales"? *i.e.*, true tales of "Hyperborean" regions up North, where the days and nights are all wrong and where the climate is (now) bearable only for two months in the year. How could such a land have been created? Perhaps the good God made it good, made it the best of all lands, *but* the Enemy spoiled it with his cruel winter! In a word, it is possible to agree to your first deduction on p. 189, without agreeing to the second.

(2) (On p. 188, Note, would it not be better to say *Aramaic* instead of *Hebrew* (or *Aramaic and Hebrew*)? And it would be better to translate it "spring-rain" rather than "rain." It is the March-April rain, while the *More* or *Yore* is the Oct.-Dec. rain. Surely it is most improbable that the Pahlavi-writing should have taken a Hebrew word. All other words in Hushvaresh (Pahlavi-writing, where you write *Malkan-Malka* and pronounce *Shahán-i-Shahá*, or something like it) are in Aramaic, the French of the Euphrates Valley.)

(3) pp. 198, 199. I quite agree with you that if you read 4 Ezra vii carefully, you see that the "Christ" there spoken of is not *our* Lord, whether orthodox or modernist. But as a matter of fact this 4 Ezra vii, 28 is one of the few verses of the book quoted by Latin Fathers. St. Ambrose (in his commentary on Luke) expressly quotes it, with the name Jesus. Therefore I cannot agree with your second paragraph, p. 199.*

(4) pp. 214 ff. With almost every word of what you say about Slavonic Enoch I am in full agreement, and I think you have done a great service by showing from a quite independent standpoint the lateness of the book, not only in details, but in design and as a composition.

But why do you still believe it to have been written by a Jew or at Alexandria? I have given in my Schweich Lectures reasons for thinking that it was likely enough to have had a Christian author. This author was (as you say) chiefly interested in his own pseudo-astronomy: he puts it all into Enoch's mouth, because it is teaching for all men, apart from "revealed religion" or "covenant religion." Enoch was pre-Christian, but he was also pre-Jewish. And the Hebrew words he uses, like *Avarat*, *i.e.* 'Arāvōth, are, like the Bible-words in heathen magical papyri, mere hocus pocus and abracadabra, not like terms used by a scholar who knows Hebrew.

* This paragraph has been deleted.

(5) Why *won't* you accept Jude 14, 15 as a quotation from our Enoch? What I mean is this: you ask for criticism and opinion and your argument on p. 214 does read a little to me as if you had made up your mind beforehand that this couldn't be! But however this may be, do the writer of Enoch the justice to remember that it is all supposed to be written before the Flood: the religious institution of the Sabbath, the Law, the Feasts, are all in the future (p. 218). Only in a vision is there any mention of Israel, or Israelite religion.

(6) One other point. The Bundahish may be the compilation of Vologeses, but such compilations are generally a codification, an arrangement, of previously existing laws, customs, beliefs. The "Græco-Magian" syncretism began, surely, with the conquests of Alexander the Great; if Iranian influence be proved in "Enoch," that in my opinion does not prove the book to be post-Christian, even if the Bundahish (as we have it) be of the first century A.D. I cannot believe that "this combination of Greek and Magian thought *took its rise* under King Valkash" (p. 223).

Dr. J. L. E. DREYER, Ph.D., Director of the Armagh Observatory: May I take the opportunity to make a few remarks on the first footnote on p. 209.

Ptolemy's system of spheres is described in detail in his "Hypotheses of the Planets." There were forty-one spheres in all, including epicycle-spheres, and eight of these were "moving spheres," one for the fixed stars and seven for the seven planets. The system of spheres was very complicated, as they were not concentric, and nobody would get the idea of either nine or ten spheres from it. It was completely overshadowed by "the Ptolemaic system" of excentric circles and epicycles and was doubtless only designed for the benefit of the weaker brethren, who required something more tangible than a mere mathematical conception of circles.

Ahmed ben Musa in the ninth century wrote a treatise to prove that there was no ninth sphere.

The first mention of nine spheres is in the writings of the Brethren of Purity in the tenth century; it is called the original mover, and a reference is made to the saying in the Koran LXIX "and eight angels carry over themselves the throne of thy Lord." This is next mentioned by Al Betrugi (Alpetragius) at the end of the twelfth century. The idea was evidently derived from

Aristotle's *πρῶτον σῶμα*, though that had not been supposed to be anything but the sphere of the fixed stars itself.

After Al Betrugi the belief in the ninth sphere or Primum Mobile seems to have become established. The tenth sphere of Dante is a purely theological idea, but in the system of King Alfonso of Castille the eighth sphere produces the (imaginary) irregularity of the precession of the equinoxes, the ninth the progressive motion of these, and a tenth is introduced as primum mobile.

Whatever be the age of the "Slavonic Enoch," the passage in question must date from the second half of the Middle Ages.

LECTURER'S REPLY TO WRITTEN COMMUNICATIONS.

I will take Professor Burkitt's letter paragraph by paragraph.

(1) A "true traveller's tale" implies a real traveller as well as a real tale. Some man must have experienced Arctic conditions before they could have been correctly described. The Iranians called the man who did this "Yim." It is immaterial whether he called himself by that name or not.

(2) I thank Professor Burkitt for his correction, and have altered the word "Hebrew" into "Aramaic."

(3) Here again I have acted in accordance with Professor Burkitt's suggestion, and have deleted the sentence which he has criticized.

(4) With regard to the nationality of the author of Slav. En., I necessarily accepted, as a preliminary hypothesis, Dr. Charles' view that he was a Jew. I did not come across anything in the book which seemed to me to give serious reason for changing this view, and the references to "chalkhydres" and to animals with crocodile heads, appeared to show a connection with a Greek-speaking people on the Nile. But when I came to the conclusion that Slav. En. was by a late astrologer, I knew that—as the Jews themselves might express it—he was "external" to both the Jewish and the Christian faiths. For an astrologer is necessarily a believer in spiritual influences from the stars and planets directing the destiny of men: in other words, he was practically a pagan, and therefore neither faithful Jew nor faithful Christian. I was not concerned to decide whether he ought to have been "cast out of the synagogue" or "excommunicated from the Church."

(5) With regard to Eth. En. I am sorry that my argument on p. 214 reads as if I had already made up my mind. I thought I was

merely stating as plainly as possible the problem that lies before us for solution. There are *three* possible solutions: St. Jude may have invented the prophecy; or the author of Eth. En. may have done so; or it may have been current before the time of either. This last solution is the one I am myself inclined to accept. St. Jude need never have come across Eth. En., nor the author of Eth. En. have ever read St. Jude's Epistle.

(6) The Græco-Magian syncretism of which I speak on p. 223 is not a general influence but a particular one. I wrote "*This combination of Greek and Magian thought*"; it was the frank adoption of the astronomical system due to Hipparchus to which I was referring. This could not have taken place much before the date of the compilation of the Bundahis.

I am greatly indebted to Dr. Dreyer for his comments, and supported by the facts that he brings forward, venture now to record the opinion which I lacked the courage to express before; viz., that Slav. En., so far from being a pre-Christian work is not only a Mediæval production, but a late one at that.

A. S. D. MAUNDER.