CHAPTER VII

THE DATE OF KURUKSHETRA WAR

(D) ASTRONOMICAL

The Mahābhārata contains innumerable astronomical references1, which, if properly interpreted are likely to yield much revealing information in the context of the matter under review. Some of the verses contain data relevant to the war; others are merely poetics. Still, some of the interesting astronomical data as found in the Mahābhārata are appended below for information and appraisal. Some of these, however, will be interpreted in due course and others examined and rejected, if necessary. In the Udyogaparva, it has been stated: (a)

प्राजापत्यं हि नक्षत्रं ग्रहस्तिक्षो महाद्युति: ॥
शनिव्रताः पीड़यति पीड़यत् प्रापिनोधिकम् ॥
कुत्ता चाज्ञाकरो बक्ष ज्योधाना मधुसुदन ॥
अनुराघां प्रायस्यमेतेऽमेतं संगमयनिवः ॥
विशेषे एव हि बाणेयं चिन्ता पीड़ते प्रहः ॥
सोमस्य लक्ष्मं व्यावृत्र राहुर्कृत्युक्ति च ॥

M. Bh. Udyoga : 143

Prājapatyam hi nakṣatram grahaśtickṣno mahādyutih ॥
Śnaiścarah piḍayati piḍayan prāpinīdhikam ॥
Kṛṭva cāṅgarakro vakram jyestāyaḥ madhūsudana ॥
Anurādhāḥ prārthayate maitraṁ saṁgamayanniva ॥
viśeṣena hi varṣāṇe citrāṁ piḍayate grahaḥ ॥
Somasya lākṣmavyāṛttam rahurarkamupalit ca ॥

this indicates that “the planet Saturn is acute (tīkṣna) and of effulgence oppresses the star (Rohiṇī or Aldebaran) of which the presiding deity is Prajāpati, and causes great affliction to living beings. O slayer of Madhu (Krṣṇa), Mars having taken retrograde motion near to Jyeṣṭha (Antares) has now approached

the star group Anurādhā (junction star δ Scorpius) or has already reached it of which the presiding deity is Mitra. More specially, O descendant of the Vṛṣṇis, a planet troubles the star Citrā (α Virginis). The marks on the moon are changed and the Node (Rāhu) is reaching the sun."

This actually indicates malefic planetary dispositions considered astrologically. From the above it appears that Saturn was acute and was very near Rohini. Mars took a retrograde motion in the Nakṣattra Anurādhā; and therefore, since Mars was retrograde in Anurādhā the Sun must have been nearly 180° away from it and very near the star group Kṛttikās (Pleiades)². An unknown planet was also stated to have been near Citrā (α Virginis). Another similar statement showing the malefic planetary dispositions is found in the Bhīṣmaparva³. This also gives the respective positions and dispositions of the planets. The verses are reproduced below: (b)

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शब्दोत्त्र ग्रहस्तः cidrām samatiagramyā tiṣṭāti ||
धूमकेतुः पुष्यं चक्रमय तिष्ठति ||
मथास्वात्याको ब्रह्मणे च बुधस्पति: ||
स्यं नक्षत्रसारः सुर्यपुरुषवर्ग पीढः ||
शुकः प्रोष्टपदे पुर्वम् समाहः बिरोचते ||
रोहिणीम् पीडयतेवसूभो च शशास्त्रारो ||
विश्ववयात्यन्तरे चैव विष्ठत: परशयः ||
बजानुवरणं कृत्वा च श्रवणं वारकरम्भ: ||
ब्रह्मार्शिं समाख्य परहिताः व्यवस्थयः ||
सवस्तहस्तापिनी क्षणे प्रज्वलितावुभी ||
विभाषाय: समोपस्य व्याःविशवनेनवरू ||
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Śveto grahaṣṭathā citrām samātiagramyā tiṣṭāti ||
Dhūmakētrumahāghoraḥ puṣyaṃ cākramyaṭiṣṭati ||
Maghāsvaṅgārake vakrāḥ śravaṇe ca vyāspātiḥ ||

2. It will be seen later that this position of the sun is impossible unless it was taken about 6 months before the war actually started.

3. M. Bh : Bhīṣmaparva : ch. 3.
Bhagam nakṣtramākramya suryapūtreṇa pidyate ॥
Śuṅkrah proṣṭhapade pūrve samāruhya virochate ॥
Rohiṇiḥ piḍayatyevamubhau ca śaśibhaskarau ।
Citraśvāyantare caiva viṣṭitaḥ paruṣayahah ॥
Vakrānuvakram kṛityā ca śravaṇaṁ pāvakaprabhaḥ ॥
Vrahmarāśīṁ samāvitya lohitāṅgo vyavasthitaḥ ॥
Saṃvaṭ Sarasṭhāpinau ca grahau prajvalītāvubhau ।
Viśākhayaḥ samīpasthau vṛhspatiśnaiścarau ॥

Form the above it appears that: "the white planet (Venus) stands by passing over the star Citrā (< Virginis). A dreadful comet is stationed at the star group Puṣyā. Mars retrograde is in the Maghās, and Jupiter is placed in divisional Sravaṇa. The son of sun (Saturn) oppresses the Nakṣatra Bhaga (Purva Phālgunī) by overtaking it and Venus in the Nakṣatra Proṣṭhapāda (Purva Bhādrapada) shines there. Both the sun and the moon oppress the star or the Nakṣatra Rohiṇī. A cruel planet is stationed at the junction of Citrā and Svāti Nakṣatras and the rudy planet (Mars) looking like fire and having got even motion at Śravaṇa stands by overpowering the Nakṣatra presided over by Brahmā. Stationed near the Viśākhās, both Jupiter and Saturn appear as it to be burning and would continue to be so in the same condition there for one year."

The planetary positions as enumerated in the above two groups of statement are tabulated and shown in the following chart:

<table>
<thead>
<tr>
<th>Planet</th>
<th>Position as per Ref: (a)</th>
<th>Position as per Ref: (b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturn</td>
<td>Rohiṇī</td>
<td>P. Phālgunī or Viśākhā</td>
</tr>
<tr>
<td>Mars</td>
<td>Anūrādha</td>
<td>Maghā or Rohiṇī</td>
</tr>
<tr>
<td>Sun</td>
<td>Jyesṭhā or Kṛttikā</td>
<td>Rohiṇī or opp. Maghā. Dhanisṭhā</td>
</tr>
<tr>
<td>Moon</td>
<td>...</td>
<td>Rohiṇī</td>
</tr>
<tr>
<td>Unnamed Planet</td>
<td>Citrā</td>
<td>between Citrā &amp; Svāti</td>
</tr>
<tr>
<td>Rahu</td>
<td>near Jyesṭhā</td>
<td>P. Bhādrapada or Citrā.</td>
</tr>
<tr>
<td>Venus</td>
<td>...</td>
<td>Śravaṇa or Viśākhā</td>
</tr>
<tr>
<td>Jupiter</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
It may be observed that the positions in the different
groups as tabulated above vary considerably and cannot form
the basis of any working hypothesis. It is, therefore, con-
sidered that these passages simply reveal that malefics afflict the
constellations and the Zodiacal divisions. Retrograde malefics
are found to be near the constellations and are not considered
astrologically auspicious; Venus, if in the first part of sidereal
Citṛā is considered debilitated in the Zodiacal division Virgo;
Rohini Śakata Veda is not auspicious at all for the benefit of
of the people in general. Inspite of this, the late Mr. Lele
attempted to find out the chronology from the information
provided by the above mentioned verses and arrived at the date
of 5229 B.C. He also found out that the positions of the
planets actually arrived at do not agree with the aforesaid
positions indicated in the available recension of the Mahā-
bhārata.

These data, as provided in the above two verses, therefore,
serve no purpose in respect of the fixation of the time period
of the war; apart from these there are other statements also in
connection with the planetary dispositions during or prior to
the war period. Several such statements are enumerated
below:

राहुरसावसवादित्वमपर्वतिणि बिशाम्पते ॥
Rāhurgrasadādityamaparvaṇi viśāmpate ॥

राहुरसावसवादित्वमपर्वतिणि बिशाम्पते ॥
Rāhuncaśrasadādityamaparvaṇi viśāmpate ॥

Both the above statements mean that Rahu eclipsed the sun
"अपरबंजि" i.e. when it was not the season, or in other words,
there was solar eclipse when it was not the occasion of the new
moon. Further, it is also noticed that there were both solar
and lunar eclipses prior to the period of the war. The Mahā-

5. M. Bh. Sabha: ch. 79.
bhārata statements run thus⁷:

चन्द्रायंत्रप्रकृती एकाः ब्रह्मचर्योदयेष्व ||
अपरिमेयः प्रहर्नेति प्रजा संक्षयमिष्टः ||

Candrādityāvubhaugrasta ekāḥpāhitrayodaśīm ||
Aparvaṇī grahenaiti prajā saṁkṣayamicchata ||

i.e., on the thirteenth day there were both solar and lunar eclipses out of season; and these untimely eclipses indicate loss of subjects. Similar statements regarding solar and lunar eclipses are also found in the Mahābhārata which mean that the moon and the sun were eclipsed in the same month on the 13th day⁸.

