

THE  
ASTRONOMICAL METHOD AND ITS  
APPLICATION TO THE CHRONOLOGY  
OF ANCIENT INDIA



1942

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K. L. DAFTARI

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OF ANCIENT INDIA

BEING THE RAO BAHADUR BAPU RAO  
DADA KINKHEDE LECTURES DELIVERED  
AT THE NAGPUR UNIVERSITY ON THE  
13TH, 14TH, 15TH AND 16TH NOVEMBER, 1940

BY

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**PRINTED AT THE BANGALORE PRESS, MYSORE ROAD, BANGALORE CITY**

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## AUTHOR'S PREFACE

THIS work was prepared in response to the invitation of the Nagpur University to deliver the Bapu Rao Dada Kinkhede Lectures for the year 1940; that explains its present form. The researches embodied in this volume are virtually the result of a life-long study and were originally published long ago in the form of essays in various Marathi Journals. My Marathi essay on the date of the Mahābhārata War, which is the foundation of my further researches in this field, was published in the *Vividha Jñana Vistāra* (विविधज्ञानविस्तार) in 1920 under the caption "Mahābhārateeya-Yuddhakāla-Nirṇaya". It will be proper here to mention that the manuscript of this essay was read by the late Lokamānya Tilak and that he had at that time expressed his favourable opinion about it in a letter to Dr. Moonje. The letter is reproduced below:—

*Yavat*, 1st September 1915.

MY DEAR MOONJE,

I have read and re-read Mr. Daftari's MSS. essay. The conclusion is in my opinion sound. But I don't agree with certain suggestions by which he tries to explain away the texts contrary to his view. He has, no doubt, worked for himself and his essay contains some entirely new suggestions. Will he not translate it into English? I should advise him to do so and publish (it) in some Oriental Journal. I shall return the copy to you with my remarks in about a fortnight. I have leisure enough at this place for that.

Yours sincerely,  
BAL GANGADHAR TILAK.

It is unfortunate that the author of the *Orion* and *The Arctic Home in the Vedas* did not find though he wished, leisure enough to make notes on my manuscript

copy. Nor had I the leisure to carry out his suggestion that the essay should be translated into English. It was sometime in 1936 that Dr. W. S. Barlingay again revived the idea that these researches should be placed before Western Scholars and Indian Scholars in other provinces of India, but at that time again I was disinclined to make any efforts in this direction on the grounds of health. Early in 1939, however, the Kinkhede Lectures Committee invited me to deliver the Kinkhede Lectures for the year 1940 and though I was at first disinclined to accept the invitation, the persuasions of the Mohani brothers and Dr. Barlingay ultimately prevailed and the result is the present work.

In preparing this volume I received very valuable help from my preceptor Śreeyuta S. K. Barlingay, his son Dr. W. S. Barlingay, Ph.D., Bar-at-Law, my friend Mr. H. K. Mohani, Tarkateertha Laxman Śastree Joshi, Editor, *Dharmakosha* and Dr. N. G. Shabde, M.A., D.Sc. (Edinburgh), Professor of Mathematics, Science College, Nagpur, and I take this occasion to thank them all very heartily.

The Vice-Chancellor of the Nagpur University, Mr. T. J. Kedar, allowed me free use of the University Library, for which I am very much thankful to him. I also thank the R. B. Babu Rao Dada Kinkhede Lectures Committee and especially R. B. Madhava Rao Kinkhede for having invited me to deliver these lectures.

Lastly, I shall feel my labours amply rewarded if students of Ancient Indian Chronology find this work helpful to them; and any suggestions from them as regards the subject-matter of my thesis will be most welcome.

NAGPUR, }  
1-1-1942. }

KESHEO LAKSHMAN DAFTARI.

## Alphabet used for Transliteration

|   |   |   |  |
|---|---|---|--|
| अ<br>आ<br>इ<br>ई<br>उ<br>ऊ<br>ऋ<br>ॠ<br>ए<br>ऐ<br>ओ<br>औ<br>क<br>ख<br>ग<br>घ<br>ङ<br>च<br>छ<br>ज<br>झ<br>ञ<br>ट<br>ठ<br>ड<br>ढ<br>न | a<br>ā<br>i<br>ī or ee<br>u<br>ū<br>ṛi<br>ṛī<br>li<br>e<br>ai<br>o<br>au or ou<br>k or c<br>kh<br>g<br>gh<br>ṅ<br>ch<br>chh<br>j<br>jh<br>ṅ<br>t<br>th<br>d | ढ<br>ण<br>त<br>थ<br>द<br>ध<br>न<br>प<br>फ<br>ब<br>भ<br>म<br>य<br>र<br>ल<br>व<br>श<br>ष<br>स<br>ह<br>ळ<br>ङ<br>ञ<br>ष<br>ङ | dh<br>ṇ<br>t<br>th<br>d<br>dh<br>n<br>p<br>ph<br>b<br>bh<br>m<br>y<br>r<br>l<br>v or w<br>ś<br>sh<br>s<br>h<br>l<br>ddh or ḍh<br>ḥ<br>ksh or csh<br>jū |
|---|---|---|--|



