

SCIENTIFIC VIEWS OF A CULTURED JEW,
FIRST CENTURY, B. C.

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THE Book of Enoch is the work of many men, many minds and dates through a period of a hundred years. In the Enoch literature we find the thought of Judaism under the stress of repeated break-down of Messianic expectations, the dogged persistence of Jewish legalism, and the persecution of Hellenizing Syria, taking on those final forms that make-up the Jewish back-ground of Christianity. It is little wonder that pseudonymous authorship was resorted to.

Why there should be five divisions to this book can hardly be said, unless as in the case of the Psalms, in so important a book as the Enoch literature there should be conformity to the five-fold division of the books of the Law. Just why this particular treatise under consideration, Enoch 72-82, should be considered the fifth part of this composite work seems still more a puzzle, and a further question based on the date of this fifth unit, is, when was the merger made?

Coming to this section (72-82), we see that it too is composite, sections 80-81 being from another hand, for while the balance of the work, 72-79, 82 is strictly a scientific treatise, 80-81 have a marked ethical tone, a theological refitting, as it were, to prepare the entire section for a place in the Enoch collection. Also sections 72-79, 82 have suffered a dislocation; 82 should precede 79, thus 72-78, 82, 79. That 82 is now a part of the book seems likely: but section 82 must precede 79, for 79:1 marks the completion of the narrative of which 82:1 is a continuation from 78.

We now have sections 72-78, 82, 79 as a scientific treatise shorn of the frills put on to fit it for its new place in the Enoch group. We have here a statement of a cultured, if not a learned man's view of celestial phenomena, as held late in the pre-Christian period.

Before starting out to speak of this tract as a norm of scientific knowledge, it would be well to ascertain if possible the date. The views here embodied did not spring up in a day. The treatise marks the culmination of a group of teachings: the several data had, doubtless, been in vogue for years, even for generations. That many of the items occur in the Old Testament may well be true, but it is difficult to see in this book merely a summary of Biblical statements. Rather, between the two Testaments something has happened, men have been thinking, the period has been one of organic development. In Jubilees 4-17-23 an allusion is made to this section of the book of Enoch. This book *The Celestial Physics* is older than the book of Jubilees. In Jubilees 32:1, the high-priesthood is traced to the house of Levi and the high-priestly office was held by the Maccabean and Hasmonean Princes (descended from Levi) down to the time of Hyrcanus II (Jos. Antt. XVI, 62, Assumptio Mosis, 6:1). Also it was before the break between Hyrcanus, 105 B. C., and the Pharisees.

In Jubilees 30:4-6 we have, as Charles thinks, the shadow of the destruction of Samaria. In 38:14, is mentioned the tribute-paying of Edom (Jos. Antt. XIII : 11 : 21), in 24:28-32 is mentioned Judah's hatred for Philistia, and according to Jos. Antt. XIII, 13:4 it was Hyrcanus who destroyed Gaza, and the fall of Samaria occurred seemingly within four or five days of the death of Hyrcanus in 105. Hence our limits for the book of Jubilees are 153-195 B. C., a period of less than half a century. This view is further supported by doctrinal reasons (Charles, Enoch, pp. 58-66; Pseudepigrapha, pp. 6-8ff). The book of Celestial Physics then, would reasonably be placed some later than the middle of the second century B. C., and would give the scientific views of an educated man of that period, who evidently felt no friction between Genesis and the teachings of the science of his day, or at least could reason out a method of harmonizing the two.

It is interesting to note that in a time of turmoil, when orthodox thought and intruding Hellenism were in bitter opposition; when fundamentalism and modernism were so violently at variance, a man or men had leisure and taste for such recondite matters. We are reminded of English society amid the Stuart struggle, or of our own country amid the horrors of the Civil War.

What view, now, did the cultured Jewish man of this period

take of the world, of the celestial phenomena above and about him? Our author is in a strait betwixt two. Throughout the book is evidence of his Jewish training: of his native love for the ancient Jewish teachings. Old Testament forms here and there assert themselves, and compel at least a compromise. The presence of the Greek cities, the craft of the Hellenized court, the beauty of Greek learning were at cross-purposes with the course of Judaism, and to light numerous finds at Askalon, Samaria, and in Trans-jordania. Traces of a native reaction appear at Sandahannah and Beth-Shean, told of a new and disturbing influence. Archaeology has brought and at Ain-duk near Jericho have been discovered remains of the new astrological ideas current with the incoming Hellenism (*Expositor*, 1926, p. 492, Col. 1).