चन्द्रमूर्द्धो ग्रस्तायमकामासिनै एवोदशीम ||
Candrasūryāvubhau grastāyamakamāsaṃ trayodaśīm ||

From the above two statements Prof. Sengupta found out that if the statements are correct, the lunar eclipse fell on August 30 and the solar eclipse on the September 14, 2451 B.C.⁹.

Another statement declares that either on the day of the battle or on the previous full moon day there was a lunar eclipse⁹. The statement runs thus:

सौमस्य लक्ष्मायव्यवत्तम राहुरक्षुपपाति ज ||
Saumasya lakṣmāvya-vṛttam rahurarkupapaiti ca ||

All these go a long way to show that due to the adverse planetary positions the danger to the lives of the people and to the country was imminent. This fact was further reiterated in the following verses¹¹:

रोहिन्यं पिडयन्त्वस्ती राजन सनाच्चरः ||
व्याधार्युतसितस्तो महाद्वयम् ||
Rohiṇīṃ pīḍayannesa sthito rājan śanaiścharaḥ||
Vyāṛttalakṣmāsaumasya bhaviṣyati mahaćbhayaṃ ||

⁸. ibid. ch. 3.
¹⁰. M. Bh. 5. 143. 4.
The verse indicates that Saturn remains oppressing, the star Rohini (Aldebaran), the markings of the moon are reversed and warns that this bespeaks of great dangers which are to come very shortly. Again after the death of Karṇa, evil indications were noticed and were stated thus:\footnote{18}{
हते कणे सरितो न प्रसब्रू जंगाम चास्त्र सतिता दिबाकरः।
श्वेतो ग्रह्स्वर ज्वलनाकर्कसः सोमस्व पुष्पोद्युदियय तिरंक्॥
हते कर्णे सरितो न प्रसब्रू जंगाम चास्त्र सतिता दिबाकरः।
श्वेतो ग्रह्स्वर ज्वलनाकर्कसः सोमस्व पुष्पोद्युदियय तिरंक्॥
Śveto grahaśca jvalanārkavarnaḥ somasya
putro bhudiyāya tiryyak ॥
}

It says that when Karṇa was killed, streams and rivers ceased flowing and the sun disappeared. The white planet (Venus) took the hue of burning sun and the son of moon (Mercury) became visible while rising heliacally in an oblique manner. Mahābhārata states further:\footnote{18}{
बुध्भवतः सप्तरीवायर रोहिष्टोऽभूमबं च चन्द्राकर्कसमो बिशाम्पते॥
Vṛhaspatiḥ samparivāryya rohīṇim vabhuva candrār-kasamo viśampate ॥
}

Jupiter surrounded the star Rohini (Aldebaran) and became (bright) like the sun and the moon.

From all the above verses, it appears that both astronomical and astrological statements are completely mixed up-together. It is surmised that at the time of the modern recension of the Mahābhārata, the theories of astrology were systematised and some of the statements cannot but be taken as modern interpolations. But with the lapse of time it has become very difficult to sort out the bran from the chaff. On a review of the positions of the planets as indicated in the above verses, it is seen that Saturn is either in conjunction or in malefic aspects (astrological) with the star Rohini (Aldebaran). Jupiter was retrograde throughout and was near Rohini. Mars was retrograde and was near Jyeṣṭhā (Antares) or in the Maghās.
and being cruel was oppressing the star. Citrā (α Virginis). Venus, the white planet is either combust or heliacally setting. Mercury became heliacally visible obliquely. All these are mixed up statements and are full of 'truth and fiction' and present a picture of astrological bias of the impending calamity; and as already stated they contain later interpolations. Therefore, for the purpose of the present disquisition only astronomical references relating to or made by Vyāsa, Kṛiṣṇa, Bhīṣma, Balarāma etc. i.e., those figures around whom the story of the Mahābhārata revolves should be taken into serious consideration.

Before proceeding to interpret those astronomical references in the Mahābhārata, it is necessary to state that up to and even after the time of the Mahābhārata war the term ‘nakṣatra’ was intended to mean a star or a cluster of stars and not the theoretical division of the ecliptic measuring 13° 20' each as we know it now. In the later period of the Vedāṅga Jotīṣa, the ecliptic was divided into 27 equal parts of 13° 20' each; and each of these divisions was attributed to each ‘nakṣatra’ or the star cluster which was within this division. As such, while considering the word ‘nakṣatra’ in the vedic or the purānic literature, it is desirable to take the ‘nakṣatra’ to mean a star or a cluster of stars. The astronomical references obtaining in the Mahābhārata in the context of the battle are mainly incidental and state only the moon's phases near the various star groups and do not directly refer to the solstices or the positions of the equinoxes in respect of any event except that of grandfather Bhīṣma's death. The only reference to the solstice is found to indicate the day when Bhīṣma died, the sun reached the winter solstice.

Admittedly, not all the references obtaining in this great compilation are absolutely true or correct. Quite a few modern interpolations and poetical effusions bordering on fiction have been included at various periods. But some facts within it cannot but be true, if we accept that there is even an iota
of truth in the whole of *Mahābhārata*. One such, is that the battle began sometime after the new moon near the star group presided over by *Indra*. Another is that Bhīṣma, the great patriarch, died on the winter solstice day, which fell, as stated, when about three-fourths of the month of *Māgha* (lunar) was over. The *Mahābhārata* itself stands on the pillar of Bhīṣma's truthfulness and on the dharma of Kiṛṣṇa. Therefore, the statement of Kiṛṣṇa that there is to be new moon on the seventh day from his talk with Karṇa needs necessarily to be taken as truth since upon him devolved the duty to prove the power of truth.

Therefore, in this treatise an attempt at determining the time period of the *Kurukṣetra* battle has been made from the incidental statements made in the *Mahābhārata* and from the various time references included in this great compilation. These references mainly show the position of the moon near a particular star or a star group, although no mention of the *tithi* is noticed. *Nakṣatras* in these references, as already stated, mostly refer to the single star or star groups and not the theoretical portion of the zodiacal division. During the *Vedāṅga Jotīṣa* period, the whole of the ecliptic was divided into 27 *nakṣatras* of 13° 20' each, but since it is not possible to determine accurately when such division was made, it seems proper that the *nakṣatras* should be taken to mean the stars or the star groups. But since lunar month was possibly the vogue of the period, both the new moon and the full moon cannot occur near the individual stars or the star clusters. Therefore, variation in degrees from the star groups are inevitable and conjunctions and oppositions should be considered to have occurred within a reasonably variable range of the star groups.

In the *Udyogaparva*, it is seen that Kiṛṣṇa went to the court of *Hastināpur* at the end of *Śarada* season, in the

14. *M. Bh.: udyoga: 83. 7:*

कौमुदे मासै रेक्ष्या शरदन्ते हिमागमे ।

*Kaumude māsi revatāṁ ēradante himāgamāṁ* ।
beginning of *Hemanta* (season) on a day when the moon was in *Revati*. He went on a peace mission to mediate the dispute between the *Kauravas* and the contending *Pándavas*; but his mission was unsuccessful. On his return to the *Virāṭa* country, where the *Pándavas* were residing, he directed them to start for the battle-field with the moon in the *Pûṣyā* (8 *Cancri*). Further in the *Śalyaparva*¹⁵, there is a statement in which Krīṣṇa is purported to have said: *O Pándavas come out with me when the moon is in Pûṣyā.*

This day when the moon was in *Pûṣyā*, after Krīṣṇa’s unsuccessful peace mission, is very important on account of (i) the fact that the *Kauravas* started for the battle field on that day, (ii) the *Pándavas* arrived two days later, and (iii) Balarāma started on pilgrimage on the same day. Although the *Pándavas* arrived at the battle field two days later, the battle did not start on that day¹⁶. The battle actually started sometime later as will be shown in due course. Krīṣṇa, while returning from the *Kaurava* court to the *Virāṭa* country, met Karṇa on the way and had a talk with him. He entreated Karṇa to join the *Pándava* side but Karṇa refused. At this Krīṣṇa told him that¹⁷ “seven days from to-day there will be the period of the moon’s invisibility or *Āmavasyā*; there-

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15. M. Bh. Salya 36. 10:

निर्गच्छद्वारं पाण्डवेया पुष्येयं सहितामया |

Nirgacchadham pāṇḍaveyā pūṣyaṇa sahitāmayā |

16. M. Bh. Salya:

मया बिषयं: सोमस्तदिनं प्रत्यपदल दीप्यमानाश्च संपेतु दिमति सप्त महाप्रहः |

Maghā viṣayagaḥ somastadinaṃ pratyapadyata dipya-
mānāśca sampetu diti sapta mahāgrahā |

17. M. Bh. Udyoga Parva : 142. 18.

सप्तमाश्चापि दिवसादामपवश्च सन्भविति |

Saptāmācāpi divasādāmāvāsyā bhaviṣyati |

Sāṃgrāme yuyjatam tasyām tṝṃ hyāhūḥ sakra-devatām |
fore, begin the battle on that day as the presiding deity (of the nakṣatra) is Indra”. It is, therefore, found that about the time when the war broke out there was a new moon either near the star Antares or Jyeṣṭhā of which the presiding deity is Indra or in Viśākhā (Libra) which is presided over by both Indra and Agni. Since Viśākhā is presided over by both Indra and Agni and since Kiṣṇa referred to the star presided over only by Indra. (Satkāvata, Sakra-devatām), it is more probable that he referred to the Amavasyā when the moon was in Jyeṣṭhā or Antares. This point will be further discussed in due course.