## ERRATA

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| <i>Page</i> | <i>Line</i> | <i>Incorrect</i> | <i>Correct</i> |
|-------------|-------------|------------------|----------------|
| 5           | 35          | verse            | verse 28       |
| 14          | 25          | n                | in             |
| 76          | 23          | 2'53             | 29'53          |
| 97          | 17          | is 5 that        | is that        |
| 99          | 36          | eally            | really         |
| 114         | 36          | nformation       | information    |
| 121         | 22          | दुद्यत्          | दुद्युत्       |
| 162         | 32          | perormed         | performed      |
| 163         | 19          | Idmawāhas        | Idhmawāhas     |
| 165         | 15          | months           | mouths         |
| 168         | 35          | d s              | days           |
| 224         | 32          | interchanged     | interchange    |
| 250         | 18          | सप्त             | सप्त           |

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# SYNOPSIS

(The numerical figures indicate paragraphs)

## LECTURE I

### OUR OBJECTIVE, METHOD AND DATA

Chronology is a great necessity for the history of ancient India. 1.—But it has baffled the efforts of many students, as they did not employ the Astronomical method to its fullest extent. 2.—What we propose to do. 3.—Statement of the method used and the difference between it and the method of former scholars explained. 4-8.—The objection that there are no ancient historical works that would furnish proper data replied to; the historical works upon which we can rely. 9-14.—The objection that these historical works are full of absurdities and discrepancies and therefore unreliable, replied to. Methods of removing absurdities and discrepancies, namely, (1) correct interpretation, (2) correction in the reading of the text, (3) discovery of the mistakes of the authors, and (4) supposition of interpolation or deletion. When these methods can be appropriately used. 15-24.—Statements in respect of which the last three methods of removing absurdities or discrepancies are used, or statements correct interpretation of which is in doubt, not to be employed for calculating dates. The last three methods to be used only for reconciling statements with a date already found. 25.—Brāhmaṇas useful for determining the length of the year used by the ancient Indians. 26.—Date of no event to be determined in isolation from those of others. 27.—The method of actual calculation. 28, 29.—Data enumerated 30.

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#### OBJECTIONS TO THE *Tithi*

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## LECTURE III

## THE SYSTEM OF ANCIENT CHRONOLOGY

or

*The Year, the Cycles, the Kalpa, and the Manvantara  
(The Date of Śree Rāma)*

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## APPENDIX A

### THE MYSTERY OF GARGA'S DATE OF THE PĀṆDAVAS

(See Paragraphs 184-191)

This date is based mainly upon the misunderstanding of the following verses in the *Vāyu Purāna* in Chapter 99:—

आंध्राणां संस्थिताः पंच तेषां वंशाः समाः पुनः ॥

सप्तैव तु भविष्यति दशाभीरास्ततोऽनृपाः ।

सप्त गर्दभिनश्चापि ततोऽथ दश वै शकाः ॥ ३५९ ॥

The reading of these verses in the *Matsya Purāna* in Chapter 273 is as follows:—

आंध्राणां संस्थिता राज्ये तेषां मृत्वान्वये नृपाः ॥ १६ ॥

सप्तैवांध्रा भविष्यति दशाभीरास्ततो नृपाः ।

सप्त गर्दभिसश्चापि शकाश्चाष्टादशैव तु ॥ १८ ॥

The real reading appears to be:—

आंध्राणां संस्थिता राज्ये तेषां वंशाः समाः पुनः ॥

सप्तैवांध्रा भविष्यति दशाभीरास्ततोऽनृपाः ।

सप्त गर्दभिनश्चापि ततोऽथ दश वै शकाः ॥

This really means "The dynasties contemporaneous with the reign of those Āndhras are seven Āndhras, ten Ābhīras, seven Gardabhins and ten Śakas". But Garga, relying probably on the reading in the *Matsya Purāna* construed it to mean\* that these dynasties succeeded the Āndhras who reigned for 456 years according to the *Vāyu Purāna* and of whom Puloman was the last. He added the years of all the dynasties previous to that of the Śakas mentioned in this verse and assuming that the reign of the Śakas began in the first year of the Śaka Era, found the date of the Pāṇḍavas. His calculation was like what is shown below:—

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\* Note.—The literal translation can be as follows:—In the territory of those Āndhras, stood kings in the line of their ministers (मृत्यु). These will be seven Āndhra kings, then ten Ābhīra Kings, seven Gardabhīn Kings and then ten Śakas.