A cross-section now of a cultured Jewish gentleman's views of celestial phenomena and their explanation. To his mind the earth is a plane, districted into four quarters of the heaven. An apocalyptic touch is added to the writer's geography. Seven great rivers flow: one, (the Nile) into the Great Sea; two from the north; (Tigris-Euphrates) into the Erythraean Sea; four others from the north, two (Indus and Ganges) into the Erythraean Sea and two into the "the Great Sea there" (into the Ural Sea?). We are puzzled to locate seven great islands "two on the mainland, five in the Great Sea." In Jubilees 8:29 these five islands are in the bounds of Japhet shirting the northern shores of the Mediterranean. We can guess Cyprus, Crete and Rhodes. The "two Islands in the Mainland" reads variously in the several manuscripts. We may note here that the moon is smaller than the sun (73:1) yet her circumference like the circumference of Heaven, marks with un-failing exactness the passing of the time until "the New Creation," (72:1), when they will be changed for all eternity—clearly a trace of the Messianic hope—Ha-Olam Hab-ba.

A forced accommodation to the new Greek Cosmology appears in the placing of Eden in the North (77:3). Greek, too, is his recognition of the Zodiac, in fact, if not in name.

To the west are six portals and as many to the East. Through the eastern portals sun, moon, and stars rise, and through the western portals they set. Six months up and six months back constitute the year, the fourth portal corresponding to the first month—Nisan, March 15-April 15. The twelve smaller portals above,

'though which flames appear,' explain the phenomena of sunrise—Homeric "rosy-fingered morn"—72:3, 75, 8f.

The moon rises, 41:5f, and sets with the sun. Its course from crescent to full is thirty days, during six months; for the other six, 29 days, a total of 354 days, 74:10-12, 75:2. The difference between solar and lunar years is thus ten days. Counting out (74:10ff, 75:5) the intercalary days 74:10i, the difference becomes six-days; 365-364— $1\frac{1}{4}$; $1\frac{1}{4} \times 4 = 5/6$ days, a quadrennium). Our writer was not necessarily critical, and fine distinctions between orthodox and the then modernist views did not trouble him.

The moon's progress from crescent to full proceeds through 28 stages, beginning on the thirtieth of each month. Moon's light is from the sun, which moon equals in size and with which moon rises and sets, except as new moon and full moon, for two months of the year, the moon pursues a course independent of the sun, but again after a 14-day period moves harmoniously with the sun.

In similar manner the stars enter through the portals and perform their courses. These stars vary in size and some of them he calls fixed stars. Charles sees here constellations, notably *Ursa Major*.

Through portals come also the winds, some favorable and some the opposite, three portals toward each of the four quarters of the earth. Four portals are favorable; eight bring storm, drought, locusts, frost, and snow. The middle portal in each quarter, four in all, bring good fortune, the outside portals, eight in all, are evil:—i. e., instead of eight points of the compass there are here 12. Here the Jewish theologian displaces the Hellenist; the South is so-called for there the Most High will descend, i. e., in the day of Judgment (cf. 25:3); the North is divided into three parts, one for men, and one for the seas, and one for Paradise. The two names of the Sun signify the two seasons of the Sun's greatest and least heat. Likewise the sun's declination seems suggested by the passing of the sun from east to west, via the north back to the east again. The twelve months thus provided for are not of equal length, but vary—thirty and thirty-one days. The four days thus added (4 months) give a total of 364 days against 360 of the Jewish years. The writer's Knowledge of the Greek eighty-year cycle, (Babbitt, Gr. gram., ¶726, every eighth year 13 months of 30 days each), the mention in the Slavonic Enoch of $365\frac{1}{4}$ days, (Charles, Enoch,

Introd. page 190), indicate that the Greek reckoning was current in our author's time. Our author has noted variation in length of day and night, the equinoctial seasons, summer and winter solstices. The four names of the moon correspond to her four phases. The chariots that bear the sun in his course are more Greek than Jewish though not unknown to the latter.

One can scarcely escape admiring our writer's frictionless mind. With perfect ease he glosses over irreconcilable difficulties, seemingly satisfied with approximate harmony. To outward appearance a Greek, at heart a Jew, at all times a harmonist mediating between the old and the new.