It is also seen that Balarāma, the elder half-brother of Kiṣṇa, was not happy with the state of affairs in the country and did not want either to take side with or even to be present during the period of the war. Instead, therefore, he went on pilgrimage. About his going on pilgrimage we find two statements which are apparently contradictory to each other. The first one is:

ततो मन्ये परितात्म जगाम यदुनन्दन।
तोर्पयात्रा हलघर: सरस्वत्या महायशा।
मैत्र नक्षत्र योगोस्म सहित: सब्रे यादवे।

Taṭo manyuparitātma jagāma yadunandanaḥ
torṇātṛā hulghara sarasvatyaṁ mahāyaśaḥ
maitre naktar yogas śahit śabhaṁ yaśadeva

i.e., “Haladhara (known as Balarāma) went on pilgrimage towards river Svaṁvatī with all the people of the Jādava tribe when the moon was in a star presided of over by Mitra”. This may mean Anurādhā (Scorpii) of which the presiding deity is Mitra; or (Maitre naktar) maitranakṣatra may simply mean a friendly star. The second statement is what Balarāma himself said on the 18th day of the war, on his return from pilgrimage and when he was present at the mace duel between Bhima and Dūryodhana, both of whom were his disciples. He said:

i.e., since I went away (on pilgrimage) this day is 40 and 2 days more; I went out with the moon at Puṣyā and have come back with the moon at Śravaṇā (Altair).

If the first statement is examined critically, it is noticed that Balarāma went out on pilgrimage when the moon was in Anurādhā (δ Scorpii) whose tropical longitude on 1.1.1976 was 242° 14' 8". 8. This is the star presided over by Mitra. If however, he started on pilgrimage when the moon was in conjunction with this star, then after 41 days, i.e. on the 42nd day, he would have returned to Kurukṣhetra with the moon in Rohiṇī or Aldebaran and this would have to be the 18th day after the battle started. In the circumstances the battle should have begun when the moon was in Hastā (δ. Corvi) whose tropical longitude on 1.1.1976 was 193° 7' 3".8. This position of the moon for the beginning of the battle is apparently untenable. Therefore, there must be another and more proper explanation of this Mahābhārata statement. It is well-known that even now most Indians consider that for going on a long journey or for that matter on a pilgrimage—Āśvinī, Puṣyā, Hastā Anurādhā, Revaṭī, Mrgśiras, Mulā, Puṇarvasu and Jyeṣṭhā are the propitious stars to commence the journey. Each day is divided into 15 muhurttas and to each Muhurta is assigned the lordship of a particular star. Each of these muhurttas cover 48 minutes of our modern idea of time reckoning and the third muhurta of the day belongs to Anurādhā star. Therefore, to start on a journey, even if the moon's nakṣatra is propitious, the muhurta is also additionally considered as a matter of good omen. Anurādhā muhurta is presided over by Mitra and starts at 1 hr. 36m. after sunrise and continues for 48 minutes. Therefore, Maitra nakṣatra quoted in the verse should preferably be interpreted to mean 'maitra muhurta'. This was the hour of
the morning when Balarāma went out on pilgrimage with all the people of the Jādava tribe.

The second statement made by Balarāma goes on to say that: "since I went out it is 40 and 2 days; I went out when the moon was in Pāṣyā and I have come back when the moon is in Śravaṇa". And that was on the 18th day of the battle. In examining this statement it is found that on 1.1.1976, the star Pāṣyā or 8 Cancri had a tropical longitude of 128° 23' 10". 8; this was the position of the moon of the time on 1.1.1976 when Balarāma went on pilgrimage. In 41 days the moon moved 540° 13' 50".49 at the mean rate of 13° 10'.34".89 per day and reached 668° 37' 1".29. Therefore, deducting 360°, the position of the moon comes to 308° 37' 1".29. The tropical longitude of Śravaṇa or Altair was 301° 26' 13".8 on 1.1.1976. Therefore, the statement made by Balarāma is substantially correct even with the present day longitudes of Śravaṇa. If it is taken that Balarāma went on pilgrimage at the exact conjunction of the moon with Pāṣyā, he arrived on the battlefield on the 18th day of the battle at Śravaṇā but about 7° 10' 47.49 ahead of the exact conjunction. This is true, of course, taking the mean daily rate of motion of the moon for 1976, but since moon's motion is very uneven, it is quite possible that Balarāma returned back from his pilgrimage when the moon was not in this position but somewhere nearer to Śravaṇā. From the current ephemerides of 1975 and 1976, it is seen that the moon was in Pāṣyā on the 21st December, 1975 and moved to Śravaṇā on the 31st January, 1976; thus it took the moon exactly 41 days' motion to reach Śravaṇa starting from Pāṣyā, of course, naturally after one full revolution. This was in the lunar month of Agrahāyaṇa and Pauṣa and roughly corresponds to the period under review.

Thus, from the above the following data come out:

(i) Krīghṇa started for the Kaurava court when the moon was in Revati or Piscium whose tropical longitude on 1.1.1976 was 19° 32' 28".8,
ii) Balarāma went on pilgrimage when the moon was in Pūṣyā or 8 Cancri whose tropical longitude on 1.1.1976 was 128° 23’ 10°8.

(iii) He returned on the 42nd day, i.e., on the 18th day of the battle when the moon was near Śravaṇā or Altair, whose tropical longitude on 1.1.1976 was 301° 26’ 13°.8.

(iv) on the day when the moon was in Pūṣyā, after Kṛiṣṇa’s unsuccessful peace overture at the Kaurava court, Duryodhana repeatedly instructed his followers to start for the battle field19.

Prāyadhaṃ vai kurukṣetraṃ puṣyodyeṭi punah punah ।
i.e., repeatedly he said, march to the Kurukṣetra when the moon rises in Pūṣyā and,

(v) while returning from Hastināpur after his unsuccessful attempt, Kṛiṣṇa had a talk with Karna, when he said that there would be a new moon or the period of moon’s invisibility on the 7th day with the moon on a star presided over by Indra20.

Saptamācāpi divasādaṃvāsyā bhaviṣyati ।
Sāṁgṛāme yugjatam tasyām tam hyāḥuḥ sakraḥdevatām ॥
i.e., from the 7th day from to-day there will be Amāvasyā; begin the battle on that day, as its presiding deity is Indra.

Assuming that the star referred to by Kṛiṣṇa was Antares (Jyeṣṭhā) and not Viśākhā or Libra where the Amāvasyā was to occur, the following mean planetary positions as on 1.1.1976 are obtained. The tropical longitude of the star Jyeṣṭhā or Antares on 1.1.1976 was 249° 25’ 36°.8 and the moon took 7 days motion from the day at Kṛiṣṇa’s speech with Karna to reach the star. The mean daily motion of the moon for 1976 was 13° 10’ 34°.89 and in 7 days the total mean motion of the

moon comes to 92° 14' 4".23. Therefore, at the time of Krśňa's talk with Karṇa the position of the moon was at (249° 25' 36".8 minus 92° 14' 4".23) 157° 11' 32".57, i.e., 3°.47' 12".23 behind δ Leonis (Purva Phālgunt) whose tropical longitude on 1.1.1976 was 160° 58' 44".8. Had he, however, referred to the new moon at Viśākhā (a Libra), whose tropical longitude on 1.1.1976 was 224° 44' 51".8, the position of the moon during his speech with Karṇa would have been (224° 44' 51".8 minus 92° 14' 4".23) 132° 30' 47".57, i.e., only 0° 30' 6".37 ahead of Asleśā (α Hydrae) whose tropical longitude on 1.1.1976 was 132° 0' 40".8 and then it would not have been possible for the Pāṇḍavas to start for the battle field with the moon in Maghā or α Leonis. In this case the the time elapsed from Krśňa's talk with Karṇa to the Pāṇḍavas' going to the battle field with the moon at Maghā would have been approximately 1.35 days at the mean rate of daily motion of the moon. This time factor leaves hardly enough allowance inasmuch as Krśňa had to go back to the Virāta country, advice the Pāṇḍavas and then make arrangements for their movement to the battle-field within such a short time. This presents immense logistical difficulties and is quite impossible. Hence it is certain that Krśňa referred to the Āṁavasyā at Jyeṣṭhā or Antares.

