

RESEARCHES INTO THE ORIGIN OF THE PRIMITIVE CONSTELLATIONS OF THE GREEKS, PHOENICIANS, AND BABYLONIANS. By ROBERT BROWN, JUN., F.S.A. Vol. ii. (Williams & Norgate, 1900.)

Again the indefatigable student of the astronomy of the ancients presents to the public, in an attractive form, a mass of information, based upon his researches into the tablets of Babylonia and Assyria which refer to the constellations, and to the heavenly bodies in general, as they understood them. The amount of material, and the knowledge to be gained therefrom, are enormous. The difficulty is, to understand the texts aright, and to draw from their information, when rightly understood, the true deduction.

The first volume, which was noticed in the *Journal of the Royal Asiatic Society* for April last (pp. 371-375), contained eight chapters, dealing with the primitive constellations of the Greeks, the Hipparcho-Ptolemy star-list, the constellations in Greek literature, and in connection with the earlier coin-types, Homeric references to the constellations, constellation-subjects in the early art of the Aigaion seaboard and Asia Minor, and Babylonian astronomy after Alexander. In this there was much that was interesting, and the importance of bringing together all available material was pointed out, and the results referred to. In the second volume, which is now before us, further and more extensive references to the tablets are given, as will be recognized from the headings of the chapters, which are as follows: "The Constellations of the Babylonian Creation-scheme," "Constellation-subjects in Euphratean Art," "The Tablet of the Thirty Stars," "Some Stellar Groups of Sevens," "The Celestial Equator of Aratos," "Further consideration of the Euphratean Celestial Sphere," "The Euphratean Star-list," "The General Concepts underlying the Constellation-figures," and "The Formation of the Primitive Constellations." There are also several plates and figures in the text. The first volume

was dedicated to Professor Sayce, the second is dedicated to the memory of François Lenormant.

There is no doubt that, as Mr. Brown claims, he has been able to compile a fairly complete list of Euphratean stars and constellations, but how far these are correctly read and identified time alone can tell. It is a matter of regret to me that I find myself unable to follow the author in all his conclusions, and that my readings, together with the significations that I give to the groups (when it is possible to assign to them a meaning), often differ greatly from his. I do not mean to say that the author is in every case wrong, but one cannot help wishing that greater caution had been exercised in both these respects.

In the first chapter of the second volume (ch. ix) the author examines the constellations of the Babylonian constellation-scheme, that curious and interesting description of the heavens given by one of the tablets of the series regarded and generally called "the story of the Creation," but which would be more correctly described as "the fight between Bel and the Dragon." In this now well-known classic of the Babylonians, there is a reference to the twelve months of the year, for each of which Merodach fixed three stars or constellations. This would make in all thirty-six constellations, and it is to the identity of these that the chapter is devoted.

As an aid to this, there exist in the British Museum certain fragments of astrolabes, the most important piece being that found by Mr. George Smith when excavating for the Trustees in 1874. This text is numbered S. 162, and fragments of a duplicate exist, the principal being 83-1-18, 608, found by Mr. Rassam in 1882. These astrolabes are arranged in concentric circles, the outermost containing the name of a month, a star or constellation, and a number; the second the name of another star or constellation, accompanied by a number half the value of the first; and the third a star or constellation, and a number half the value of that of the second row. There are, therefore, three stars or constellations for each month, corresponding

with the statement in the Babylonian Creation-Story, and there is every probability that Mr. Brown is right in regarding them as those which are referred to in that Legend.

Taking these fragments as a base, Mr. Brown has completed the series, restoring the names of the remaining stars or constellations and the numbers in accordance with the system that the astrolabe seemed to indicate. The scheme is seductive, it is exceedingly probable, and the numbers follow a system which might easily be that of the ancient and unknown Babylonian who drew up and arranged the stars or constellations there enumerated.

Whilst looking through some rough copies of inscriptions made by me many years ago, I noticed that two lists of stars were accompanied by numbers, and that these went in progression. I at once compared them with the fragments of the planisphere and with each other, the result being that I was able to restore the whole text of the document treated of by Mr. Brown. I do not reconstruct the sphere, but give it in list-form, reserving a fuller examination of the document for some future time. The following is the order in which the constellations for each month are given:—

(Nisan)	DILI-GANA ¹	200
	DILI-BAT ²	100
	APIN ³	50
(Iyyar)	MULA ⁴	220
	ŠU-GI	110
	A-NU-NI-TU ⁵ ("the goddess Anunitu")	55

¹ Explained in the lists as *Iku* ("the water channel"), "the star of the land—the land of Babylon." W.A.I., v, 46, 50 *ab*.