|             |   |       |
|-------------|---|-------|
| 1,072 years | Bārhadhratha  | Kings |
| 138 "       | Pradyotana  | "     |
| 360 "       | Śaiśunāga   | "     |
| 100 "       | Nanda   | "     |
| 137 "       | Maurya  | "     |
| 112 "       | Śunga   | "     |
| 456 "       | Āndhra  | "     |
| 52 "        | Seven Āndhra  | "     |
| 67 "        | Ten Ābhīra  | "     |
| 72 "        | Seven Gardabhin   | "     |
|             | (The Kaṇva Kings are omitted as<br>being ministers and contempora-<br>ries of the Śunga Kings.) |       |
| 2,566 "     | TOTAL   |       |

Here, it should be noted that the years of the seven Gardabhins are given by the verse:—

सप्तषष्टिं च वर्षाणि दशाभीरास्ततो नृपाः ।  
सप्त गर्दभिनश्चैव भोक्ष्यंतीमां द्विसप्ततिः ॥

found in some books of the *Vāyu Purāṇa* (see Ānandāśrama Edition of the *Vāyu Purāṇa*) and the years of the seven Āndhras are given by the verse:—

आंध्राः श्रीपार्वतीयाश्च ते द्विपंचाशतं समाः ॥ २३ ॥

in Chapter 273 of the *Matsya Purāṇa*. That the Kanvas were contemporaries of Śungas is proved by verse 35 of Chapter 272 of the *Matsya Purāṇa* where the Kaṇva Kings are said to be servants (ministers) of the Śungas (शुंगमृत्यु) and by verses 1 and 2 of Chapter 273 of the same where it is said that the Āndhra King also destroyed the remains of the Śungas (शुंगानां चैव यच्छेषं क्षपित्वा).

The total found by the calculation given above agrees with the number of years given by Garga. Kalhana did not know this calculation and therefore he construed Garga's verse to mean that 2,526 years passed from the Pāṇḍavas to the beginning of the Śaka Era. The mystery about Garga's date of the Pāṇḍavas is thus solved very clearly. This also shows that Garga found in the Purāṇas, the years of the Bārhadhratha, Pradyotana, Śaiśunāga and Nanda Kings to be 1,072, 138, 360 and 100 years respectively and confirms our calculation in para 167.

## APPENDIX B

### THE DATE OF THE *MAITRYUPANISHAD*

Objection is taken by some to the date of the Mahābhārata War proved in these lectures, on the ground that the date of the Mahābhārata War is earlier than that of the *Maitryupanishad* and that the date of the *Maitryupanishad* is about 1900 B.C.

That the *Maitryupanishad* is later than the Pāṇḍavas is certain inasmuch as, it undoubtedly refers to certain passages in the *Chhândogya Upanishad* (compare, for example, Prapāthaka 6, Khaṇḍa 2 of the *Maitryupanishad* and Chapter 7, Khaṇḍa 9 of the *Chhândogya Upanishad*) which in its turn mentions the name of Dewakīputra Kṛishṇa in Chapter 3, Khaṇḍa 17. The date of the *Maitryupanishad*, moreover is said to be about 1900 B.C. from the following statement in it:—

“ कालस्यैतद्रूपं यन्निमेषादिकालात्संभृतं द्वादशात्मकं वत्सरमेतस्याग्नेयमर्ध-  
मर्धं वारुणं मघाद्यं श्रविष्ठार्धान्तमाग्नेयं क्रमेणोत्क्रमेण सार्पाद्यं श्रविष्ठार्धात् सौम्यं ”  
(प्रपाठक ६, खंड १४).

[*Translation.*—“The year consisting of twelve months, is the figure of the *Kāla*, i.e., Time formed by the Nimesha and other portions of Time. It (the year) consists of two parts, one Āgneya (relating to Fire) and the other Vāruṇa (relating to Water). From the Maghā to the middle of the Dhanishṭhā in the proper order is Āgneya (because man takes resort to fire to protect himself from cold in these days). From the Āśleshā to the middle of the Dhanishṭhā in the reverse order is Soumya (because man resorts to the Soma or the Moon in these days when troubled by the heat of the Sun).”]

This passage is said to show that the point of the Winter Solstice was in the middle of the Dhanishṭhā, at the time of the *Maitryupanishad* and that therefore the date of the *Maitryupanishad* must be about 1900 B.C. It follows, it is argued, that the date of the Mahābhārata War must be earlier than 1900 B.C., i.e., about 700 years earlier than the date proved in these lectures.