Again, Krśňa started for Hastināpur on his peace mission when the moon was in Revati or τ Piscium whose tropical longitude on 1.1.1976 was 19° 32' 28".8; and if it is taken that Krśňa referred to the new moon at Jyeṣṭhā or Antares in his speech with Karṇa, the time elapsed from his going out on peace mission to the time of his talk with Karṇa would have been 10.37 plus days; and had he referred to the new moon at Viśākhā or α Libra, the time elapsed would have been 8.54 days, which seems to be quite on the short side to cover all his busy itinerary. He had to attend the Kaurava court at the very least for two days; he had to spend some time on his journey bothways; he had to attend a meeting with Vidūra; and then while on the point of being detained, he managed to leave Hastināpur, probably surreptitiously; and then on his way
back he met Karṇa to whom he firstly advised to join the Pāṇḍava party as the supreme commander but on his refusal to do so he advised to start the war on Āmāvasyā which was to fall on the 7th day. After that he had to go back to the Virāta country and advise the Pāṇḍavas to make suitable arrangements to conduct such a big battle in which the whole of the then India was represented. All these activities within the short period of 8.54 days seem quite impossible. Therefore, it seems more probable that Krishṇa referred to the Āmāvasyā at Jyeṣṭhā or Antares. The question that has to be settled at the very outset is whether the battle actually started on the Āmāvasyā at Jyeṣṭhā or later. Since very little time remained for Krishṇa to go back to the Virāta country and then make proper arrangements for such a big battle by way of arranging soldiers, tents, captains of the army, logistical arrangements, removal of the wounded and the dead, the balance of probability rests with the war having been started later than the period at Āmāvasyā referred to by him in his talk with Karṇa.

With the available data, there is another way to verify this. Assuming that Balarāma started on pilgrimage with the moon in Pusyā, he returned when the moon was in Śravaṇā and that was the 42nd day after he left and on the 18th day since the war broke out. It has already been shown that when he returned, the approximate position of the moon was 308° 37' 1".29 i.e, 7° 10' 47".49 ahead of Śravaṇā. Therefore, since the battle started, the moon moved for 17 days. In 17 days, the moon's approximate motion would be nearly 223° 59' 53".13 at the mean rate of daily motion for 1976. Thus, on the day of the battle, the moon's position, according to this, would be (308° 37' 1".29 minus 223° 59' 53".13) 84° 37' 8.16 which is 1° 14' 51".36 ahead of Mrgśiras or λ Orionis, whose tropical longitude on 1.1.1976 was 83° 22' 16".8. Hence, since Krishṇa's talk with Karṇa, about 7 days plus a fortnight had passed when the moon was near about the star group Mrgśiras. In the circumstances the war could not have started in Āmāvasyā but
actually started in *Purnamāsti*. This can also be verified from another event recorded in the *Mahābhārata*.

It is noticed that while Kṛṣṇa was negotiating peace at the *Kaurava* court there was a full moon near the *Kṛttikās*\(^{21}\). It is also known that Kṛṣṇa started on his peace mission “at the end of Śarata season, in the beginning of Hemanta (season) and on a day when the moon was in *Revati*”. The tropical longitude of *Revati* or *Piscium* was 19° 32' 28.8" on 1.1.1976 and that of *Kṛttikā* or *Tauri* was 59° 39' 24.8". Therefore, from the day that Kṛṣṇa started for *Hastināpur* to the day when there was the full moon at *Kṛttikā*, the moon traversed about 40° 6’ 56’; and at the mean motion of the moon for 1976, it takes only 3 days plus for this to happen. Thus, it can easily be surmised that the battle could not have started on that full moon day but actually started on the next full moon.

In examining this from another angle it is seen from the *Mahābhārata*\(^{22}\) that on the 14th day of the war Abhimanyu, Kṛṣṇa’s nephew and Arjuna’s teenaged son was killed in an ungallant warfare being surrounded by seven *rathis* or senior was captains of the *Kaurava* side. At this Arjuna became very angry and took the vow that he would kill Jayadṛasta, who was the main instigator of this gross act of injustice, by the next evening\(^{23}\). The same afternoon, before evening fell, the sun became invisible and the sky became dark as night. At this, Arjuna killed Jayadṛasta\(^{24}\) but after sometime, the sun came up with its full glory again. Apparently, therefore, there was a total solar eclipse visible at *Kurukṣetra* latitude just before the evening on the 14th day of the war and this made Jayadṛasta discard his extreme caution which he punctilliously maintained throughout the entire period of the day. From this,

\(^{21}\) M. Bh : Bhishma : 2.23 : this full moon will be elaborately discussed later.

\(^{22}\) M. Bh : Drona : 49

\(^{23}\) ibid : 73

\(^{24}\) ibid : 164.6
it can safely be assumed that this was a new moon day and 14
days back when the battle began it had to be a full moon day.

On further scrutiny of the *Mahābhārata* statements, it is
seen that the night of the 14th day of the battle was so very
dark that during the severe battle at night oil lamps had to be
lit, and with that light the battle was fought36. The fight was
continued into the night and at midnight, the *rakṣasa* hero
Ghaṭotkaca, a progeny of Bhima, was killed. The contending
armies were so very tired that they slept under terms of tem-
porary truce on the battlefield itself. The *Mahābhārata* statement
gives the following particulars36:

अद्व्रात्रि: समाजमे निधानाां विशेषतः ।
सवर्षेऽवसानसन्निवसाहः क्षत्रिया दीनचेतस: ॥
ते युवः यदि मनवविवर्तात्स सैनिकाः ॥
निमलयत चाँचैब रणमूमः मुन्तकम् ॥
ततो बिनिर्धा बिषान्ता चचन्नमस्थविते पुनः ।
ससाविप्रवान्यान्यं सांगांमु कुरुपान्ह ॥

Ardhvarātriḥ samājagme nīdrāndhānāṃ viśeṣataḥ ।
Sarve hyāsannirūṣāhāḥ kṣatriyā dinacetasaḥ ॥
Te yuyāṃ yadi manvadhvamupāramata sainikāḥ ।
Nimilayat cātraiva raṇabhūmānu muhurtakam ॥
Tato vinidrā viśrāntā ścandramasyadite punaḥ ।
Saṃsādhayiṣyathāṃyonyam saṃgrāmam kurūpāṇdvam ॥

Thus, the soldiers slept for sometime and after a period when
the moon rose, the battle started again with renewed vigour.

The *Mahābhārata* says37:

यथा चन्द्रोधयोऽजुतः: क्षरितं सागरोिवदतः ।
तथा चन्द्रोधयोऽजुतः सः समुव नलायवः ॥
तत्: प्रभुते युवः पुनरेव बिषाम्पते ।
लोकेऽलोकिनाशय वर्तोकमेष्टसताम् ॥
Yathācandrodayodbhūticaḥ kṣubhitah sagaroibhavaḥ ।

25. ibid 163.1
27. M. Bh. ibid.
THE DATE OF KURUKSHETRA WAR

Tathā candrodhayodbhūtaḥ sa vabhuva nalārṇavaḥ ॥
Tataḥ pravārtte yudham punareva viśāmpate ॥
Loke lokavināśāya paralokabhīpsaṭaṃ ॥
i.e., just as the ocean becomes turbulent when the moon rises,
thus became the sea of the armies with the rise of the moon;
O king, then the battle began again between men wishing for
the blessed life in the other world and for the annihilation of
the subjects.

It is seen, therefore, that on that night, after midnight
was over and the armies of both sides slept for sometime, the
moon rose and again the battle began. As regards the time
when the battle was resumed and the condition of the moon,
the following statement of the Mahābhārata speaks for itself:

हर बृकोतमगामसमथुति स्मरसरासन पूर्ण समप्रमः ॥
नवबधूरसिमतवानमनोहर: प्रविस्तृतः कुमुदकरबान्यवः ॥
Haravrśättamagātrasamadyutiiḥ smaraśarāsanapūrṇa-
samaprabhaḥ ॥
Navavadhūsmitacārūmanoharaḥ pravisṛtaḥ kumu-
dākaravandhavaḥ ॥

and also:

त्रिभागमात्रासेसायां रात्रायं युद्धसबल्तः ॥

Tribhāgamātrasēṣāyaṃ ratryāṃ yudhvamavartata ॥
hence, it is seen that only one-fourth of the night was left when
the battle was resumed. The moon was like the head of the
bull of Mahādeva, like Cupid’s bow fully drawn out and as
pleasant as the smile of a newly wedded wife. The moon then
began to spread her golden rays. Therefore, leaving aside the
poetical effusions, the following facts come out. At the time
when the war resumed the moon was observed to have a
crescent shape with sharp horns like those of a bull. The
night was then almost over as the sun began to rise in the east
after a little while. If it is accepted that the lunar month

28. ibid 185.
29. ibid 187.1.
30. ibid 187.1.
began in those days also from the day of the full moon, the 14th day of the war fell at the middle of the month of Agraḥāyaṇa and corresponds to the early part of the present day calendar month of December. The time of the moon rise on the day of the new moon or on the previous day may be at about 5-30 A.M. when roughly one hour’s darkness still remains. Thus, since the crescent moon was visible in the early hours of the dawn, the day possibly started with the 29th tithi and the new moon began sometime late in the afternoon of the day. Therefore, the moon was approximately a days motion or so behind the sun on the 14th morning.