² Explained as the star *Nabat*, apparently meaning "she who proclaims." W.A.I., v, 46, 40 *ab*.

³ Explained as *Anšara* in W.A.I., v, 46, 1 *ab*.

⁴ For this reading see p. 373, lower part.

⁵ The stars *Anunitum* and *Šinunitum* are explained as "the river Tigris and the river Euphrates" in W.A.I., v, 46, 34 *ab*.

(Sivan)	SIB-ZI-NA	240
	UR-A ¹	120
	NAGAR ²	60
(Tammuz)	DU-SI-SA ³	230
	MAS-TAB-BA ("the twins")	110
	AL-TARA	55
(Ab)	PAN or BA ⁴ ("the bow")	200
	MAS-TAB-BA-GAL-GALA ⁵	
	("the great twins")	100
	MAR-GID-DA ("the waggon")	50
(Elul)	BIRI ⁶	180
	UG-GA ⁷	90
	SU(?) - PA ⁸	45
(Tisri)	NIN-MAĦA ⁹	160
	Zi-ba-ni-tum ¹⁰	80
	EN-TE-NA-MAS-LUM ¹¹	40
(Marcheswan)	UR-BAT(?) ¹²	140
	GIR-TAB ¹³	70
	LUGALA ¹⁴	35

¹ The tablet 85-4-30, 15 has the variant *Ur-gula*, "the great dog," instead of *Ur-a*, abbreviated to *a* in the lists of signs of the Zodiac, where these groups stand for the constellation Leo.



² This is identified with *Allul* (see below), but cannot be the same here.

³ Explained as *Kakkab mešrê*, according to Delitzsch "star of prosperity."

⁴ Explained as "Ištar of Babylon" in W.A.I., v, 46, 23 *ab*.

⁵ Explained as "Lugal-girra and Mešlam-ta-êa, Sin and Nergal" in W.A.I., v, 46, 4, 5 *ab*.

⁶ Explained as "Anu and Anatu, Anšara between them."


⁷ , which, as R^m 2, 31, tells us, has the pronunciation of *Uga*. A variant is  = *arabu*, "the raven," interchanging with the former because it has the same pronunciation (*uga*) in Akkadian. *Uga (ugga)* is explained as "the lord of Death."

⁸ Explained as "the Queen of the Igigi."

⁹ Explained as "Queen of the gods."

¹⁰ Explained as "the (two?) lords of the Sun."

¹¹ Explained as "the weapon of the star . . ."

¹² Explained as one of the gods whose name begins with .

¹³ Explained as "the father of heaven and earth."

¹⁴ Explained as "the king, lord of the Igigi."

(Chisleu)	Muštabarrû mûtanu ¹	120
	UD-GU-DU-A ²	60
	UZ ³ ("the Goat")	30
(Tebet)	GU-LA ⁴	140
	AL-LUL ⁵	70
	TÎ ⁶ (= ID-ĤU, "the eagle")	35
(Sebat)	NU-MUŠ-DA ⁷	160
	NAM-MAĤA ⁸	80
	DA-MU ⁹	40
(Adar)	KU ¹⁰ ("the fish")	180
	LUL-A ¹¹	90
	AMARUDUK ¹² (Merodach)	45

It will be seen that the numbers in the first of each three constellations go from 240 (*Sibzina*, under the month Sivan) to 120 (*Muštabarrû mûtanu*, under the month Chisleu); thereafter ascending again until the same month and number are reached as at first. The numbers attached to the second of each three constellations are exactly half those of the first series, and go from 120 for UR-A, under the month Sivan, to 60 for UD-GU-DU-A, under the month Chisleu, ascending again like those of the first series. The numbers attached to the third of each series are exactly, in their turn, half those of the second of each series, and go from 60, the number which accompanies NAGAR, under the month Sivan, to 30, the number accompanying UZ, under Chisleu. The numbers increase and decrease by 20, by 10, and by 5, for the first, second, and third series, respectively.