The argument, however, obviously lacks logical stringency. The passage in question does not necessarily show that the

*Maitryupanishad* must have been composed as early as 1900 B.C. For, it is quite possible that the *Upanishad* though, as we shall presently show, it is a work of a comparatively recent date might yet describe astronomical phenomena of an epoch far earlier than the date of its composition. And, indeed, a careful examination of its structure reveals that it purports to describe a dialogue supposed to have taken place with Bṛihadhratha, a descendant of Ikshwāku, the sixth in descent from Ikshwāku's son Nimi, who lived about 750 years earlier than the Pāṇḍavas. It is only natural, therefore, that consistently with its structural plan, such a work should mention in Prapathaka 1, Khaṇḍa 5, only those Kings who lived much earlier than the Pāṇḍavas and describe astronomical phenomena occurring in the time of Bṛihadhratha. For this purpose it could have drawn upon the information available in the Purāṇas which were then extant and a reference to the *Vāyupurāṇa*, Chapter 50, verses 197-99, would seem to suggest that the astronomical information contained in the passage in the *Upanishad* might possibly have been taken from the *Vāyupurāṇa*. Authors are often known to do such things. Therefore it is certain that the objector's argument cannot possibly shake the conclusion that has been so rigorously arrived at in these lectures in respect of the date of the Mahābhārata War from far more reliable and unimpeachable astronomical data and the evidence of the Pourāṇic Dynasties between the War and Chandragupta Mourya.

We may point out by the by, that the date of the *Upanishad* must be subsequent to that of the Buddha. The language of the *Upanishad* is comparatively modern. The sage who is the preceptor of Bṛihadhratha is named Śākāyanya and we know from the Purāṇas that the name of the grandfather of Buddha was Śākya and we know that Buddha himself was called Śākya-simha. Thus Śākāyanya may be but another name of Buddha. These facts go to show that this *Upanishad* was probably subsequent to the time of Buddha.

## APPENDIX C

### THE STARTING POINT OF THE DIVINE YUGAS

We have presumed in paragraph 347 that the starting point of the Divine Kali was the same as that of the third Human Kṛita. There is, however, in the *Bhāgavata Purāna*, an express statement about the starting of the Divine Kali. The *Bhāgavata* says in Skandha 12, Chapter 2:—

यस्मिन् कृष्णो दिवं यातस्तस्मिन्नेव तदाहनि ।

प्रतिपन्नं कलियुगमिति प्राहुः पुराविदः ॥ ३३ ॥

[*Translation.*—“The historians (पुराविदः) say that the Kali started on the very day on which Śree Kṛishṇa went to Heaven.”]

It may be said that this is only a panegyric of Śree Kṛishṇa. But the word पुराविदः suggests that though undoubtedly a panegyric, this statement may have been based upon some fact. And indeed we know a fact which can be at the basis of this statement. Śree Kṛishṇa died 22 years after the Bhārata War, *i.e.*, in 1926·7 Kalpa Era or Kali Era (see *supra*, paragraphs 98, 99 and 338). The century of the Saptarshi Kāla started at the beginning of the 27th year of the Kali Era, *i.e.*, the Kalpa Era (see *Dixit*, page 373), *i.e.*, at 26 Kalpa Era. We have seen, however, in paragraphs 325 and 333 that the beginning of the year was shifted forward first by half of an year and then by two lunar months again, *i.e.*, in all by 7/10ths of an year. Therefore in the year of Śree Kṛishṇa's death, the first year of the century of Saptarshi Kāla must have begun at 1926·7 Kalpa Era. This agrees with the date of Śree Kṛishṇa's death. This agreement shows that there is a fact at the basis of the statements in the *Bhāgavata* and that fact is that the date of Śree Kṛishṇa's death and date of the starting of the century of the Saptarshi Kāla was the same. But the *Bhāgavata* calls this date, the date of the starting of the Kali, shown to be the Divine Kali by the word द्वादशाब्दशतात्मकः (the Kali of 1,200 years) in the preceding 31st verse of the same chapter. This shows that the Divine Kali, started in 1926·7 Kalpa Era. The Divine Dwāpara must therefore have started 74 years before the starting of the Vārāha

Kalpa (*i.e.*, before 3102 B.C.) taking the shifting of the beginning of the year into consideration. This is opposed to our presumption that the Divine Kali started in 2000 Kalpa Era and that therefore the Divine Dwāpara started at the beginning of the Kalpa Era. Our presumption was based upon the idea that the starting point of the Divine and the Human Yugas must be same and this idea does not appear to be incorrect. This opposition therefore suggests that the starting point of yugas was changed when in 3102 B.C. the conjunction of the planets in the Revati was seen and that the old starting point still survives in the shape of the starting point of the century of the Saptarshi Kāla. From this point of view, the starting point of the Divine Dwāpara would be 74 years before the starting of the Vārāha Kalpa in 3102 B.C., *i.e.*, 3176 B.C. and the starting of the Divine Kṛita 10176 B.C. The date of the habitation of the Meru by the ancestors of the Indian Āryas would therefore be 10176 B.C. instead of 10102 B.C. as settled in para. 353.

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