Some further statements of the Mahābhārata may now be recounted for further elaboration. In the Bhīṣmaparva, a statement made by Vyāsa to Dhrtrāstra is found. It states:\footnote{31}{M. Bh. Bhīma : 2.23.}

अलसे प्रभयाहीनाः पौर्ण मासी च कार्तिकीम् |
चन्द्रां च उद्दिन्यूणसं हर पथवै नमः स्थले ॥

Alakṣe prabhāhīnām paurnamāsīm ca kārtikīm ।
Candroj bhūdgnavarṣ’ca padmavarṇe nabhaḥsthale ॥

i.e., I find the full moon at the Kṛttikās (Pleiades) lustreless, the moon is visible like a fire like hue in the lotus coloured sky. In this context a serious consideration has to be made. It is to be remembered that (पौर्ण मासी च कार्तिकीम्) paurnamāsīm ca kārtikīm full moon in the lunar month of Kārtika does not necessarily mean that the moon should be in exact astronomical conjunction with the Kṛttikās. In this particular case, as per Vyāsa’s statement, the exact conjunction was probably due to occur within a short period, say a few hours, and hence the hue of the moon and the sky is different from normal. This may also be due to the foggy weather which is sometimes seen at the Kurukṣetra region during early winter. If the full moon was to occur on the next morning, the moon would be short from the oppositional point by near about a day’s motion and consequently it would be 14 day’s old when Vyāsa spoke to Dhrtrāstra.
In examining another very important statement obtaining in the *Mahābhārata*, it is seen that on the 10th day of the battle at about sunset, Bhīṣma, the first general of the Kaurava army fell wounded and was unable to further participate in the fight; he remained on his bed of arrows and expired after 58 nights from the 10th day of the battle. On the day of his death the sun took its northerly course or in other words the *Uttarāyana* or the winter solstice began. Yudhiṣṭhira came to the battle-field where Bhīṣma was lying to pay his last respects and, if necessary, to perform the last rites. The relevant *Mahābhārata* verse\(^\text{82}\) states:

उष्टिव्र ऊष्टिव्र सब्जेरीः स्रीमानः पञ्चनाशनगरोत्तमे।
समं कौरवास्यस सत्त्वां पूर्वक्षमः॥
स निर्ययो गजपुराण्यायाः परिबारिः।
दृष्टा निर्मूलमाधित्यं प्रवृत्तं चोत्तीरायणम्॥

· Uṣitvā sarvarīḥ śrīmāṇaḥ pañcāśannagarottame
· Samayaṃ kauravāgrasya sasmāra pūrūṣarṣavah
· Sa niryayo gajapūrāṇyājakaḥ parivāritaḥ
· Drṣṭva nivṛttamādityaṃ pravrīttaṃ cottarāyaṇaṃ

i. e., Yudhiṣṭhira residing at his beautiful township of *Haśtināpur* for 50 nights (i. e., after the battle was over) came to remember that the day when the Kaurava chief would leave this mortal world had arrived. He, therefore, went out of *Haśtināpur* with a party of priests, after having come to know that the sun had stopped from the southerly course and that the northerly course had began. Apparently, therefore, there was some means of observation of the solstices at the time, and Yudhiṣṭhira, finding after 50 nights from the 18th day of the battle, that the time of the winter solstice had arrived, went back to the battle field to be present at the time of Bhīṣma’s death. When Yudhiṣṭhira met Bhīṣma at *Kurukṣetra*, he (Bhīṣma) thus spoke to him\(^\text{88}\):

32. \textit{M Bh. : Anusasana : 167}:
i.e., it is a piece of good luck, O Yudhiṣṭhira, son of Kunti, that you have come here with your ministers. The all-powerful (भगवान) sun has turned (i.e., taken its northerly course). I am lying here for 58 nights on the bed of pointed arrows; this time seems to me as long as a hundred years. O Yudhiṣṭhira, the month of Māgha (lunar) is now in progress; this should be the light half of the moon and its three-fourths should be over. Actually, however, it was the dark half of the month but about three-fourths of the dark fortnight was over.

Both the above verses are corroborative of each other as Yudhiṣṭhira went to the battle-field from Hastiāpur, 50 nights after the battle was over. But Bhīṣma had to pass 58

34. It has already been seen that on the 14th day of the battle there was the period of Amavasya and since that day Bhīṣma died 54 nights later. Thus it still remains about 5 days to complete 2 lunations. Thus, his death was on the dark half and about the 9th or the 10th tithi.

The original word was possibly Krisna and might have been changed later to Sukla to bring out the approved time of Bhīṣma's death. Nilakaṇṭha, the commentator of Mahābhārata quotes a verse from Bhārata Sāvītṛi which says that “Bhīṣma was killed by Arjuna on the 8th day of the dark half of the month of Magha”—Bhīṣma parva : ch. 17.2 quoted in Anc : Ind : Chr : F. N. p.9.
nights on the bed of arrows since he fell on the 10th day of
the battle. It would not be out of place to mention another
verse appearing in the Śāntiparva:\textsuperscript{35}:

\begin{quote}
पञ्चासातं षट् च कृष्णग्निर शेषं दिनां तस जीवितस्य ।
ततः शुभः कम्भः लोकोद्यास्त् समेच्यसे शीघ्रः विमुच्य देहम् ॥
Pancaśataṁ sat ca kurıpravirā seṣam diṁnāṁ tava
jivitasya ।
\end{quote}

Tataḥ suvaiḥ Karmaphalodayaistvaṁ sameṣyase Bhīṣma
vimucya dehaṁ ॥

i.e., O Bhīṣma, chief of the Kuru clan, it still remains 56 days
of your life; after that, due to the resultant effect of your good
deeds you will discard your mortal body (and attain bliss).
This statement made by Kriṣṇa was in a different context and
does not fit in with the time of his death. But, apparently,
this was predicted on the third day from his (Bhīṣma’s) retire-
ment, when Kriṣṇa possibly went to see him for the first time
and compliment him for his gallant fight.

The last but the most important astronomical indication
that is found in the Mahābhārata is that Yudhiṣṭhira was
consecrated for the year long Aśvamedha jajña which started
with the full moon in the spring season. The period in
question is stated to be citrāpunāmāsa (चित्रपूण्मास) or the day
of the full moon near the star Citrā or κ Virginis. Vyāsa
spoke to Yudhiṣṭhira thus:\textsuperscript{36}:

\begin{quote}
जैनां हि पौर्णमास्यां तु तस दीक्षा भविष्यति ॥
\end{quote}

Caitrāṁ hi paurṇamāsyāṁ tu tava dīkṣā bhavisyati ॥

i.e., you will be consecrated on the Citrā full moon. Citrā
full moon occurs on the subsequent 5th full moon from the
day of the Kārtika full moon when Vyāsa pointed to Dhṛtarāṣṭra
that the moon had become lustreless. From the ephemerides
it is noticed that the time period for the moon to move from
Kṛttikā full moon to Citrā full moon covers about 144.50
days but taking the synodic period of the lunar month

\textsuperscript{35} M. Bh. Santi : 51 : 44.

\textsuperscript{36} M. Bh. Asvamedhika : ch. 72.
to have 29.530588 days per month the period comes to about 147.65 days. Therefore, taking the uneven motion of the moon into consideration, 146.65 days may be taken to cover this period. Taking this figure, the moon at the total approximate motion of 13° 10' 34".89 per day for 1976, covers 1951° 19' 14".95. Deducting multiples of 360° the actual movement since the Kārtika full moon comes to 151° 19' 14".95. Adding this to the moon's tropical longitude of exact conjunction with the Kṛttikās (59° 39' 24".8), its tropical longitude on the Citrā full moon day comes to 210° 58' 39".75. On this day, Yudhiṣṭhira was going to be consecrated for the Āsvamedha jajña. Since this was a full moon day the sun's tropical longitude would be approximately 30° 58' 39".75. It is also seen that the tropical longitude of Citrā on 1.1.1976 was 203° 30' 21".8 which is very near to the position already found above.

Summing up the above, it is found that in the year of the battle: (i) after Kṛiṣṇa's talk with Karṇa there was a new moon near the star Jyeṣṭhā or Antares, (ii) the war started at the full moon next to the one referred to by Vyāsa in his talk to Dhṛtrāstra, (iii) the battle lasted till the moon reached Śravaṇa or Altair, (iv) Bhīṣma became incapacitated on the 10th day of the battle, (v) after 58 nights he expired when the sun took its northerly course, and (vi) Yudhiṣṭhira was consecrated on the Citrā full moon for the year long Āsvamedha jajña.

From the aforesaid the following time schedule may be drawn up:

A) Time from the full moon at the Kṛttikās to the full moon when the battle started 29.50 days
Bhīṣma's generalship 10 days
Bhīṣma on his arrow bed before his death 58 days

97.50 days

B) From Kṛttikā full moon to full moon of lunar Agrāhā-yana 29.50 days
Lunar month of *Agrahāyana* 29.50 days  
Lunar month of *Pausa* 29.50 days  
3/4th of the dark fortnight of *Māgha* 9.00 days  
---
97.50 days

C) On the 18th day of the battle the moon was 1½ days old and was in conjunction in Šravaṇā and the sun took the northerly course in about 50 days.

From the above data we can proceed with our calculation in order to find out the time period of the battle. The mean celestial longitudes of the stars for 1.1.1976 referred to in this treatise are given in *Annexure C*.

A) The moon at the assumed conjunction with *Kr̥ttikās* or *Alcyone* was 14 days old.