¹ Explained as *mûtu*, "death."

² Explained as the god Muštabarrû mûtanu, "the forecaster of death."

³ Explained as "the lady of the kid."

⁴ Explained as "the lord of death, the god Ea."

⁵ Explained as "the seat of God."

⁶ Explained as "the hero of the Igigi."

⁷ Explained as "the double (?) gods, Addu and Marduk."

⁸ Explained as "the father of the stream."

⁹ Explained as "the lady of life."

¹⁰ Explained as "the triple (?) god, the god Ea."

¹¹ Explained as "the lord causing to stand."

¹² Explained as "the king, the god of the Igigi."

From the fragments of spheres, or astrolabes, at the author's disposal, he was able to obtain the necessary information to insert the numbers correctly for the constellations from the month Sivan to the month Chisleu, but instead of ascending again to 220 for the constellation MULA (under the month Iyyar), he has continued to descend to 20, 10, and 5, respectively. In addition to this, his names differ in every case, except for the constellations furnished by the fragments of the astrolabes, and for MAR-GID-DA, the third of the series for the month Ab, Zibanitum, the second of the series for the month Tisri, and AN-HU (to be pronounced TÎ), the third of the series for the month Tebet.

That the list which I have been able to consult is correct, must be conceded, but notwithstanding that it differs so considerably from Mr. Brown's reconstruction of the astrolabe, this difference can hardly be held to prove that he is wrong. Indeed, the fact that he has rightly located, in his restoration of the ancient astrolabes, MARGIDDA, Zibanitum, and TÎ, implies that he was on the right track, and that some of the remaining stars and constellations that he has located may turn out to be correctly placed when we know more of their duplicate names, and the appellations of the principal stars of which they are composed, and which may have been used by the ancient Babylonians to indicate the constellations to which they belonged. In one case at least, however, he can hardly be right, and that is his location of NU-SIR-DA (or NU-MUŠ-DA, as I have read it). This he has placed in the third series, under the month Tisri, notwithstanding that the astrolabe-fragment 83-1-18, 608 has in this place the remains of a line giving the two characters \star 𐎶𐎵𐎶𐎵 , which are undoubtedly to be completed $\text{𐎶𐎵𐎶𐎵} \text{𐎶𐎵} \text{𐎶𐎵} \text{𐎶𐎵}$, generally read, as provisionally here, EN-TE-NA-MAŠ-LUM.¹

¹ A better reading would probably be *En-temena-maš-šeg*, but the word is a very doubtful one.

There is much of interest in the book, but one cannot help thinking, and greatly regretting, that it is before its time. Babylonian astronomy is such a difficult subject, and there is so much more to learn about it, that no one can lay down hard and fast lines as to the identity of the names that they gave to the heavenly bodies, which, closely connected as they were with their religion, were bound to have more than one name, and to be connected in more than one way.

Nevertheless, the book will be found interesting, and very useful, for those who wish to see the diverse opinions of scholars upon the identifications of the stars and star-names as we find them inscribed on the tablets of Babylonia and Assyria. Hommel, Jensen, Oppert, Sayce, and many others are all quoted, and whatever may be the opinion about the book, it must be recognized as the most complete work upon ancient astronomy yet published. It is the work of a widely-read scholar, who can, and probably will, improve upon it in the near future. Classified indexes are appended, and the insertion of references in full is a feature, and a useful one, of the second volume, as it was of the first.

T. G. PINCHES.

A HISTORY OF SANSKRIT LITERATURE. By ARTHUR A. MACDONELL, M.A., Ph.D., Boden Professor of Sanskrit in the University of Oxford. (London: Heinemann, 1900.)

During the past few years much has been done to make smooth the path of the Oriental student; and those of us who gained our knowledge of the history of Sanskrit literature chiefly from Professor Weber's excellent, but by no means easy, work on the subject will think with a sigh how much toil we might have been spared by such a book as the present. The design of the series to which it belongs—"Short Histories of the Literatures of the World," published by Mr. Heinemann under the editorship of Mr. Edmund Gosse—is, evidently, to supply a trustworthy and, at the same time, a thoroughly readable account of the