Hence the (1976) celestial longitude of the moon at the time was

\[
\text{= } 59° 39' 24''.8
\]

The moon was 14 days old and the mean synodic month had a length of 29.530588 days—say 29.53 days. Therefore, the moon was ahead of the sun by

\[
\frac{360° \times 14}{29.53} = 173° 43' 18''
\]

Hence the sun's present day (1.1.1976) mean celestial longitude for the time under review

(360° plus 59° 39' 24''.8 minus

\[
173° 43' 18''
\])

\[
= 245° 56' 06''.8
\]

Sun’s motion in 97.50 days

Hence the present (1.1.1976) mean celestial longitude of the sun for reaching the winter solstice of the year of the *Kurukšetra* war

\[
= 342° 1' 36''.8
\]

B) Since Vyāsa pointed out about the lustreless full moon to Dhṛtrāstra there
was a new moon at Antares or Jyeṣṭhā. Assuming that the sun and the star Antares had the same celestial longitude on the day, we have the celestial longitude of the (1. 1. 1976) sun at the new moon at Antares = 249° 25' 36".8

Since on the 14th day of the battle there was Āmāvasyā, the moon is one day short of the conjunction, and therefore it was 28.50 days old:

Therefore, the moon was ahead of the sun by:

\[
\frac{360° \times 28.50}{29.53} = \frac{347° 26'}{26.30}
\]

Therefore, the sun’s present day longitude at the time of Moon’s conjunction with Antares (360° plus 249° 25' 36".8 minus 347° 26' 36") = 261° 59' 0".8

Sun’s motion in 80 days = 78° 51' 6"

Hence the mean celestial longitude on 1.1.1976 of the sun for reaching the winter solstice of the Kurukṣetra war year = 340° 50' 6".8

C) The position of the moon at the assumed conjunction (as on 1.1.1976) with Śravaṇa when Balarāma returned from pilgrimage:

as already found = 308° 37' 1".29

This was the 18th day of the war. On the 14th day afternoon the Āmāvasyā started, as already found. Therefore, it continued till 15th evening. Thus on the 18th morning the moon was 1½ days old. Hence the moon was ahead of the sun by

\[
\frac{360° \times 1.50}{29.53} = \frac{18° 17'}{48.21}
\]

—10
Therefore the present day (1.1.1976) celestial longitude of the sun for that time:

\[(360^\circ \text{ plus } 308^\circ \ 37' \ 1''.29 \text{ minus } 18^\circ \ 17' \ 48'') = 290^\circ \ 19' \ 13''.29\]

Sun's motion in 50 days = \[49^\circ \ 16' \ 56''.20\]

Hence, the (1.1.1976) mean celestial longitude of the sun for reaching the winter solstice of the Kurukṣetra war year = \[339^\circ \ 26'9''.46\]

We have, therefore, received various values for the present (1.1.1976) mean celestial longitude of the sun for reaching the winter solstice for the Kurukṣetra war year, as under:

A) = \[342^\circ \ 1' \ 36''.8\]

B) = \[340^\circ \ 50' \ 6''.8\]

C) = \[339^\circ \ 26' \ 9''.49\]

Taking the mean of these three values we find:

\[= \ 340^\circ \ 45' \ 57''.7\]

Thus from the above, we find the present day (1.1.1976) mean tropical longitude of the sun for the winter solstice of the Kurukṣetra battle year to be \[340^\circ \ 45' \ 57''.7\]. Therefore, the total shifting of the winter solstice up to the end of 1975 is roughly \[340^\circ \ 45' \ 57''.7\] minus \[270^\circ = 70^\circ \ 45' \ 57''.7\] and represents a lapse of 5115 years at the approximate rate of precession of \[49''.80\] per year. Hence the year of the Kurukṣetra war comes to near about 3139 B.C. and this is very near the traditional date of 3137 B.C. which should be accepted as the period of the Kurukṣetra war.

At this juncture it is necessary to verify astronomically that Bṛṣma died in the dark half of the moon and not in the light half. Since the Kārtika full moon, (i.e., from the beginning of the lunar month of Kārtika) three full lunar months plus three-fourths of the fortnight had passed when Bṛṣma died. The time schedule showing the number of days thus passed have been recorded before and comes to 97.50 days. We find that
three complete full moon periods take 88.50 days at 29.50 days from one full moon to the other but still 9 days after the full moon are left out to complete 97.50 days. Therefore, Bhīṣma died in the dark half, i.e., after the full moon, on or about the 9th tithi, which at a rough estimate comprises of three-fourths of the dark half of the moon.

From some current ephemeris, it is found that the years 1912/13 corresponds with the Kurukṣetra war year in as much as the full moon at the Kṛttikās occurred on November 29, 1912. Taking this as the basis, the mean tropical longitudes of the sun and the moon at 5-30 P.M. I.S.T. are given below in the from of a time table of the battle period.

<table>
<thead>
<tr>
<th>Year 1912. Month and date</th>
<th>Tropical longitude of the sun</th>
<th>Tropical longitude of the moon</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov/24</td>
<td>241° 52'</td>
<td>59° 37'</td>
<td>full moon at Kṛttikās.</td>
</tr>
<tr>
<td>Dec/1</td>
<td>248° 57'</td>
<td>159° 28'</td>
<td>Kṛṣṇa's talk to Karna at P. Phālguna.</td>
</tr>
<tr>
<td>Dec/8</td>
<td>256° 04'</td>
<td>253° 34'</td>
<td>Āmāvasyā at Jyeṣṭhā</td>
</tr>
<tr>
<td>Dec/23</td>
<td>271° 20'</td>
<td>82° 00'</td>
<td>battle started, Mrgśiras full moon.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 1913</th>
<th>Month and date</th>
<th>Tropical longitude of the sun</th>
<th>Tropical longitude of the moon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan/1</td>
<td>280° 30'</td>
<td>211° 13'</td>
<td>10th day of the war when Bhīṣma fell.</td>
</tr>
<tr>
<td>Jan/5</td>
<td>284° 35'</td>
<td>252° 39'</td>
<td>14th day of the war when Jayadratha was killed.</td>
</tr>
<tr>
<td>Jan/9</td>
<td>288° 39'</td>
<td>311° 25'</td>
<td>18th day of the war, Balarāma returned in Śravanā.</td>
</tr>
<tr>
<td>Feb/20</td>
<td>331° 16'</td>
<td>142° 55'</td>
<td>Pūrṇamāsi near Maghā before Bhīṣma died.</td>
</tr>
<tr>
<td>Feb/28</td>
<td>339° 19'</td>
<td>256° 32'</td>
<td>Bhīṣma died and winter solstice began.</td>
</tr>
<tr>
<td>March/22</td>
<td>1° 16'</td>
<td>181° 19'</td>
<td>Hastā Pūrṇamāsi.</td>
</tr>
<tr>
<td>April/20</td>
<td>29° 48'</td>
<td>204° 27'</td>
<td>Citrā pūrṇamāsi when Yudhiṣṭhira was consecrated for Asvamedha sacrifice.</td>
</tr>
</tbody>
</table>

37. Krishnamurti's Ephemeris.
From the above table, it would appear that almost all the positions of the sun and the moon agree with those mentioned in the text and also with those already found by us. Further, it may be seen that on the day Bhisma died the tropical longitude of the sun is almost the same as the figure found in this Chapter and the variation is negligible. This figure, when converted into time element also comes to very near the traditional period of 3137 B.C. Thus, from all the astronomical references as verified by the current ephemeris the same period is arrived at. Therefore, there are very justifiable grounds for acceptance of 3137 B.C. as the period of the Kurukshetra war.
CHAPTER VIII

THE DATE OF KURUKSHETRA WAR

EPILOGUE

The object of this treatise was to find out the date of the Kurukṣhetra war. For this purpose no effort has been spared in the previous Chapters to present and analyse the relevant portions from various classical works of Indian and Greek authors pertaining to the Kurukṣhetra war period. In the Chapter entitled ‘The Antiquity of Indian Chronology’ describing the heliacal rising of the Āûvins and the Maghās, the sun’s depression at the time of calculation has been taken as 18° below the horizon. In case, however, the magnitude of the stars was greater and they emitted more brilliant colours at that remote period, the depression would be shorter and the time period should be lowered by about 72 years (approximately) for each further degree of lower depression. As stated in previous Chapters, the investigation of the time factor of the vedic period has been deemed necessary to make certain of the existence of a developed culture at that remote period and to test the probability of its transmission to the later Purānic period of the Mahābhārata. Throughout the relevant parts of this treatise an attempt has been made to prove that the vedic culture was evidently mature at that period of hoary antiquity. Hence the period of the Kuru-Pāṇḍavas naturally inherited as much cultural development and maturity. As such, the descriptions, at least the majority of them, appearing in the Mahābhārata text elaborating cultural development of that period cannot but be taken as a reality.

More preference has been noticeably accorded to the astronomical methodology to find out the time period of the war than any other. This may be argued that Purānic and epigraphic evidences have not been properly investigated. The Purānic evidences, as these are found, are
incomplete as shown in Chapter VII. The dynastic lists included therein are also contradictory to each other, and no mean factor can be determined to equate their proper values. The search for the time period of the Kurukṣetra war culminated on the finding of the true beginning of the Kali era as the battle was stated to have been fought at the junction of the Kali and the Dwāpara eras. Many instances have been quoted in the relevant Chapter and discussed extensively to point out the difficulty in proving the Purānic statements. Another example is given below to substantiate the above statement. Bhaṭṭotpala quotes in his commentary on Brhad Saṁhitā¹ that at the juncture of Kali and the Dwāpara eras, the seven riṣhis were in the nakṣatra Maghā and they, being faithful to their religious performances were engaged in the protection of the people. Apparently, this contains a riddle which cannot be easily solved. If the riṣhis were in the nakṣatra Maghā, they evidently were the Great Bears, who were stated elsewhere to be in the Maghās both during Yudhiṣṭhira and Parikṣita’s time. But the riddle lies in the next part of the verse. If the riṣhis were in the Maghās and if they are taken to mean the Great Bears, how can they be faithful to their religious practices, or how can they be engaged in the protection of the people?

The verse runs thus:

कलिद्वारसंधि तु स्थितातस्ते पितुदैवतम्।
मुनयो धर्मं निरता: प्रजानां पालने रता: ॥

Kalidvāparasandhavau tu sthitāṁste pitṛdaivataṁ।
Munao dharmaniratāḥ prajānāṁ pālane ratāḥ ॥

Although there is controversy regarding the proper interpretation of the word pitṛdaivatam (पितृदैवतम्), the verse has been quoted in the context of the period of Yudhiṣṭhira’s reign and as such must be taken to mean the Maghās. Thus, it may be seen that the fixation of the beginning

1. Bhattotpala’s commentary on Brihad Sam. Ch. XIII. 3. Since ‘Pitrīs’ are the presiding deities of Magha, ‘pitridaivatam’ means the nakṣatra Magha.
of the Kali era is the most important factor in utilising the Purānic evidences, since Bāhradṛatha dynasty began from the end of the Kurukṣetra war. This was 36 years before the Kali era had started. But the insurmountable obstacle that faces both the astronomers and the Saṃskrit scholars is the alleged movement of the rishi or the Great Bears. Some verses have already been quoted in the relevant chapter and two others are appended below to prove the point. In the Viṣṇupurāṇa, there is a verse²:

प्रयास्थल्ल यदा चैते पूर्ववासिड्रां महार्षियां ।
तदा नन्दाय प्रभुवेष: कलिवृत्ति गमिष्यति ॥

Prayāsyanti yadā caite pūrvāsādṛāṁ maharṣayaḥ ।
Tadā nandāṁ prabhṛtyeṣaḥ kalivṛddvīṁ gamiṣyati ॥

i.e., when the rishi moved to the Pūrvāśaḍās, the Nandas came into existence. Again from the Bhāgavata Purāṇa³ a verse containing the same meaning is found as under:

यदा मध्यास्यो यास्थल्ल पूर्ववासिड्रां महार्षियां ।
तदा नन्दाय प्रभुवेष: कलिवृत्ति गमिष्यति ॥

yadā maghābhhyo yāsyanti pūrvāsādṛāṁ maharṣyaḥ ।
Tadā nandāṁ prabhṛtyeṣaḥ kalivṛddvīṁ gamiṣyati ॥

Therefore, the movement of the rishi forms the focal point. But the Great Bears cannot have any movement whatsoever according to modern astronomy. These Purānic references containing the movement of the rishi cannot be put to any use towards fixation of ancient chronology. These evidences may be examined casually for the verification of other results, but can neither be put to severe test nor can these form the nucleus of independant investigation, at least for fixation of chronology.

In the Purāṇas, calculation of the dynastic chronology from Parikṣita to Nanda has also been made by the (परिक्षित

3. Bhagavata: 12.2.32.
It has been stated here that from the birth of Pariksita to the accession of Nanda, the interval is one thousand and five hundred years. There are also variations of the reading of (पञ्चसत्तरम्) पञ्चसत्तरम् from which the range in the interval in time between Pariksita and Nanda varies considerably. Further, the dynastic lists as furnished in the Puranas are also incomplete as confessed by the compilers themselves. In the circumstances, although the references obtained from the classical Greek historians, the extant traditions, the Puranic dynastic lists and also astronomical references in the Mahabharata have all been utilised, emphasis has been laid on investigation of the time period through astronomical data. It should be mentioned here that Babu Bankim Chandra Chattopadhyaya of 'Vandemataram' fame, tried to find out the Kurukshetra war period through the Puranic methodology in the introduction to his work 'Krishnacarita'. He found out that the war period was at 1430 B.C. Since this date does in no way coincide with the traditional or any other date this may be discarded, but as a pioneer his work in this field should be given due appreciation. It is not claimed that the astronomical data utilised for the purpose of finding the time period is infallible inasmuch as the position of the moon stationed at a nakshatra is only given in the Mahabharata; but detailed verification of the time period from various angles leaves only a limited room for error. But, even then, it must be admitted that because of the moon's extremely uneven motion, there remains a chance for variation, although slight.

Most of the traditional references appearing in the various records have been discussed indetail in Chapter VI. Amongst these, Kalhana's statement, that the Kurukshetra war was fought 653 years after the Kali era had began, has also been analysed, and the reasons for this discrepancy have been located. Since he could not find out the reigning periods of 35 kings of Kashmir, he committed the error of advancing the war period by 653 years. He also could not locate the three kingless periods in the history of India. As we have found out the date of the war by various other methods, and, since the date coincides with the traditional date of 3137 B.C, there seems to be doubt that Kalhana was mistaken in placing the period of the war. In this case, the corroborative evidences are the Puranas, which categorically state that the Kali era began just after Krişña's demise, which, according to Mahābhārata tradition was 36 years after the Kurukshetra war. Therefore, Kalhana's working data were incomplete and so he placed the war period 653 years after the advent of the Kali era.

We have already shown that the Greek historians speak of a continuity in the line of kings in India and from these, an approximate time period of the war has been found out. That was about 3000 B.C. Since the tradition was existing at about the 4th century B.C., as found from the accounts of the classical historians, this can not be the astronomical creation of Aryabhaṭṭa as suggested by Burgess. In fact, this tradition was current in the country about 800 years before Aryabhaṭṭa had even been born. He had only put on record what was current as tradition regarding the beginning of the Kali era in his own time. This was not his creation by calculating (or mis-calculating) backwards.

In the foregoing Chapters most of the relevant materials obtaining in the classical narratives, the Puranas, traditional records and the Mahābhārata have all been examined from different angles and it has been found that the Kurukshetra war

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was fought at or about 3137 B.C. This is also the traditional date current in the country at least for more than two thousand and three hundred years. One interesting point that needs special consideration is that, if this date is accepted as correct, if the vedic periods calculated by astronomical methods are accepted, possibility of an 'Aryan' invasion or 'Aryan' migration into India at about 1500 B.C., or at any later date whatsoever, other than the invasion of the borders by Cyrus (558–530 B.C.) and the full scale invasion into the country by Alexander the Great may be safely ruled out. This view has also the indirect support from the records of classical Greek historians, since they have not mentioned of any tradition or even a local story current in the then India about their coming from outside or from anywhere else. Traditions are national memories, and, they die very hard. On the other hand, from the Indian traditions and from old Persian sayings, they asserted that there was no full scale invasion into India except by Alexander the Great. Hence, the 'Aryans' must be the indigeneous people of India, born in this country, living in the country and migrating out of the country when necessary. If so, their history has to be rewritten to bring out the proper sequence of events since earliest times and investigations should be carried out to assess their migratory movements to the west from time to time.

We have traced the literary history of Krīṣṇa since vedic times. In the later period, 'Krīṣṇa' was identified with 'Viṣṇu' and still later, during Pāṇini's time at about 500 B.C, Bāsudeva-Arjuna cult was well-established in the northern territories. In course of time, this cult also petered out and Bāsudeva-Saṃkarṣana cult came into existence. It was also replaced later by 'Krīṣṇa' or 'Gopāla' cult. We have discussed the literary evidences of antiquity about 'Krīṣṇa' in Chapter III, and here some of the epigraphic records of the 'Vaiṣṇava' cult are enumerated to prove that this cult took a precedence since the pre-Christian times. This becomes evident from the earliest
available ‘Vaiṣṇava’ epigraph, the Besnagar Garuḍa Pillar Inscription7 of the time of Bhagabhadra, Regnal year 14, which has been assigned to the end of the 2nd century B.C. The Inscription reads:

(language Prakrit influenced by Sanskrit; Script-Brāhmi of circa end of the 2nd century B.C.)

Text. Part I

1. [ de ] vadevas va [ sude* ] vas garuḍadhvaje ayaṃ
2. kārīte ē [ ā ] heliodoreṇa bhāga
3. vatena diyas putreṇa takhhkhsilākena
4. yona–dūtena [ā] gatena mahārājas
5. aṁtalikitas upa [*] tā sakāsaṁ rayo
6. kasi = pu [tra] s [bh] āgabhadras trātāras
7. vasena ca [tu] dasena rajena vadhāmanas !!

For the 7th line D. R. Bhandarkar reads:

Bhandarkar: Vāsinā mapha [de] se nairāje navadha [ṁ] mā [nusāsanāya]

This means, in short, that this Garuḍa column of Bāsudeva, the God of Gods, was erected here by Heliodoros the Bhāgavata . in the 14th year of his kingship. This Bāsudeva is none other than Kṛṣṇa the son of Basudeva, and has been

identified with ‘Viṣṇu’ by the erection of the Garuḍadvaja. The Mathurā Stone Inscription of Sodāsa belongs to the period of 10–25 A.D. and the names of the five heroes of the Viṣṇi tribe, including Bāsudeva and Saṃkarṣana have been included. Kṛiṣṇa belonged to this tribe and was considered to be their well wisher and chief adviser. Therefore, Bāsudeva referred to in this inscription is none other than Kṛiṣṇa who was also revered as the ‘avatāra’ of ‘Viṣṇu’. We have already seen that Pāṇiṣṭa refers to the joint cult of Bāsudeva and Arjuna. The next stage “in the evolution of the Bāsudeva sect is marked by the dropping of Arjuna” as is evidenced from the above inscription.

The next stage of development of the Kṛiṣṇa cult is found in the Ghosundi Stone Inscription of king Sarvatāta. This shows that in the 2nd half of the 1st century B.C. Saṃkarṣana-Bāsudeva cult came into existence and Saṃkarṣana (=Balarāma) has evidently been given a predominance as he was mentioned first. Both of them were identified with Nārāyaṇa=Viṣṇu. Similar preference was also given in the


   i) [ कारितो अयं राजा भगव ] [ते] न गाजायनेन पारावरी पुजेण स
   ii) [ बैतातेन अभिषेषे था* ] जिना भग [ दू * ] भ्यां सबूतेन शाचिसरीब्यामम्
   iii) [ अनिहताभ्यां सब्रेब्याम्* ] भ्यां पूजा-शिला-प्राकारो नारायण बाटनां

   i) [ kārito ayaṁ rajñā Bhāgava ] [te] na gājāyanena pārāsaśāpṛutrena Sar
   ii) [vatātena āsvamedha yā] jinā Bhagava [d] bhyaṁ Saṃkarṣaṇa-vasudevābhyaṁ
   iii) [anihatābhyaṁ sarvesvarā] bhyaṁ puja-śilā-prākāro Nārayaṇa-vāṭakā
Nanaghat Cave Inscription\textsuperscript{10} of Nāgānīka at the beginning of the 1st century A.D. (नमो सञ्ज्ञै बालृदेवानार्म = namoh samakarsana vāsudevavāṃ). It appears that during the very early periods of the Christian era the ‘\textit{vṛṣṇa}’\textsuperscript{11} or ‘Kṛṣṇa Śakti’ as envisaged at a later date by the ‘\textit{Gauḍiṭya Vaiṣṇava seet}’ was also recognised. We find in the Mathurā Stone Inscription of the time of Sodāsa (c. 10–25 A.D.), the images of five deified heroes of the \textit{Vṛṣṇi} tribe. A part of the Inscription reads\textsuperscript{12}:

\textbf{Text.}

\begin{quote}
भगवताम् बृजीणाम् पञ्चबीराणाम् प्रतिमा: श्रील देवगु [हे स्थापिता:•]

\textit{Bhagavatām Vṛṣṇiām pañcavīrāṇām pratimāḥ śailadeva-devagr [he sthāpitāh]}
\end{quote}

Lueders has has identified\textsuperscript{13} the \textit{pañcavīras} as (i) Baladeva, (ii) Akrūra, (iii) Anādhristi, (iv) Sārana, and (v) Vidūratha, whereas, in the \textit{Vayupurana}\textsuperscript{14} the identities of the five heroes are found in the verse quoted below:

\begin{quote}
सञ्ज्ञै बालृदेव: प्रश्न: साम्य एव च.

अनुर्द्वशी पञ्चोणे बंशवीरा: प्रकोष्टिता:।

Samkarsana vāsudevaḥ pradyumnaḥ sāmva eva ca।

Aniruddhaśca pañcāite vaṁśavirāḥ prakṛtītāh।
\end{quote}

Therefore, at this period the \textit{Kṛṣṇa} cult was well-established and ‘\textit{vṛṣṇa}’ divisions of \textit{Kṛṣṇa}’s śakti was already recognised. Pātañjali\textsuperscript{15} refers to \textit{Kāṁsabhakta} and \textit{Bāsudevabhakta}, who wore red and black faces while appearing in the performance of \textit{Kāṁsavadha} drama. The reasons for this was explained by B. C. Keith. He sets aside all the literary evidences and explains Kṛṣṇa and Kāṁsa as “the spirit of the spring and summer” which “prevails over the spirit of the dark winter”\textsuperscript{16}.

\begin{enumerate}
\item[10.] Select Inscriptions: Sircar; p. 186 f.
\item[11.] Caitanya caritamrita: Adi. 35.
\item[12.] Select Inscriptions: Sircar; p. 122; Cunningham, A.S.R., XX, p. 49
\item[Plate 5, No. 4; Lueders, Ep. Ind. XXIV, p. 194 etc.
\item[13.] Ep. Ind. XXIV, p. 194 f in. The Evolution of Theistic Sects in Anc.
\item[India, p. 85.
\item[14.] Vayupurana: LXXIX: 1–2.
\item[15.] Mahabhasya—Patanjali; 111.1.6.
\item[16.] J.R.A.S. 1911, 1008.
\end{enumerate}
He also compares this cult as the primitive dramatic situational of the slaying of winter which is the source whence the drama is derived in India as in Greece. He forgot to consider that the Indian winter in the Mathurā region was not so very severe as to necessitate the formulation of a ‘summer-winter’ cult.

Another ‘Vaiṣṇava’ inscription in one line was found on the (द्वार) gadā held by a four armed standing male figure of stone. This was found near Burhikhar near Malhār in the Bilāspur district, Madhya Pradesh. The figure is locally known as “Caturbhūja Bhagavān”. The “line of writing in Brāhmi characters of about the close of the 1st. century B.C., begins in the upper part of the gadā and comes downwards”17. The importance of this is the existence of a ‘Viṣṇu’ temple at the beginning of the Christian era.

We have now dealt with some of the inscriptions belonging to the ‘Vaiṣṇava’ cult of the pre-Christian eras and the 1st. century of the Christian era. The inscriptions found at these places conclusively show the existence of ‘Bāsudeva’ cult prior to the Christian era which also continued into the early part of our era. Some scholars have assumed that the legends connected with Kṛiṣṇa can only be explained by the influence of Christianity and the Christian legends. R. G. Bhandarkar thinks that the Ābhīras were responsible for bringing the legend into the country. He also thinks that it is possible “they brought with them the name of Christ also and this name probably led to the identification of the boy-god with Vāsudeva–Kṛiṣṇa”18. The Ābhīras were mentioned in the Mahābhāṣya of Pātanjali (c. 150 B. C.) and Tarn is of opinion that the Ābhīras possibly entered India after Alexander’s invasion19. Apparently, Christ was not even born at the time when Bāsudeva cult was in existence in the country. Bhandarkar’s theory is, therefore, untenable. Similarly,

Dr. Macnicol’s observation that there “seems to be good ground for believing that about the middle of the 7th century Nestorian missions (which are believed to have entered India from the north in the year 639) may have brought stories of the child Christ as well as pictures and ritual observances which affected the story of Khśňa as related in the Purāṇas in relation to the celebration of his birth festival”²⁰ seems to be quite far-fetched. Keith has pointed out that there is no proof that the Nestorian mission entered India in 639 A.D.²¹ and going a step further Eliot states that “there is strong evidence that most of the doctrines and practice resembling Christianity have an Indian origin”²². This elaborate discussion has been necessary to show that Khśňa cult was Indian in origin and Indian by practice; it was existing within the country before Christ’s birth. Also from the Mahābhārata we find that he was a historical figure and was known by various names e.g. Bāsudeva, Khśňa, Gopāla, amongst others.

It may be mentioned that in the astronomical portion of the calculation, only approximate values have been taken and detailed calculations have not been undertaken. For that, the time period may differ, but only slightly. It has been seen that Bhīśma died in the dark half of the moon whereas, he himself stated that it was the light half. This has been explained with details, and if we take it that the war began on the full moon day, the period of Bhīśma’s death must have been in the dark half. Later interpolation from ‘krśňa’ (कृष्ण) to ‘sukla’ (सुक्ल) has been suggested with proofs in its proper place. From the calculations made with the help of the current ephemeris, it is seen that he died with the moon in the Maghās, of which the presiding deities are the ‘Pitris’; and since he was leaving this mortal world and going to his forefathers, it is not impossible that he decided to die with the moon in a nakṣatra of which the presiding deities are the ‘Pitris’.

Yudhiṣṭhira was consecrated for the Ṛtvamedha sacrifice on the day of the (चित्रपूर्णमास) citrā puṇḍamāsa according to Vyāsa’s statement. If Vyāsa told this after Bhīṣma’s death, there remained only about 52 days left by which time the horse had to move throughout the length and breadth of India. But we do not know when this was spoken but if it was just after the war, there was enough time; but in case, it was after Bhīṣma’s death, the time was short and the horse could conveniently travel only 1500 miles or so. We also do not know if more horses than one were utilised for this purpose. By now, most of the relevant matters and almost all the statements which are of importance have been discussed.

From the foregoing Chapters we have found out that the Kurukṣetra war fought at about 3137 B. C. and now after considering all the aspects we find no reason to change our viewpoint.